12.0 Utilities

12.1 Introduction

Brookbanks Consulting Limited was appointed by Bloor Homes Ltd & Sandleford Farm Partnership to undertake an assessment of the utility requirements for a proposed development on land at Sandleford Park, Newbury.

The objective of the assessment is to identify the existing utility services infrastructure at and near to the site, along with outline requirements for necessary reinforcements to existing networks.

This chapter summarises the findings of the assessment and specifically addresses the following issues:

- Identify potential impacts.
- Determine the potential utility diversions and upgrading works that would be required to accommodate and service the proposed development.
- Evaluate the significance of residual effects.

This chapter is supported by a Services Supply Statement that is included in *Appendix L1*.

As part of the service supply enquiries, the maximum quantum was set at 2,000 residential dwellings, two 2 Form Entry Primary Schools, Local Centre (2,150m²), D1 Community Facility and an 80 Bed Care Home. Evolution of the masterplan has derived that a lower quantum, is viable. The following chapter outlines the capacity requirements for the larger quantum; although it has been judged that the decrease in quantum would remain deliverable and robust in line with the supply data received.

12.2 Scoping and Consultation

12.2.1 Sources of Information

During the preparation of this assessment, the following statutory bodies and interested parties have been consulted regarding the location of existing utilities.

- Thames Water: Potable water and foul drainage;
- SSE: Electricity
- SGN: Gas
- BT, Virgin Media, Vodafone: Telecommunications
- GTC: Multi-Utility (Electricity and Gas)

For each service, the utility provider has given an assessment of the likely reinforcement and/or upgrades to their networks and potential diversions required to accommodate the proposed development, and this information has been used to determine the potential impact on the relevant utilities.

As part of the appraisal of capacity of the existing utility networks surrounding the proposed development, the surrounding existing water, gas, electricity and telecommunication networks have been assessed to help determine the impact and effects of the proposed development.

The potential effects of the proposed development upon the local and/or wider network are considered to be during both the construction and operational phases and may be direct and/or indirect. The following effects may occur:

- Short term loss of supply;
- Network outage;
- Inadequate provision of service supplies to a development.

The potential effects will be assessed with regards to the following receptors during either the construction and/or operational phase:

- Population - existing end users (e.g. Existing residential dwellings in surrounding area)
- Population - future end users (e.g. future occupants)
- Existing Land (the ground where the mains/cables will be laid).

12.3 Assessment Methodology

12.3.1 Assessment Approach

The nearby utilities have been reviewed and identified. The potential diversion works required to accommodate the proposed development represent estimates which are indicative only at this outline stage and will be reviewed as the planning process advances.

Each utility has been assessed for the likely reinforcement and/or upgrade requirement to their network infrastructure.

'Off site apparatus' refers to infrastructure present in the vicinity of the proposed development but outside of the application site.

12.3.2 Significance Criteria

Since there are no generally accepted criteria for assessing the significance of the effect on utilities, and given the nature of the impact, effects are identified as far as possible using the 7 point scale set out in *Tables 12.1*, *12.2* and *12.3*. No general threshold of significance can be identified that is applicable to all utility installations. The impact and significance of each installation is based on a professional judgement.

Tables 12.1 and *12.2*, below outline the criteria for determining the magnitude of impacts, the sensitivity of receptors and the significance of effects is outlined in *Table 12.3*:

Table 12.1 - Impact Magnitude	
Magnitude	**Criteria**
Large	Loss of attribute
Moderate	Losses on integrity or partial loss of attribute
Small	Minor Impact / minor loss of attribute
Negligible	Insignificant loss of attribute that does not affect use or integrity

Table 12.2 - Sensitivity of Receptor	
Sensitivity	**Criteria**
High	Loss of Supply for existing receptor.
Medium	Net Reduction in supply for existing receptor.
Low	Short term supply problems to receptor.

Table 12.3 Significance of Effects				
Magnitude of Impact	**Sensitivity of Receptor**			
	High	**Medium**	**Low**	**Negligible**
Large	Substantial	Substantial	Moderate	Minor
Moderate	Substantial	Moderate	Minor	Negligible
Small	Moderate	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

12.3.3 Uncertainties and Limitations

Third party information has been used in the preparation of this report, which Brookbanks Consulting Ltd, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks Consulting Ltd accepts no liability for same.

The current analysis of the utilities and impacts is based on a point in time analysis of the utilities network and will be affected by any alterations to the networks carried out by the incumbent utilities providers.

12.4 Baseline Conditions

12.4.1 Gas

SGN has been consulted regarding the location of their existing network in the vicinity of the Site. Existing details of the gas supply network have been provided and transferred to a composite existing services plan, which is contained in the *Appendix L1*.

SGN operate a Medium Pressure (MP) gas network to the north of the Site along Monks Lane and to the east of the Site along Newtown Road.

SGN also operate Low Pressure (LP) gas networks within the vicinity of the proposed development. LP gas mains are shown to the north of the Site along Monks Lane, to the west of the Site along Andover Road and Warren Road and to the north-east of the Site along Newtown Road.

SGN operates further MP gas mains to the north-west and north-east of the Site and LP gas mains to the north, west and east of the Site along individual roads supplying the adjacent residential developments.

In addition to the SGN assets, SSE, ES Pipelines and GTC operate assets within close proximity to the proposed development.

SSE operate 90mm PE LP gas mains to the north of the along Heather Gardens off Monks Lane.

ES Pipelines also operate 63/90mm LP gas mains along The Oaks north-east of the proposed development, 63mm LP mains off Warren Road to the west of the Site, and an additional network north-west of the Site off Andover Road.

GTC operate 63mm LP gas mains to the east of the Site along Deadmans Lane and to the north-east of the Site off Monks Lane.

12.4.2 Electricity

SSE has been consulted regarding their existing network locations. Existing details of the electricity supply network have been provided and transferred to a composite existing services plan, which is contained in the *Appendix L1*.

SSE operates existing High Voltage (HV) networks within close proximity to the proposed development along Monks Lane to the north of the Site and Andover Road to the west of the Site.

In addition, SSE operates Low Voltage (LV) networks to the north along Monks Lane, and to the west along Andover Road and Warren Road. An overhead LV network is shown off Newtown Road to the east of the Site.

Additional HV and LV assets are shown to the north, west and east of the Site along individual roads supplying the adjacent developments.

12.4.3 Potable Water

Thames Water (TW) has been consulted regarding the location and capacity of their existing network within the vicinity of the Site. Existing details of their water supply network has been provided and transferred to a composite existing services plan, which is contained in the *Appendix L1*.

TW operates an existing distribution network to the north of the Site along Monks Lane (355mm HPPE, 250mm POL and 6”), to the west of the Site along Andover Road (4” and 6”) and to the east of the Site along Newton Road (4” and 6”).

In addition, a 6” potable water main is shown along Warren Road to the west of the Site off Andover Road which continues crossing the south of the Site from west to east.

Additional assets are shown to the north, west and east of the Site along individual roads supplying the adjacent developments.

12.4.4 Foul Water

Thames Water (TW) has been consulted regarding the location and capacity of their existing sewerage network within the vicinity of the Site. Existing details of their Foul Water supply network has been provided and transferred to a composite existing services plan, which is contained in the *Appendix L1*.

TW operate a Foul Water, Surface Water and Rising Main Sewers within the vicinity of the proposed development.

A 225mm Foul Water sewer and 450/525/600mm Surface Water sewer are shown to the west of the Site along Andover Road. Along Warren Road to the west of the Site, a 150mm Foul Water sewer and a 150mm Surface Water sewer are identified.

Adjacent to Newton Road to the east of the Site, a Foul Water (225mm) and a 180mm Foul Water Rising main are identified on TW asset plans.

In addition, a 375mm Surface Water sewer is shown to cross the east of the Site off Newton Road and a 300mm Surface Water Rising Main is identified on TW asset plans shown to cross the north of the Site off Monks Lane.

12.4.5 Telecommunications

The main incumbent telecommunications provider is BT Openreach. An extract from their asset plans is shown within *Appendix L1*, which shows existing BT Openreach networks along Monks Lane to the north, Andover Road and Warren Road to the east and Newtown Road to the east.

Also, existing BT Openreach apparatus is shown to north, east and west of the proposed development, along individual roads, supplying the adjacent developments.

Virgin Media also operate assets within the vicinity of the proposed development. Existing Virgin Media apparatus are shown to the north along Monks Lane, west along Andover Road and Warren Road and to the east of the Site along Newtown Road.

Virgin Media operate additional assets to the west, north-west and east of the proposed development, along individual roads, supplying the adjacent developments.

In addition to BT Openreach and Virgin Media, Vodafone operate assets along Newtown Road to the east of the Site and along Monks Lane to the north of the Site.

12.4.6 Service Supply Competition

The traditional procurement route, up until recently, had been to provide service supplies to a new development through a local network operator. With the incumbent companies having somewhat of a monopoly, competition in the market was poor.

However, following deregulation of the service supply networks, through the likes of Ofgem, Ofcom and Ofwat, independent network operators have been able to enter the market and provide new service supplies to developments.

Companies such as GTC and Connect take a holistic view in putting together infrastructure reinforcements, site distribution and supply packages and off-set the costs with anticipated future revenue through the transmission and supply of service to give a better financial arrangement and single point of responsibility for the developer.

These businesses use a multi-utility approach to implement the infrastructure. The independent companies are still regulated by the relevant office of regulation and subsequently asset owners must:

- Ensure that the installed network meets regulated standards
- Design to an operating lifetime of 40+ years

- Manage a return on their investment
- Ensure that the existing network performance is not compromised.

12.5 Mitigation Measures

12.5.1 Inherent Mitigation Measures

There are no inherent mitigation measures.

12.5.2 Standard Mitigation Measures

The procedures for managing the construction of the proposed development will be set out in a Construction Environmental Management Plan. A draft is included in *Appendix D1*.

Specific requirements for diversionary and/or protections to existing utility apparatus will be progressed into detailed design with the incumbent utility providers as the development progresses.

The provision of new utility supply infrastructure will be procured via formal applications to the appropriate utility provider and the utilities will be procured to meet the requirements of the phased build out for the development. The on-site utilities installation will be an integral component of the phased development infrastructure provision.

In mitigating the potential construction effects, consideration is given to the need to shut down supplies while making new connections. Network operators have developed methodologies to permit 'live jointing' or similar whereby the existing network remains fully operational during connection works. During certain operations, and only very occasionally, it remains necessary to temporarily shut down the local network. In such circumstances, the area to be shut down is localised and planned for periods that cause the least disruption. The supplying company is required to give adequate notice to the affected users and ensure that appropriate provision is made for essential supplies.

Potential loss of supply through network damage is mitigated through carefully planning of the construction phases of the development. The existing and planned networks will be located on the ground and on plans for all contractors to use during implementation. Good working practices, such as 'licence to dig' will be employed, encompassed by the Health & Safety file, to control site operations. Such means of control will substantially reduce the potential risk of damage to the supplying network.

Good working practices and site controls will be maintained throughout the site development implementation process to minimise the risk of network 'outages' to the lowest practical level.

During the occupation stage, the strict regulatory regimes under which all public service supply companies operate dictate that any network expansion results in no loss or reduction of service. These will ensure that the minimum regulatory standards are maintained and that no environmental effect results from supplying the site with network services.

Off-site Mitigation

Mitigation in the form of off-site utilities improvement works are set out in *Appendix L1* and are considered to be standard mitigation in this instance, despite being secured through financial contributions.

In summary, proposed off-site mitigation includes:

- Improvements to the existing foul network, including for offline storage at London Road SPS, local sewer upsize outside the development at Newtown Road, local sewer upsize at Newbury Train Station at Station Road.
- Offsite potable water improvements.
- Local upgrades.

12.5.3 Actionable Mitigation Measures

No actionable mitigation is proposed.

12.6 Assessment of Environmental Impacts

12.6.1 Impact Assessment

Construction Phase

Gas Supply

Supply Loading

To assist SGN in their capacity assessment of their existing network, a Total Peak Gas Demand for the Site of 46,948Wh and an annual gas demand of 36,411,900kWh were provided.

Network Requirements

SGN provided a budget estimate to supply the proposed development as identified in *Appendix L1*.

SGN will install appropriately sized gas infrastructure to suitable locations. SGN will also carry out all necessary excavation and reinstatement work up to the proposed development boundary.

SGN has provided no costing for meter/meter housing.

Once at the detail design stage, a firm quotation (which includes a fee) can be submitted to SGN, where they are able to provide a more accurate quotation.

Effects

The connection of the proposed development to the gas mains (including the laying of new links, diversions and protection of existing gas mains) will form an integral part of general construction works and activities.

The specific works involved are not expected to give rise to significant effects and it is judged that there will be **negligible** effects on nearby residential, ecological and landscape receptors.

Electricity

Supply Loading

To assist SSE in their capacity assessment of their existing network, a total Electricity Demand for the Site of 4,848kVA was provided.

Network Requirements

SSE provided a budget estimate to supply the proposed development in *Appendix L1*.

SSE has assumed that the proposed development can be connected into the local 11kV network and that there may be no need for reinforcement works. Confirmation of the connection point and the requirement for reinforcement contribution costs can be provided following payment of a feasibility study or requested at the firm quotation stage.

SSE assume that all on site excavation and reinstatement will be provided by the developer, as well all internal containment for rising mains cables. It has also been assumed that SSE will need to install several new Distribution Substations each on a 4m x 4m plot.

The multi-utility company GTC has been offered two High Voltage connections (one Point of Connection to St John's Primary and one on Rupert Road).

Effects

The connection of the proposed development to the electricity supply network will form an integral part of general construction works and activities. The specific works involved are not expected to give rise to significant effects and it is judged that there will be a **negligible** effect on nearby residential, ecological and landscape receptors.

The location and construction details of the on-site substation(s) will form part of reserved matters applications but the height, and scale of these facilities and proximity to boundaries can be controlled to ensure a negligible impact on residential, ecological and landscape receptors, as part of the detailed design process.

Potable Water

Supply Loading

To assist Thames Water in their capacity assessment of their existing network, a total Peak Clean Water Demand of 30.95l/s was provided. It should be noted that this was based on

the development of 2,000 new residential properties, 2,850m^2 of commercial space, two schools with a total of 1,108 pupils and an 80 bed care home.

Network Requirements

A detailed network model will need to be completed at the detailed design stage in order to fully ascertain the construction and reinforcement requirements of the entirety of development.

Effects

The connection of the proposed development to the water mains (including the laying of new links, diversions and protection of existing water mains) will form an integral part of general construction works and activities.

The specific works involved are not expected to give rise to significant effects and it is judged that there will be a **negligible** effect on nearby residential, ecological and landscape receptors.

Foul Water

Supply Loading

To assist Thames Water in their capacity assessment of their existing foul network, a total Foul Water demand for the site of 93.19l/s was provided. It should be noted that this was based on the development of 2,000 new residential properties, 2,850m^2 of commercial space, two schools with a total of 1,108 pupils and an 80 bed care home.

Network Requirements

TW has completed a Sewer Impact Study for the proposed development. Although provided a loading of 93.19l/s was provided, Thames Water have undertaken their assessment based on a pumped flow of 44.1l/s, which was based on Thames Water's latest guidelines at the time of consultation.

The Sewer Impact Study has confirmed that the foul network does not have available capacity in the network downstream of the proposed connection manhole (north-east of the Site off the Newtown Road roundabout) to accept the proposed development flows.

Improvements to the existing foul network are required to enable the proposed connection to the sewer network, without causing any detriment to the level of service provided. The proposed improvement (offline storage and local online upsizing) works are outlined below:

- Connect development flows to manhole SU47653301 at a pumped rate of 44.1l/s
- Offline Storage at London Road SPS:
    - Provide approximately 1,671m3 off-line storage in the green area adjacent to London Road (Newbury) SPS, located at Faraday Road. Flows would enter the storage via a low level weir constructed within manhole SU47676411, set at a spill level of 71.25m AOD. Flows would need to be pumped back to the existing sewer network at manhole SU47676411

- Local sewer upsize outside of the development at Newtown Road
    - Upsize foul sewer to a diameter of 375mm between manholes SU47653202 and SU47652301 for a length of 163m
- Local sewer upsize at Newbury Train Station at Station Road
    - Upsize foul sewer to a diameter of 375mm between manholes SU 47662601 and SU 47663707 for a length of 83m
    - Upsize foul sewer to a diameter of 300mm between manholes SU47661601 and SU47663708 for a length of 149m

Due to the size of the proposed development Thames Water has confirmed that they will require two permanent depth loggers to be installed to monitor the flows at the downstream point of the development site and also at the proposed connection point.

Further discussions are ongoing with Thames Water to qualify and confirm their requirements for the upgrade works.

Effects

The connection of the proposed development to the foul water mains (including the laying of new links, diversions, protection of existing foul water mains and upgrade works) will form an integral part of general construction works and activities.

The specific works involved are not expected to give rise to significant effects and it is judged that there will be a **negligible** effect on nearby residential, ecological and landscape receptors.

Telecommunications

Supply Requirements

A development of this nature will require a suite of communication services, typically being:

- **FTTP:** Fibre to the Premises (FTTP) technology, where the fibre runs all the way to the home or business, from the local exchange is being deployed in certain areas. FTTP will offer the top current download speed of 330Mbp for residential properties and 1Gbps for commercial properties. This is labelled ‘Ultrafast Broadband’ by BT Openreach.
- **ADSL:** Asymmetric Digital Subscriber Line (ADSL) is the basic broadband service delivered over the traditional copper network and predominately in use in rural areas offering up to 24Mbps downloads, and up to 2.5Mbps upstream. This is adversely affected by distance from the exchange.
- **Cable Television:** Cable television services provide an option for the proposed domestic dwellings to replace the need for satellite dishes. Cable Television is provided by Virgin Media, BT (BT Vision) and GTC.
- **FTTC:** Fibre to the Cabinet (FTTC) relies on the existing copper network between the telephone cabinets but is then fed by fibre optic cables to the local exchange. This reduces the loss experienced over the copper network. Download speeds offered can be up to 80Mbps.

- **LLU:** Local Loop Unbundling (LLU) is the process of opening up a telephone exchange so that it can be used by a number of different broadband providers. These broadband providers are then able to use connections from the telephone exchange through to the customer's homes to deliver home broadband.
- **ISP:** Internet Service Providers (ISP) supplies the end user with internet access services over the telecom network. The speeds offered by the ISP are restricted by the physical network. The available ISPs delivering services over FTTP are currently limited but will increase as it is rolled out to more customers to increase the market.

Network Requirements

As BT has network infrastructure running within the existing highways adjacent to the site, it will therefore be a straightforward task to provide on-site communication ducts distributing services into the development from the existing infrastructure. Other operators may wish to provide network services although they are likely to connect to a nearby alternative point of presence (POP).

The proposed development is covered by the Newbury exchange. In addition to the Newbury exchange area, the Highclere exchange covers the west of the Site

In addition to BT Openreach, ADSL, and Virgin Media an initial review has identified the following LLU operators are present in the Newbury exchange: Sky, Talk Talk (CPW), Vodafone and Zen Internet. Within the Highclere exchange, BT Openreach, ADSL, Sky and Talk Talk (CPW) are present

The Newbury exchange (approximately 1.7km north of the proposed development) and the Highclere exchange (approximately 3.8km south west of the proposed development can offer FTTC and FTTP in some areas.

Effects

The connection of the proposed development to the telecommunication supply network will form an integral part of general construction works and activities.

The specific works involved are not expected to give rise to significant effects and it is judged that there will be a **negligible** effect on nearby residential, ecological and landscape receptors.

Offsite Utility Infrastructure

It is anticipated that diversions and/or protection of existing underground offsite utilities adjacent to the site will be required to accommodate the proposed development access points. Localised diversion and/or protections will be agreed for each location at the detailed design stage.

As the impact on the existing offsite utilities will be limited to the locations of the proposed new access points, the likely effects arising from the diversion works is likely to give rise to a **negligible** effect.

It has been judged that the utility installations during the construction period outlined above will largely involve the digging of trenches to lay new service cabling.

Table 12.4 - Summary of Impact Assessment – Construction Phase						
Receptor	**Sensitivity**	**Description of Impact**	**Inherent & Standard Mitigation Measures**	**Magnitude of Impact**	**Type of Effect**	**Significance of Effect**
Existing End User	Medium	Network Outages	Care taken when making new connections, live jointing or temporary shutdowns where necessary. Adopting good working Statutory Obligation practices e.g. 'licence to dig'.	Negligible	Temporary Short-term Direct	Negligible
Existing End User	Medium	Shortages of supply	Development of supply strategies and reinforcements where necessary.	Negligible	Temporary Short-term Direct	Negligible

Occupation Phase

The utility infrastructure diverted to accommodate the proposed development and new utility supply provision will be formally adopted by the incumbent utility provider and remain their responsibility with regard to future ownership, operation and maintenance.

Direct and indirect shortages of service supplies, both locally and in the wider network, are possible due to constraints on the supplying network. However, with mitigation implemented the effects will be **negligible**.

Inadequate provision of service supplies to a development can result in local and more widespread reductions in network robustness and supply continuity. Hence, when assessing the supply requirements for a development, it is essential that the appropriate supply operators are involved in assessing their existing network and given the opportunity to form strategies for dealing with supply growth. With this mitigation implemented, the effects will be **negligible**.

No significant effects are anticipated during the operation of the proposed development.

Table 12.5 - Summary of Impact Assessment – Operational Phase						
Receptor	**Sensitivity**	**Description of Impact**	**Inherent & Standard Mitigation Measures**	**Magnitude of Impact**	**Type of Effect**	**Significance of Effect**
Existing End User and Future End User	Medium	Shortages of supply	Development of supply strategies and reinforcements where necessary.	Negligible	Temporary Short-term Direct	Negligible
Existing End User and Future End User	Medium	Inadequate provision of service supplies	Involving the appropriate supply operators in assessing their existing network and given the opportunity to form strategies for dealing with supply growth.	Negligible	Temporary Medium Direct and/or Indirect	Negligible

12.6.2 Residual Impact Assessment

As there is no actionable mitigation proposed, the residual effects are as set out in *Section 12.6.3*.

12.7 Cumulative Impact Assessment

12.7.1 Sandleford Park West

The cumulative effects of development growth proposals for the remainder of the Sandleford Park allocation will be taken into account when finalising service supply strategies with the respective service and utility companies. This will ensure that the proposed development does not prejudice the delivery of utilities infrastructure for the whole of the Sandleford Park allocation.

As such, the proposed development will result in a beneficial effect as it will work as a catalyst that the local networks complete the necessary upgrades so that they are capable of supplying development within the entire allocation without prohibitive constraints.

12.7.2 Cumulative Impact Assessment

The cumulative effects of development growth proposals in the vicinity will be taken into account when finalising service supply strategies with the respective service and utility companies.

As such the development will result in a beneficial effect as it will work as a catalyst that ensures that the local networks complete the necessary upgrades so that they are capable of supplying all development proposals without prohibitive constraints.

12.8 Summary

The significance of the effects in relation to utilities at the site has been assessed. Where possible, the significance has been quantified, and where this has not been possible, it has been assessed on the basis of professional judgement.

The potential significance of the effects assumes that the mitigation measures outlined will be implemented and are fully in accordance with current guidance and the requirements of the regulating authorities.

Standard good practice mitigation measures and statutory obligations will be employed during the development which will ensure that there will be **negligible** effects arising as a result of the Utilities connections to the site.