

# Outline Application

NW Bicester Planning Application 1

Utilities Statement



A2Dominion

NW Bicester Eco-Town

Utilities Statement

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Application 1: Land to the North of the Railway Line and A4095  
Lords Lane and West of B4100 Banbury Road, surrounding Lords  
Farm and Hawkwell Farm, Bicester, Oxfordshire



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A handwritten signature in black ink, appearing to read "P. Harker", is written over a horizontal line.

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# 1 INTRODUCTION

## 1.1 Background

Hyder Consulting has been commissioned by A2 Dominion to prepare a Utilities Statement in support of Application 1 (Land North of Railway Line) forming part of the NW Bicester development.

The Application 1 development comprises approximately 2,600 homes including extra care housing, employment, shopping and community facilities, a primary school and an extension of the capacity of the Exemplar primary school. The total site area comprises 154.82 hectares of land.

This report contains details of the baseline Scheme Appraisal undertaken to assess the infrastructure and constraints associated with the proposed outline application for development. The report addresses topography, ground conditions and utilities, identifies constraints and further study requirements.

## 1.2 Location

The site is located to the west of the B4100 Banbury Road and is bound to the south by the A4095. The site lies adjacent to the existing residential areas of Bicester specifically Bure Park and is 2.7km from the town centre (measured to the existing Hawkwell Farm enclosed within the land north of the railway). Figure 1-1 below shows the boundary and location of the site.

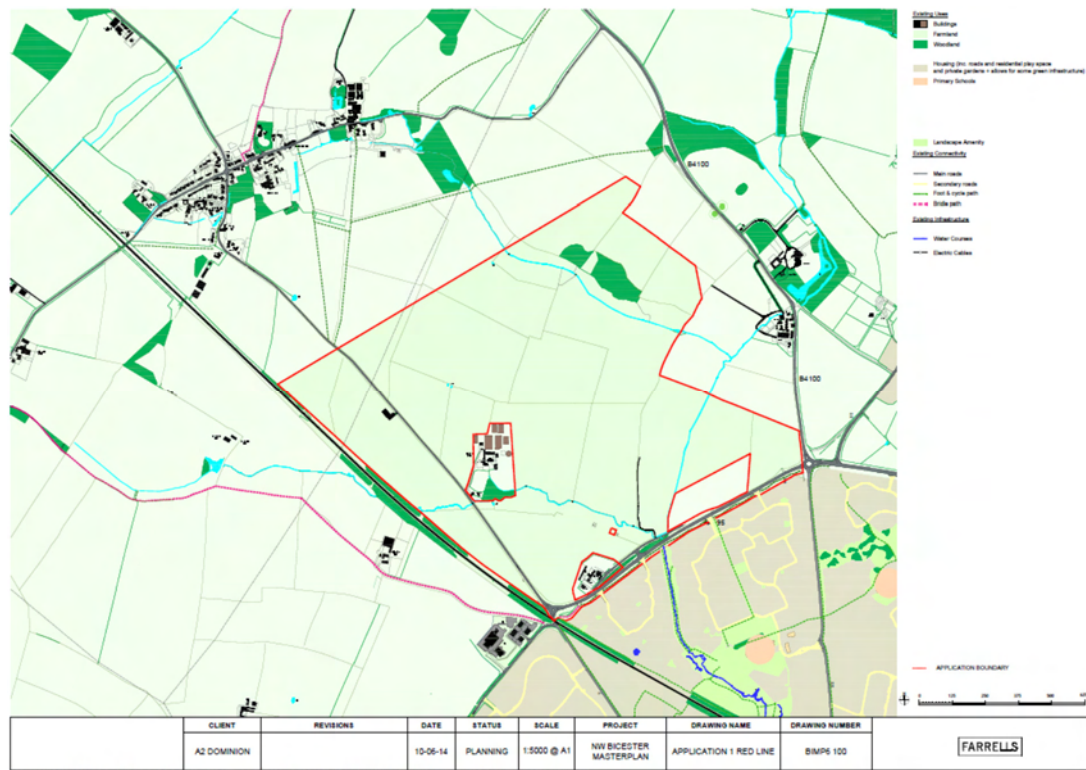


Figure 1-1 – Boundary and location of site

The location of the Site is presented on drawing 1001 within Appendix A.

## 2 TOPOGRAPHY

A topographical survey has been completed for the Exemplar Site. Ordnance Survey DTM (Digital Terrain Model) data and Mastermap have been purchased to provide ground relief and mapping information respectively for the remainder of the Site.

Drawing 1000 (Appendix A) shows contours and topological details of the entire Site produced from the DTM data and Mastermap mapping.

On Drawing 1000 the existing topography of the Site is shown to fall gently by approximately 10m from the north-western boundary to the south-eastern boundary (from ~95m AOD to ~85m AOD). This topography is typical of the gently rolling nature of this part of Oxfordshire.

A full topographical survey of the site is currently being undertaken to provide further detail for reserved matters stages as the scheme develops. Due to the generally regular topography of the site DTM data is considered to be sufficient for the outline application.

## 3 LAND USE

The majority of the site comprises agricultural land categorised as Grade 3 (good to moderate quality). As characterised by Grade 3 land, the principal land uses on Site are for arable cropping and rotational grassland. Fields are bounded either by post and wire fences or by dense hedges with some large trees. Most fields were surrounded by drainage ditches approximately 0.5m to 0.75m deep.

Existing buildings within this area include Hawkwell Farm and Lord's Farm, albeit these do not fall within the Application boundary.

## 4 GROUND CONDITIONS

Ground conditions have been assessed within desk studies and site investigations for the masterplan study area together with site investigations in the Phase 1 (Exemplar) site. See separate application submission documents for further detail of ground conditions.

Public register information relating to the masterplan Site and the surrounding area was obtained, predominantly from Envirocheck Reports of the Site. Pertinent information regarding the constraints identified within this report both on and nearby the site have been extracted and presented on Drawing 1005 within Appendix A. A number of discharge consents, water abstractions and landfills are recorded on the public register as being within the Site.

A targeted, intrusive ground investigation will be required to provide further environmental and geotechnical information prior to submission of reserved matters

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## 5 UTILITIES

### 5.1 Introduction

This section of the report contains details of the existing public utilities located within the area indicated on Drawing 1001 in Appendix A of this report together with an initial appraisal of the utility demand and capacity of the existing network.

A combined services plan has been prepared based on records received and this is shown on drawing 1003 in Appendix A.

The information is based on a review of the records of the existing apparatus received from the utility companies and discussions with their officers. Given the level of information available to the utility companies at this moment in time, their information was offered as preliminary comment only pending more detailed design development. Copies of utilities records are contained in Appendix B.

### 5.2 Statutory Undertakers Equipment

#### 5.2.1 Consultations

The following Statutory Utilities have been approached as part of the initial utilities enquiry, seeking information on their existing services:

Scottish & Southern Electricity	Electricity
Southern Gas Networks	Gas
BT	Telecommunications
Virgin Media	Telecommunications
Thames Water	Sewerage and Water

#### 5.2.2 Scottish and Southern Energy

Scottish and Southern Energy (SSE) has indicated that there are high voltage and low voltage electrical services in the area that are likely to be affected by the proposals.

SSE plans indicate that existing 33kV overhead cables cross the site from the south eastern corner running in a north westerly direction from the B4030. There is a junction in the overhead line approximately 300m west of Himley Farm, the 33kV.

At this location the 33kV line running from the B4030 continues in a north westerly direction. Further to this, a branch from the junction crosses the site in a north easterly direction exiting the northern boundary of the site, approximately 230m east of Bicester Road / Bucknell Road.

11kV overhead cables cross the site, running in a north easterly direction from Lovelynych House, passing near to Himley Farm, and terminating approximately 100m north east of Gowell Farm.

Approximately 150m west of Gowell Farm, an 11kV branch from the overhead cable runs in a northern direction to Aldershot Farm. From here it continues underground, following the route of the track towards Howes Lane, with a branch off serving the police depot.

On reaching Howes Lane the underground 11kV cable enters Bucknell Road. Within Bucknell Road there is a further junction. The underground cable runs along Lords Lane in a north easterly direction, while overhead cables run parallel with the railway line in a north westerly direction.

An 11kV overhead cable runs within the B4100, east of the site. This cable appears to run from Lords Lane / Southwold Lane, terminating at Caversfield House at the eastern most corner of the site.

Low voltage cables are generally located in the vicinity of existing properties within the site. It is likely that the power rating has been reduced from high to low voltage via pole mounted transformers.

### 5.2.3 Scotia (Southern) Gas Networks

Scotia Gas Networks (SGN) have provided plans of their existing network in the vicinity of the site. These plans confirm that the only SGN apparatus in the vicinity of the site is a Medium Pressure main, running within Howes Lane from the B4030 / Middleton Stoney Road and terminating at the Avonbury Business Park.

A Low Pressure main serves the Avonbury Business Park, and a Medium Pressure main serves the adjacent Police Depot.

SGN have further advised that networks under the ownership of Independent Gas Transporters may be present in the vicinity of the site. This issue will require further investigation, however it is unlikely that these supplies would be located within the Site.

### 5.2.4 BT

BT networks are present adjacent to the site, generally serving the existing properties. Underground ducts are shown to cross the site within Bicester Road / Bucknell Road and along this route, there is a junction to serve the Hawkwell Farm Cottages.

At the road junction between Bucknell Road / Howes Lane / Lords Lane, there is a BT junction box. From this junction ducts run south within Howes Lane to serve the existing properties within the site (Aldershot Farm, Gowell Farm, Avonbury Business Park and the Police Depot). Ducts also run north from the junction within Lords Lane terminating at Lord's Farm.

BT have also indicated that there are existing underground ducts within the B4030, running parallel with the western most boundary of the site, and within the B4100, which runs alongside the eastern most boundary of the site.

## 5.2.5 Virgin Media

Virgin media (VM) have confirmed that they do not have any apparatus within the development area. However, there are existing VM ducts exist within Bicester Road up to the site boundary.

## 5.2.6 Thames Water

Thames Water Utilities Ltd (TWUL) is the water supply and wastewater drainage and treatment provider for the Central Oxfordshire Sub-region which covers the Bicester area.

### Sewerage

TWUL has services in proximity of the site that are likely to be affected by the proposals, and TWUL plans indicate that an existing 150mm foul water rising main and 150mm standby rising main running south along Bicester Road / Bucknell Road, which bisects the site approximately 500m east of the railway.

The plans indicate that the rising main (including the standby rising main) starts north of the proposed site at a location adjacent to Bainton Road, and runs in a southerly direction following the route of a minor vehicular access track until it meets Bicester Road / Bucknell Road.

On reaching Bicester Road / Bucknell Road the rising mains continue in a south easterly direction through the site and into Bicester town, where both the rising main and the standby rising main connect into the existing gravity sewer network.

By inspection of the TWUL plans, it would appear that there are no public sewers in the vicinity of the eastern most boundary of the site.

The villages surrounding Bicester are understood to be served by minor Sewage Treatment Works, which discharge via the rising main / gravity network into the STW located south of Bicester.

### Water Supply

TWUL plans indicate three potable water mains crossing the site following an existing minor track located approximately 600m west of the railway.

The three mains consist of a 450mm trunk main, 18" strategic main and 9" strategic main, and originate north west of the site, crossing the M40 near to the location of an existing water tower, and continuing along minor tracks in a south easterly direction through the development site.

The three mains exit the site at to the location of the Bucknell Road / Howes Lane junction (near to the Bucknell Road / Lords Lane roundabout). On leaving the site, the 450mm trunk main downsizes to a 350mm and continues in an easterly direction along Lords Lane; the 18" strategic main continues in a westerly direction along Howes Lane; and the 9" strategic main crosses the railway before continuing in a south easterly direction, north of and parallel to the railway.

Adjacent to the south western boundary of the development site, an existing 125mm diameter (ductile iron) water main and an abandoned 4" cast iron water main are running along the B4030.

Adjacent to the north eastern boundary of the development site, an existing 150mm diameter distribution main branches off from the 350mm trunk main running within Lords Lane (A4059) at the location of the roundabout with the B4100. The distribution main continues along the B4100 serving existing properties within the eastern corner of the site.

### 5.2.7 Diversions

On review of the information received from the utility companies it would appear that the diversion of existing on-site services may be required. However, this is subject to review by the utility companies on finalisation of the development design detail.

### 5.2.8 Key Constraints

It would appear from the plans received from the utilities companies, that there are a number of utility corridors crossing the site.

Most notably:

- Bicester Road / Bucknell Road contains the Thames Water rising mains and underground BT ducts;
- the lane to the west of the railway line contains Thames Water trunk mains, 11kV cables and BT ducts;
- and the 33kV overhead network crosses the south and west of the site.

The existing services are also shown on the Site Sensitivity Features plan, Drawing 1002 in Appendix A.

Requirements for utilities diversion and protection need to be considered further in conjunction with development of the application and appropriate discussion with utility providers will be undertaken to ensure continuity of supply.

## 5.3 Existing Utility Network

### Sewerage

The Bicester Sewage Treatment Works (Oxford Lane) serves the Bicester, Launton, Arncott, Ambrosden and Blackthorn and is also one of four sludge (biosolid) centres in the TWUL western region. Treated water is discharged into the nearby Langford Brook with the raw sludge treated with lime before recycling to agricultural land.

The treatment works was upgraded in 2004 but is identified in the Cherwell Development Framework as requiring further upgrading. Bicester is an urban centre recognised by Thames Water as currently experiencing considerable growth in population that will place increasing pressure on existing sewage and water supply resources.

Initial feedback from Thames Water was that the existing treatment works at Bicester is close to operational capacity and significant network improvements would be required to accommodate the eco-town development.

### Water Supply

The existing TWUL potable water network serving Bicester is supplied from reservoirs at Farmoor and Ardley and recent improvements to the Ardley water main have been undertaken.

Initial feedback from TWUL indicate that although there is sufficient source water supply, improvements to the wider network would be required to accommodate the development. Network modelling would be required to determine the impact of the development on the local water network.

Although Bicester is within the Water Supply Area of Thames Water, SSE Water has recently applied to be the water company for the 1500 unit residential development at Kingsmere, Bicester and this suggests that alternative operators operations would be viewed favourably by Ofwat.

### Electricity

The District Network Operator (DNO) is SSE and there is an established system of 33kv and 11 kv supply within the greater Bicester area. Discussion with SSE has identified that they have a plan in place to provide a new 132 / 33 kV town substation with 132 kV supply from East Claydon to be delivered by March 2019. The application Site is located on the periphery of the town and extension of the electrical network will be required to service the site.

### Telecoms

The existing network is operated by British Telecom and Virgin Media who are both capable of providing extended telecoms connections into the development. Opportunities for provision of high speed internet access to the eco town together with transmissions modes would require further consideration during the development of the project.

## 5.4 Utility Demand

The development will be required to meet the standards set out in the Planning Policy Statement 1 supplement on Eco Towns ('the PPS1 Supplement'); which sets out key sustainability principles that eco-towns should achieve. The Eco-Town Standards set out in the PPS1 Supplement relevant to utility demand include ET7 (Zero Carbon) and ET17 (Water).

ET 7 contains a requirement for the development to achieve zero carbon, and states *"The definition of zero carbon on eco-towns is that over a year the net carbon dioxide emissions from all energy use within the buildings on the eco-town as a whole are zero or below."*

ET 17 places a requirement on Eco-Towns to be water efficient and refers to the need for a water cycle strategy, *"that provides a plan for the necessary water services infrastructure improvements."* and *"set out the proposed measures which will limit additional water demand"*.

Preliminary calculations to estimate the utility requirement to serve the proposed development have been undertaken. The calculations assess the requirements based on conventional development demand rates and high level sustainable development rates.

Where possible the sustainable development demand rates have been assessed in accordance with Code for Sustainable Homes and BREEAM standards.

The demands and assumed reductions are initial estimates, to be confirmed through discussions with utility companies and implementation of sustainable strategies relative to energy and water (see separate application submission documents). A Summary of the Utility demand calculation is contained in Table 5.1.

**Table 5.1 Summary of Demands for Application 1 Development**

Utility	Conventional Development	Sustainable Development
Potable Water	41 l/s	32 l/s
Sewage (peak)	247 l/s	192 l/s
Electricity	13,099 kVA	11,789 kVA
Gas (annual)	38,540,930 kWh	26,978,651 kWh

A suitable strategic approach to low and zero carbon energy provision to the development will be subsequently developed as part of the Energy Strategies. The strategic approach would also need to consider the selection, application and commercial operation of differing technologies and approaches.

## 6 SUMMARY

This Infrastructure Appraisal summarises the base line information gathered for NW Bicester Application 1 that will be used in the further development of the scheme design. Topography, land use, ground conditions and utilities have been considered. Constraints have been identified together with areas where further details or consideration is required.

Appendix A

Drawings