



Officers' Meadow, Shenfield

Utilities Appraisal Report

On behalf of **Croudace Homes Ltd**

croudacehomes

Project Ref: 332410839/100.004 | Rev: - | Date: September 2023

Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: Unit 10, Connect 38, 1 Dover Place, Ashford, Kent TN23 1FB
T: +44 (0)1233 527252 E: ashford@stantec.com

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	Name	Position	Signature	Date
Prepared by:	Michelle Hawkett	Principal Technician		05/09/2023
Reviewed by:	Larry Aiyedogbon	Associate		05/09/2023
Approved by:	Jane Piper	Director	JP	05/09/2023
For and on behalf of Stantec UK Limited				

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1 Introduction

1.1 Report Scope

- 1.1.1 This Utilities Appraisal Report (UAR) has been prepared by Stantec UK Limited on behalf of Croudace Homes Ltd to support a hybrid planning application for the proposed development of up to 344 residential dwellings at a site on land off Chelmsford Road, known Officers' Meadow, Shenfield.
- 1.1.2 The Site forms part of the Strategic Site R03 (Land North of Shenfield) allocated in the Brentwood Local Plan (BLP) (March 2022). The Site is the largest parcel of land, at 21.32 hectares (ha), which is being independently brought forward by Croudace Homes Ltd as part of the Development Framework for Site R03 alongside a consortium of developers including Redrow Homes, Countryside Properties and Stonebond Properties.
- 1.1.3 The UAR will outline the existing utility infrastructure relating to the site and assess the constraints and opportunities in procuring new electricity, gas, telecommunications, potable water and wastewater services. The report will also identify the need for new utility infrastructure including the potential for upgrade / reinforcement works and where necessary the requirement for further investigation / modelling.
- 1.1.4 In accordance with both national and local planning policy, the report will detail how the proposed development can be served by utility infrastructure without significant environmental impact.

1.2 Site Information

Existing Land Use and Site Location

- 1.2.1 The Site is located to the north of Shenfield, a 20 minute walk and a 10 minute cycle to Shenfield Town Centre. The Site is bound to the north-west by Chelmsford Road, its associated dwellings and their rear residential curtilages. Beyond Chelmsford Road lies the A12 (dual carriageway) and open farmland. The south-eastern boundary of the site is delineated by Ancient Woodland, an area of undesignated woodland and a railway line, beyond which lies additional areas of woodland, residential development, and further farmland.
- 1.2.2 The Site is constrained by Ancient Woodland, a TPO tree belt to the north-west of the site and a critical drainage area.
- 1.2.3 To the north of the Site lies a Grade II listed Milestone in the northern verge of Chelmsford Road opposite number 179 Chelmsford Road.

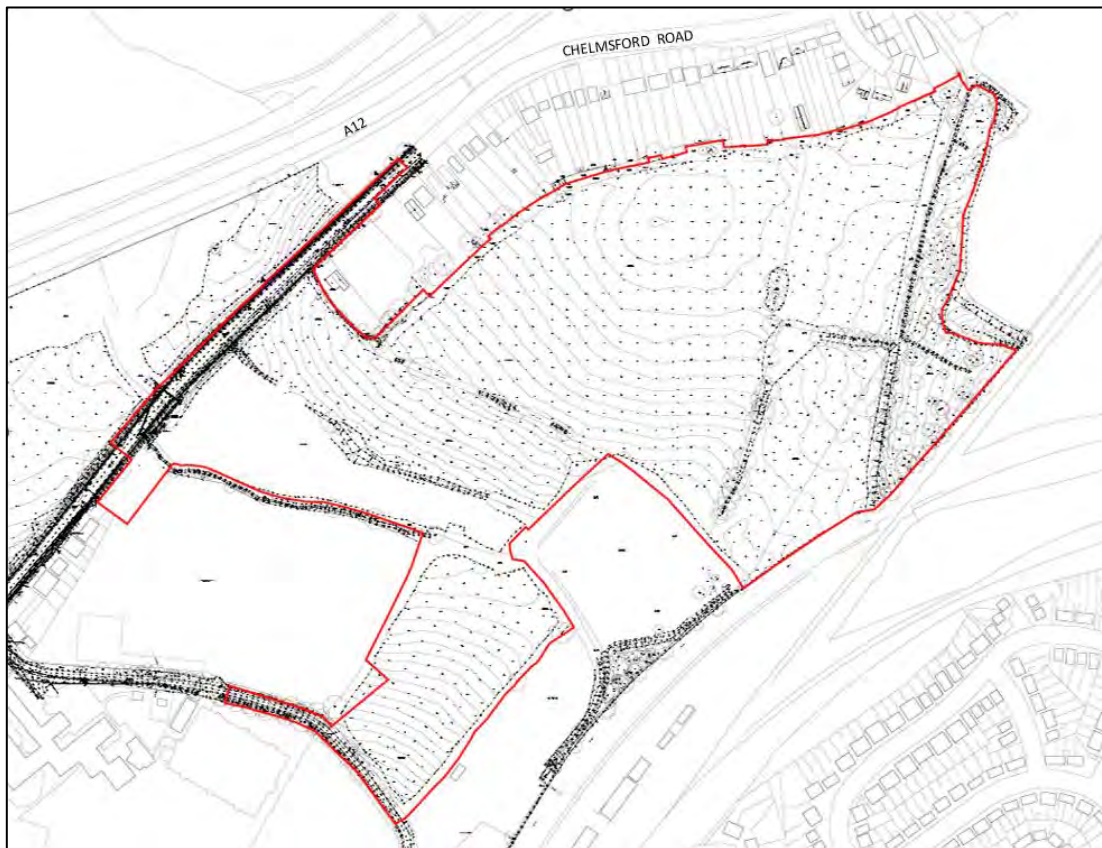


Figure 1.1: Site Location

- 1.2.4 The site comprises a series of fields which historically has been in agricultural use but is now mainly maintained rough pasture/scrubland.

Development Proposals

- 1.2.5 The development proposals for the Croudace Homes Ltd development include the provision of 344 units including 35% affordable housing, safeguarded land for a 2FE primary school and early years facility, public open space and associated landscaping, drainage and highways infrastructure.
- 1.2.6 A copy of the Proposed Site Layout (drawing number 1643.100 Rev P), prepared by FINC Architects, dated September 2023 is contained within **Appendix A**.

2 Planning Policy and Relevant Guidance

2.1 Planning Policy Context

2.1.1 The following Planning Policies have been used to inform this appraisal: -

- National Planning Policy Framework (NPPF, 2021)
- Brentwood Local Plan 2016-2033 (Adopted 23 March 2022)

National Policy

2.1.2 The National Planning Policy Framework (NPPF) (July 2021) confirms that there should be a presumption in favour of development where it can be demonstrated that the proposals are sustainable. Paragraph 20 of the NPPF states that:

'Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for:

- a) housing (including affordable housing), employment, retail, leisure and other commercial development;*
- b) infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);*
- c) community facilities (such as health, education and cultural infrastructure); and*
- d) conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation.*

2.1.3 Paragraph 114 specifically considers communications infrastructure and states:

'Advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being. Planning policies and decisions should support the expansion of electronic communications networks, including next generation mobile technology (such as 5G) and full fibre broadband connections. Policies should set out how high quality digital infrastructure, providing access to services from a range of providers, is expected to be delivered and upgraded over time; and should prioritise full fibre connections to existing and new developments (as these connections will, in almost all cases, provide the optimum solution).'

2.1.4 Planning for climate change is also considered and paragraph 154b states that:

'New development should be planned for in ways that:

- b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.'*

2.1.5 Paragraph 155 continues:

'To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a) *provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);*
- b) *consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and*
- c) *identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.'*

Local Planning Policy

- 2.1.6 The local planning authority for the area is Brentwood Borough Council (BBC). Currently, the **Brentwood Local Plan** 2016-2033 Document (Adopted 23 March 2022) is the relevant local policy document for the area. The policies relevant to utility infrastructure are summarised below:

Strategic Policy BE01: Carbon Reduction and Renewable Energy

1. Carbon Reduction and Construction Standards

Development should meet the minimum standards of sustainable construction and carbon reduction as set out below:

- a. *All major development will be required to achieve at least a 10% reduction in carbon dioxide emissions above the requirements of Part L Building Regulations; and*
- b. *New Non-residential development will be required to achieve a certified 'Excellent' rating under the BREEAM New Construction (Non-Domestic Buildings) 2018 scheme, or other equivalent standards.*

2. Renewable Energy

Wherever possible, application of major development will be required to provide a minimum of 10% of the predicted energy needs of the development from renewable energy. Where on-site provision of renewable technologies is not appropriate, or where it is clearly demonstrated that the above target cannot be fully achieved on-site, any shortfall should be provided through:

- a. *'allowable solutions contributions' via Section 106 or CIL. These funds will then be used for energy efficiency and energy generation initiatives or other measure(s) required to offset the environmental impact of the development; or*
- b. *off-site provision, provided that an alternative proposal is identified, and the measures can be secured.*

- 2.1.7 This policy outlines that incorporating renewable energy generation and energy efficiency measures into new development will be essential in order to achieve carbon reduction targets
- 2.1.8 All developments should maximise opportunities for on-site electricity and heat production as well as use innovative building materials and smart technologies to reduce carbon emissions, reduce energy costs to occupants and improve the borough's energy resilience.

Policy BE02: Water Efficiency and Management

Water Efficiency

1. *Development should incorporate water conservation measures in the proposals and meet the minimum standards for water efficiency as set out below:*
 - a. *New residential development will be required to achieve limits of 110 litres per person per day.*
 - b. *New non-residential development is expected to meet BREEAM 'Excellent' rating in category Wat 01.*
 - c. *Major developments and high or intense water use developments (such as hotels) is expected to provide more substantial water management measures such as rain/ and grey water harvesting.*

Waste Water and Sewage

2. *Development proposals should:*
 - a. *seek to improve the water environment and demonstrate that adequate wastewater infrastructure capacity is provided;*
 - b. *ensure that misconconnections between foul and surface water networks are eliminated and not easily created through future building alterations;*
 - c. *incorporate measures such as smart metering, water saving and recycling, including retrofitting and rain/grey water harvesting, to help to achieve lower water consumption rates and to maximise futureproofing;*
3. *Applications will need to demonstrate that the sewerage network has adequate capacity both on and off-site to serve the development and to assess the need to contribute to any additional connections for the development to prevent flooding or pollution of land and water courses. Where sewerage capacity is identified as insufficient, development will only be permitted if it is demonstrated that improvements will be completed prior to occupation of the development.*

Policy BE06: Communications Infrastructure

1. *The Council will support proposals for high quality communications infrastructure and superfast broadband, including community-based networks, particularly where alternative technologies need to be used in rural areas of the borough.*
2. *Proposals from service providers for new or the expansion of existing communications infrastructure (including telecommunications masts, equipment and associated development, and superfast broadband) will be supported subject to the following criteria:*
 - a. *evidence is provided to demonstrate, to the Council's satisfaction, that the possibility of mast or site sharing has been fully explored and no suitable alternative sites are available in the locality including the erection of antennae on existing buildings or other suitable structures;*
 - b. *evidence is provided to confirm that the proposals would cause no harm to highway safety;*
 - c. *the proposal has no unacceptable impact on the character and appearance of the area, landscape or heritage impacts or unacceptable impacts on the natural environment;*
 - d. *the proposal has been designed to minimise disruption should the need for maintenance, adaption or future upgrades arise;*

- e. *the proposal will not cause significant and irremediable interference with other electrical equipment, air traffic services or instrumentation operated in the national interest; and*
- f. *the proposal conforms to the latest International Commission on Non-Ionising Radiation Protection (ICNIRP) guidelines, taking account of the cumulative impact of all operator equipment located on the mast/site where appropriate (i.e. prevent location to sensitive community uses, including schools).*

Policy BE07: Connecting New Developments to Digital Infrastructure

1. *To support Brentwood's economic growth and productivity now and in the future, all development proposals should:*
 - a. *Provide up to date communications infrastructure as an integral part of development proposals. As a minimum, all new developments must be served by the fastest available broadband connection, installed on an open access basis. This includes installation of appropriate cabling within dwellings and business units and full connection of the developed areas to the main telecommunications network;*
 - b. *ensure that sufficient ducting space for future digital connectivity infrastructure (such as small cell antenna and ducts for cables, that support fixed and mobile connectivity and therefore underpins smart technologies) is provided wherever possible;*
 - c. *support the effective use of the public realm, such as street furniture and other installations, to accommodate new state of the art well-designed and integrated mobile digital communication infrastructure;*
2. *When installing new and improving existing digital communication infrastructure in new development, proposals should:*
 - a. *identify and plan for the telecommunications network demand and infrastructure needs from first occupation;*
 - b. *take into account the Highway Authority's land requirements so as not to impede or add to the cost of the highway mitigation schemes where the location and route of new utility services in the vicinity of the highway network or proposed new highway network;*
 - c. *ensure the scale, form and massing of the new development does not cause unavoidable interference with existing communications infrastructure in the vicinity. If so, opportunities to mitigate such impact through appropriate design modifications should be progressed including measures for resiting, re-provision or enhancement of any relevant communications infrastructure within the new development;*
 - d. *demonstrate that the siting and design of the installation would not have a detrimental impact upon the visual and residential amenity of neighbouring occupiers, the host building (where relevant), and the appearance and character of the area;*
 - e. *seek opportunities to share existing masts or sites with other providers; and*
 - f. *all digital communication infrastructure should have the capacity to respond to changes in technology requirements over the life of the development.*
3. *Where applicants can demonstrate, through consultation with broadband infrastructure providers, that superfast broadband connection is not practical, or economically viable:*

- a. *the developer will ensure that broadband service is made available via an alternative technology provider, such as fixed wireless or radio broadband; and*
- b. *ducting to all premises that can be accessed by broadband providers in the future, to enable greater access in the future. Only where this is not practicable or viable, the Council will seek developer contribution towards off-site works to enable those properties access to superfast broadband, either via fibre optic cable or wireless technology in the future to provide like capacity.*

Policy BE11: Electric and Low Emission Vehicles

All development proposals should wherever possible maximise the opportunity of occupiers and visitors to use electric and low emission vehicles and maximise the provision of electric vehicle charging / plug-in points and/or the space and infrastructure required to provide them in the future.

2.2 Relevant Guidance

Electricity

- 2.2.1 Competition in the electrical market is such that a developer has a range of independent Distribution Network Operators (IDNOs) in addition to the Distribution Network Operator (DNO). IDNOs provide an embedded network across the proposed development such that the electrical infrastructure is designed, installed, owned, maintained, and operated by the IDNO. It is also common for IDNOs to be part of multi-utility companies that offer all or a number of utilities (electric, gas, water, telecommunications).
- 2.2.2 IDNOs often work out as the more cost-effective choice, partly due to timescales and their ability to respond more quickly to a project programme and constraints. However, the main reason is due to them being able to offset the costs of reinforcement, site distribution and supply packages with anticipated future revenue.

Gas

- 2.2.3 As of 2025, the Government's Future Homes Standard will require new homes to be future proofed with low carbon heating and high energy efficiency, as well as seeing a reduction in carbon of over 75%. As such, the installation of fossil fuel heating systems, for example gas fired boilers, will no longer be possible within new homes.
- 2.2.4 Similarly, with the latest Building Regulations Part L that came into effect 15th June 2022 requires that new homes achieve a 30% reduction in carbon emissions, which will likely result in a need for low carbon heating and high energy efficiency, prior to the 2025 Future Homes Standard.

Telecommunications

- 2.2.5 Openreach BT is the incumbent national communications company across the country, with the exception of K-Com in the Hull area. As such, they operate the majority of fibre and copper telecoms networks across the country.
- 2.2.6 Openreach BT offer what is known as an open network, where numerous internet service providers (ISP) are signed up to them. This offers residents and company owners a wide choice of ISPs.
- 2.2.7 Virgin Media and Vodafone, who have smaller networks across the country, are closed networks. This means that residents and company owners can only sign up to them as ISPs.

- 2.2.8 The industry regulator, Ofcom has worked on bringing competition into the residential market, with other communications companies such as GTC via Open Fibre Network Limited, Jurassic Fibre, Hyperoptic to name but a few.

Potable Water

- 2.2.9 The Water Act 2003 and Water Act 2014 extends the scope for competition in the industry.
- 2.2.10 Self-lay providers, who are Water Industry Registration Scheme (WIRS) accredited, are able to carry out the contestable works for a water company. Whilst this may not result in reduction in construction cost, self-lay providers commonly offer a must faster construction programme and better communication throughout the project. Self-lay providers do not own and operate the water network, which will be owned by the regional water company. In this case, South West Water.
- 2.2.11 Alternatively, multi-utility providers and independent water companies are able to design, install, own and operate water networks. The company will apply to Ofwat for a New Appointment and Variation (NAV), where they are able to replace the regional water company within the site boundary as the water provider for that specific geographic area.
- 2.2.12 With a NAV, the independent water company is able to offer an asset value, whereby the year on year income generated from the water supply is calculated, which is then paid back to the developer on the adoption of the mains.
- 2.2.13 Under Section 37 of the Water Industry Act 1991, the Water Company is required to "develop and maintain a system of water supply such that it can have supplies available to persons demanding them," i.e., it is obliged to provide a point(s) of connection for new development at the nearest practicable point to the site of the same diameter main or greater. Any reinforcement works required must now be funded by the Water Company subsidized by way of the Infrastructure Charges Levied on all new connections.

2.3 Other Guidance

- The Water Industry Act 1991
- Water Act 2003
- Water Act 2014
- OFWAT (2023)
- The Electricity Safety, Quality and Continuity Regulations 2002
- HSE - Avoiding danger from underground services (HSG47) 2014
- HSE - The Pipelines Safety Regulations (L82) 1996

3 Utility Providers

3.1 Introduction

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

3.2 Statutory Undertakers Communications

3.2.1 The host electricity Distribution Network Operator (DNO) is UK Power Networks (UKPN) and Cadent is the gas provider for the area. Openreach is the licensed open access telecommunications network provider, the potable water transporter is Essex and Suffolk Water (ESW) and the foul water transporter is Thames Water (TWUL).

3.2.2 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.

Table 3.1: Statutory Undertakers Contact List

Utility Medium	Statutory Undertaker	Existing Infrastructure On/Near Site	Diversionary Works Required	C2 Enquiry Date
Electricity	UKPN	Yes	Possible	25/05/2023
Gas	Cadent	Yes	Possible	25/05/2023
	ESP	Yes	No	05/06/2023
Telecommunications	BT Openreach	Yes	Possible	25/05/2023
	Colt	No	No	25/05/2023
	Lumen Technologies	Yes	No	25/05/2023
	CityFibre	No	No	25/05/2023
	MBNL	Yes	No	25/05/2023
	Sky	No	No	25/05/2023
	SOTA	No	No	25/05/2023
	Telia	No	No	25/05/2023
	Verizon	No	No	25/05/2023
	Virgin Media	No	No	25/05/2023
	Vodafone	No	No	25/05/2023
Potable Water	Essex & Suffolk Water	Yes	Possible	25/05/2023
Foul Water	Anglian Water	Yes	Possible	25/05/2023
Other	Network Rail	Yes	No	25/05/2023
	EQUANS	No	No	25/05/2023

- 3.2.3 The report refers to the copies of the utility asset record plans obtained from each utility undertaker. These records were obtained in May 2023 and are contained within **Appendices D to H**. These records identify only adopted utility assets, not privately-operated networks, and generally do not include individual service connections.
- 3.2.4 An existing services drawing based on asset records obtained from the utility providers is shown on drawing **332410839/100.004/001 P01** and is contained within **Appendix B** of this report.
- 3.2.5 Stantec has, for the purposes of this report, made capacity enquiries to the incumbent undertakers to ascertain points of connection and to determine if there is a need to reinforce or upgrade any of the off-site utility networks. A Combined Services Layout drawing (**332410839/100.004/002 P02**) showing proposed points of service connections is contained within **Appendix C**.

4 Utility Demand Schedule

4.1 Assumptions

4.1.1 In line with the recently approved building regulations in England (Conservation of Fuel and Power: Approved Document L1 - aims to reduce carbon emissions), an all-electric heating strategy is assumed for the site.

4.1.2 Additionally, within the building regulations recently published, Infrastructure for the Charging of Electric Vehicles; Approved Document S has been reviewed and the number of Electric Vehicle Charging Points (EVCPs) assumed is one parking space per dwelling, as per Paragraph 1.1 which states the following:

'Where associated parking spaces are provided for a new residential building, the number of associated parking spaces that have access to an electric vehicle charge point must be a minimum of either of the following.

a. The number of associated parking spaces.

b. The number of dwellings that the car park serves.'

4.2 Loading Assessment

4.2.1 An indicative loading assessment has been prepared by Stantec on the basis of the above information, and current industry standards. The load assessment schedule has been issued to each statutory utility provider as the basis for their capacity assessment and to identify the scope of any off-site activities necessary to bring utilities to the site.

4.2.2 Electricity, gas and water demand loads have been estimated for the proposed development using Stantec's experience on similar residential development schemes.

4.2.3 A summary of the utility demand schedule is provided in **Table 4.1**, below.

Table 4.1: Utility Demand Schedule

Utility	Loading
Electricity Peak	2,416 kVA
Potable Water Peak	5.7 l/s
Foul Water Peak	4.52 l/s

4.3 Methodology

4.3.1 The report is divided into sections covering electricity, gas, telecommunications, potable water and wastewater, and a brief description has been provided in terms of existing infrastructure, diversion requirements and new connections activities.

4.3.2 A summary of the new connection and diversion strategies is also included in **Section 9** of this report.

5 Electricity

5.1 Existing Infrastructure

- 5.1.1 UK Power Networks (UKPN) are the host electricity distribution network operator for the region. The full extents of the UKPN apparatus surrounding the development site are provided on the Existing Services Layout and UKPN asset plans, contained within **Appendix B** and **Appendix D** respectively.
- 5.1.2 UKPN records show existing high voltage (HV) cables running within the southern footway of the A12 and the northern footway of Chelmsford Road to the north of the site, connecting to Chelmsford Road Switching Station and Mountnessing Kiosk substation.
- 5.1.3 A further HV cable runs from the A12 towards the southern footway of Chelmsford Road, to connect into Hillside Service Station substation.
- 5.1.4 A low voltage (LV) cable runs within the southern footway of Chelmsford Road from Mountnessing Kiosk to the east of Fen Close.
- 5.1.5 There is a further substation located within the Electricity Distribution Site to the south of the site, with associated HV and LV networks serving the rail networks and adjacent commercial units.

5.2 Diversionary Works

- 5.2.1 There are no diversions required within the site boundary. However, construction of the new access roundabout on Chelmsford Road may trigger the need for diversion or protection work of the existing UKPN cable routes. The requirement for diversion or protection works will be dependent on detailed design of the access junction and proposed construction depths.



Figure 5.1: Existing UKPN Cables (in red) that may require protecting or diverting

5.3 Proposed Infrastructure

- 5.3.1 UKPN has provided a preliminary proposal to serve the development with a point of connection to Hutton Primary Substation, located off Whittington Road at OS grid reference 562689,195725, approximately 1.5km to the south of the site.

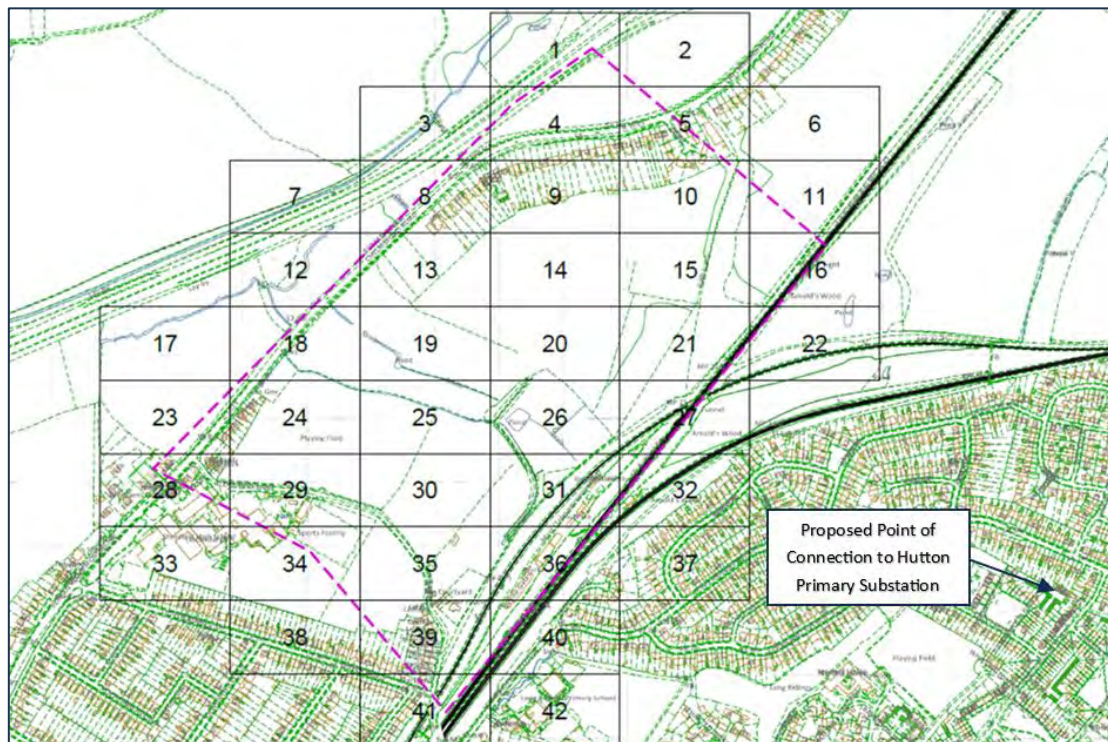


Figure 5.2: UKPN Proposed Point of Connection

- 5.3.2 UKPN has confirmed that there is insufficient capacity within the existing network to serve the anticipated demand for the site, and therefore, off-site reinforcement works will be required to serve the development.
- 5.3.3 In accordance with the latest OFGEM Significant Code Review (SCR) that came into effect on 1st April 2023, demand customers no longer pay a proportion of upstream reinforcement costs. However, all reinforcement works must be completed prior to any connections, and this should be factored into the programme of works.
- 5.3.4 4 No. 800kVA substations are proposed to serve the development, including one dedicated to the school site to accommodate the anticipated demand for an all-electric development.
- 5.3.5 Each substation requires an area of 4m x 5m with 24-hour unimpeded vehicular access, and this should be considered within the proposed masterplan.
- 5.3.6 UKPN's preliminary proposal is contained within **Appendix D**.

6 Gas

6.1 Existing Infrastructure

- 6.1.1 Cadent is the incumbent gas transporter for this region. Their assets in the vicinity of the site are shown on the Existing Services Layout (**Appendix B**) and on the Cadent asset record plans, contained within **Appendix E**.
- 6.1.2 The asset records provided by Cadent show a 180mm diameter polyethylene (PE) Low Pressure (LP) gas main located in the southern footway of Chelmsford Road to the north of the site, with a 75mm PE LP teed connection running within Alexander Lane to serve Shenfield High School.
- 6.1.3 Further LP mains are shown to the south of the site, with a 63mm LP pot ended connection running within the southern end of Alexander Lane.

6.2 Diversionary Works

- 6.2.1 There are no gas main diversions required within the site boundary. However, construction of the new access roundabout on Chelmsford Road may trigger the need for diversion or protection work of the existing Cadent pipe routes. The requirement for diversion or protection works will be dependent on detailed design of the access junction and proposed construction depths.

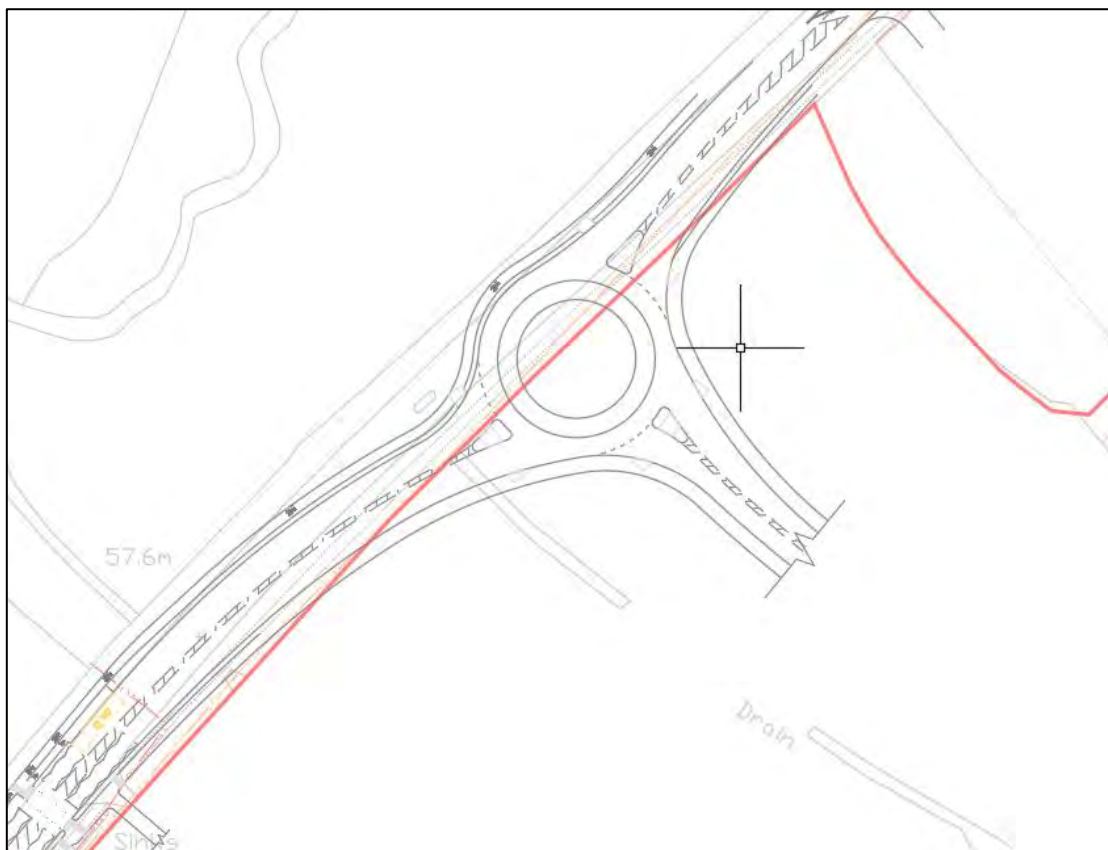


Figure 6.1: Existing Cadent Gas Main (in orange) that may require protecting or diverting

6.3 Proposed Infrastructure

- 6.3.1 As of 2025, The Government's Future Homes Standard will require new build homes to be future proofed with low carbon heating and high energy efficiency. As such, the installation of fossil fuel heating systems, for example gas fired boilers, will no longer be possible within new homes.
- 6.3.2 In order to meet the above requirements, it is intended that both residential and non-residential plots on this development will benefit from an all-electric solution, and therefore, no gas supply will be required for the site.

7 Telecommunications

7.1 Existing Infrastructure

- 7.1.1 Openreach is the local telecommunications network operator and provides telecommunications services to the surrounding area of the proposed development site. Details of the Openreach assets are provided on the Stantec Existing Services Layout and Openreach asset plans, contained within **Appendix B** and **Appendix F** respectively.
- 7.1.2 Openreach records indicate that there are several underground duct routes located in both footways of Chelmsford Road to the north of the site. There are also overhead lines on poles shown running along the southern verge, with an overhead connection crossing within the wider site boundary to the rear of plot 2 on Fen Close.
- 7.1.3 Lumen Technologies also show a duct route running adjacent to the railway lines to the south of the site.

7.2 Diversionary Works

- 7.2.1 There are no telecom service diversions required within the site boundary. However, construction of the new access roundabout on Chelmsford Road may trigger the need for diversion or protection work of the existing Openreach duct routes. The requirement for diversion or protection works will be dependent on detailed design of the access junction and proposed construction depths.
- 7.2.2 The overhead line shown crossing the site boundary to No. 2 Fen Close does not appear to be affected by the proposed site layout provided at this stage.

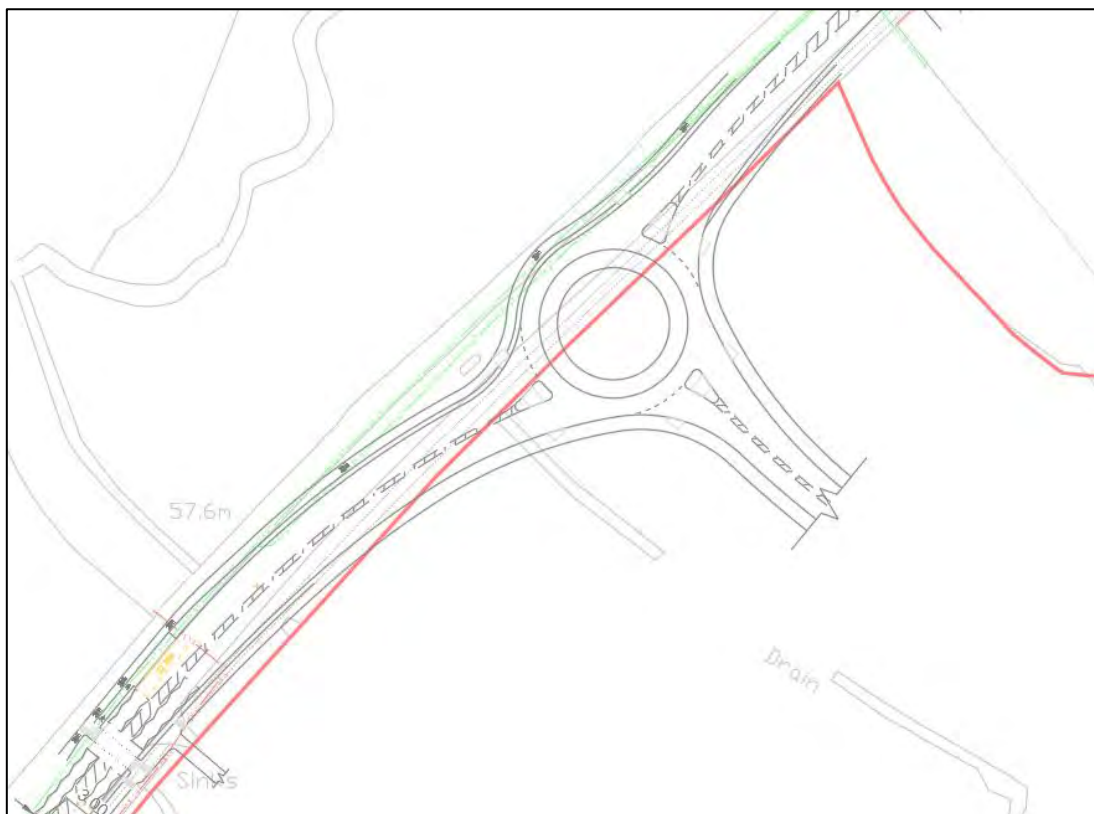





Figure 7.1: Existing Openreach Ducts (in green) that may require protecting or diverting

7.3 Proposed Infrastructure

- 7.3.1 Broadband infrastructure is considered vital in supporting the overall growth agenda in Britain. In March 2018, the Government introduced a broadband Universal Service Obligation so that everyone within the UK has an enforceable right to request high speed broadband.
- 7.3.2 In line with current practices, Openreach will free-issue all new connection ducts for installation by the developer's groundworks contractor and will additionally contribute a lump-sum for each plot connected to their Openreach network.
- 7.3.3 For residential developments of more than 20 units, Openreach will provide fibre to the premise (FTTP) free of charge. All necessary off-site upgrade works will be undertaken by Openreach at no cost to the developer.
- 7.3.4 The development will most likely be fed from the Brentwood Exchange and connect into the existing Openreach infrastructure located in Chelmsford Road. The exchange currently serves approximately 21,666 residential properties as well as 903 non-residential premises. The exchange can currently provide FTTC (fibre to the chamber) but is not yet FTTP enabled. Therefore, additional time and early communication should be factored in to allow for the enabling of FTTP.

7.4 Existing Broadband Capabilities

- 7.4.1 As shown in Figure 7.2 below, a broadband availability check carried out using OFCOM's Mobile and Broadband Checker suggests that Superfast broadband is available within the local area.
- 7.4.2 The most common Superfast broadband is Fibre to The Cabinet (FTTC), with fibre installed as far as the street cabinet, which connects to the copper phone line that serves the premise.

Broadband type	Highest available download speed	Highest available upload speed	Availability
Standard	7 Mbps	0.8 Mbps	
Superfast	80 Mbps	20 Mbps	
Ultrafast	--	--	

Networks in your area - [Openreach](#)

Figure 7.2: Existing Broadband Capabilities

7.5 Mobile Coverage

- 7.5.1 Figure 7.3 below, also obtained from OFCOM's Mobile and Broadband Checker site, shows mobile coverage by network for the area is very good, with a range of providers.



Provider	Voice	Data	Enhanced Data
EE			
Three			
O2			
Vodafone			

Figure 7.3: Mobile Coverage by Network

8 TV and DAB Services

8.1 Signal Strength

- 8.1.1 The proposed development site is predicted to receive a terrestrial TV signal from the Sudbury transmitter. This area should receive 133 Freeview channels.
- 8.1.2 The above information has been sourced online from freeview.co.uk.

9 Potable Water

9.1 Existing Infrastructure

- 9.1.1 Essex & Suffolk Water (ESW) is the incumbent potable water transporter in this region, and they own and operate the majority of the distribution potable water mains in the area.
- 9.1.2 Asset records have been obtained from ESW and are included within **Appendix G**. These have also been included on the Existing Services Layout (**Appendix B**).
- 9.1.3 ESW asset records indicate that there is a 6" diameter water main located in the southern footway of Chelmsford Road to the north of the site, reducing to 4" diameter adjacent to property number 163 Chelmsford Road. There is a teed connection from the 6" main that runs within the northern section of Alexander Lane and is pot ended adjacent to Shenfield High School.
- 9.1.4 A further 4" main is shown running within the western footway of Alexander Lane to the south of the site, terminating at a washout adjacent to Fron Cottage.

9.2 Diversionary Works

- 9.2.1 There are no water main diversions required within the site boundary. However, construction of the new access roundabout on Chelmsford Road may trigger the need for diversion or protection work of the existing 4" potable water main. The requirement for diversion or protection works will be dependent on detailed design of the access junction and proposed construction depths.

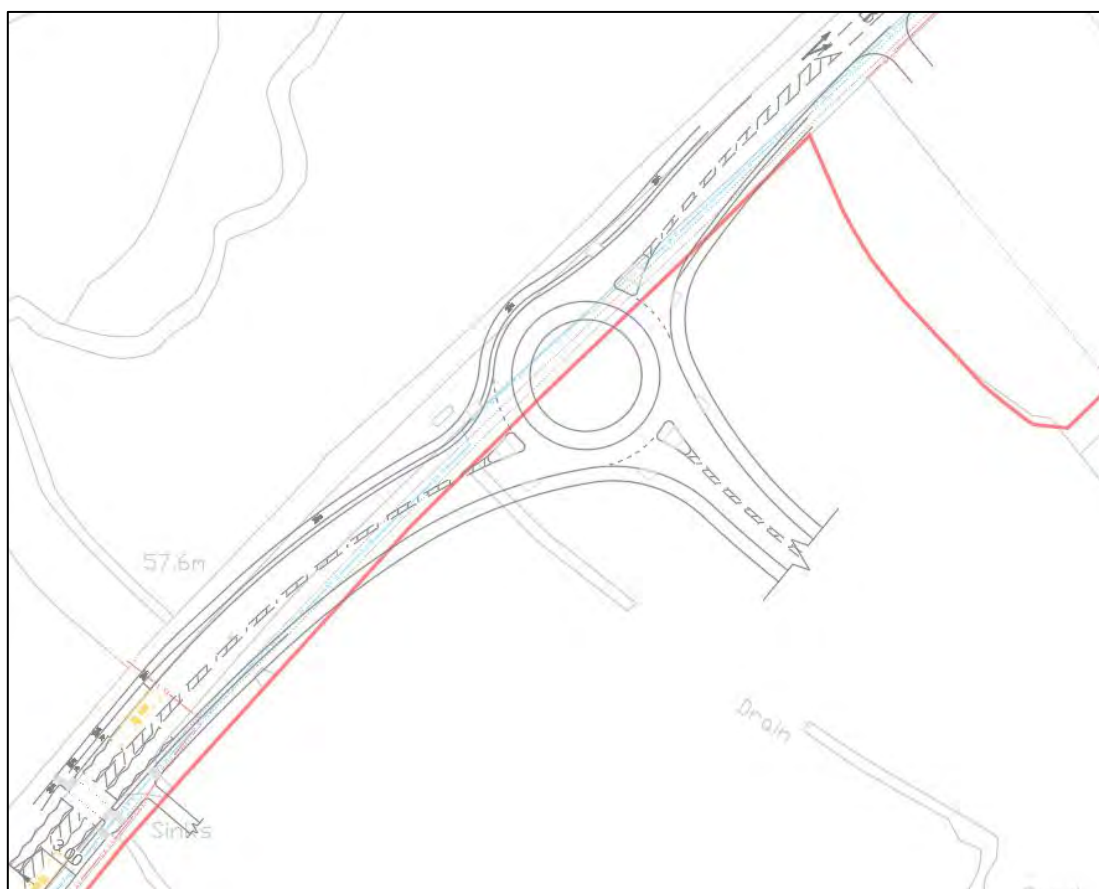


Figure 9.1: Existing ESW Potable Water Main (in blue) that may require protecting or diverting

9.3 Proposed Infrastructure

- 9.3.1 Under Section 37 of the Water Industry Act 1991, the Water Company is required to “develop and maintain a system of water supply such that it can have supplies available to persons demanding them,” i.e., it is obliged to provide a point(s) of connection for new development at the nearest practicable point on its network where the parent pipe is the same diameter, or greater, than that of the connection from the development to the site. Any reinforcement works required must now be funded by the Water Company, subsidised by way of the Infrastructure Charges Levied on all new connections.
- 9.3.2 These works will be requisitioned by the developer under Section 41 of the Water Industry Act 1991.
- 9.3.3 A pre-planning enquiry was carried out by ESW in August 2022 to determine whether there is sufficient capacity within the existing water supply network to accommodate the demand generated by the proposed development.
- 9.3.4 ESW confirmed that there was insufficient capacity in the potable water network to supply the 320 proposed dwellings and network reinforcement would be required. Based on the data available at that time, they estimate approximately 40-50 properties could be supplied before reinforcement works would be required.
- 9.3.5 It is anticipated that works would be required to upgrade the pumps at Mountnessing Tower before completion of the development, and it is estimated that these works would be completed within approximately 2 years from submission of a mains requisition application. These works would be carried out at nil cost to the developer.
- 9.3.6 The proposed points of connection are from the existing 6” main which terminates outside 152 Chelmsford Road and also from the 6” main outside Shenfield High School in Alexander Lane. ESW’s response can be found within **Appendix G**.

10 Wastewater

10.1 Existing Infrastructure

- 10.1.1 Anglian Water own and operate the wastewater network in this region and their assets are shown on the Existing Services Layout and Anglian Water asset plans, contained within **Appendix B** and **Appendix H** respectively of this report.
- 10.1.2 Asset records indicate an existing foul water sewer ranging from 150mm to 300mm diameter, located on the southern side of Chelmsford Road to the north of the site.
- 10.1.3 There is a 150mm foul rising main shown crossing the site diagonally, connecting to the above sewer adjacent to the existing gas governor on Chelmsford Road, and exiting the site on Alexander Lane, before continuing through the school grounds on the opposite side of the carriageway.

10.2 Diversionary Works

- 10.2.1 Anglian Water has advised that there are no public sewers within the site boundary. However, diversions or protection works may be required to accommodate the proposed site access off Chelmsford Road.



Figure 10.1: Existing Anglian Water Foul Sewer (In brown) that may require Protecting or Diverting

10.3 Proposed Infrastructure

- 10.3.1 Anglian Water are 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 Anglian Water 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 Anglian Water through the infrastructure charges levied on new connections, and/or its own capital program allocation.
- 10.3.2 The developer will be responsible for the cost of the offsite sewers / mains from the identified POC to the developer’s site boundary. These works can either be requisitioned by the developer under Section 98 of the Water Industry Act 1991 (if third party land is involved) or Section 104 of the Water Industry Act 1991 (if the sewers / mains are within the developer’s land holdings).
- 10.3.3 All onsite sewers will be designed and constructed by the developer and offered for adoption by Anglian Water under Section 104 of the Water Industry Act 1991.
- 10.3.4 A pre-planning report was produced by Anglian Water in January 2022 to determine whether there is sufficient capacity within the existing foul drainage network to accommodate the demand generated by the proposed development.
- 10.3.5 The foul drainage from the proposed development is in the catchment of Shenfield and Hutton Water Recycling Centre and Anglian Water confirmed that there is sufficient foul water capacity in the existing sewerage network to serve the proposed development.
- 10.3.6 The proposed point of connection to the foul network is into the 225mm diameter foul sewer in Chelmsford Road at manhole 6200 (National Grid Reference TQ6156496218). Anglian Water’s response is included within **Appendix H** of this report.

11 Conclusion

11.1 Summary of Investigations

11.1.1 It is considered that the proposed development complies with national and local planning policy by making sufficient provision for utilities infrastructure. This will be provided through on-site provision as required by the proposed development and supported by any offsite works where needed.

11.1.2 The following table summarises the results of the investigations undertaken by Stantec.

Table 9.1: Summary of Investigations

Statutory Undertaker	Existing Utility Infrastructure		New Utility Infrastructure
	Onsite / Near Development	Diversion Requirements	Requirements
UKPN	HV cables within southern footway of the A12 and the northern footway of Chelmsford Road, connecting to Chelmsford Road Switching Station and Mountnessing Kiosk Substation.	No diversions within the site boundary. Diversion / protection may be required to accommodate site access proposals in Chelmsford Road.	Point of connection at Hutton Primary substation. Off-site reinforcement will be required and this will be funded by UKPN. 4 No. 800kVA substations to be accommodated on site; 3 to serve the residential units, with a further dedicated substation to serve the school site.
Cadent	180m LP main in southern footway of Chelmsford Road with a 63mm LP teed connection running within Alexander Lane to serve the school.	As above	There is no gas requirement for the site.
Openreach	Underground duct routes and chambers located in both footways of Chelmsford Road. Overhead line crosses within the wider site boundary from No. 2 Fen Close.	As above	FTTP available free of charge for 20 units or more, but area not currently FTTP enabled
Essex & Suffolk Water (Potable Water)	6" diameter main located in southern footway of Chelmsford Road, reducing to 4" adjacent property No. 163. Teed connection from 6" main running within Alexander Lane, pot ended adjacent to the school.	As above	After connection of the first 40-50 units, there is insufficient capacity within the existing network, triggering the requirement for off-site reinforcement works to upgrade the pumps at Mountnessing Tower. Proposed points of connection from the 6" main in Chelmsford Road and the 6" main in Alexander Lane.
Anglian Water (Wastewater)	150mm-300mm wastewater pipe in Chelmsford Road. 150mm foul rising main crosses from Chelmsford Road to Alexander Lane to the west of the site.	As above	Sufficient capacity available for 400 new dwellings with a connection at manhole 6200 off the 225mm sewer in Chelmsford Road.

11.2 Next Steps / General Facts for Consideration

- 11.2.1 It is recommended that a GPR survey is undertaken to determine the exact location and depth of existing services around the site boundaries, particularly where the proposed new site access / roundabout is to be located, in order to establish any requirements for diversions or easements.
- 11.2.2 Quotations obtained to date are desktop budget estimates only and are not valid for acceptance. Formal quotations will need to be requested at a later date, once the site layout has been finalised.
- 11.2.3 Early communication with utility providers to factor extended lead times for reinforcement works into the build programme, such as reinforcement of the existing electricity network, modelling of potable water network and upgrading from FTTC to FTTP for broadband provision.
- 11.2.4 It should be noted that the capacity availability detailed within the responses received is only current at the time of issue and is subject to change with any changes to the network (i.e., existing service upgrades, new connections, disconnections, etc.). Formal quotations are required to determine availability based on a detailed design, and only then can capacity be secured.
- 11.2.5 When formal applications for utility connections are submitted we would recommend approaching a few independent network operators (IDNOs) to offer competitive quotations to those offered by the host DNOs, where developer contributions can be reduced due to the asset values IDNOs are able to apply to their connections.
- 11.2.6 IDNOs also use a different methodology for calculating electricity demands, whereby they do not include an additional demand for EV charging. This could potentially alter the proposed point of connection, which could reduce the extent of network reinforcement work required.

Appendix A Proposed Site Layout

Appendix B Existing Services Layout

Appendix C Combined Services Layout

Appendix D Electricity

Appendix E Gas

Appendix F Telecommunications

Appendix G Potable Water

Appendix H Wastewater