

16.0 INFRASTRUCTURE AND SERVICES: REPLACEMENT CHAPTER

16.1 INTRODUCTION AND METHODOLOGY

- 16.1.1 Rodgers Leask Ltd has been commissioned to advise on the environmental implications of the service requirements for the proposed development. This Chapter of the Environmental Statement considers the effect of the development upon existing service infrastructure, the effect of the development upon services to existing properties in the area and the required works to facilitate service provision to the proposed development. This Chapter focuses upon the provision of supplies to the development while the discharge of wastewater and rainfall is assessed at Chapter 10: Water, Hydrology and Drainage.
- 16.1.2 The proposed development comprises a Sustainable Urban Extension (SUE), coupled with a Strategic Employment Site (SES). It is envisaged that the completed development would provide up to 4,250 homes and 21 hectares of employment.
- 16.1.3 Premier Energy has produced a 'Utility Investigation Report' that examines the presence of existing services within the site, and identifies the capability of this plant to support the development proposal. The full report is contained at Appendix 16A.
- 16.1.4 An 'Energy Statement' (included within the Supporting Documents to the ES) has been compiled by Wardell Armstrong (December 2011) on the use of renewable energy sources and describes the options available to produce and use renewable energy. These energy sources range from the well known solar photo voltaics and wind turbines to anaerobic digestion plants. Elements of the statement are incorporated within this Chapter as appropriate.

Location

- 16.1.5 The proposed development site comprises of two distinct land parcels to the west of Leicester, located immediately west of the M1 and to the north and south of the M69 as shown on the Illustrative Masterplan included at Appendix 2A, Figure 2.3.
- 16.1.6 The northern parcel is bounded to the south by the M69 trunk road and to the west by the M1 corridor. Farmland lies immediately west of the site and the Leicester Forest East residential area is located to the north. The site is within close proximity to the city of Leicester, as well as having good highway links with its close proximity to both the M1 and M69 corridors.
- 16.1.7 The southern parcel is located immediately to the south of the M69; its eastern boundary is the M1 corridor. The grounds of Enderby Hall and woodland lie adjacent to the site's western boundary. Leicester Lane contains the site to the south.

Assessment Methodology

- 16.1.8 To assess the environmental effect of services provision to a site, an assessment of two separate aspects of the proposal is required; the first is the effect of the development upon existing supplies within the area, the second is with regard to the provision of services to the new development to ensure that the services are both adequate and do not have a negative effect upon the environment. The assessment takes the form of an examination of existing service records, along with initial consultation with the statutory undertakers responsible for

the supply of services, to identify whether sufficient supplies can be provided to serve the development.

- 16.1.9 Secondly, an assessment has been undertaken of the supply requirements of the development to ascertain whether the supply of services has an environmental effect. For the purpose of this assessment, energy requirements have been determined through a review of the 'Utility Site Investigation Report', produced by Premier Energy and the 'Energy Statement' produced by Wardell Armstrong to identify opportunities for the use of sustainable energy within the proposed development.

16.2 PLANNING CONTEXT

- 16.2.1 Due to the privatised nature of the service industry there are no national planning policies that cover the provision of service infrastructure.
- 16.2.2 However, the provision of infrastructure is, in certain instances, subject to examination by the planning authority where above ground features are required, and as such these would be considered at a local level.

Blaby District Local Plan, 1999 (Saved Policy review)

- 16.2.3 A review of this current planning policy with regard to service infrastructure showed that there were no saved policies that have implications upon services.
- 16.2.4 Refer to Chapter 3: Planning Policy for a more detailed summary of the current local planning policy position in relation to infrastructure.

16.3 BASELINE CONDITIONS

- 16.3.1 The site would require infrastructure to service both the SUE and SES. This report explores the provision of infrastructure to supply the development as well as the environmental aspects of supplying the development with services.
- 16.3.2 In order to understand the site in terms of services, records from all of the major service providers within the local area have been procured and examined to establish the location of existing services and ascertain how these would affect the Masterplan proposals. Written responses from the statutory undertakers are appended to the Premier Energy Report at Appendix 16A.

Water Supply

- 16.3.3 The application site is crossed by Severn Trent Water Limited's supply network. This section of the report discusses the current infrastructure from the north of the site to the south of the site.
- 16.3.4 Examining the northern parcel in the first instance, a 4" water main exists to the very north-east of the site.
- 16.3.5 On the periphery of the residential area to the north of the site, an 8" water main traverses from east to west.

- 16.3.6 An existing 1000mm water main crosses the site in a south-easterly direction from the site's western boundary. This substantial piece of infrastructure bisects the site, potentially providing a good strategic water supply for the development.
- 16.3.7 An existing 180mm water main skirts the western boundary with supplies of 2" feeding off this into the site.
- 16.3.8 Towards the south-eastern corner of the site an existing 18" water main can be seen that crosses from the M1 corridor through the site, exiting towards the M69 corridor which it crosses before entering the southern parcel.
- 16.3.9 The southern parcel contains the 18" water main described above which runs from the northern boundary in a westerly direction where it exits the site. A 2" water main can also be found entering this parcel in a southerly direction from the Fox Covert woodland area.

Easements / Diversions

- 16.3.10 On examining the local supply records it is evident that several services exist, crossing through and running adjacent to the site. It is considered that diversions would be feasible within the site although, where possible, infrastructure would be afforded a suitable easement, to be agreed with Severn Trent Water Limited.

Electricity Supply

- 16.3.11 A reliable power supply is essential for modern living and employment. Modern life is dependent upon electricity as the predominant source of energy. From electricity it is possible to provide both light and heat; it therefore represents a very important energy source. The development of increasingly sustainable methods of power generation and the improvement in efficiency of the devices using electricity make it an increasingly sustainable and versatile form of energy. The incorporation of a good electricity supply into the design of the development is intrinsic to its success. The existing electricity infrastructure within the area has been identified through the request of records from E.ON, who operate the electricity network for the local area.
- 16.3.12 Within the northern part of the site, an existing high voltage cable connects the Kings Drive substation to the Old Warren Farm substation. An 11kV cable overhead line crosses the site from the Leicester Forest East to the site's western boundary and feeds the Bridle Lane Lubbesthorpe substation. The cable traverses the site to the west and connects to Old House Farm and The Lawns substations. It continues in a south easterly direction through New House Farm substation to Hopyard Farm in the site's south eastern corner.
- 16.3.13 Enderby substation, a Grid Switching Station, is located at the south western corner of the northern parcel. This is a substantial piece of infrastructure with 400kV overhead pylon routes to/from the grid switching station to the north-west and south west of the site. This also connects to the 132kV cables that travel eastwards to the site's boundary with the M1. From the substation there are also 132kV cables exiting from its northern boundary, arcing into the site before exiting via the western site boundary.
- 16.3.14 An 11kV cable crosses the southern parcel in a north easterly direction towards the M1 / M69 island (Junction 21) where there is a substation just beyond the site boundary. Connecting to

the 11kV cable at its south western end is the Warren Farm substation. This substation connects the nearby Warren Cottages and Warren Farm with a low voltage supply.

Easements / Diversions

16.3.15 The electricity records indicate that several services exist, crossing and adjacent to the site. It is considered that diversions would be feasible within the site although, where possible, infrastructure would be afforded a suitable easement as agreed with E.ON.

16.3.16 The Extra High Voltage network (EHV 400 – 132 kV) is a strategic supply and any diversionary works required to accommodate development would require long term planning if this is required.

16.3.17 A review of the report by Premier Energy identifies that the HV (11kV) network is likely to require diverting and maintaining. It is expected that diversions would be via the road network. It is anticipated that to facilitate the development several diversions would be required. However, the exact detail of these could not be determined at the time of producing the Utility Investigation Report.

Gas Supply

16.3.18 Gas is the predominant source of energy used to provide homes with heating. It is a fossil fuel, sourced from deep underground voids. As a non-renewable form of energy it is less favourable than other renewable forms. However, the generation of electricity presently relies upon the use of fossil fuels at source and until the bias changes to more sustainable electricity generation sources, the use of natural gas would continue to represent a reasonable alternative.

16.3.19 From a review of the National Grid service records it can be seen that no gas supplies exist within the site. However, gas services are noted to the periphery of the application site serving the Leicester Forest East residential area to the north.

Easements / Diversions

16.3.20 Since no gas services are present within the site, diversions or easements would not be required for existing equipment. However, proposed infrastructure would be designed to enable easements to be provided as required by National Grid.

Telecommunications

16.3.21 High capacity data networks are important to provide sufficient data capacity for modern living within any new development. In addition to cable infrastructure, wireless devices rely upon the mobile telephone network to deliver multimedia services and the infrastructure associated with these has also been noted.

16.3.22 An examination of BT Openreach and Virgin Media records has been undertaken for the site to ascertain the infrastructure that is within the site boundary. Investigations found that no Virgin media infrastructure is present within the site area. However, services are noted within the Leicester Forest East residential area to the north of the site.

16.3.23 The records of BT Openreach show services within the site boundary and these are described, from north to south as they are shown on the records, below.

- An overhead cable traverses from the northern boundary of the site (rear of properties on Forest House Lane) to Old Warren Farm. It is understood that an O₂ network mast exists at Old Warren Farm which may require relocation as part of the development proposals.
- An overhead supply crosses the site from its western boundary, servicing New House Farm.
- BT cables are laid along the alignment of Beggar's Lane at the western periphery of the site.
- Several BT cables exist in the vicinity of Hopyard Farm; these services connect into the southern parcel of the site via a vehicular bridge crossing the M69. To the west of the site within the southern boundary, BT cables serving the Enderby substation can be found.
- Services from the northern parcel are noted as providing supplies to Warren Cottages and Warren Farm.
- BT ducting is noted on Warren Park Way, an industrial area to the west of the site. This is thought to service the mobile telephone network through a local mast.

Easements / Diversions

16.3.24 Examination of the telecommunications records indicate that several services exist, crossing, and adjacent to, the site. It is considered that diversions would be feasible within the site, although, where possible, infrastructure would be afforded a suitable easement as agreed with BT Openreach. Enquiries from Premier Energy to BT Openreach has revealed that five locations on the site are anticipated to require diversion works. However further development of the proposals would enable this to be rationalised.

Sewerage

16.3.25 The public sewerage network is owned and operated by Severn Trent Water Limited (STWL), which provides foul and storm sewerage systems. The foul systems ultimately convey flows through to a sewage treatment works. Consultations with STWL regarding the drainage strategy for the site have indicated that foul flows from the northern parcel would be conveyed through a network of sewers to the Wanlip Sewage Treatment Works. No sewerage connection serving the southern parcel exists. However, a gravity connection passing under the M1 (through the Leicester Lane bridge) may be possible. If a gravity connection cannot be secured this element of the development will drain to a pumping station to enable flows to be elevated.

16.3.26 With regard to storm water, the final proposed detailed layout and earthworks strategy would have some effect upon the viability of catchments. However an observation of the present topography shows that the Northern parcel divides into five separate natural catchments, draining to existing ditches / water courses.

16.3.27 For the southern parcel there are effectively two natural catchments: approximately two thirds of the site area drains towards the M69 / M1 junction (north-easterly) and the remainder drains to the southern site boundary. Again it is envisaged that surface water would be taken from the developed area to these watercourses via a Sustainable Urban Drainage System that

provides not only attenuation of flow volume but also a degree of water quality treatment, evapotranspiration and ex-filtration of flows directly to the ground.

16.4 PROJECT DESIGN

Potential Effects

- 16.4.1 The provision of a large development such as this would place additional demand upon local services, requiring off-site upgrade works to provide sufficient capacity to adequately service the development and ensure that adjacent areas do not experience interruptions in services as a result of the additional demand.
- 16.4.2 The source of energy places demand upon national infrastructure resulting in the need to provide additional resources to serve the development. The additional resources required could be fossil fuels placing additional demand upon the diminishing levels of fossil fuel available along with contributing to pollution.

Mitigation

- 16.4.3 To ensure that services to new and existing premises are sufficient, phasing of the development would be undertaken to ensure that infrastructure improvements are made in advance of the additional demands being placed upon them to ensure service levels are maintained.
- 16.4.4 To reduce the effect of the development upon both the diminishment of fossil fuel and its consequential polluting effect, it is proposed to utilise the latest construction techniques to minimise demand for energy, and to provide within the site a significant level of sustainable technologies to provide long term solutions. Sustainable energy sources are to be incorporated within the development. Solar hot water would be provided for the majority of residential properties. Where beneficial, solar panels for domestic electricity would be incorporated within the development. Based upon the active sustainable measures of the solar water heaters and panels, Wardell Armstrong have advised that the provision of solar water heaters would provide 32% renewable energy on the site. A total of 80 detached dwellings fitted with Solar Photo Voltaics provides a further 17% renewable energy. With the passive measures of modern building standards that reduce energy demand, the development presents a low impact upon energy resources. Outside of the development footprint, new technologies are evolving to improve the efficiency of grid energy production and these would consequentially be used by the development for energy requirements beyond what would be produced onsite.

Water Demand

- 16.4.5 To supply the development with sufficient water, consultation has been undertaken with Severn Trent Water Limited. To ensure that the supply network can provide the levels required the development would be served from the existing 18" main that bisects the site. This would be connected to the development areas via branch pipelines to provide distribution of the services throughout the site.

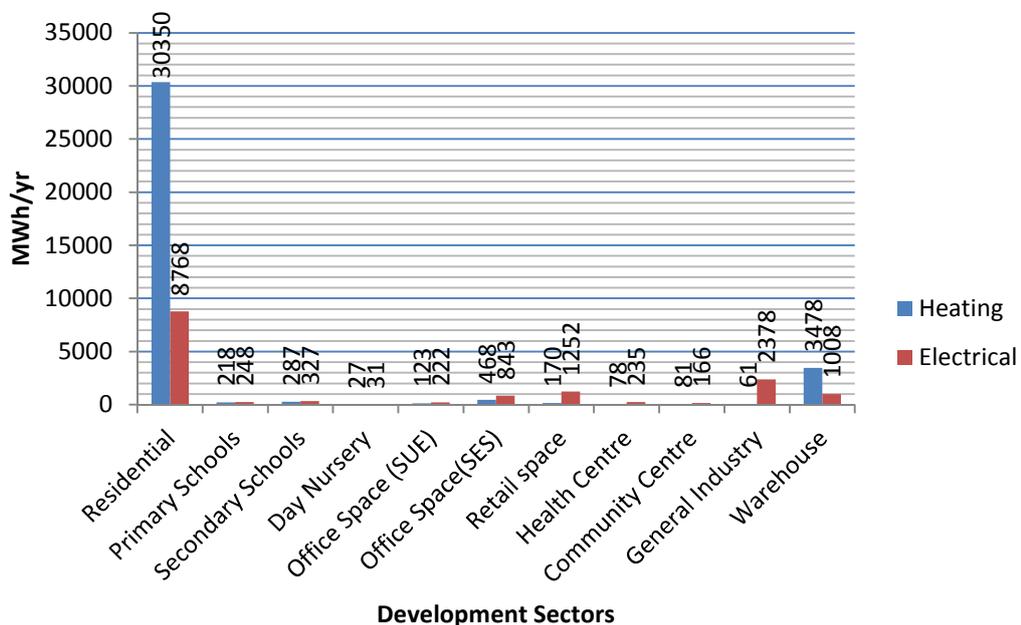
16.4.6 No detailed demand level assessments have been carried out. However, Severn Trent Water Limited has confirmed that supplies can be provided to the site (Appendix 16A). Since the supply is within the site, there is no requirement to bring in new external water infrastructure.

16.4.7 The Masterplan retains an easement for this existing main, therefore the development would not require any diversionary works.

Energy Demand

16.4.8 Wardell Armstrong have identified the energy demand for the Project as shown in the chart below. These calculations take into account the levels of improved building efficiency required by the Building Regulations 2010 (Statutory Instruments, 2010).

Figure 1: Energy Demand Assessment



Source: (Energy Statement, Wardell Armstrong, 2011)

16.4.9 From the chart above it can be seen that the residential element of the development has by far the greatest energy requirement, with warehousing, industry and retail having notably more energy requirements than the remaining sectors.

Electricity

16.4.10 The total load for the proposed development, as reported by Premier Energy is 11.75 Mega Volt Amperes (MVA)

16.4.11 To service the site E.on has confirmed that a new, two transformer, 40 MVA primary substation would be required. This new facility would provide the power requirement for the proposed development and also residual capacity for the network. A cost sharing exercise between E.ON and the developer would be undertaken. The substation would be constructed adjacent to the Hinckley Road / Braunstone Way roundabout, which is some distance to the north-east of the site. This land is understood to be in the ownership of E.on. The exact

routing of connecting cabling between this primary substation and the site has not yet been specified. However, this would require a crossing of the M1 corridor at some point to penetrate into the development land and would be afforded via the most suitable route. The substation would be connected to the Leicester grid substation and 4 HV cables would feed the site laid over a distance of approximately 2.2km. The lead-in time for the construction of this facility is 16 – 18 months and this therefore needs to be in place before the development can be connected to the electricity supply. Connection works are also limited between the months of April – October so this may impact upon the lead-in time, if the timing of the Project does not coincide with this. From this new primary substation, an 11kV HV network would be used to distribute electricity via secondary substations to users. This would then be distributed and transformed to low voltage via a network of approximately 14 No. 500 kVA substations distributed around the site.

Gas

16.4.12 National Grid has been consulted with regard to a gas supply at the site. Due to the level of demand anticipated, supplies would need to be accessed from the Medium Pressure Network, which passes approximately 1km from the site in Hinckley Road to the north of the site.

16.4.13 National Grid has confirmed that it is feasible to provide this service to the site and, as a consequence of the supply being medium pressure, onsite gas governors would be required to enable the pressure from this infrastructure to be reduced to a low pressure level suitable for development supplies.

Sustainable Measures

16.4.14 In addition to the above, renewable energy sources have been considered so as to contribute to both the demand from the site and also for export to the National Grid.

16.4.15 Following an initial scoping assessment of all sustainable energy technologies to determine appropriateness for the site at Lubbesthorpe, Wardell Armstrong carried out detailed assessments of the following sources of renewable energy:-

- Wind
- Solar
- Ground Source Heat Pumps
- Biomass

16.4.16 Wardell Armstrong conclude that some of the options for renewable energy were considered impractical for use at Lubbesthorpe. However, it was recommended that the following remaining methods of providing renewable energy were potentially suitable for the development at Lubbesthorpe:-

- Solar Hot Water – provision of flat plate collectors upon the roofs of properties to increase base water temperature from that received from the supply.
- Solar Photo Voltaics – provision of solar panels upon roofs to provide electricity generation.

- Ground source heat pumps – installing coils and pumping equipment into the ground to gather heat from the surrounding ground to raise the temperature of the incoming water supply.
- Combined Heat & Power and District Heating (CHP & DH). The construction of a centralised energy production facility that provides for all, or part of the development demand for heat and power.

16.4.17 An initial phase has been assessed comprising the incorporation of Solar Thermal for water heating on all dwellings and the provision of Solar Photo Voltaic's on 80 detached dwellings could provide 32% and 17% respectively of the total energy demand being met by renewable energy sources. The proposed masterplan shows a significant number of detached dwellings within the development, and detailed assessment would be required to ensure that the most appropriate locations for solar PV installations were considered overall. This would be the subject of further assessment as proposals evolve further. Assuming 80 detached dwellings could be suitably fitted with solar PV within the first phase would enable compliance with the 2013 Carbon Compliance levels.

Energy Efficiency and BIR

16.4.18 It is considered that Solar Hot Water could be implemented on all properties relatively economically and would meet a large proportion of the carbon compliance levels that are required. In addition it is feasible to assume that a proportion of dwellings could be fitted with Solar Photo Voltaics to provide electricity with relative ease. However this would be subject to detailed design to assess feasibility dependent upon the final layout and building orientations. This approach is scalable and can be integrated within the development as it grows.

16.4.19 It is considered by Wardell Armstrong that the above measures could be practically and successfully employed at Lubbesthorpe, therefore contributing to the reduction in the production of CO₂.

16.4.20 Furthermore, if the recommended measures are implemented, the contribution of energy produced would provide a significant quantity of the overall energy requirements of the development and could enable some export of energy to the electricity network.

Telecommunications Demand

16.4.21 Both BT Openreach and Virgin Media have confirmed that they have networks with suitable capacity within the local area that can be extended to provide services to the site. It is not known from the available BT Openreach records if the network within the immediate vicinity of the site is a conventional cable solution or a fibre optic installation, however BT has verified that there would be sufficient capacity to cater for the proposed development. At this stage BT has not detailed where service supplies would be provided from, this would be established in due course.

Foul Sewerage Disposal

16.4.22 Foul sewerage draining from the site has been discussed with Severn Trent Water Limited (STWL) to determine any potential problems at the outset. STWL has indicated that foul drainage would be taken to Wanlip Sewage Treatment Works. STWL has assessed this and

identified that the Wanlip Sewage Treatment Works has sufficient capacity to cater for the proposed development. To connect to the network, an existing 300mm diameter pipeline has been identified, this currently serves Leicester Forest East Motorway Service Area. STWL has suggested that this pipeline would require hydraulic simulation modelling to determine whether or not it has sufficient capacity to cater for the development. Furthermore, due to the levels that the pipe is constructed at, the southern part of the site would not be able to drain to this pipeline under gravity. Since this pipeline has a potential capacity issue it would seem sensible to consider the construction of a modest sized pipeline under the M1 to drain the southern part of the site. The residual capacity in the existing 300mm could then be utilised to capacity for the northern part of the site.

- 16.4.23 For the southern land parcel no existing foul sewers exist. However it appears that a sewerage connection could be made to the network east of the M1 along Leicester Lane (under the M1). This network conveys flows to a small pumping station which is known to have operational problems due to odour. STWL indicate that they believe this to be partly due to trade waste discharges; chemical dosing is presently used to mitigate this.
- 16.4.24 In addition, odour can be produced from sewerage due to septicity; a problem manifested by sewerage that is not conveyed at a high enough rate and left to stand. This tends to happen in locations where flows are low and the rising mains from the pumping station are quite long, giving lengthy retention times that give rise to the production of Hydrogen Sulphide, with the consequential 'bad egg' smell at the outfall from the rising main. The introduction of further flows to this network would increase the pumping time and thereby reduce retention times and consequently the production of Hydrogen Sulphide within the rising main. A hydraulic study of the network would be required to assess pump operation and whether or not the present pumping station has sufficient capacity to deal with the additional flows from the development locally.
- 16.4.25 It appears probable that the northern part of the southern parcel may need to be pumped into the southern section of the site where a gravity connection could potentially continue to convey flows to the catchment described above. A drainage strategy would enable a more detailed examination of the possibilities for the site to be examined.

Storm Water Disposal

- 16.4.26 The northern parcel of land has been briefly examined to assess the topography and possible drainage routes and is divided into five natural catchments.
- 16.4.27 The southern parcel of land is divided into two natural catchments, with approximately two thirds of the site draining towards the M1 / M69 junction (M1 Junction 21), and the remaining third draining to the southern site boundary.
- 16.4.28 It would be the intention to use the existing local watercourses where practicable to receive the storm water from the site areas. However, it would be normal practice to ensure that flow rates during design events do not exceed flow volumes of what would be expected to drain from the existing Greenfield site to these watercourses. This would be facilitated through the incorporation of attenuation measures.

16.4.29 These may be through the use of Sustainable Urban Drainage Systems, such as swales, green roofs, soakaways or attenuation basins that facilitate the storage of the peak runoff, releasing it at a much lower rate of discharge.

16.4.30 To fully assess this it would be necessary to produce a drainage strategy which explores all drainage options for the site and identifies the individual catchment areas for the finished Masterplan.

16.5 ASSESSMENT OF EFFECTS

Operation Effects

16.5.1 Due to the increased demand levels placed upon services, outages or shortages can sometimes be noted when demand levels are increased. In order to prevent this, the phasing of the development would be such that the infrastructure required to provide sufficient services is in place prior to the development aspects coming on stream.

16.5.2 Each phase of development would be carefully discussed and planned with the statutory undertakers to ensure that the loadings placed by the individual phases are met with sufficient capacity in the network.

16.5.3 Through this methodology the network would actually have additional residual capacity in the lead up to each phase of development. The environmental effect of this is therefore negligible.

Service Provision

16.5.4 The provision of services that rely upon the usage of fossil fuels is unsustainable at the outset. Therefore, as part of the proposed development process Wardell Armstrong were commissioned to examine the sustainable energy options available that would be effective for the proposed development. Section 16.3 above highlights the demand levels and the proposed incorporation of sustainable energy options within the development. Through constructing the development to recommended current energy efficient design standards as well as the incorporation of sustainable energy technology, the proposed development presents a negligible effect upon energy resources.

Construction Effects

Service Installation (below ground)

16.5.5 The majority of services would be installed underground, through open cut methods of construction. This method of construction requires excavation by mechanical means (by hand where situations dictate) to provide a trench within which to lay the service. The service is generally laid, surrounded by a bedding material (to protect the integrity of the service) and backfilled with suitable material, dependent upon the potential loading exerted upon the trench. Water supply, gas supply and some electricity and telecommunications equipment would all be installed through the excavation of trenches.

- 16.5.6 Excavation would, in the most part, be undertaken by mechanical means within low risk areas, or by hand where the location of services or where the potential for hazards inappropriate for excavation using a machine are likely.
- 16.5.7 Ground conditions are assessed at ES Chapter 11: Land Contamination. The Chapter suggests that some of the site may be subject to contamination and identifies an appropriate mitigation strategy for each possible contamination issue. The likely residual effects following implementation of the recommended mitigation strategy are summarised at Table 11c of the Chapter. There are no significant residual effects identified within this table.
- 16.5.8 The environmental effects of carrying out trench excavations are discussed below:-
- Effects to the local ground water levels – trench working may require the water table to be reduced below the foundation level of the trench.
 - Dust & Debris – the excavation process would loosen small particulates which in dry weather can become airborne.
 - Gas release – excavation below ground level could release gas trapped within voids and these would be released into the local atmosphere.
 - Instability – instability in the ground through the excavation of a trench is possible.
- 16.5.9 The shallow construction of water mains is unlikely to affect the local ground water levels. If work is required within the region affected by groundwater, pumps or dewatering equipment would be installed. If the ground water level is reduced sufficiently, dewatering could be reduced allowing the local ground water levels to be retained just below the trench foundation. It is likely that any effect to the local ground water levels would be transient and minimal therefore the effect of this aspect of the work upon the environment is considered to be negligible.
- 16.5.10 In the longer term, trench bedding material, used to provide protection to the pipeline, can often be a medium for groundwater to travel. If groundwater is perceived to be problematic in the zone of the trench, clay tanks can be installed to prevent migration of groundwater.
- 16.5.11 The management of dust and debris from excavations is required during construction. The main issue with regard to dust and debris is the migration of this to the external area away from the site. It is usual practice on most construction sites to provide wheel wash facilities on the egress from the site to the external road network. Within the confines of the site, dust would be evident due to earthworks and the movement of surplus materials. However, controls would be put in place within the site to ensure this is managed. To prevent the issue of dust and debris leaving the site, the mitigating measure of a wheel wash facility would ensure that the residual environmental effect is negligible.
- 16.5.12 It is unlikely that gas release would present a problem on a greenfield site, however geotechnical information would need to be reviewed to ascertain if the risk of this is of any significance. If the geotechnical study highlights an issue of ground borne gases, a suitable monitoring or remediation regime would be implemented. The risk of this to the local environment would therefore be negligible.
- 16.5.13 Trench instability can cause localised ground movement, as well as changes to the ground water regime of the local area. It would be necessary for trenches to be stabilised in a suitable manner. Trenches would require either lateral retention through positive pressure trench

sheets / boxes, or the battering back of the trench sides to a suitable angle of repose for the materials being excavated. If works are undertaken in the manner described, the residual environmental effect would be negligible.

Service Installation (above ground)

16.5.14 There would be a need for electricity to have some elements of infrastructure elevated. The main impact would be any necessary excavation or displacement due to the installation of poles or masts. The installation process of these would be localised and have minimal effects. The environmental effect of this would be negligible.

Discharge of Pollutants to Watercourses

16.5.15 During construction works, potentially polluting liquids such as diesel and petroleum would be brought onto site. Additionally, if dewatering works are required, the slurry that is pumped contains a significant sediment concentration that can be damaging to watercourses. As part of the site management, any fuel sources, such as diesel bowsers, would be managed within suitable bunded systems to prevent spillage to watercourses.

16.5.16 Pumped water from any excavations would be passed through settlement facilities before returning water to the ground, enabling the ground to provide filtration, removing suspended solids, prior to its re-entry to the watercourse via the ground water table.

16.5.17 It is considered that the proposed management proposals mitigate the risk of any polluting substance to a negligible level.

Cumulative Effects

16.5.18 The effect of a development upon the environment can be classed as negligible but in combination with other development proposals or changes to the local environment, these effects can combine to result in more extensive effects. It is understood that Sustainable Urban Extensions at Earl Shilton and Barwell have been identified for consideration with this proposed development.

16.5.19 It is considered that these SUEs are located a significant distance from the application site and any cumulative effects would be negligible.

Residual Effects

16.5.20 Following the assessment and mitigation measures it is envisaged that any residual effects would be negligible.

16.6 STATEMENT OF EFFECTS

16.6.1 Environmental effects of the proposed development have been examined with regard to the provision of services to the development, and the effect of the service provision for the environment can be categorised as negligible overall.