16.0 INFRASTRUCTURE AND SERVICES

16.1 INTRODUCTION AND METHODOLOGY

16.1.1 Waterman Boreham are instructed to advise on the potential effects on the service supplies associated with the proposed Sustainable Urban Extension together with the Strategic Employment Site (SES). This Chapter therefore considers the capacity of the existing network and the location of these services, together with the details of any measures associated with new supplies.

16.1.2 The key services that have been considered are:-

- Electricity;
- Water;
- Gas;
- Telecoms;
- Foul Drainage.

16.1.3 Surface water drainage is assessed in **Chapter 10: Water, Hydrology and Drainage**.

16.1.4 A plan illustrating the location of the existing services is shown at **Appendix 16A, Figure 16.1**.

Methodology

16.1.5 The methodology adopted in this Chapter of the **ES** sets out an appraisal of the baseline conditions, followed by an identification of the potential effects due to the proposed development. Such effects are then considered and mitigation measures provided where appropriate together with further investigation as necessary.

16.1.6 During the development of this report, the following statutory bodies and interested parties have been consulted in relation to the proposals:-

- E.on;
- National Grid (Electric);
- Severn Trent Water;
- National Grid Gas;
- BT.

16.2 BASELINE CONDITIONS

16.2.1 The land currently operates as farmland in the main with limited service supplies to the few properties within the overall site. However, there are a number of network services that bisect the land and these are shown on the plan attached at **Appendix 16A**. These include:-

- Overhead power lines Extra High Voltage;
- Overhead power lines High Voltage;
- Low voltage underground power supplies;

- Severn Trent trunk main;
- BT plant both overhead and underground.

16.2.2 Detailed investigations have been undertaken by Premier Energy to ascertain the location of all services crossing the site and in the vicinity of the site.

16.3 PROJECT DESIGN

Electricity

16.3.1 E.on have confirmed that in order to serve the load demand of the site it will be necessary to establish a new, two transformer 40MVA primary substation. The substation will be situated on a reserved site next to the Hinckley Road / Braunstone Way Roundabout, which is understood to be in the ownership of E.on. This substation will be fed from the Leicester Grid substation and 4 x 2.2km of HV cable will be laid from the substation to the site.

16.3.2 From the primary substation there will be an 11kv HV network distributed to the secondary substations located at various points around the site.

16.3.3 High voltage overhead electricity cables are situated to the southern end of the site. The development will not be affected by these pylons with the development located outside of the required easements. In practice, the proposed housing will be in excess of 25 metres from the line of these cables.

Water

16.3.4 Severn Trent Water has confirmed that the existing water supply network surrounding the site can afford an adequate supply of water to the proposed development and therefore no abnormal works should be required. The global strategy will be to provide a distribution network of mains to serve the dwellings with larger supplies for the commercial development.

16.3.5 In relation to the existing trunk main, which bisects the site on a north-west alignment, it is considered that the necessary easements can be provided and the existing main will remain in place. Precise details of the mains location will be determined to ensure the necessary easement. Whilst the current masterplan may show some development over the indicative alignment of the main, this will be amended at the detailed stage to maintain the easement over the entire length.

Foul Drainage

16.3.6 Severn Trent Water has provided details of their existing foul water network in the vicinity of the site. These indicate that the foul drainage system for the residential areas to the north currently discharge to the east, crossing the M1 south of the Motorway Service Area, and connect with strategic sewers in the vicinity of Lubbesthorpe Way. These then in turn connect with the Sewage Treatment Works at Enderby, some 3km to the south east of the site.

16.3.7 Based on the existing sewer network it is envisaged that the proposed development will outfall via new sewers connecting the site with the strategic main to the east of the motorway, making use of the new M1 bridge or via the existing culvert to the south of the existing MSA. In addition, it is proposed to connect to the south via Leicester Lane.

16.3.8 Such connections will require reinforcement of existing sewers and many require pumping on some sections of the new sewer system. Severn Trent Water advise that the final design proposals will be supported by network modelling and strategic planning to inform the scheme. Furthermore, it is anticipated that improvements will be required at the treatment works over the course of the development, but not the initial phases. The extent of such measures will be the subject of a detailed appraisal.

Gas

16.3.9 The National Grid Gas has advised that there is sufficient capacity within the medium pressure gas network with the nearest main approximately 1km from the site. Such a supply to the MP system will necessitate onsite gas governors from which a low pressure network will be established.

Telecommunications

16.3.10 There are currently a number of services crossing the site some of which may need to be diverted as part of the development proposals.

16.3.11 Both BT and Virgin Media have confirmed that existing services within the vicinity of the site can be extended to serve the proposed development.

16.3.12 There are two telecom masts on site, one close to the M1 services and the other to the south near Harolds Lane. It is considered that neither of these will be affected by the development. It is also understood that there is an O2 mast located at Old Warren Farm and this may require relocation as part of the development.

Potential Effects – Service Supplies

16.3.13 The potential environmental effects of service supply relate to both the operational and constructional phases of the development. These effects are as follows:-

Operational Effects

- Direct and indirect shortages of service supplies, both locally and in the wider network due to constraints on the supply network;
- Direct and indirect contamination of surface water, soil and potentially ground water contamination due to surcharging the foul water network or the discharging of untreated foul flows.

Construction Effects

- Direct short term loss of supply due to connections to the supply network.

16.4 ASSESSMENT OF EFFECTS

Operational Effect:-

- Direct and indirect shortages of service supply, both locally and in the wider network due to constraints on the supply network.

16.4.1 Inadequate provision of service supplies to a development can result in local and more widespread reductions in the network and supply continuity. Accordingly 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.

16.4.2 For the mitigation of the potential effects of the development, all service companies have been involved in the initial consideration of the scale of development proposed and the necessary capacity requirements. Accordingly, the phasing of the development will include the necessary service provision and measures to ensure that the supply demands of the proposed development and ongoing requirements are met.

16.4.3 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. Accordingly, the proposals being developed by the supply companies will ensure the minimum regulatory standard is maintained and that no environmental effects result from supplying the site.

16.4.4 The service supply companies are developing phased enhancements to their infrastructure to ensure the availability of capacity and robustness of the network as the phases progress.

16.4.5 The potential operational effect is assessed as **nil** and not significant.

Operational Effect:-

- Direct and indirect contamination of surface water, soil and potential groundwater due to surcharging of the foul water network or the discharge of untreated foul flows.

16.4.6 When assessing the potential effects of the foul drainage, it is essential that the proposed system is designed to convey foul water safely from the site to a suitable treatment facility without overloading the existing sewage system. Furthermore, it is also important that the treatment facility is designed to accommodate the load from the proposed development and that the treatment achieves a discharge quality that does not impact on to quality standards in the receiving watercourse.

16.4.7 Accordingly Severn Trent Water has been involved in discussions regarding the investigation and impact of the proposed development on both the sewer network and also the treatment works at Enderby. As has been identified new sewer provision will be made to connect the site with the existing strategic sewers. Where necessary local improvements will be made to the strategic sewers to accommodate the development

flows. Likewise, improvements necessary to the treatment works will be undertaken and planned into the phasing of the development.

16.4.8 Any new network provision and reinforcements will be coupled with development strategies that reduce the discharge of foul sewage through water conservation measures in the form of low flow showers, water saving toilets and other reduced water strategies.

16.4.9 Accordingly the detailed phasing of improvement measures will be developed with Severn Trent Water. As a result of these measures, it is considered that the environmental effects are **nil**.

Construction Effect:-

- Direct short term loss of supply due to connections to the supplying network.

16.4.10 Network outage may occur while making new connections to the supply network or through accidental drainage to existing infrastructure.

16.4.11 In mitigation of the need to shut down supplies while making new connections, network operators have developed methodologies to permit 'live jointing' or the like 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.

16.4.12 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 and Safety file, to control site operations. Such means of control will substantially reduce the potential risk of damage to the supplying network.

16.4.13 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.

16.4.14 Accordingly, this potential operational effect is assessed as **minor** and not significant.

16.5 STATEMENT OF SERVICE SUPPLY EFFECTS

16.5.1 During the operation of the site, it is considered that there will not be any adverse environmental effect associated with the infrastructure service provision.

16.5.2 Through the construction phase of the development it is recognised that there may be a **minor** effect on the infrastructure services however, that effect is considered to be not significant.

16.5.3 Accordingly, it is considered that no significant environmental effects will result associated with the infrastructure service supply and foul drainage from the development.