

# utilities and wastewater assessment

Land South of Town House Road,  
Costessey, Norfolk

CCE/T331/SA-01

November 2017

For Taylor Wimpey

## Document Review Sheet

This document has been prepared for the sole use of Taylor Wimpey. Its content should not be relied upon by others without the written authority of Cannon Consulting Engineers. If any unauthorised third party makes use of this report they do so at their own risk and Cannon Consulting Engineers owe them no duty of care or skill.

The content of this report is based on information provided in late 2017. The validity of the statements made may therefore vary over time as network alterations occur.

Reference	Date	Author	Checked
CCE/T331/SA-01	November 2017	JA-M	-

DRAFT

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3. Wastewater Drainage

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## 1.0 Introduction

- 1.1 This report has been prepared to provide an overview of the servicing constraint and supply implications associated with the proposed development of land south of Town House Road, Costessey, Norfolk. The site lies at OS grid reference 617421, 311500 and has the nearby postcode NR8 5AD (refer to Figure 1).
- 1.2 The site is a greenfield site and is therefore not connected to the local utility networks; however, the site does border the existing settlement which is fully serviced.
- 1.3 The content of the report relates to the site being developed to provide up to 100 residential dwellings with the primary access being from Town House Road.
- 1.4 A combined services plan highlighting the existing service infrastructure in the vicinity of the site is provided within Appendix A with the proposed development layout at Appendix B. Initial correspondence with the service providers is included at Appendix C and an outline wastewater drainage strategy can be found at Appendix D.

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## 2.0 Utilities

### Electricity

- 2.1 The electrical network in the area is owned and maintained by UK Power Networks (UKPN). There are existing overhead cables crossing the site at the north-east boundary and crossing the site's central parcel (refer to Appendix A).
- 2.2 UKPN has provided a budget cost to divert / underground the two spans of high voltage cable that cross the site's central parcel to remove this constraint to the development layout (refer to Appendix C).
- 2.3 Initial correspondence with UKPN provides a budget estimate for serving the proposed scale of development. The indicative cost includes making a point-of-connection (POC) to the existing high voltage network within West End (to the west of the site), laying a new HV cable along Town House Road and into the site where a new substation will be established, a second HV cable will then be laid to connect to the HV overhead cable to be undergrounded as part of the diversion works (refer to paragraph 2.2). The budget cost for such works and laying LV property supplies can be found at Appendix C.
- 2.4 A comparison quotation from an Independent Distribution Network Operator (IDNO) was sought and found to be more competitive (refer to the GTC correspondence at Appendix C). However, this budget quotation is based on an indicative POC and off-site costs and hence is subject to change when a later stage detailed cost is requested.

### Gas

- 2.5 Cadent Gas Ltd (CGL) has an existing low pressure gas main adjacent to the northern site boundary within Town House Road (refer to Appendix A). There is also a high pressure gas main located to the south of the site, but due to the distance of this main to the site it does not present a constraint to the proposed development.
- 2.6 CGL has confirmed that the gas infrastructure within Town House Road would not require diverting / lowering and protecting to allow for the construction of the proposed site access.
- 2.7 CGL has confirmed that a connection can be made to the existing low pressure gas main located within Town House Road to the north of the site, which currently has capacity to supply the proposed scale of development (refer to Appendix C).
- 2.8 Again a quotation was obtained from GTC for providing a gas supply to the site which can be found at Appendix C.

### Water Supply

- 2.9 There are existing Anglian Water (AW) potable water mains within the local road network adjacent to the site. There is also a raw water main crossing the site in the north-western corner and running parallel to the site's western boundary (refer to Appendix A).
- 2.10 The easement associated with the potable water main within Town House Road does not affect the proposed development; however, the total easement width of XX m associated with the raw water main does need to be respected. The illustrative layout has been developed on the basis that the raw water main remains in its current location.
- 2.11 AW are yet to comment on supplying the site. Pre Planning Enquiry expected w/c 06/11/17.
- [For info the 200 unit response from AW stated a connection point from Longwater Lane + local reinforcements costing £100k. If AW were to undertake the local reinforcements + on-site mains laying, the developer contribution to the capital scheme cost would be in the order of £20k]

### Telecommunications

- 2.12 BT operates a service in the area and has overhead and underground cables located within the adjacent road networks in close proximity to the site (refer to Appendix A).
- 2.13 BT has a statutory obligation to provide telecommunication services but it will be the developer's responsibility to arrange the required service at the appropriate time when the development proposals are advanced.
- 2.14 There are currently no Virgin Media or Viatel cables in the vicinity of the site and no strategic additions to these networks are envisaged in the immediate future.

### Pipelines

- 2.15 Linesearch has shown there are no major pipelines or transmission infrastructure in the vicinity of the site that would act as a constraint to the proposed development (refer to Appendix C).

### 3.0 Wastewater Drainage

#### Network

- 3.1 Anglian Water (AW) own and maintain the wastewater sewerage network serving Costessey. There are a number of public wastewater sewers and rising mains in the vicinity of the site servicing the adjacent built development (refer to Appendix A).

#### Conveyance

- 3.2 AW are yet to comment on supplying the site. Pre Planning Enquiry expected w/c 06/11/17.  
[For info the 200 unit response from AW stated an outfall to the sewer in Longwater Lane with no need for off-site upgrades. It equally stated that sufficient treatment capacity exists at the receiving Whitlingham Water Recycling Centre]
- 3.3 The topography of the site indicates that a pumped drainage solution is required and hence an on-site pumping station (PS) has been allowed for within the illustrative site layout. In order to meet adoption criteria a Type 3 PS will be necessary for this scale of development and hence it will have an associated cordon sanitaire of 15 m, where no residential building is permitted.

#### Treatment

- 3.4 Treatment of the development's wastewater will occur at Whitlingham Water Recycling Centre (WRC). AW report that there is currently spare treatment capacity at this WRC to cater for the effluent generated by this proposed scale of development.

## Figures



Figure 1 – Site Location

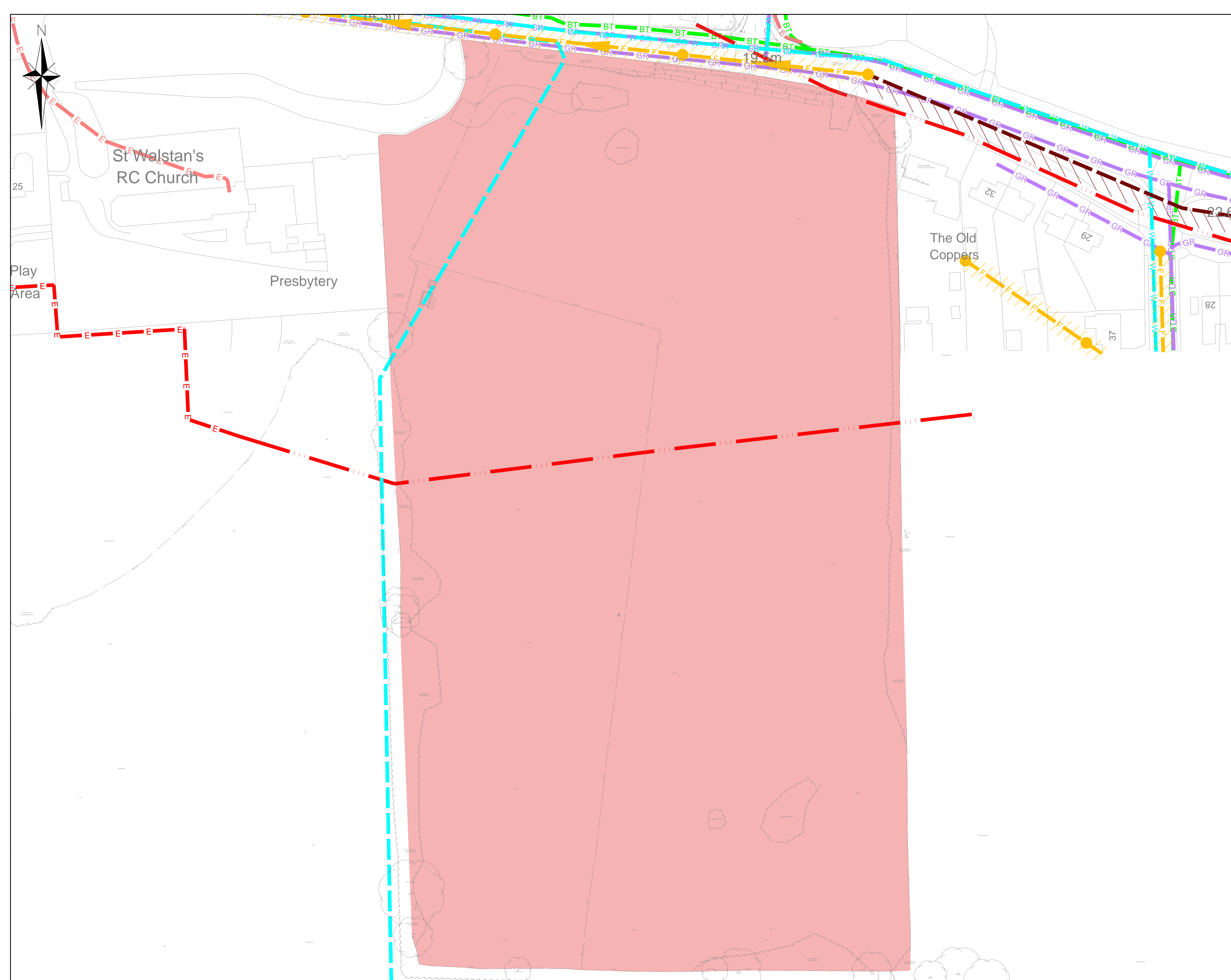
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## Appendices

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## Appendix A – Combined Services Plan

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- KEY:**
- SITE AREA
  - UKPN OH CABLES
  - UKPN HV UG CABLES
  - UKPN LV UG CABLES
  - ANGLIAN WATER FOUL WATER SEWER WITH 6m EASEMENT AS SHOWN
  - ANGLIAN WATER RISING MAIN
  - ANGLIAN WATER RAW WATER MAIN
  - ANGLIAN WATER POTABLE WATER MAIN
  - NATIONAL GRID LP GAS MAIN
  - BT UG CABLES

Approximate positions only

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. The actual position of the services must be verified and established on site before any work is undertaken.

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REV	DESCRIPTION	DE	DR	CH	PA	DATE
DESIGNED BY	DRAWN BY	CHECKED BY	PASSED BY			
-	JAM	RBT	-			
SCALES @ A1 SIZE		DATE	ISSUE STATUS			
N.T.S		10/05/2017	PRELIMINARY			

PROJECT TITLE

**LAND AT TOWNHOUSE ROAD, COSTESSEY, NORFOLK**

DRAWING TITLE

**COMBINED SERVICES PLAN**

CLIENT

**TAYLOR WIMPEY STRATEGIC LAND**



Cannon Consulting Engineers  
Cambridge House, Kentford, Newmarket, Cambs, CB8 7PN  
Tel: +44 (0)1638 555 107  
info@cannonce.co.uk www.cannonce.co.uk

DRAWING NUMBER	REV.
<b>T331 / 400</b>	-

Appendix B – Site Layout

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## Appendix C - Services Correspondence

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Mrs Jenni Askew-Martin  
Cannon Consulting Engineers  
Cambridge House  
Lanwades Business Park  
Kentford  
Suffolk  
CB8 7PN

23 October 2017

Our Ref: 8500072077 / QID 3000010537

Your Ref: JA-M/T331/UKPN2017.10.11

Dear Mrs Askew-Martin,

Site Address: Land at Townhouse Road, Costessey, Norfolk, NR8 5AD

Thank you for your recent enquiry regarding the above premises. I am writing to you on behalf of Eastern Power Networks plc the licensed distributor of electricity for the above address trading as UK Power Networks.

I am pleased to be able to provide you with a budget estimate for the work.

It is important to note that this budget estimate is intended as a guide only. It may have been prepared without carrying out a site visit or system studies. No enquiry has been made as to the availability of consents or the existence of any ground conditions that may affect the ground works. It is not an offer to provide the connection and nor does it reserve any capacity on UK Power Networks electricity distribution system.

#### **1. Budget estimate:**

The budget estimation for this work is:

##### High Voltage Point Of Connection

£170,000.00 (exclusive of VAT) if the Point Of Connection (POC) is to our High Voltage network along West End.

The above budget estimate is based on laying a new HV cable along Town House Road and into site where a new substation will be established, a second HV cable will then be laid out to connect to the HV cable to be undergrounded as part of the diversion works. New LV mains and service cables will then be laid throughout the site to provide connections to 100 gas heated houses.

An additional sum of £28,000.00 may also be chargeable to divert/underground 2 spans of HV overhead line crossing the site.

This budget estimate is based on the following assumptions:

- The most appropriate Point of Connection (POC) is as described above.

- A viable cable or overhead line route exists along the route we have assumed between the Point of Connection (POC) and your site.
- In cases where the Point of Connection (POC) is to be at High Voltage, that a substation can be located on your premises at or close to the position we have assumed.
- Where electric lines are to be installed in private land UK Power Networks will require an easement in perpetuity for its electric lines and in the case of electrical plant the freehold interest in the substation site, on UK Power Networks terms, without charge and before any work commences.
- You will carry out, at no charge to UK Power Networks, all the civil works within the site boundary, including substation bases, substation buildings where applicable and the excavation/reinstatement of cable trenches.
- Unless stated in your application, all loads are assumed to be of a resistive nature. Should you intend to install equipment that may cause disturbances on UK Power Networks' electricity distribution system (e.g. motors; welders; etc.) this may affect the estimate considerably.
- All UK Power Networks' work is to be carried out as a continuous programme of work that can be completed substantially within 12 months from the acceptance of the formal offer.

Please note that if any of the assumptions prove to be incorrect, this may have a significant impact on the price in any subsequent quotation. You should note also that UK Power Networks' formal connection offer may vary considerably from the budget estimate. If you place reliance upon the budget estimate for budgeting or other planning purposes, you do so at your own risk.

If you would like to proceed to a formal offer of connection then you should apply for a quotation, Please refer to our website

[http://www.ukpowernetworks.co.uk/internet/en/help-and-advice/documents/the\\_connection\\_process.pdf](http://www.ukpowernetworks.co.uk/internet/en/help-and-advice/documents/the_connection_process.pdf) for '**The connection process**' which details our application process. To help us progress any future enquiry as quickly as possible please quote the UK Power Networks Reference Number from this letter on all correspondence.

If you have any questions about your budget estimate or need more information, please do not hesitate to contact me. The best time to call is between the hours of 9am and 4pm, Monday to Friday. If the person you need to speak to is unavailable or engaged on another call when you ring, you may like to leave a message or call back later.

Yours sincerely

Helen Cardoza  
Metropolitan House  
Potters Bar, Herts  
EN6 1AG  
01279 824 623  
PrelimsEPN@ukpowernetworks.co.uk



**Network Enquiry No** : 180007976  
**Your Reference** : T331/NG2017.10.10

## Cadent Gas Limited

National Gas Emergency Service - 0800 111 999\* (24hrs)  
\*calls will be recorded and may be monitored

JENNI ASKEW-MARTIN  
Cannon Consulting Engineers  
Cambridge House  
Lanwades Business Park  
Kentford, Newmarket  
CB8 7PN

**Date** : 13th October 2017  
**Contact** : Performance and Support  
**Direct Tel** : 0845 3666758  
**Email** : networkdesign@cadentgas.com

www.cadentgas.com

**Dear JENNI,**

**Re: Land Enquiry for Proposed Development Site at NEW SUPPLY, LAND AT, TOWNHOUSE ROAD, COSTESSEY, NORWICH, NR8 5AD.**

Thank you for your enquiry which we received on 10th October 2017. I enclose details of Cadent Gas plant in the vicinity of your proposed supply.

The nearest main with sufficient capacity is 2 metres from the site boundary and it is a Low Pressure main.

Standard design pressures have been used. Refer to [www.Cadentgas.com](http://www.Cadentgas.com)

Plans attached: Yes

A copy of the Cadent Connections Charging Statement referenced in this letter can be found on Cadent's website:

<http://cadentgas.com/Get-connected>

If you require a printed version please contact us on the details provided above.

I trust this meets with your requirements at this stage. If you have any queries please do not hesitate to contact Performance and Support on the above number.

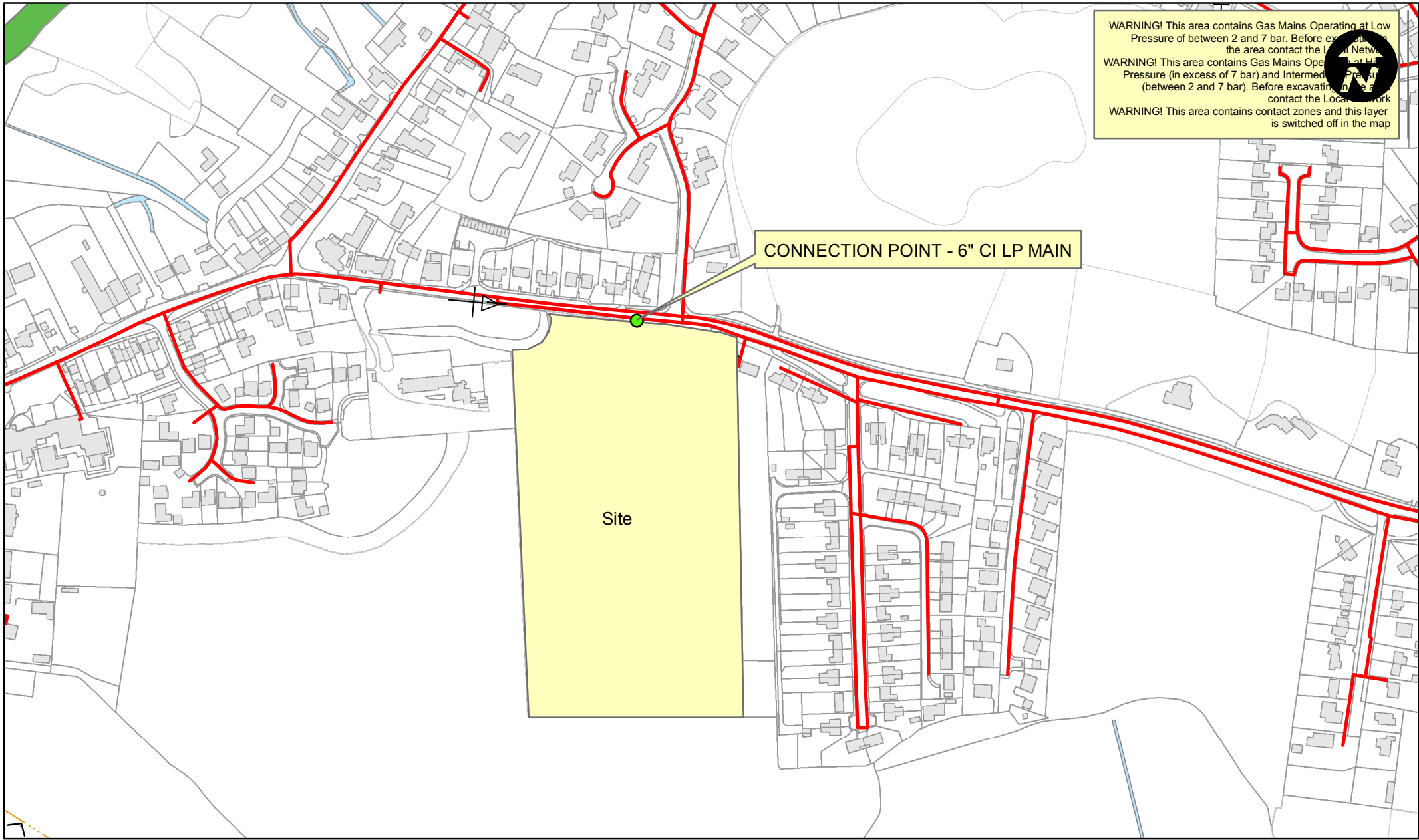
Yours sincerely,

Claire Wilcox  
Design Specialist



Cadent Gas Limited  
Registered No.10080864  
Registered Address Ashbrook Court, Prologis Park, Coventry, CV7 8PE

Letter Id: CRM013  
Page 1 of 1



WARNING! This area contains Gas Mains Operating at Low Pressure of between 2 and 7 bar. Before excavating in the area contact the Local Network Operator.

WARNING! This area contains Gas Mains Operating at High Pressure (in excess of 7 bar) and Intermediate Pressure (between 2 and 7 bar). Before excavating in the area contact the Local Network Operator.

WARNING! This area contains contact zones and this layer is switched off in the map

CONNECTION POINT - 6" CI LP MAIN

Site

SCALE: 1:500 @ A4  
 USER ID: j.panne.bebington  
 DATE: 13-Oct-2017 13:28:38  
 INTERNAL USE ONLY  
 OS Ref: 617483, 311556  
 CENTRE: <Centre>

L/P GAS MAIN  
 M/P GAS MAIN  
 I/P GAS MAIN  
 H/P GAS MAIN  
 N/H/P GAS MAIN  
 PROPOSED PIPE - LP  
 PROPOSED PIPE - MP  
 PROPOSED PIPE - IP  
 ABANDON - LP  
 ABANDON - MP  
 Out Of Standard Service



SCHEME: <NG GDFO Scheme Name>  
 DESIGN: <NG GDFO Design Number>  
 REVISION: <NG GDFO Revision>

This plan shows those pipes owned by Cadent in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GTs, or otherwise privately owned, may be present in this area. Information with regard to such pipes should be obtained from the relevant owners. The information shown on this plans given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc., are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and any other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.



180007976



This plan is reproduced from or based on the OS map by Cadent Gas Limited, with the sanction of the controller of HM Stationery Office. Crown Copyright Reserved..

Our Ref: East/34100041/405617

Mrs Jenni Askew-Martin



Energy House  
 Woolpit Business Park  
 Woolpit, Bury St Edmunds  
 Suffolk, IP30 9UP

**T** 01359 240363

**F** 01359 243377

[sales@gtc-uk.co.uk](mailto:sales@gtc-uk.co.uk)

[www.gtc-uk.co.uk](http://www.gtc-uk.co.uk)

17 October 2017

Dear Mrs Askew-Martin

**Domestic Budget Quotation - Gas & Electricity**

**Project:** Land at Townhouse Road, COSTESSEY, NT8 5AD with 100 gas domestic and 100 electric domestic connections.

Thank you for your recent enquiry. Using the information you have provided GTC have produced a budget costing to meet your requirements. GTC's price to provide Gas & Electricity infrastructure based on the terms of offer within this quotation is £87,107.76.

On-site works - You pay GTC	<b>£70,906.20</b>
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In addition to this price GTC have itemised any exceptional and off-site costs that are required, including those by the Upstream Network Operators (NWO), to complete the work to serve your site.

GTC would like to draw your attention to the charges below; it is essential that these charges are included in all cost comparisons for this development.

Off-site works (GTC) – Gas:	£3,293.82
Off-site works (GTC) – Electricity:	£4,841.74
Network Operator Costs – Gas:	£66.00
Network Operator Costs – Electricity:	£8,000.00
<b>TOTAL OFFSITE – You pay GTC</b>	<b>£16,201.56</b>

**ADDITIONAL POINTS OF NOTE**

- The budget costing is formulated on the basis of a total of 100 gas domestic and 100 electric domestic connection(s).
- GTC’s costing includes the installation of domestic gas meters only.
- GTC anticipate a lead in period of a minimum of 6 weeks from acceptance of GTC’s subsequent firm quotation before work can commence on site.
- The network will be designed and installed by GTC.
- GTC will supply all materials for the gas and electricity infrastructure.

**SITE DETAILS**

**Schedule of Domestic Plots**

Property Type	3BD	3BS	3BT	Total
Gas	34	33	33	100
Electric	34	33	33	100

**TERMS OF OFFER**

**GAS TERMS**

GTC have assumed a Low Pressure connection to feed this site.

This quotation includes the excavation and reinstatement costs in the public highway which will be carried out by GTC from the point of connection to the site. GTC have assumed a connection off the GDN/iGT 6" Metallic Low Pressure main adjacent to the site entrance and have allowed for 3 metres off-site work (3m road) from the connection point to the site entrance.

The Developer shall be responsible for all on-site excavation and reinstatement.

GTC have assumed that any existing mains on-site will be abandoned. It is the responsibility of the Developer to arrange works with the gas transporter.

GTC have assumed there are no environmental issues that may impact on the materials or methods of installation of its proposed networks.

GTC have assumed all mains and services feeding 100 properties will be in trenches pre-excavated by the Developer.

GTC's mains will typically be laid down one side of the estate roads to minimise on road crossings, service lengths and mains lengths.

This quotation is based on smart meters in cavity meter boxes.

This quotation is based on all smart meters at the properties being installed by GTC (or its subcontractor) and owned by GTC Pipelines Limited. If the Developer wishes to appoint a third party to install and/or own any gas meters at any of the properties, it shall obtain GTC’s prior written consent to do so and, in such circumstances, GTC reserves the right to amend the amounts payable under this quotation accordingly.

**ELECTRICITY TERMS**

This quotation includes indicative electric point of connection (PoC) and off-site costs. Costs associated with the PoC are therefore subject to change.

Please note: PoC and off-site costs will be provided when the upstream DNO has provided these details in full. However, PoC and non contestable charges will be the same regardless of who is to own the network.

GTC have assumed a High Voltage (HV) connection due to the size of the site and as such 1 substation will be required and the costs are included in this quote. GTC have assumed that the Developer will carry out all civil works associated with the substation at their own cost.

This quotation includes the excavation and reinstatement costs in public highway (3m footpath), which will be carried out by GTC.

GTC have assumed that the Developer will construct a brick-built housing for the substation(s) to GTC specifications.

If the development is in an area that the environment agency consider to be susceptible to a risk of flooding, then any electrical plant and equipment will need to be established at a level 600mm above the 1 in 100 year predicted flood level, or the Developer will need to guarantee that they have mitigated the risk of flooding by incorporating suitable flood defences.

Diversions or abandonment works may be required and are excluded from GTC's quote. The details can be obtained by contacting the upstream DNO.

The Developer shall be responsible for all on-site excavation and reinstatement.

GTC have assumed all mains and services feeding 100 properties will be in trenches pre-excavated by the Developer.

GTC's mains will typically be laid down one side of the estate roads to minimise on road crossings, service lengths and mains lengths. This quote does not include ducting as this is the responsibility of the Developer to install suitable ducts and jointing pits at the Developers cost to GTC specifications.

GTC's quote is based on 100 plots having gas heating.

GTC have calculated the total load for the site to be 168kVA.

GTC's quote is based on meter positions for the houses to be external on the front elevation of each property. Where internal meters are to be fitted, the Developer will be responsible for establishing a metering location in accordance with GTC standards (GE-TGI-IG-0015), details of which will need to be confirmed by the Developer.

GTC's quotation excludes meter boxes and hockey sticks. GTC can supply these at an additional charge of £20.60 each for standard meter boxes.

Based on the information you have provided GTC have not included for any lift motors, pumping stations or other disturbing electric loads (such as welders, motors, heat pumps or air conditioning equipment) in GTC's quotation.

GTC's quotation excludes the cost of Temporary Builders Supply (TBS). The indicative cost to connect this is £1,500, this cost assumes the Developer shall be responsible for all excavation and reinstatement; the Developer will provide a weatherproof lockable box/kiosk with suitable internal space to accommodate the meter board the meter location less than 25m from GTC's installed and energised mains. This price includes for the disconnection of the temporary supply upon request.

GTC's quotation excludes the cost to connect adoptable street lighting columns. GTC can connect these for an additional charge, the current price for this work is £275 per column. This cost includes the supply and lay of 9m of service cable between GTC's existing Low Voltage (LV) mains and the street lights, in this cost GTC have assumed you will provide ducting and excavation to GTC specifications. Prior to the energisation of the street lights you will need to have appointed an electricity supplier for the supply of the street lights. Following the first energisation the terms of connection will be as set out in the National Terms of Connection or in a separate agreement between GTC and yourself.

## **CONFIDENTIALITY**

This quotation and associated documentation is confidential between GTC, , and their associated parties for this project. It contains commercially sensitive information and should not be divulged to any other party without written permission from GTC.

Should you be successful in obtaining and developing this site, GTC will be pleased to supply a firm quotation. Please return a detailed site plan and a completed quotation request form.

GTC trust that this budget costing will be acceptable and look forward to receiving your instructions. Should you require further details please do not hesitate to contact me (07747 567918) or the Sales Support Team (01359 240154) to discuss further.

Yours sincerely

John Blowers  
Regional Sales Manager - East

Enc:

## Appendix D – Outline Wastewater Drainage Assessment

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