



# Land at North West Bicester

## Utilities Appraisal Report

On behalf of **Firethorn Developments Ltd.**

Project Ref: 49656/2000 | Rev: 1 | Date: April 2021

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## Document Control Sheet


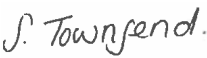

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**Report Title:** Utilities Appraisal Report

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<b>For and on behalf of Stantec UK Limited</b>				

Revision	Date	Description	Prepared	Reviewed	Approved
0	16/04/2021	Draft	JP	ST	DH
1	26/04/2021	Planning Submission	ST	ST	DH

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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 Firethorn Developments Limited to support the outline planning application for the proposed residential development at the site, Land at North West Bicester.
- 1.1.2 The UAR will outline and assess the existing utility infrastructure relating to the site and determine the constraints and opportunities in procuring new electricity, telecommunications, potable water and wastewater services. The report will also identify the need for new utility infrastructure including the potential for upgrade / reinforcement works or the need for further investigation / modelling. The report will also demonstrate compliance with national and local planning policy.
- 1.1.3 The site is identified for development in the Cherwell Local Plan 2011 – 2031 (dated July 2015) and North West Bicester Supplementary Planning Document (dated February 2016) as part of the 6000 home mixed-use development, North West Bicester Eco-Town.

## 1.2 Site Information

### Existing Land Use and Site Location

- 1.2.1 The development site is located to the northwest of Bicester town centre, bordered by the Exemplar Site to the north and south east, the B4100 to the north and open agricultural land to the south and west.

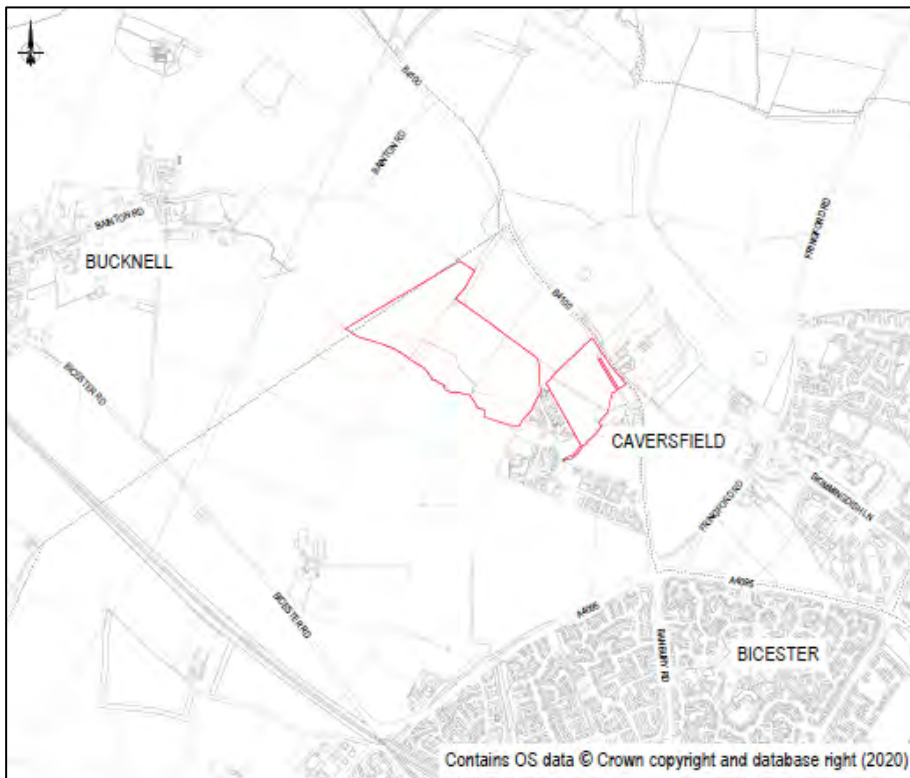


Figure 1.1: Site Location

- 1.2.2 The site consists of two land parcels with a total area of 22 hectares and is made up of greenfield, former agricultural land.

### Development Proposals

- 1.2.3 The development proposals comprise up to 530 residential units with one electric vehicle charging point (EVCP) per unit. The description of the development is as follows:

*“Outline planning application for residential development (within Use Class C3), open space provision, access, drainage and all associated works and operations including but not limited to demolition, earthworks and engineering operations, with the details of appearance, landscaping, layout and scale reserved for later determination.”*

- 1.2.4 A copy of the Illustrative Masterplan (Drawing number SK004A), prepared by Mosaic Urban Design and Masterplanning, dated 17/02/2021 is contained within Appendix A.

## 1.3 Planning Policy

### National Policy

- 1.3.1 The National Planning Policy Framework (NPPF) (February 2019) 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);*

- 1.3.2 Paragraph 112 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).’*

- 1.3.3 Planning for climate change is also considered and paragraph 150b 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.’*

- 1.3.4 Paragraph 151 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

1.3.5 The local planning authority for the area is Cherwell District Council (CDC). The Adopted Cherwell Local Plan 2011- 2031 contains strategic planning policies for development which must be considered in the determination of planning applications. CDC formally adopted the Local Plan on 20th July 2015

1.3.6 The policies relevant to the provision of utility infrastructure are summarised below.

### CDC Core Strategy

#### Policy PSD1: Presumption in Favour of Sustainable Development

1.3.7 Policy PSD1 reiterates the requirement of presumption in favour of sustainable development as contained in the NPPF. The policy states:

*“When considering development proposals, the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework (NPPF). It will work proactively with applicants to find solutions which mean that proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in the area.*

*Planning applications that accord with the policies in the Core Strategy (and, where relevant, with policies in neighbourhood plans) will be approved without delay, unless material considerations indicate otherwise.”*

#### Policy BSC 9: Public Services and Utilities

1.3.8 Policy BSC 9 states that CDC will support proposals which involve new or improvements to public services and utilities if they are necessary to successfully deliver sites in accordance other relevant policies and with strategic site delivery as set out in the Infrastructure Delivery Plan. The policy also states that:

*“new developments will be expected to include for provision for connection to Superfast Broadband.”*

#### Policy ESD 8: Water Resources

1.3.9 Policy ESD 8 seeks to ensure that development will only be permitted where adequate water resources exist or can be provided without detriment to existing uses. Where appropriate phasing of development will be used to enable the relevant water infrastructure to be put in place in advance of development commencing.



### **Policy Bicester 1: North West Bicester Eco-Town**

1.3.10 Policy Bicester 1 discusses the North West Bicester Eco-Town development standards. It states that the Ecotown development will be:

*“A new zero carbon (i) mixed use development including 6,000 homes will be developed on land identified at North West Bicester.”*

1.3.11 Within the policy, significant requirements are laid out for the site wide master planning for the 6,000 homes. The relevant requirements this policy sets out in term of utilities infrastructure that need to be met are:

- *Housing to have real time energy monitoring systems, real time public transport information and Superfast Broadband access, including next generation broadband where possible. Consideration should also be given to digital access to support assisted living and smart energy management systems.*
- *Utilities and infrastructure which allow for zero carbon and water neutrality on the site.*

### **Infrastructure Delivery Plan (IDP)**

1.3.12 The IDP's identifies all types of infrastructure required to ensure delivery of growth targets and policies contained in the Local Plan. In terms of utility infrastructure the document aims to ensure that utilities infrastructure grows at the same rate as that of the communities.

### **North West Bicester Supplementary Planning Document (SPD)**

1.3.13 This SPD (dated February 2016) provides further guidance on the interpretation of the Core Strategy policies and sets out minimum standards to be achieved by the proposed development.

## 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 Communications

2.2.1 The host electricity Distribution Network Operator (DNO) is Scottish & Southern Electricity Networks (SSE). Openreach is the licensed open access telecommunications network provider and the potable and foul water transporter is Thames Water.

2.2.2 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.

Utility Medium	Statutory Undertaker	Existing Infrastructure On/Near Site	Diversiory Works Required	C2 Enquiry Date
Electricity	SSE	Yes	No	21.08.2020
Gas	SGN	Yes	No	21.08.2020
Telecommunications	Openreach	Yes	No	17.09.2020
	Airband Technology	No	No	17.09.2020
	Colt	No	No	21.08.2020
	CenturyLink	No	No	21.08.2020
	CityFibre	No	No	21.08.2020
	Gigaclear	No	No	17.09.2020
	KPN	No	No	21.08.2020
	MBNL	No	No	21.08.2020
	O2	No	No	17.09.2020
	Sota	No	No	21.08.2020
	Utility Assets	No	No	21.08.2020
	Verizon	No	No	21.08.2020
	Virgin Media	No	No	16.09.2020
Vodafone	No	No	21.08.2020	
Potable Water	Thames Water	Yes	No	16.09.2020
	Anglian Water	No	No	17.09.2020
Foul Water	Thames Water	Yes	No	16.09.2020

Utility Medium	Statutory Undertaker	Existing Infrastructure On/Near Site	Diversiory Works Required	C2 Enquiry Date
	Anglian Water	No	No	17.09.2020
Other	GTC	Yes	No	09.09.2020
	Energetics	No	No	21.08.2020
	ENGIE	No	No	21.08.2020
	ESP	No	No	17.09.2020
	Fulcrum Pipelines	No	No	17.09.2020
	HS2	No	No	17.09.2020
	Open Fibre (formerly Independent Fibre)	Yes	No	17.09.2020
	Network Rail	No	No	17.09.2020
Other	UKPN Eastern & London	No	No	17.09.2020
	Wales and West Utilities	No	No	17.09.2020
	WPD	No	No	17.09.2020
	ZZOOMM	No	No	17.09.2020

Table 2.1: Statutory Undertakers Contact List

- 2.2.3 The report refers to the copies of the utility asset record plans obtained from each utility undertaker. These records were obtained in August / September 2020 and are contained within Appendices C to G. These records identify only adopted utility assets, not privately-operated networks, and generally do not include individual service connections.
- 2.2.4 An existing service drawing based on the asset records obtained from the utility providers, with infrastructure assets in proximity of the site is shown on drawing 49656/2001/001 and is contained within Appendix B of this report.
- 2.2.5 Stantec have for the purposes of this report, made capacity enquiries (based on 550 units) to the incumbent undertakers to ascertain points of connection and to determine if there is a need to reinforce / upgrade any of the off-site utility networks.

## 3 Utility Demand Schedule

### 3.1 Assumptions

- 3.1.1 A key component of the Ecotown development to the North West of Bicester was that the residential properties and commercial units would be heated by an SSE operated district heating network. Therefore for the purpose of this assessment, it has been anticipated that a connection will be made onto the SSE district heating network located in Charlotte Avenue, which currently supplies the adjacent Exemplar Site. The assessment also considers the provision of one 7kW rated electric vehicle charging point (EVCP) per property.
- 3.1.2 The primary fuel of the district heating network's energy centre is currently natural gas, and with the changes to Part L of the Building Regulations in 2021, means that any source of heat from natural gas is currently likely to fail Part L. SSE Enterprise is therefore currently reviewing approaches to decarbonise their network with the final solution likely to be air source heat pumps providing the energy requirements for heating and hot water for all houses. The final energy strategy will be detailed at the Reserved Matters stage.
- 3.1.3 The assessment has also assumed that there will not be any abnormal loading units such as swimming pools and lifts.

### 3.2 Loading Schedule

- 3.2.1 An indicative loading schedule has been prepared by Stantec on the basis of the above information, and current industry standards. The 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 boundary of the site.
- 3.2.2 Notional electricity and water demand loads were estimated for the proposed development using Stantec experience on residential developments [1] and BS6700:1997, British Water – Code of Practice – Flows and Loads [2].
- 3.2.3 The additional load generated from electric vehicle charging points (EVCP) has been considered as part of this assessment. Each residential unit will have one 7kW EVCP installed. The utility demand schedule is provided in Table 3.1, below.

Utility	Loading
Electricity Peak <sup>1</sup>	3,514 kVA
Potable Water Peak <sup>2</sup>	3.74 l/s
Foul Water Peak	3.74 l/s

Table 3.1: Utility Demand Schedule

### 3.3 Methodology

- 3.3.1 The report is divided into each of the following primary service disciplines, electricity, gas, telecommunications, potable water and wastewater. Each of these disciplines are described in terms of existing infrastructure, diversion requirements and new connections activities.
- 3.3.2 A summary of the new connection and diversion strategies is included in Section 8 of this report.

## 4 Electricity

### 4.1 Existing Infrastructure

- 4.1.1 SSE are the host electricity distribution network operator for the region. The full extents of the SSE apparatus surrounding the development site are provided on the Stantec Existing Utilities Layout (49656/2001/001) and SSE asset plans, contained within Appendix B and Appendix C respectively.
- 4.1.2 The Bicester North Bulk Supply Point located approximately 2km to the north east of the site transformers 132kVA down to 33kVA and supplies three primary substations in the area; Upper Heyford, Cottisford and Bicester with Bicester being located closest to the site boundary.
- 4.1.3 The SSE asset records indicates an 11kV cable route in Charlotte Avenue to the south of the development site which supplies a substation located in the SSE district heating energy centre located adjacent to Bramley Avenue.
- 4.1.4 There is an overhead 11kV cable route located in the open land to the north-west of the site and an underground 11kV route alongside the B4100 to the north of the site.
- 4.1.5 There are overhead LV routes and service connections located alongside the B4100 associated with existing residential properties and St Laurence Church.
- 4.1.6 GTC (an independent distribution network operator) own and operate a network that serves the adjacent Exemplar Site. There are LV and 20kV routes, and an existing GTC substation (fed from the SSE 11kV cable route continuing north along Charlotte Avenue) is located between the two land parcels that make up the proposed development site.
- 4.1.7 A copy of the GTC asset records are also contained within Appendix C.

### 4.2 Diversionary Works

- 4.2.1 Construction of the development site access junctions onto Charlotte Avenue may trigger the need for diversion or protection work of the existing SSE and GTC electricity cable routes and potentially the SSE District Heating pipes depending on their depth below ground. The requirement for diversion or protection works will be dependent on detailed design of the access junction and proposed construction depths.

### 4.3 Proposed Infrastructure

- 4.3.1 SSE has undertaken a feasibility study for the proposed development with a connection to the existing SSE district heating network and one EVCP per unit. The feasibility study has yet to be issued by SSE and this section of the report will be updated once the study has been received.
- 4.3.2 It is anticipated that a minimum of four substations should be accommodated within the masterplan. This is based on the assumption of providing three 1000MVA sized transformers and one 800kVA sized transformer. However, this number may increase dependent on the distribution of the substations within the development and maximum cable lengths from the substations to individual dwellings. Each substation will require an area of approximately 5m x 5m with suitable vehicle access.

## 5 Gas

### 5.1 Existing Infrastructure

- 5.1.1 SGN is the incumbent gas transporter for this region. The asset records provided by SGN indicate that there are no existing Low Pressure (LP), Intermediate Pressure (IP), Medium Pressure (MP) or High Pressure (HP) gas mains within the site boundary.
- 5.1.2 Asset records show a low pressure gas main located in Charlotte Avenue to the south of the site which provides a connection to the SSE district heating energy centre adjacent to Bramley Avenue and continues past the site to terminate outside the local primary school. This is indicated on the Stantec Existing Utilities Layout (49656/2001/001) and SGN asset plans, contained within Appendix B and Appendix D of this report.
- 5.1.3 There is no other gas infrastructure located within the Exemplar Site.

### 5.2 Diversionary Works

- 5.2.1 No diversionary works are required to accommodate the development proposals.

### 5.3 Proposed Infrastructure

- 5.3.1 No new connection enquiries were submitted to the statutory undertakers as a gas supply to the development is not required.

## 6 Telecommunications

### 6.1 Existing Infrastructure

- 6.1.1 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 Utilities Layout (49656/2001/001) and Openreach asset plans, contained within Appendix B and Appendix E respectively.
- 6.1.2 The asset records indicate that there is an underground duct route running along the B4100 to the north east of the site, and an overhead route running parallel to this on the other side of the road adjacent to St Laurence Church.
- 6.1.3 As built records obtained for the Exemplar Site show an existing Openreach duct route (with associated chambers) running along Charlotte Avenue within the Exemplar Site, supplying telecommunications services to the existing houses. It is likely that the main duct route connects to one of the existing chambers along the B4100. This route is not shown on the Openreach asset records and it is understood that although this network was built to Openreach specification, Fibre Options (FO) supply the telecommunications and fibre network work in the area.
- 6.1.4 Fibre Options has a communications room within the existing energy centre and is connected into the Vodafone Oxford to Milton Keynes fibre route with the connection point to the south east of the site.
- 6.1.5 The Fibre Options network is also a fibre IRS network to provide a TV connection, therefore no dishes are required on individual properties. Two dishes are located on top of the energy centre. one is for Sky and Freesat and the other as a backup.

### 6.2 Diversionary Works

- 6.2.1 Construction of the development site access junctions onto Charlotte Avenue may trigger the need for diversion or protection work of the existing fibre duct route. The requirement for diversion or protection works will be dependent on detailed design of the access junction and proposed construction depths.

### 6.3 Proposed Infrastructure

- 6.3.1 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.
- 6.3.2 In line with current practices, Openreach will free-issue all new connection ducts for installation by the developer's groundwork contractor and will additionally contribute a lump-sum for each plot connected to their Openreach network.
- 6.3.3 For residential developments of more than 20 units, Openreach will provide fibre to the premises (FTTP) free of charge. All necessary off-site upgrade works will be undertaken by Openreach at no cost to the developer.
- 6.3.4 The Fibre Options network serving the Exemplar Site has been designed for 1,100 units but has capacity to supply up to 6,000 units. Fibre Options rent capacity from the Telehouse East Exchange and are in the process of upgrading the infrastructure to provide a resilient connection and will shortly be offering 1Gbps services.

- 6.3.5 Discussions have been held with Fibre Options who has shown an interest in supplying the site with a fibre network.



## 7 Potable Water

### 7.1 Existing Infrastructure

- 7.1.1 In this region, Thames Water is the incumbent potable water transporter and they own and operate the majority of the distribution potable water mains in the area.
- 7.1.2 Asset records have been obtained from Thames Water and are shown on the Stantec Existing Utilities Layout (49656/2001/001). These are contained within Appendix B and Appendix F respectively.
- 7.1.3 The asset records indicate that there is a 4" diameter distribution main located along Charlotte Avenue supplying the properties within the Exemplar Site. This distribution main connects into a distribution main located along the B4100 to the south east of the proposed development and terminates at the northern section of the Exemplar Site.

### 7.2 Diversionary Works

- 7.2.1 Construction of the development site access junctions onto Charlotte Avenue may trigger the need for diversion or protection work of the existing water main. The requirement for diversion or protection works will be dependent on detailed design of the access junction and proposed construction depths.

### 7.3 Proposed Infrastructure

- 7.3.1 A pre-planning enquiry was submitted to Thames Water to determine if there is sufficient capacity within the existing water supply network to accommodate the demand generated by the proposed development.
- 7.3.2 Thames Water confirmed that there is currently only sufficient capacity in the potable water network to supply the first 49 dwellings and advised that they would have to undertake network modelling to determine the extent of any reinforcement works required to their network to support the proposals.
- 7.3.3 Thames Water normally carry out network modelling once planning permission for a site has been obtained, however Firethorn Developments Limited were keen to understand the scale of any reinforcement works required at an early stage. Therefore, through an underwriting agreement with Thames Water, this modelling study was brought forward.
- 7.3.4 Thames Water has estimated that the network modelling will take approximately six months to complete and the outcome will determine what measures are needed to supply the full development with potable water.
- 7.3.5 The pre-planning enquiry response can be found within Appendix F of this report.

## 8 Foul Water

### 8.1 Existing Infrastructure

- 8.1.1 Thames Water own and operate the wastewater network in this region. Thames Water's drainage records are shown on Stantec Existing Utilities Layout (49656/2001/001) and Thames Water asset plans, contained within Appendix B and Appendix G respectively of this report.
- 8.1.2 Asset records indicate an existing adopted 225mm diameter foul water sewer located within Charlotte Avenue serving the Exemplar Site. From the asset records it appears that the adopted sewer does not discharge or connect to another adopted sewer network in the area.
- 8.1.3 The asset records also show a private pumping station and rising main located adjacent to the SSE energy centre which flows eastwards towards the B4100 and then heads north up Fringford Road.
- 8.1.4 Thames Water has confirmed that the existing adopted sewer discharges into a private foul sewer network which is in the process of being adopted by Thames Water.

### 8.2 Diversionary Works

- 8.2.1 It is unlikely that the construction of the development site access junctions onto Charlotte Avenue may trigger the need for diversion or protection work of the existing sewer network however the requirement for this will be assessed during detailed design.

### 8.3 Proposed Infrastructure

- 8.3.1 A pre-planning enquiry was submitted to Thames Water to determine if there is sufficient capacity within the existing foul drainage network to accommodate the demand generated by the proposed development.
- 8.3.2 Thames Water confirmed that there is currently insufficient capacity in the foul drainage to accommodate the proposed development and estimated that the typical timescales to complete the network modelling and associated design and reinforcement works would be approximately 20 months.
- 8.3.3 Following further liaison, Thames Water agreed to undertake a high-level review of the proposed preliminary foul drainage strategy for the site to determine the potential impact it may have on the existing foul sewer network.
- 8.3.4 A preliminary wastewater strategy plan was therefore submitted to Thames Water to review. Two options were presented with both options proposing two points of connections into the existing sewer in Charlotte Avenue. Option 1 proposed an additional connection onto the sewer located in Wintergreen Fields, while Option 2 would require a package pumping station to pump flows from the southern section of the eastern land parcel to the north of the site, to discharge into one of the proposed connection points in Charlotte Avenue.
- 8.3.5 Following their assessment, Thames Water confirmed that they preferred Option 1 and that there is currently sufficient capacity to connect the first 447 dwellings, 87 at Wintergreen Fields and 360 dwelling at Charlotte Avenue. The proposed preliminary outline foul drainage Strategy (Stantec drawing 49656/2001/002) can be found in Appendix G.
- 8.3.6 It should be noted that the connection from the eastern land parcel to the sewer in Wintergreen Fields may require requisition (under S98 of the Water Industry Act 1991) should not all land along this route be public highway.

- 8.3.7 As with the potable water supply, Firethorn Developments Limited were willing to enter into an underwriting agreement with Thames Water to undertake the modelling in advance of planning permission being obtained for the site. Unfortunately, due to the current workload experienced by the Thames Water Wastewater Team, only sites with planning consent are currently being prioritised. Thames Water also consider that because 447 dwellings can be connected before any offsite reinforcement works are required, that sufficient time is available for them to design and deliver the upgrade solution once planning permission for the site has been obtained.

## 9 Conclusion

### 9.1 Summary of Investigations

9.1.1 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.

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

Statutory Undertaker	Existing Utility Infrastructure		New Utility Infrastructure
	Onsite / Near Development	Diversions Requirements	Requirements
SSE	11kV cable route and district heating pipes located within Charlotte Avenue	Possible diversion / protection requirements to accommodate site access proposals.	TBC
SGN	LP gas main located in the southern section of Charlotte Avenue supplying the SSE Energy Centre.	None anticipated.	Not required.
GTC	Existing Substation and LV cable routes supplying Exemplar Site.	Possible diversion / protection requirements to accommodate site access proposals.	Should be approached for a new connections quotation once final energy strategy for the site has been determined.
Fibre Options	Underground duct routes and chambers located within Charlotte Avenue.	Possible diversion / protection requirements to accommodate site access proposals.	Assumed connection to infrastructure along Charlotte Avenue if chosen operator.
Openreach	Underground duct route and chambers running along the B4100 to the north east of the site	None anticipated.	For residential developments of more than 20 units, Openreach will provide FTTP free of charge.
Thames Water (Potable Water)	A 4-inch diameter distribution main located in Charlotte Avenue	Possible diversion / protection requirements to accommodate site access proposals.	Sufficient capacity currently available for 49 dwellings only. Modelling required to determine upgrade works. The cost for this has been underwritten by the developer in advance of planning permission being obtained for the site.
Thames Water (Wastewater)	A 225mm diameter foul sewer located in Charlotte Avenue.	Alterations to foul drainage network unlikely however this will be assessed further at detailed design stage.	Capacity for 360 dwellings connecting into Charlotte Avenue and 87 units in Wintergreen Fields. Modelling to accommodate any further units to be undertaken post planning.

Table 9.1: Summary of Investigations

# Appendix A Illustrative Masterplan



- Key
- 01 Vehicular, pedestrian and cycle access point
  - 02 View to church
  - 03 Sustainable Drainage System (SuDS)
  - 04 Play
  - 05 Small new copses
  - 06 Trim trail
  - 07 Edible landscapes
  - 08 Wetland habitat
  - 09 Woodland with some limited public access
  - 10 Pedestrian connection
  - 11 Potential pedestrian connection
  - 12 Modern farmstead interpretation
  - 13 Lower density rural edge
  - Application boundary (22.0714)

0m 100m



CLIENT: Firothorn

PROJECT: North West Bicester

DRAWING: Illustrative masterplan with Exemplar

PROJECT NUMBER: 1192

DRAWING NUMBER: SK044 CHECKED BY: MI/LA

REVISION: - STATUS: Draft

DATE: 17/02/2021 SCALE: 12,000



# Appendix B Existing Services Layout



- NOTES:
- DO NOT SCALE THIS DRAWING. IF IN DOUBT PLEASE REQUEST FURTHER INFORMATION.
  - ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT CONTRACT DRAWINGS, CONSTRUCTION DETAILS AND SPECIFICATIONS.
  - ASSET INFORMATION SHOWN ON THIS DRAWING HAS BEEN TAKEN FROM RECORDS RECEIVED DURING SEPTEMBER / OCTOBER 2020.
  - PRIVATE SERVICES MAY BE PRESENT WITHIN THE STUDY AREA BUT MAY NOT BE INDICATED ON THIS DRAWING.
  - THE OCC HIGHWAY DRAINAGE RECORDS ARE YET TO BE RECEIVED AND ARE NOT CURRENTLY SHOWN ON THIS DRAWING.
  - UTILITY INFORMATION FOR THE EXEMPLAR SITE HAS BEEN PRODUCED FROM ASSET RECORDS AND BREHENY AS CONSTRUCTED DRAWINGS DATED JANUARY 2016.

- KEY:
- SITE BOUNDARY
  - EXISTING SSE 11KV CABLE ROUTE
  - EXISTING OVERHEAD SSE 11KV CABLE ROUTE
  - EXISTING OVERHEAD SSE LV CABLE ROUTE
  - EXISTING OVERHEAD SSE SERVICE CABLE ROUTE
  - EXISTING SSE DISTRICT HEATING
  - EXISTING GTC 20KV CABLE ROUTE
  - EXISTING GTC LV CABLE ROUTE
  - EXISTING GTC SERVICE CABLE ROUTE
  - EXISTING LOW PRESSURE SGN GAS MAIN
  - EXISTING SGN GAS METER
  - EXISTING SGN GAS VALVE
  - EXISTING OPENREACH DUCT ROUTE
  - EXISTING OPENREACH OVERHEAD ROUTE
  - EXISTING OPENREACH JOINT BOX
  - EXISTING OPENREACH MANHOLE
  - PLANNED OPENREACH JOINT BOX
  - EXISTING FIBRE OPTIC DUCT ROUTE
  - EXISTING THAMES WATER POTABLE WATER MAIN
  - EXISTING SURFACE WATER SEWER AND MANHOLE (PRIVATE)
  - EXISTING THAMES WATER FOUL WATER SEWER AND MANHOLE
  - EXISTING FOUL WATER RISING MAIN
  - EXISTING WATERCOURSE

SERVICES ARE ASSUMED TO BE LAID IN THIS AREA AWAITING CONFIRMATION FROM SERVICE PROVIDERS / STATUTORY UNDERTAKERS

EXISTING GTC SUBSTATION

Mark	Revision	Date	Drawn	Chkd	Appd
C	OPENREACH AND FIBRE OPTIC DUCT ROUTES UPDATED	21.04.21	CD	ST	
B	EXISTING UTILITIES UPDATED	14.04.21	CD	ST	
A	REVISED SITE BOUNDARY & AS-BUILT INFORMATION	06.11.20	CD	JP	

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.  
 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.

Drawing Issue Status

**FOR INFORMATION**

LAND AT NORTH WEST BICESTER

EXISTING SERVICES LAYOUT

Client  
**FIRETHORN DEVELOPMENTS LTD.**

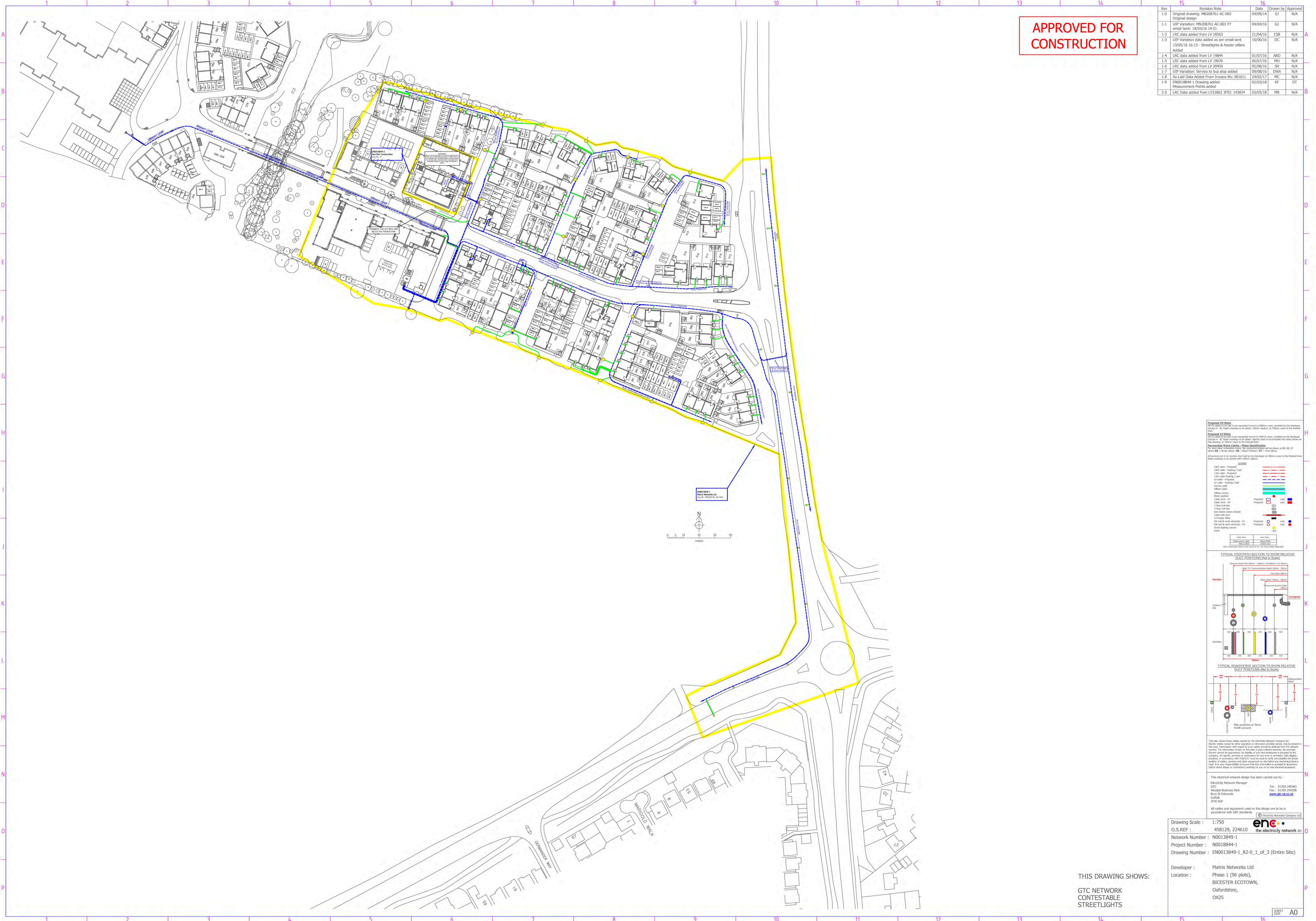


Date of 1st Issue 21.10.2020	Designed -	Drawn CD
AD Scale 1:1000	Checked JP	Approved DTH
Drawing Number 49656/2001/001	Revision C	Reading 01189 500 761

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 READING  
 Tel: 01189 500 761



# Appendix C Electricity



**APPROVED FOR CONSTRUCTION**

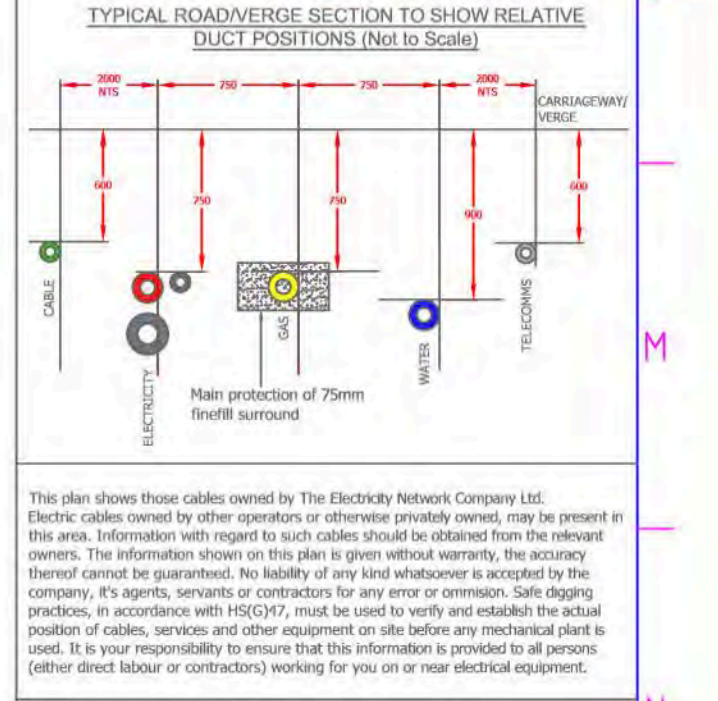
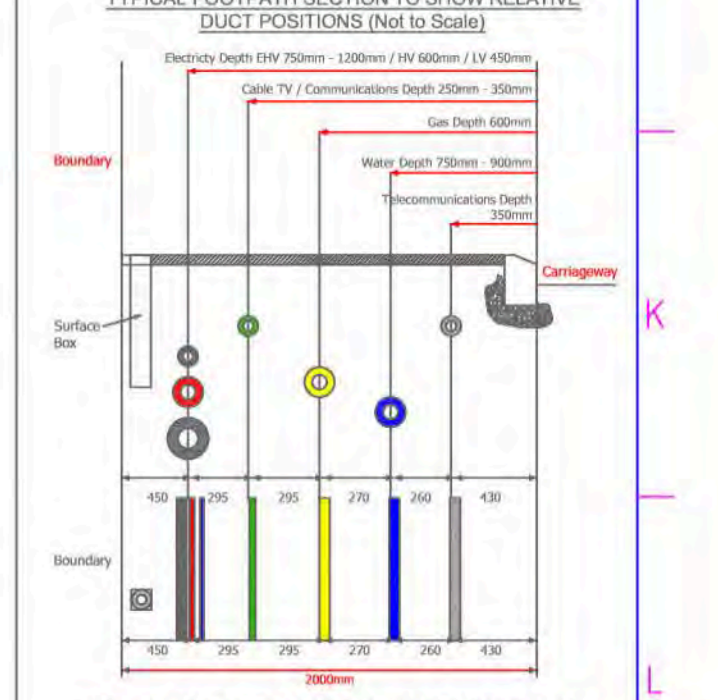
Rev	Revision Note	Date	Drawn by	Approved
1.0	Original drawing: MN200761-AC-003 Original design	04/09/14	GJ	N/A
1.1	UIP Variation: MN200761-AC-003 P7 email Sent: 18/03/16 14:51	04/04/16	GJ	N/A
1.2	LRC data added from LV 18563	21/04/16	CSB	N/A
1.3	UIP Variation data added as per email sent 13/05/16 16:13 - Streetlights & feeder pillars added	15/06/16	DC	N/A
1.4	LRC data added from LV 15844	01/07/16	ARD	N/A
1.5	LRC data added from LV 15976	06/07/16	MR1	N/A
1.6	LRC data added from LV 20459	05/08/16	SH	N/A
1.7	UIP Variation: Service to bus stop added	09/08/16	DWA	N/A
1.8	As-Is Data Added From Invoice No: 001611	24/02/17	MC	N/A
1.9	EN0018844-1 Drawing added Measurement Points added	02/03/18	KF	DT
2.0	LRC Data added from LV20862 (PID: 143824	03/05/18	NR	N/A

**Proposed HV Route**  
 110kV cables to be installed in pre-erected trench in 400mm cover, provided by the developer. 15. All other changes to be done. Other cables, if shown, are to be installed in 400mm cover to be done by the developer.

**Proposed LV Route**  
 11kV cables to be installed in pre-erected trench in 400mm cover, provided by the developer. 15. All other changes to be done. Other cables, if shown, are to be installed in 400mm cover to be done by the developer.

**Proposed Cable Routes - Other Information**  
 All systems are to be ducted. Ducts are to be installed in 400mm cover to be done by the developer. All systems are to be installed with 100mm separation.

System	Proposed	Lead
11kV cables	Red	Red
11kV cables - Existing	Blue	Blue
11kV cables - Proposed	Green	Green
LV cables	Yellow	Yellow
LV cables - Existing	Orange	Orange
LV cables - Proposed	Purple	Purple
Service cables	Light Blue	Light Blue
Office cables	Light Green	Light Green
Office services	Light Purple	Light Purple
Water services	Light Orange	Light Orange
Cable tray - LV	Light Red	Light Red
Cable tray - HV	Light Blue	Light Blue
2 Way Cable Tray	Light Green	Light Green
4 Way Cable Tray	Light Orange	Light Orange
6 Way Cable Tray	Light Purple	Light Purple
Cable with duct	Light Yellow	Light Yellow
40mm dia. cable tray	Light Blue	Light Blue
60mm dia. cable tray	Light Green	Light Green
80mm dia. cable tray	Light Orange	Light Orange
100mm dia. cable tray	Light Purple	Light Purple
150mm dia. cable tray	Light Yellow	Light Yellow
Earth	Light Red	Light Red



This drawing shows cables owned by The Electricity Network Company Ltd. The cables are shown in the drawing to show their relative positions. The drawing is not a plan view and does not show the actual depth of the cables. The drawing is not a plan view and does not show the actual depth of the cables. The drawing is not a plan view and does not show the actual depth of the cables.

This electrical network design has been carried out by:

Electricity Network Manager  
 GTC  
 Weymouth Business Park  
 Bury St Edmunds  
 Suffolk  
 IP35 5LP

Tel : 01203 240303  
 Fax : 01203 240306  
[www.encl.co.uk](http://www.encl.co.uk)

All cables and equipment used on this design are to be in accordance with GB standards.

**enc**  
 the electricity network company

Drawing Scale : 1:750  
 O.S. REF : 458129, 224610  
 Network Number : N0013849-1  
 Project Number : N0018844-1  
 Drawing Number : EN0013849-1\_RZ-0\_1\_of\_3 (Entire Site)

Developer : Matrix Networks Ltd  
 Location : Phase 1 (96 plots), BICESTER ECOTOWN, Oxfordshire, OX25

Sheet 25 of 25 A0

THIS DRAWING SHOWS:  
 GTC NETWORK  
 CONTESTABLE  
 STREETLIGHTS



