

## **8. Analysis of Planning and Environmental Issues**

### **8.1 Introduction**

- 8.1.1 This section of the Statement considers the principle of the development and addresses the relevant planning and environmental issues.
- 8.1.2 The analysis takes into account the findings of the ES, drawing upon the other documents submitted with the planning application, including the Design and Access Statement, Flood Risk Assessment, Energy Statement, Sustainability Assessment, Transport Statement, Waste Management Plan and Construction Environmental Management Plan.
- 8.1.3 The National Planning Policy Framework (NPPF) (2012) includes the presumption in favour of sustainable development. Paragraph 14 of the NPPF states that this means “*approving development proposals that accord with the development plan without delay*”. The analysis of the Upgrade against the development plan policies and other considerations is set out below.
- 8.1.4 Relevant policies are identified for each topic area considered below.

### **8.2 Principle of the Development**

*(Relevant Policy includes: Future Water, Water for Life, NPPF, PPG, National Planning Policy Statement for Waste Water, London Plan 2011 – policies 1.1, 2.1, 2.2 & 5.14; Land for Industry and Transport SPG 2012; Enfield Core Strategy – Core Policy 21 & 22; Emerging Enfield DMD (Addendum of Focused Changes) DMD 58)*

- 8.2.1 As set out in Section 4 of this Statement and Chapter 4 of the ES, there is an overwhelming need to provide a modern sewage treatment facility at Deephams Sewage Works. A modern facility will underpin the health of the community, the quality of the environment and its economic prosperity.
- 8.2.2 The need for the proposed improvements at Deephams is specifically confirmed by Government through the ‘National Planning Policy Statement for Waste Water’ (2012), which outlines a clear statutory driver for the scheme in meeting European and national water quality targets.
- 8.2.3 In both ‘Future Water – The Government’s Water Strategy for England’ (2008) and ‘Water for Life – Government’s White Paper on Water (2011)’, the Government recognises that improving sewage systems is fundamental to the quality and ecology of the water environment, meeting the needs of a growing population and addressing climate change. This is echoed in Defra’s ‘Strategic Policy Statement to Ofwat’ (2013), which stresses the need for water companies to actively plan for the increasing demand on sewerage networks and ensure the system is resilient and capable of supporting sustainable growth.
- 8.2.4 Similarly, the NPPF urges local authorities in bringing forward development to ensure that supporting infrastructure is of sufficient quality and capacity to meet forecast demands (paragraph 162). This is also supported by the Planning Practice Guidance (PPG) (2014) which states that adequate wastewater infrastructure is

needed to support sustainable development (Paragraph: 001, Reference ID: 34-001-20140306). These are central tenets of the Upgrade scheme.

- 8.2.5 The principle of the proposed Upgrade is further supported by Policy 5.14 of the London Plan (2011). The Mayor is committed, in partnership with the boroughs, appropriate agencies within London and adjoining local planning authorities, to ensure that London has adequate and appropriate wastewater infrastructure to meet the requirements placed upon it by population growth and climate change, and to protect and improve water quality, having regard to the Thames River Basin Management Plan. The Upgrade scheme will ensure that the requirements of the Environment Agency's environmental permit are met; that water quality is improved; that adequate wastewater treatment capacity will be made available to meet future demand; that the delivery of the London Plan and Thames River Basin Management Plan is supported; that it will not have adverse effects on the environment; and, that it utilises best available techniques and energy capture. The Upgrade therefore clearly meets the terms of policy 5.14 and should be supported.
- 8.2.6 In a wider sense, the Upgrade will have a role in delivering the strategic vision and objectives for London set out in London Plan policies 1.1, 2.1 and 2.2. These recognise that investment in infrastructure is essential for London to retain and extend its global role as well as improving the quality of life of those that live and work in the City. The Upgrade is identified in the Mayor's Land for Industry and Transport SPG. In SPG 7 the Mayor and Boroughs are required to take into account land requirements for water management infrastructure, in particular where growth in homes and jobs is anticipated.
- 8.2.7 LBE Core Strategy (Core Policy 21) acknowledges that in order to "*improve water quality in the Borough during the life of this Plan, Thames Water Utilities Ltd plan to improve/redevelop Deephams Sewage Treatment Water Works*". The Core Strategy states that the Borough is committed to delivering sustainable wastewater infrastructure and intends to work with water companies to ensure that Enfield's future wastewater treatment needs are "managed effectively in a coordinated manner", including making sure that planned growth is in tandem with proposed growth (Core Policy 21).
- 8.2.8 The LBE reinforces its support for the Upgrade scheme in its emerging Development Management DMD. The Addendum of Focused Changes (2014) includes an additional paragraph after section 8.4.4 as follows: "*A major upgrade is being planned for the Deephams Sewage Works during the plan period, to meet new environmental standards and to accommodate growth within the catchment. The principal (sic) of the upgrade is supported as being necessary to deliver infrastructure to meet existing and future wastewater demands.*"
- 8.2.9 The principle of the development is thus supported by planning policy and guidance.

### **8.3 Justifying the Location and Technology**

*(Relevant Policy includes: National Policy Statement for Waste Water; PPS10; Updated National Waste Planning Policy; London Plan 2011 Policies 5.16, 5.17, 5.18; Enfield Core Strategy – Core Policy 22)*

- 8.3.1 In accordance with the National Policy Statement for Waste Water (paragraph 2.6.13), Thames Water has undertaken a comprehensive review of alternatives (Chapter 4 of the ES, and see also Section 5 of this Statement). The proposed

upgrade of the existing Deephams Sewage Works site was confirmed as the most appropriate of all of the alternatives through this process.

- 8.3.2 A series of initial strategic alternatives were considered, following which 22 potential locations for the construction of the Upgrade were assessed. Thames Water's assessment has also considered different technologies for use as part of the wastewater treatment processes, culminating in the adoption of Integrated Fixed Film Activated Sludge (IFAS) technology in the secondary treatment stage.
- 8.3.3 Whilst mainstream waste policy does not specifically deal with wastewater, it does set out a number of criteria for locating waste management uses. PPS10 states that when considering sites for waste management uses, priority should be given to sites already in use for waste treatment and the re-use of previously developed land (paragraph 21 (ii)). The proposed Upgrade clearly meets this requirement and indeed, is able to adapt and make use of existing structures.
- 8.3.4 Annex E of PPS10 and Appendix B of the Updated National Waste Planning Policy Consultation (2013) set out further locational criteria to be applied in testing the suitability of sites which are addressed within the Environmental Statement. The criteria include identification of sensitive receptors and the extent to which adverse odours and air emissions can be controlled through the use of appropriate equipment. The ES demonstrates that air emissions can be suitably controlled so that there will be no significant impact on the amenities of residential and commercial areas. In relation to odour there will be a significant reduction in odour emissions from the Deephams Sewage Works following the Upgrade resulting in a significant improvement to the amenities of the residential and commercial areas.
- 8.3.5 In respect of the Mayor's policies, the proposals meet the aspirations of London Plan Policy 5.16 in that the proposals involve processing sewage in a location where it currently drains to, managing London's waste within London. The proposals are also supported by Policy 5.17 as the Upgrade will maximise the use of an existing sewage works. Whilst the Upgrade is located in proximity to existing residential properties and other sensitive receptors, the scheme has been carefully designed and mitigation measures incorporated to reduce any significant environmental effects. The Upgrade scheme will also deliver significant carbon savings.
- 8.3.6 The proposed Upgrade prioritises the more efficient use of an existing waste site and will modernise the sewage works in order to maximise potential environmental, social and economic benefits and as such accords with Core Policy 22 of Enfield's Core Strategy.
- 8.3.7 The proposed location for the Upgrade, and the proposed technology, is in accordance with planning policy and guidance.

#### **8.4 Meeting the requirements of the environmental permit, water quality and the Blue Ribbon Network**

*(Relevant Policy includes: Future Water, Water for Life, London Plan 2011 Policies 7.24 - 7.28, 7.30, The Mayor's Water Strategy; Lee Valley Park Development Framework; Enfield Core Strategy – Core Policies 21, 32 & 35; Emerging Enfield DMD – Policies 64, 70, 75)*

- 8.4.1 A specific need has been identified by the Environment Agency to avoid deterioration and improve water quality with the Salmons Brook, the River Lee and

the River Thames. As a consequence, more stringent environmental standards on the effluent discharged from Deephams Sewage Works have been imposed by the Environment Agency through a new environmental permit that Thames Water is obliged to meet by March 2017. The proposed upgrade of Deephams Sewage Works will mean that Thames Water can meet this obligation, enable compliance with Directives and Regulation as well as fulfil their statutory duty to provide sufficient sewage treatment capacity. This is set out in detail in Section 4 of this Statement.

- 8.4.2 The need for the proposed upgrade scheme in order to protect water quality is confirmed by the NPS for Waste Water (2012). At paragraph 2.6.3. it says, *“The need for improvement of waste water treatment at Deephams STW is driven by European and national statutory water quality requirements. The improvements are essential to ensure that Salmons Brook and the River Lee (to which it flows) meet environmental quality standards to comply with the Freshwater Fish Directive, and Water Framework Directive and to ensure that there is no deterioration in the current classification as a result of increased volumes of discharge”*.
- 8.4.3 The need to protect the environment from water pollution is also addressed within the NPPF. Paragraph 109 states that, *“The planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of .... water ...pollution”*.
- 8.4.4 The River Thames, the canal network, and other tributaries, rivers and streams (including the Salmons Brook and the River Lee) and open water spaces are collectively defined in the London Plan (2011) as the Blue Ribbon Network (Map 7.5). Policies 7.24 – 7.28 and 7.30 of the London Plan seek to protect and enhance the attractiveness, biodiversity and landscape value, and multi-functional nature of the Blue Ribbon Network.
- 8.4.5 The combined importance of London’s Blue Ribbon Network and the quality of the water held within it is further emphasised by paragraph 5.58 of the London Plan which explains that: *“Most of London’s waterbodies fail to achieve ‘good’ ecological status/ potential as set out in the Thames River Basin Management Plan. This sets out the requirements of the Water Framework Directive. Sources of pollution include misconceptions of sewerage to surface water drains, contaminated run-off and storm sewage. ... Effective wastewater infrastructure is fundamental to sustainable urban life and therefore investment and expansion are required. Currently, Thames Water is implementing plans for additional sewage treatment capacity at several major works ... While the impacts of these works need to be minimised and mitigated, it is nevertheless essential that a positive planning approach is in place to support this investment...”*
- 8.4.6 This is also reflected in the Lee Valley Park Development Framework Thematic Proposals published in January 2011, which states that the Park Authority will continue to work with Thames Water and other partners to deliver improvements to water quality (Page 92).
- 8.4.7 The delivery of the Upgrade will contribute towards these water quality objectives, including the enhancement of the Blue Ribbon Network. The Upgrade therefore accords with London Plan policies 7.24-7.28 and 7.30, which seek to protect and

enhance the attractiveness, biodiversity and landscape value, and multi-functional nature of the Blue Ribbon Network. Through the provision of enhanced treatment processes, increased wastewater treatment and storm storage capacity, the Upgrade will minimise the release of untreated wastewater and pollution into the water environment, according with the Mayor's Water Strategy 2010.

- 8.4.8 At a Borough level, the proposals directly contribute to Policy 32 of Enfield's Core Strategy which seeks to ensure that "*water quality will not be compromised, and to secure, where appropriate, improvements to water quality.*" Paragraph 8.49 adds that "*water quality can be improved through a number of measures including the effective design, construction and operation of sewerage systems and sewage treatment plants....*" The Upgrade also accords with emerging DMD Policy 64 as it will reduce the risk of water pollution from the operation of the sewage works, and DMD Policy 70 as the proposals will not adversely affect water quality.
- 8.4.9 The implementation of the Upgrade, together with plans and projects being undertaken by the LBE, the Environment Agency and others, will assist the LBE in its target to increase the percentage of Enfield's rivers and canals which are rated as fair or better in terms of their chemical and biological water quality (Core Strategy Monitoring Indicator 32) and the restoration of the River Lee and Salmons Brook (Core Policy 35).
- 8.4.10 The Upgrade proposals therefore meet the requirements of planning policy and guidance in respect of water quality and the Blue Ribbon Network.

## **8.5 Growth and Regeneration of the Upper Lee Valley**

*(Relevant Policy includes: London Plan 2011 policies 2.6, 2.7, 2.13, 2.17; Upper Lee Valley Opportunity Area Planning Framework 2013; Lee Valley Park Development Framework; Central Leaside Area Action Plan; Edmonton EcoPark Planning Brief; Meridian Water Masterplan; Enfield Core Strategy 2011 – Core Policies 1, 11, 14, 37, 38, 39, 40 & 41; Emerging Enfield DMD – Policies DMD 22 & 23)*

- 8.5.1 The Deephams Sewage Works catchment includes land within the London Boroughs of Enfield, Haringey, Waltham Forest and Barnet and also extends into the counties of Hertfordshire and Essex. The London Plan anticipates that there will be significant growth and regeneration in North London, with the Mayor specifically seeking to enhance the quality of life in outer London for present and future residents (Policy 2.6). A key component of this will be making the most effective use of existing and new infrastructure investment (Policy 2.7).
- 8.5.2 As set out in Section 4 of this Statement, the main focus of growth and regeneration within the Deephams catchment will be the part of the catchment that lies within the Upper Lee Valley Area of Opportunity (ULVAO). Policy 2.13 and Annex 1 of the London Plan set out the strategic directions for the ULVAO which seek to optimise residential and non residential output and densities, provide necessary social and other infrastructure to sustain growth, and, where appropriate, contain a mix of uses.
- 8.5.3 The GLA published the Upper Lee Valley Opportunity Area Planning Framework in July 2013. In Section 5.4 it describes Deephams Sewage Works as a "*strategically important*" treatment works. It acknowledges that Thames Water needs to upgrade the works to support planned growth within the catchment and to meet tighter environmental standards. Importantly, the Framework recognises that, "*a major*

*sewage treatment works will continue to be a feature of this area and this will need to be considered when allocating other land uses”.*

- 8.5.4 This is also acknowledged in the Lee Valley Park Development Framework Thematic Proposals published in January 2011, which state that the Park Authority will continue to work with Thames Water to minimise and mitigate any impacts on the Park arising from new or increased wastewater treatment capacity (page 94). Thames Water has sought to work closely with the Park Authority in preparing the Upgrade proposals, and the Authority supported the delivery of the Upgrade on the existing Deephams Sewage Works site in its Phase 1 consultation response.
- 8.5.5 The LBE’s Core Strategy identifies a number of Strategic Growth Areas (Core Policy 1) where the plan is to focus future growth and development in the Borough. Deephams Sewage Works is located within the Central Leaside Strategic Growth Area. Core Policy 1 states that, *“Improvements to the social and physical infrastructure will be prioritised in the strategic growth areas in order to ensure that planned growth and development will be sustainable”*. Core Policy 37 indicates that the main intention within the Central Leaside will be for the area to retain its industrial and employment character. Where new development is proposed, it will be required to facilitate better north-south connections as well as east-west links to the Lee Valley Regional Park. Furthermore, the Borough will seek opportunities to improve, restore and open up access to the Lee Valley Regional Park and the waterfront. Whilst the Upgrade proposals will not create new connections or routes through the operational sewage works site, for operational and health and safety reasons, the significant reduction in odour emissions that will be delivered through the Upgrade will benefit the recreational users of the Lee Valley Regional Park.
- 8.5.6 The Central Leaside Area Action Plan (2012), in particular the Interim Direction Document, references the proposed Upgrade works at Deephams Sewage Works and the role it will play in catering for population growth (page 26). The Interim Direction Document, as set out in Section 7.95 of this Statement, outlines a number of opportunities that are expected to arise as a result of the proposed Upgrade, including the sustainable treatment of wastewater. The Upgrade scheme addresses these opportunities, as outlined in this Statement and ES.
- 8.5.7 Incorporated within the Central Leaside Strategic Growth Area is the Meridian Water Place Shaping Priority Area. Meridian Water is the LBE’s flagship regeneration scheme, involving the comprehensive regeneration of the area to form a sustainable new mixed use Community by 2026. Core Policy 38 and the Meridian Water Masterplan (2013) provide the policy basis for this proposal, confirming that the phased redevelopment of the area will deliver the necessary infrastructure to support the community and attract families and new employers to the area. Although located approximately 1km to the north of Meridian Water, the Upgrade will support the Borough’s proposals through meeting the new environmental permit standards for effluent discharged into the Salmons Brook, and through the significant reductions in odour emissions from the Deephams Sewage Works.
- 8.5.8 Immediately south of Deephams Sewage Works lies the Ardra Road industrial area, with the Edmonton Eco Park and Eley’s Industrial Estates further to the south. These are all identified in the London Plan as a Strategic Industrial Location. These are safeguarded in the Enfield Core Strategy through Core Policy 14. The Upgrade proposals will not preclude future development or redevelopment of these locations for employment uses.

- 8.5.9 Immediately to the north of Central Leaside is the North East Enfield Strategic Growth Area. The area comprises a number of Strategic Industrial Estates and these will continue to be the focus of environmental improvements and investment (Core Policy 40). The Core Strategy identifies that within the North East Enfield Area there is potential to develop 1000 new homes with the focus for this development in the Ponders End Place Shaping Priority Area (Core Policy 41). As with Meridian Water, the Upgrade will support the Borough's proposals through significantly reducing odour emissions from the Deephams Sewage Works.
- 8.5.10 In Edmonton, the Core Strategy (Core Policy 39) indicates that the focus will be on improving the function and appearance of Edmonton Green town centre. At Picketts Lock, the LBE are committed to working with the Lee Valley Park Authority, to identify a priority mix of additional recreation and leisure facilities (Core Policy 11). These proposals will also benefit from the significantly reduced odour emissions from the Deephams Sewage Works and the provision of the necessary wastewater treatment infrastructure to service development.
- 8.5.11 From the above it is evident that there is significant planned regeneration in the area around the Deephams Sewage Works site, and further afield within its extensive catchment. As set out in Section 4 of this Statement, the existing sewage infrastructure at Deephams Sewage Works does not have spare capacity to accommodate this level of growth. The Upgrade scheme, that makes provision for additional wastewater treatment capacity, is therefore critical to ensuring that development is sustainable and sufficient infrastructure is in place to support planned growth.
- 8.5.12 The Upgrade will increase the treatment capacity of the sewage works, from a population equivalent (PE) of 891,000 (2011 base year) to a PE of 989,000. The increased capacity is designed to accommodate planned growth within the catchment, calculated by Thames Water using population projections and other information published by the GLA and local Councils. The forecast increase in capacity is derived from the GLA 2012 demographic projections, issued in December 2012 and updated in February 2013, which when combined with data from other local Councils resulted in a forecast PE increase for the Deephams catchment of 89,000 over the period 2011 to 2031. Thames Water then added a further 10% to the forecast growth to provide for uncertainty and variation in the forecasts, which equated to the total forecast capacity for the Upgrade of 989,000 PE.
- 8.5.13 Thames Water is aware of the London Plan Further Alterations published in January 2014, and the increased population projections that are currently being forecast. It has reviewed the design capacity of the Upgrade in light of these figures, and remains confident that the 989,000 PE figure is the most appropriate capacity to currently plan for, representing a central estimate of future potential growth in the catchment. There remain a number of uncertainties over future flows to the sewage works, including the effects of lower projected per capita consumption of water, and the impact of economic cycles on industrial and commercial usage of water and the pace of residential development within the catchment.
- 8.5.14 It is important to also note that following completion of the Upgrade, Thames Water will still be able to accommodate increased flows to the sewage works, whether through alterations to the process plant on the site (e.g. through the introduction of

additional IFAS media in the Aeration Lanes), or through the construction of further treatment plant or tanks on vacant land within the Site, should additional capacity be required to be provided in the future. In contrast, providing too much spare capacity in the treatment process through the Upgrade itself, could reduce the effectiveness of the treatment process. In this regard, Thames Water considers that the Upgrade not only meets the current Environmental Permit requirements, and planned growth within the catchment, but that the Deephams Sewage Works site will remain able to respond to any future increases in flow, beyond those currently planned for.

- 8.5.15 The Upgrade will also result in a sewage works at Deephams that is ‘fit for purpose’ and capable of meeting the long term needs of the catchment. The proposals will deliver improved standards of wastewater treatment and environmental management, including significant reductions in odour emissions, and meet the rising challenges set by climate change and the need for greater energy efficiency. As such, the proposals are consistent with the regeneration objectives of the area and will support growth proposals as they come forward.
- 8.5.16 The Upgrade proposals will provide infrastructure improvements and odour reductions to support the growth and regeneration of the Upper Lee Valley, meeting the requirements of the relevant planning policy and guidance

## **8.6 Odour**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 – Policy 7.14; Enfield Core Strategy 2011 – Core Policy 32; Enfield UDP Policy E14; Emerging Enfield DMD – Policies DMD 64 & 65)*

- 8.6.1 Para 109 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by “*preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability*”.
- 8.6.2 The Waste Water NPS (2012) recognises that odours from wastewater infrastructure can have a significant adverse impact on the quality of life of individuals and communities. Para 4.3.3 of the NPS states that “*The potential for adverse odour impact from wastewater infrastructure will be dependent on a number of factors including the layout and distance of the most odorous sources to receptors, the selection of process technologies with high or low “odour potential”, the selection and ongoing maintenance and control of appropriate and effective odour abatement equipment and, above all, continuing effective management*”. Paras 4.3.5-4.3.10 go on to outline the requirements for an odour assessment as part of applications for development consent.
- 8.6.3 The NPS explains that applications should “*consider the impact of odour emissions not from a narrow perspective of nuisance but to consider the broader impact on amenity. Nuisance does not equate to a loss of amenity as significant loss of amenity will occur at lower levels of odour emission than would constitute nuisance*”.
- 8.6.4 Para 4.3.16 of the NPS lists potential mitigation measures that may include one or more of the following:
- locating main odour sources away from sensitive development;

- selection of “low odour” process technologies;
  - containment or enclosure of the most odorous sources on the site;
  - where processes are enclosed, ventilation should be provided and vented, at high enough extraction rates to control fugitive leaks, to suitable odour abatement equipment; and
  - an Odour Management Plan documenting the measures to be employed to anticipate the formation of odours and to control their release from the site.
- 8.6.5 London Plan Policy 7.14 ‘Improving Air Quality’ requires development proposals to “*minimise increased exposure to existing poor air quality and make provisions to address local problems of air quality ... such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes*”. This policy also requires development proposals to “*be at least ‘air quality neutral’ and not lead to further deterioration of existing poor air quality*”.
- 8.6.6 LBE’s Core Strategy Policy 32 states that “The Council will work with its partners to minimise air ... pollution”. It goes on to state that “*In particular, new development will be required to: improve air quality by reducing pollutant emissions and public exposure to pollution...*”.
- 8.6.7 Emerging LBE Policy DMD 64 ‘Pollution Control and Assessment’ states that “*Developments will only be permitted if pollution and the risk of pollution is prevented, or reduced and mitigated during all phases of development, including demolition / decommissioning, construction, operations / occupation and maintenance*”. The supporting text to this policy confirms that this relates to odour as well as other forms of pollution. Emerging LBE Policy DMD 65 ‘Air Quality’ states that “*Planning permission will be refused for developments which would have an adverse impact on air quality unless the developer is able to demonstrate that measures can be implemented that will mitigate these effects. Development will only be permitted if it is air quality neutral*”.
- 8.6.8 The generation of odours is an unavoidable consequence of receiving and processing wastewater/sewage.
- 8.6.9 The existing operation of the Deephams Sewage Works generates odour emissions that have been identified by the LBE and the local community through pre-application consultation as one of the most significant issues to be addressed in the Upgrade planning application. The application includes detailed information on existing odour emissions from the Site, together with an assessment of the impact of the Upgrade proposals, and details of the odour mitigation that Thames Water is planning to implement and its related Odour Management Plan for the Site. This information is provided in ES Chapter 15 (Odour) and its related appendices.
- 8.6.10 ES Chapter 15 identifies that the odour emissions from the Site will be significantly reduced as a result of the Upgrade proposals, and that this will build on improvements that Thames Water has already made on the Site. The improvements undertaken to date have already reduced emissions by approximately 15% since 2010, and a number of local residents in Picketts Lock Lane have reported to Thames Water through the consultation process that they have noticed the reduction in odour from the Site.

- 8.6.11 The level of odour mitigation proposed in the Upgrade planning application is very significant, and has been increased from that which was proposed in the Phase 1 and Phase 2 pre-application consultations in response to comments received, both from LBE and the local community. In the Phase 2 consultation, whilst 92 per cent of respondents strongly agreed or agreed with proposals to reduce odour emissions, the LBE and a number of residents felt the proposals did not go far enough, and encouraged Thames Water to do more.
- 8.6.12 The odour mitigation proposals submitted for planning approval include measures to cover the four smelliest parts of the sewage works, and to install new odour control units to extract, clean and vent the air through 5m and 10m high stacks. Thames Water will also continue to implement robust odour management procedures defined within an Odour Management Plan for the site (see Appendix 15.2 in Environment Statement Volume 3 (Appendices)).
- 8.6.13 Odour control covers will be installed on:
- The existing inlet works
  - The new Stream A and Stream B primary settlement tanks
  - The new anoxic zones of the Stream A and Stream B aeration lanes
  - The existing secondary digesters
- 8.6.14 The combination of new plant and equipment, together with the odour control covers and odour control units will significantly reduce the odour emissions from the Deephams Sewage Works. The future management of odour from the upgraded sewage works will be controlled through the implementation of the Odour Management Plan for the site.
- 8.6.15 Prior to the Upgrade, the level of odour emissions is identified in the ES as being 526,914 OU<sub>E</sub>/s (European Odour Units per second).
- 8.6.16 Following completion of the Upgrade, including the odour mitigation proposals, the level of odour emissions is predicted to fall to 80,361 OU<sub>E</sub>/s, a reduction of 446,553 OU<sub>E</sub>/s or 85%.
- 8.6.17 This is a significant improvement, which will result in all residential and commercial properties that currently experience odour from the sewage works receiving a significant reduction in odour.
- 8.6.18 The ES estimates the geographical extent of the odour emissions from the site, both pre and post the Upgrade, using different exposure levels for comparison purposes. The assessment identifies that the geographical extent of the odour exposure is predicted to reduce by 88% following the Upgrade for all exposure levels (i.e. a much smaller geographical area will experience odour).
- 8.6.19 The ES also estimates what this means in terms of numbers of properties (residential and commercial). The results identify that there will be a 99 per cent of existing properties outside of both the areas most (within the 5 odour unit or higher contour) or moderately (within the 3 odour unit to 5 odour unit contour) affected by odour.

- 8.6.20 This is considered to meet and significantly exceed the requirements of planning policy and national guidance, particularly the London Plan and the LBE policy requirement for the development to be at least air quality neutral.
- 8.6.21 National and local policy also seeks to ensure that new development does not result in a loss of amenity, as a result of emissions or pollution. The odour mitigation proposals secured through the Upgrade will deliver significant improvements in amenity for the local area currently affected by odour emissions. Again, this is considered to go beyond what is necessary to be in accordance with the national and local planning policies.
- 8.6.22 Thames Water considers that its proposals meet and exceed policy requirements, and also meet the Council's and resident's requests to provide significant odour benefits and improvements for the local area.

## **8.7 Health**

*(Relevant policies: NPPF; NPS for Waste Water; Planning Practice Guidance; London Plan 2011 Policy 3.2; Best Practice Guidance: Health Issues in Planning; Enfield Core Strategy 2011 – Core Policy 7; Emerging Enfield DMD – Policy 64)*

- 8.7.1 ES Chapter 11 provides an assessment of the potential impacts of the Upgrade on health, drawing upon the technical assessments for Air Quality, Contaminated Land, Noise and Vibration, Odour, Transport and Waste.
- 8.7.2 The NPPF seeks to ensure that development facilitates healthy and inclusive communities (paragraph 69), whilst the PPG requires that health and well-being are considered in planning decision making (Reference ID: 53-001-20140306). Health and well-being are incorporated throughout the NPPF through the principles of sustainable development, and policies on transport, quality homes, good design, climate change and the natural environment.
- 8.7.3 The NPS for Waste Water identifies that wastewater management has the potential to affect the health and well-being of the population, but also acknowledges that the provision of waste water infrastructure is of clear benefit to society and to our health as a whole (paragraph 3.10.1). The NPS recognises that the possibility of some adverse effects cannot be discounted, and therefore any adverse health impacts should be identified in the ES together with measures to avoid, reduce or compensate for these impacts as appropriate.
- 8.7.4 The London Plan also identifies that the planning system can play a key role in promoting health and reducing health inequalities. Policy 3.2 requires that new development should be designed, constructed and managed in ways that improve health and promote healthy lifestyles to help to reduce health inequalities, with the impacts of major development proposals considered through the use of Health Impact Assessments.
- 8.7.5 The Mayor of London's Best Practice Guidance: Health Issues in Planning (2007) also outlines the link between how development is planned and delivered and the health of the communities that then inhabit that development. The guidance also identifies a wide range of factors that can influence individuals' chances of being healthy and that should be taken into consideration in development proposals, including education, employment, housing, social networks, air and water quality, access to nutritious food as well as access to health and social care.

- 8.7.6 Core Policy 7 in the Enfield Core Strategy 2011 requires an assessment of health impacts to be undertaken for major development proposals, and identifies links to other policies of the Core Strategy to promote a pattern of land use to encourage healthier lifestyles.
- 8.7.7 In accordance with the NPS for Waste Water, London Plan Policy 3.2, and LBE Core Policy 7, an assessment of the likely health and well-being effects associated with the construction and operation of the Upgrade is presented in the ES (Chapter 11). As agreed through consultation with the LBE, the assessment has been undertaken in accordance with the Healthy Urban Development Unit (HUDU) Watch out for Health (2004) methodology, including consideration of the following topic areas:
- Healthy Lifestyles
  - Access to Work
  - Accessibility
  - Air Quality and Neighbourhood Amenity
  - Social Cohesion and Social Capital
  - Public Services
  - Resource Minimisation
  - Climate Change
- 8.7.8 The assessment presented in the ES draws upon the technical assessments for Air Quality, Contaminated Land, Noise and Vibration, Odour, Transport and Waste to assess their impact upon health and well-being. The assessment concludes that no mitigation measures further to those identified by the above assessments are deemed necessary in relation to health and well-being.
- 8.7.9 The ES identifies that during construction there is predicted to be a negligible/positive effect on Resource Minimisation due to the implementation of the new CHP engines and re-use of construction materials. A temporary negligible effect is predicted on Healthy Lifestyles due to odour emissions continuing as at present, before plant covers and odour control units are progressively installed, and on Air Quality and Neighbourhood Amenity due to short term noise impacts and temporary changes in landscape and visual amenity before new planting is put in place and matures. As these are short term or temporary and reversible effects within a prevailing urban/industrial environment, the ES does not consider these to constitute a significant impact.
- 8.7.10 During operation, the ES identifies positive effects on health and well-being. These positive effects include, amongst others:
- on Healthy Lifestyles through greatly reduced odour emissions, facilitating improved conditions for exercise and recreation by residents and others in the local area;
  - on Access to Work through the use of the education facility and promotion of Thames Water's apprenticeship and graduate schemes within the local area;
  - on Accessibility by allowing educational visits to the Works and a dedicated Thames Water education facility on site;
  - on Air Quality and Neighbourhood Amenity from major odour reductions and CHP plant upgrade; and,

- on Resource Minimisation and Climate Change through a significant reduction in energy consumption and CO<sub>2</sub> emissions due to more efficient design and treatment processes and upgraded CHP plant.

8.7.11 The proposed Upgrade is therefore considered to be in accordance with the NPPF, NPS for Waste Water, and the requirements on London Plan Policy 3.2 and Enfield Core Policy 7.

## **8.8 Socio-economic**

*(NPPF; NPS for Waste Water; London Plan 2011 Policies 4.12, 7.1; Enfield Core Strategy 2011 – Core Policy 9, 13, 16, 21);*

8.8.1 The ES identifies and assesses socio-economic effects in the individual topic assessments, e.g. Odour, Landscape etc.

8.8.2 The NPPF (section 7) outlines a number of dimensions to sustainable development and the role of planning system in achieving this. It outlines that planning has an 'economic' role in supporting growth and coordinating development, including the provision of infrastructure. Planning also has a 'social' role in supporting strong, vibrant and healthy communities. The NPS for Waste Water provides further guidance on socio-economic factors in section 4.15. The Upgrade will bring about a number of socio-economic benefits to the immediate locality, the LBE and the wider North London area.

8.8.3 As outlined above in Chapter 4 and Section 8.5 of this Statement, the Upgrade will provide additional wastewater treatment capacity for the catchment area to support growth and regeneration within the Upper Lee Valley. The Upgrade is therefore a critical component of the sustainable regeneration of Enfield and Upper Lee Valley Opportunity Area and accords with London Plan Policy 7.1, Enfield Core Policy 21, and Upper Lee Valley Opportunity Area Planning Framework.

8.8.4 The Upgrade includes the provision of a new education facility at the site through the conversion of a currently vacant, former Thames Water training room. The existing brick built building will be refurbished to provide an education room with space for 30 students, together with toilets and ancillary facilities. A safe guided walking route around the site for educational tours will also be provided to learn about sewage treatment and the water cycle, the details of which will be secured by planning condition. The proposed education facility will make an important contribution towards supporting community cohesion and providing skill development and training opportunities in accordance with London Plan Policies 4.12, 7.1 and Enfield Core Policy 9.

8.8.5 The Upgrade will also create approximately 200-230 employment opportunities during construction. A Local Employment Strategy has been prepared and submitted as part of the planning application (see Planning Application Folder – Tab 11). The Strategy has been prepared in consultation with the LBE and JobCentre Plus, building on wider engagement through the Stakeholder Forum.

8.8.6 Through the implementation of the Local Employment Strategy, Thames Water and AMK are committed to maximising the opportunities for local employment through the construction programme, and in providing local contract opportunities to the benefit of the local economy. The Local Employment Strategy identifies a series of

commitments, including at least 20% local labour during construction, apprenticeships and training for local people, recruitment of local people through the Offender Rehabilitation Programme, and measures to engage with local schools and colleges in education and training. As such, the proposal “*supports local employment, skills development and training opportunities*” in accordance with London Plan Policy 4.12.

8.8.7 Once the Upgrade is complete there will be no change in the number of people employed to operate the sewage works. However the Local Employment Strategy commits Thames Water and AMK to provide access to their wider apprenticeship and graduate training schemes, and to continue its engagement with local schools and colleges.

8.8.8 In relation to wider socio-economic benefits of the Upgrade, the development will provide a modern sewage treatment works that will have significantly reduced odour emissions when compared to current levels. This will benefit all residents and businesses located within areas that currently experience odour emissions from the Site, and support LBE’s planned regeneration proposals within the local area.

## 8.9 Recreation

*(Relevant policies: NPPF; London Plan 2011 Policy 7.27 & 7.30; Enfield Core Strategy 2011 – Core Policies 11 & 35; Enfield DMD 83; Lee Valley Regional Park Development Framework)*

8.9.1 The ES identifies and assesses potential impacts on recreation in the individual topic assessments, e.g. Odour, Landscape, Health etc.

8.9.2 There are no existing Public Rights of Way (PRoW) or recreational facilities within Deephams Sewage Works. There are however a number of recreational facilities located around Deephams Sewage Works, including:

- Pymmes Brook Trail which runs east-west along Picketts Lock Lane. The route is also part of the London Cycle Network.
- Lee Park Way which runs north-south alongside the Lee Navigation. The route also forms part of the National Cycle Network Route 1.
- A PRoW which runs east-west along the southern boundary of the William Girling Reservoir.
- Lee Valley Heritage Trail which runs west-east along Lower Hall Lane. Part of the route also forms part of the London Cycle Network.
- Residential narrow boats on the Lee Navigation.
- The Lee Valley Regional Park to the north and east of the site.
- Off-road tarmac cycle path (part of the London Cycle Network) which runs north-south along the eastern footway of Meridian Way.
- The Lee Valley Athletics Centre which comprises indoor and outdoor facilities.
- Lee Valley Golf Course - an 18 hole course which is open to members and non-members.
- Lee Valley Camping and Caravan Park which provides pitches for caravans, motorhomes, trailer tents, recreational vehicles and tents. Permanent cocoons and cabins can be rented on site which can sleep between two and four people respectively.
- Picketts Lock Indoor Bowls Club.
- A 12 screen Odeon cinema complex.

- 8.9.3 The Upgrade will not prevent or limit access to or the use of any of the recreational facilities located around Deephams Sewage Works.
- 8.9.4 Potential impacts arising from construction and operational noise, vibration, dust, odour, changes to views have been considered in the respective assessments presented in the ES and within this Statement. The conclusions of these assessments are that whilst there will be temporary indirect effects on users of the recreational facilities, predominately through construction noise, visual impact of construction activities including tower cranes, and construction traffic movements and the effects of traffic (noise and air quality), it is not considered that any of these issues will significantly detrimentally affect the use or enjoyment of recreational facilities located in close proximity to the site.
- 8.9.5 Indeed, as a result of the Upgrade scheme, there are likely to be benefits arising from the proposals on recreation. The Health Impact Assessment presented in Chapter 11 of the ES anticipates that the odour improvements generated by the Upgrade scheme will improve the recreational value of the Lee Valley Leisure Complex, the Lee Valley Caravan and Camping Park and the footpaths and cycle tracks within the vicinity of Deephams Sewage Works. Overall it is anticipated that the Upgrade will almost completely mitigate the effect of odour on 13 recreation and leisure facilities. Furthermore, the delivery of the Upgrade will contribute to the enhancement of the Blue Ribbon Network, which in turn may have indirect water based recreational benefits in the longer term.
- 8.9.6 In relation to the LBE's DMD Policy 83 (Development Adjacent to the Green Belt), for health and safety and operational reasons it is not feasible to provide public access to the Site, although Thames Water will organise guided education and other visits as required.
- 8.9.7 The Landscape Strategy for the Upgrade has been designed to incorporate additional planting on the boundaries of the Site, to link with and enhance existing off site vegetation, particularly on the northern and eastern boundaries adjoining the Lee Valley Regional Park.
- 8.9.8 The Upgrade is therefore considered to accord with principles and requirements of London Plan Policy 3.19, 7.27, 7.30; and Enfield Core Policy 11 to protect recreational facilities. In particular, the increase in recreational amenity that is anticipated to arise from the odour improvements delivered by the Upgrade scheme will comply with the NPPF requirements for developments to encourage the use of high quality recreation and amenity facilities, and with NPS requirements to protect access to key public services, open space or recreation facilities.
- 8.10 Design**  
*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policies 7.1, 7.2, 7.3, 7.5, 7.6, 7.13; Enfield Core Strategy – Core Policies 30 & 31; Enfield UDP Policy (II) GD3; Emerging Enfield DMD – Policies DMD 37, 38)*
- 8.10.1 A Design and Access Statement (see Planning Application Folder – Tab 5) and Sustainability Statement (see Planning Application Folder – Tab 6) have been submitted as part of the application. These statements describe the consideration of design through the preparation of the Upgrade proposals, and provide detailed

assessments of the design issues associated with the proposed development against relevant policies and guidance.

- 8.10.2 In summary, Deephams Sewage Works is an operational site and there is no public access for health and safety and operational reasons. The design of the Upgrade proposals necessarily places health and safety and operational requirements at the forefront of considerations. This, coupled with the challenges of keeping the sewage works operational throughout the construction of the Upgrade, has dictated the layout and broad details of the Upgrade proposals (see Section 2 of the Design and Access Statement).
- 8.10.3 Notwithstanding the above, regard has been had to London Plan and LBE Development Plan policies in the development of the design proposals for the Upgrade. The layout has been designed to maintain physical separation from the residential properties to the north, and the retention and enhancement of the existing landscaped bund and wider landscaping within the site (see Section 2 of the Design and Access Statement). The Upgrade proposals are of a scale comparable to the existing infrastructure and buildings on the site, and will, as confirmed in the landscape and visual impact assessment reported in ES Chapter 13, be seen in the context of the existing industrial landscape from near and distant viewpoints.
- 8.10.4 Plant and equipment proposed as part of the Upgrade is necessarily functional in its design and appearance. Where alternative options are available for materials, Thames Water has sought to use grey or recessive colours, with matt finishes. In this way the appearance of the completed scheme will be accommodated into the existing industrial landscape of the Site. New buildings are functional in design, incorporating brown roofs and rainwater harvesting where appropriate, with materials and colours for these new structures specified to fit within the existing character of the Site (see Section 2 of the Design and Access Statement, and the Sustainability Statement).
- 8.10.5 Having regard to the above, to the extent that the policies are applicable to an operational sewage works, and the scale and nature of the type proposed in the Upgrade, it is considered that the proposals accord with relevant parts of London Plan Policies 7.1 to 7.6, and 7.13, and LBE Core Policies 30-31, DMD Policies 37-38, and saved UDP Policy GD3.

## **8.11 Sustainable Development and Climate Change**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policies 5.1, 5.3, 5.9, 5.11, 5.13, 5.20; Sustainable Design and Construction, London Plan SPG 2006; Draft Sustainable Design and Construction SPD 2013; Emerging Enfield DMD – Policies 49, 50, 55, 56, 57 & 58)*

- 8.11.1 A Sustainability Statement (see Planning Application Folder – Tab 6) has been submitted as part of the application. In addition, the Environmental Statement includes individual assessments of the Upgrade proposals in relation to topics including water, waste, ecology etc.
- 8.11.2 In addition, Thames Water has committed to submit the Deephams Sewage Works Upgrade Project for a CEEQUAL (Version 5.1) Whole Project Award, covering the combined environmental performance of the Customer, Designer and Contractor. Thames Water's objective is to achieve a CEEQUAL score of Excellent for the project. It is anticipated that participation in the scheme will drive high performance

across a range of environmental and social criteria and will result in public recognition of this high performance for all parties involved.

8.11.3 National policy and guidance, and Development Plan Policy all seek to ensure that developments meet the highest standards of sustainable design and construction, including measures to make effective use of land and existing buildings, minimise energy use, reduce air and water pollution, promote sustainable waste behaviour, and incorporate living roofs and walls where feasible. The Sustainability Statement which accompanies the planning application provides a detailed assessment of the Upgrade proposals against 11 sustainable development themes. These themes are:

- Re-use of land and buildings
- Conservation of energy, materials and water resources;
- Maximising the use of natural systems;
- Reducing the impacts of noise, pollution and flooding;
- Promoting health and well-being;
- Conservation and enhancement of the natural environment and biodiversity;
- Sustainable waste management;
- Sustainable construction;
- Sustainable transport;
- Conserving and enhancing the historic environment; and,
- Economic development.

8.11.4 The detailed assessment provided in Section 4 of the Sustainability Statement demonstrates that the Upgrade proposals accord with national policy and guidance, and Development Plan Policy, having regard to the detailed requirements of individual policies as set out in the Sustainability Statement.

## **8.12 Energy**

*(Relevant policies: NPPF; London Plan 2011 Policies 5.2, 5.5, 5.6, 5.7; The Mayor's Climate change Mitigation and Energy Statement; Enfield Core Strategy – Core Policy 20; Emerging Enfield DMD – Policies 51, 52, 53, 54, 55)*

8.12.1 An Energy Statement (see Planning Application Folder – Tab 7) and Sustainability Statement (see Planning Application Folder – Tab 6) have been submitted as part of the application.

8.12.2 The transition to a low carbon future is one of the Government's core land use planning principles set out in the NPPF. In determining planning applications, local authorities should expect new development to comply with Local Plan policies for decentralised energy and seek to minimise energy consumption through landform, layout, building orientation, massing and landscaping.

8.12.3 The Mayor's Climate Change Mitigation and Energy Statement and London Plan policies include specific objectives to reduce London's CO<sub>2</sub> emissions to mitigate climate change and ensure a secure and reliable energy supply for London.

8.12.4 In order to fully contribute to minimising carbon dioxide emissions, Policy 5.2 of the London Plan requires development proposals to accord to the following energy hierarchy:

1. *Be lean: use less energy;*

2. *Be clean: supply energy efficiently;*
3. *Be green: use renewable energy.*

8.12.5 The LBE's Core Policy 20, take this forward by requiring "*all new developments, and where possible via a retrofitting process in existing developments to address the causes and impacts of climate change by: minimising energy use; supplying energy efficiently; and using energy generated from renewable sources in line with London Plan and national policy.*"

8.12.6 The Energy Statement submitted as part of the planning application demonstrates how the Upgrade addresses the above GLA and the LBE energy hierarchies in meeting carbon emission reduction targets as follows:

- **Be Lean:** Although the Upgrade increases treatment capacity which has the potential to increase energy consumption, Thames Water has reviewed the process and energy consumption across the site and will implement technologies and measures to reduce energy consumption. These are set out in detail in Section 5.1.2 of the Energy Statement. The impact of the proposed energy efficiency measures is a reduction in baseline electricity consumption of about 6%.
- **Be Clean:** The Mayor expects 25% of the heat and power used in London to be generated through the use of localised decentralised energy systems by 2025 (London Plan Policy 5.5). LBE requires major developments which produce heat and energy to contribute to the supply of decentralised energy networks unless it is demonstrated that this is not technically feasible or economically viable (draft DMD policy 52). No district heating network currently exists in the locality although LBE is working alongside neighbouring local authorities to develop a Lee Valley Heat Network (LVHN). Thames Water will therefore include provision within the Upgrade for the installation of pipework infrastructure to the Site boundary, to facilitate the potential future import and/or export of heat to and from the Site.
- **Be Green:** A detailed renewable feasibility assessment has been undertaken for the proposed Upgrade considering stand-alone renewable technologies including wind and photovoltaic cells. The renewable energy technology being proposed for the Upgrade is the replacement of the existing CHP engines with new, more efficient equipment with increased capacity. New CHP engines will be installed on the Site allowing the additional biogas generated from the anaerobic digestion plant to be used far more effectively than present, while also removing the current requirement to use supplementary fuel oil when operating the CHPs. This meets London Plan policies 5.6, which requires the feasibility of CHP to be considered, and 5.7 which seeks the increased proportion of energy generated from renewable sources.

8.12.7 Both the London Plan and the LBE have policies that set targets for development to achieve reduction in carbon dioxide emissions. Policy 5.2 of the London Plan requires a 40% reduction improvement on Building Regulation requirements from 2013 to 2016 for new non-domestic building developments, whilst Policy 5.7 requires major development proposals to provide at least 20% of their energy needs through the use of on-site renewable energy generation wherever feasible. Similarly, the LBE through emerging DMD policy 51, will require major non-residential development to achieve as a minimum 40% improvement from 2013 to 2016 on Building Regulations, with reductions to be provided on-site. Where these savings

cannot be secured, the LBE will be requiring the provision of on site renewable energy to make up the shortfall or provide a 20% carbon dioxide reduction, whichever is greater, unless it can be demonstrated that this is not technically feasible or economically viable (DMD Draft Policy 53).

- 8.12.8 The built environment energy policy requirements adopted by the GLA and the LBE focus on reducing energy use in the context of the relevant Building Regulations and generating renewable energy within a development site. Through dialogue with the GLA it has been agreed that building related targets set by London Plan policy are not directly appropriate to the Upgrade. Instead, the GLA has agreed that Thames Water should demonstrate through a CO<sub>2</sub> emissions/population equivalent metric the relative savings in total CO<sub>2</sub> emissions will be made across the Deephams Sewage Works following the Upgrade.
- 8.12.9 The Energy Statement presents a comparison of carbon metrics and demonstrates that there will be a 49% reduction in carbon emissions (54% per population equivalent Metric). Innovation has been considered across the design process to minimise energy consumption and maximise renewable energy generation. Overall the proposed Upgrade will deliver significant carbon savings against the baseline emissions and exceed the requirements set out by GLA and the LBE for an improvement to the relative carbon emissions.

### **8.13 Ecology and Nature Conservation**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policies 5.11, 7.19, 7.28; Enfield Core Strategy – Core Policy 36; Emerging Enfield DMD – Policies 55, 76, 78, 79)*

- 8.13.1 A detailed assessment of ecology and nature conservation related to the construction and operation of the Upgrade is presented in Chapter 9 of the ES, which also identifies mitigation measures as part of a proactive approach to protect biodiversity interest at the site and in the surrounding area. An assessment of water quality is contained in Chapter 18 of the ES.
- 8.13.2 The majority of the Site is previously developed land, containing sewage treatment infrastructure at the Site and therefore has limited ecology and nature conservation interest. The main features of ecological interest are found along the periphery of the site as identified in the ES. Part of the Lea Valley Site of Metropolitan Importance Nature Conservation (SMINC) is designated within the north eastern boundary of the site. With the exception of enhanced planting and habitat creation, no works are proposed within the boundary of the SMINC as part of the Upgrade and therefore there will be no direct impact upon the SMINC.
- 8.13.3 The Upgrade requires the removal of approximately 180m of species-poor hedgerow from the eastern boundary of the Site. However, the habitat will be replaced as part of the Landscape Strategy proposed as part of the Upgrade. A new mature species-rich hedgerow and small tree plantation will be planted behind the Enfield Ditch tributary in the north-east corner and around the car park and buildings in the north west corner of the Site. The ES indicates that this will increase the quality and quantity of the hedgerow resource on the Site.
- 8.13.4 The Upgrade will also result in the loss of approximately 0.35 hectares of plantation woodland and scrub on the eastern boundary and approximately 40 additional scattered trees in the centre of the Site. This habitat is identified in the ES as

supporting a number of common breeding and wintering bird species and being a source of winged insect food for bats. The proposed habitat enhancements will however provide replacement habitat that includes the provision of native scrub and wet scrub, coppice trees, small tree plantation, mature hedgerows and a wildflower meadow, reducing any impacts to negligible significance.

- 8.13.5 In addition to the above habitat enhancements to be delivered through the Landscape Strategy, Thames Water will be incorporating approximately 1,150m<sup>2</sup> of brown roofs, to be installed on the Return Activated Sludge and Surplus Activated Sludge pumping station and blower house, meeting the requirement of Policy 5.11 of the London Plan and the LBE's Emerging Policy DMD 55. The brown roofs will incorporate features such as tree limbs/logs, cleaned brick, stones and sand, providing important habitat for a range of species and replicating valuable wasteland habitat. The erection of 25 bird boxes and 10 bat boxes, strategically placed around the periphery of the Site in locations corresponding to areas of activity, will also be delivered through the Upgrade, and be incorporated into the Landscape Strategy.
- 8.13.6 The habitat enhancements will be secured through the Landscape Strategy. The mitigation measures set out in the ES will also be secured through the Construction Environment Management Plan, including an Invasive Species Management Plan as an appendix to that document, to ensure the treatment and management of the invasive species identified at the site.
- 8.13.7 The ES concludes that overall the Upgrade is considered to have a negligible effect on Ecology and Nature Conservation, with the individual residual impacts identified as negligible or minor beneficial for ecological receptors.
- 8.13.8 The ES identifies one adverse temporary residual impact, with construction noise impacts having a minor adverse impact on breeding and wintering birds utilising the Upgrade site. Impacts associated with bird species utilising the nearby Chingford Reservoirs SSSI are considered to be of negligible significance with the incorporation of the generic noise mitigation outlined in Chapter 14 of the ES, and best practice.
- 8.13.9 The ES identifies that habitat enhancements delivered through the CEMP and Landscape Strategy will have minor beneficial impacts as a result of the increased local provision of hedgerow BAP habitat and supporting habitat for birds. The Upgrade is therefore considered to accord with the requirements of the NPPF minimising impacts on biodiversity and providing a net gain in biodiversity.
- 8.13.10 Similarly, the Upgrade is considered to accord with the London Plan Policy 7.19 & 7.28; Enfield Core Policy 36; and emerging Enfield Policies DMD 76, DMD 78 & DMD 79 through the provision of mitigation for potential impacts and the positive contribution to biodiversity through habitat enhancement and enhancement of wildlife corridors.
- 8.13.11 The requirements under the Habitats Directive with regard to the Upgrade were considered as part of the EIA Scoping process with the LBE. It was agreed with Natural England that the Upgrade will not have an adverse effect upon the integrity any of internationally designated sites, and therefore it is not necessary as part of the determination of the Upgrade application to give further consideration to the Habitats Directive (see Screening Report in ES Appendix 9.5).

## **8.14 Green Infrastructure**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policies 2.18, 5.10; SPG and Open Environments: The All London Green Grid SPG 2012; Enfield Core Strategy – Core Policy 30; Enfield UDP policies (i) O3, (ii) O7, O8, O9, C36, C37, C38 & C39)*

- 8.14.1 Green infrastructure is identified by the London Plan as a multi functional network of green spaces together with the Blue Ribbon Network, which will secure benefits including biodiversity; natural and historic landscapes; culture; sense of place; the economy; sport; recreation; local food production; mitigating and adapting to climate change; and water management alongside social benefits. London Plan Policy 2.18 encourages enhancement to this network from development proposals.
- 8.14.2 The Site is located to the west of the Lee Valley Regional Park and the Lee Navigation, which form part of the strategic network of green infrastructure and the Blue Ribbon Network. This network also includes the Lee Valley Site of Metropolitan Importance Nature Conservation (SMINC) designation, which extends into the north eastern part of the site, and Pymmes Brook that is identified by Enfield UDP Policies (II) O7 and O8 as part of the green chain corridor.
- 8.14.3 Further consideration of the designated SMINC is provided in the Ecology and Nature Conservation (section 8.13) above, however, with the exception of enhanced planting and habitat creation, no works are proposed within the boundary of the SMINC.
- 8.14.4 As detailed in Section 8.13, to address the modest tree and hedgerow loss as part of the Upgrade scheme a comprehensive landscape strategy has been developed. This includes replacement habitat incorporating the provision of native scrub and wet scrub, coppice trees, small tree plantation, mature hedgerows and a wildflower meadow. Habitat enhancements will also be delivered through the landscape strategy, including the provision of brown roofs and bird/bat boxes.
- 8.14.5 The landscape strategy and the enhancement measures at Deephams Sewage Works will provide greater diversity of habitat structure throughout the year and a visual foil and screening to the Site. The landscape strategy recognises the waterside environment, with a focus on enhancing the waterside location and reference wetland habitat, whilst improving amenity value. Green infrastructure connectivity will be maximised by both enhancing linear features at the Site periphery and linking to existing features beyond the site boundary.
- 8.14.6 Overall the Upgrade is considered to make a positive contribution to improving green infrastructure and integrating the site with the wider green infrastructure and Blue Ribbon network. The Upgrade is therefore considered to accord with the principles of London Plan Policies 2.18 and 5.10; Green Infrastructure and Open Environments: The All London Green Grid SPG; Enfield Core Policy 30; Enfield UDP Policies (I) O3, (II) O7, and O8.
- 8.14.7 Similarly, the replacement planting and habitat enhancement is considered to be in accordance with UDP Policies (II) C36, C37, C38 & C39. The Landscape Strategy has been designed to enhance existing, and to create new, linkages between on and off site planting and habitat areas in accordance with UDP Policy O9.

## 8.15 Water Resources

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 policies 7.28; Enfield Core Strategy 2011 – Core Policy 21, 32; Emerging Enfield DMD – Policy 63, 64, 70).*

- 8.15.1 ES Chapter 18 and related appendices provide a detailed assessment of the potential impacts of the Upgrade on water resources.
- 8.15.2 Chapter 4 and section 8.4 of this Statement, explain how the Upgrade responds to the need to meet the new environmental permit issued by the Environment Agency.
- 8.15.3 This section of the Statement considers the wider effects on water resources, namely above ground water resources including surface water drainage and run-off, water quality and geomorphology, as addressed in Chapter 18 of the ES. An assessment of potential environmental effects in relation to groundwater quality is included in Section 7 of the ES: Contaminated Land.
- 8.15.4 The NPPF aims to protect and enhance the environment by looking at economic and social drivers, paying particular attention to water quality and resources, including the implementation of the Water Framework Directive. The NPPF indicates that a key role for the planning system should be to prevent both new and existing development from contributing to or being put at an unacceptable risk from, or being adversely affected by unacceptable levels of water pollution (section 109).
- 8.15.5 The NPS for Waste Water in Section 4.2 considers the impact on water quality and resources from wastewater development. It indicates that during construction, operation and decommissioning phases, infrastructure development can lead to increased demand for water, involve discharges to water and cause adverse ecological effects resulting physical modifications to the water environment.
- 8.15.6 The ES identifies and assesses a number of watercourses that make up the River Lee catchment. Discharges from the sewage works are made to Salmons Brook, which flows into the Pymmes Brook, which subsequently joins the River Lee downstream of Tottenham Lock. In addition to these main watercourses, there are several other tributaries and channels. The ES identified nine lengths of these watercourses as sensitive receptors. These include:
- Reach 1: Deephams Sewage Works outflow channel
  - Reach 2: Middle Salmons Brook
  - Reach 3: Lower Salmons Brook
  - Reach 4: Lee Navigation (Canal) and Overflow Channel
  - Reach 5: Enfield Ditch Tributary
  - Reach 6: Brimsdown Ditch
  - Reach 7: Enfield Ditch
  - Reach 8: Pymmes Brook
  - Reach 9: Downstream River Lee
- 8.15.7 The watercourses surrounding the Upgrade, primarily Enfield Ditch tributary and Enfield Ditch have a high sensitivity based on their vulnerability, particularly due to low dilution; but a negligible importance or value. The Lee Navigation and Overflow Channel is not considered to be particularly vulnerable but is of a high value and importance. The Deephams Sewage Works outflow channel is not considered to be

a watercourse and is therefore of limited value, however its sensitivity and potential to impact on downstream reaches is recognised.

- 8.15.8 Further downstream, the Lower Salmons Brook is considered to be of medium sensitivity based on vulnerability and its current ecological quality, but is considered to be of negligible value or importance. Downstream the sensitivity reduces to low but the value of watercourses increases to medium in the Pymmes Brook and high in the Downstream River Lee.
- 8.15.9 The ES identifies that Upgrade demolition and construction activities have the potential to lead to contaminant transfer from on site activities and via localised flooding, which would increase flows and affect water quality and sediment quality. A number of mitigation measures will however be employed as identified in the Construction Environment Management Plan (Environmental Statement Appendix 5.3), and the Water Management Plan as an appendix to that document.
- 8.15.10 These mitigation measures are considered to reduce the probability of any effects occurring to low and any residual significant effects to negligible. The risk of demolition and construction activities leading to pollution of downstream watercourses is considered to be low and of negligible significance. As such the proposals accord with emerging Enfield Policy DMD 64 which indicates that for a development to be permitted, pollution and the risk of pollution must be prevented, or reduced and mitigated during all phases of development.
- 8.15.11 As part of the Upgrade, a new drainage scheme will be installed (Application Plan A630-AMK-174) that includes rainwater collection from odour control covers and building roofs and the return to the sewage treatment works inlet for treatment. The rainwater is returned for treatment due to potential for the water to be contaminated by the sewage treatment process. The ES considers that this will have a negligible effect on water quality and flow regimes, meeting the requirements of Core Policy 21 of the Enfield Core Strategy, which seeks to ensuring that sustainable drainage measures are incorporated, wherever possible, as a means of managing surface water run off.
- 8.15.12 In respect of the operation of the Upgrade, potential improvements in water quality and turbidity will result from upgrading the treatment process to enhance the quality of the treated sewage effluent discharged. Improvements will also arise from decreasing the frequency of storm tank spills of diluted, but untreated effluent from the Site. In the absence of the Upgrade there is a significant risk of deterioration in river water quality as current treatment processes at Deephams Sewage Works will not be able to consistently treat water quality to the required discharge standards. As such the ES therefore considers that there will be minor beneficial effects on water quality in the Lower Salmons Brook, Pymmes Brook and River Lee.
- 8.15.13 In accordance with the NPS for Waste Water, the effects on the water environment are considered within the ES. This has had regard to the River Basin Management Plan. Ensuring water quality is not compromised and improvements to water quality are secured, where appropriate, is central to LBE's Core Policy 32 which seeks to minimise water pollution. As required by emerging LBE policy DMD 70, the risk to water quality arising from the Upgrade has been carefully considered, in consultation with the Environment Agency. In accordance with policy DMD 60, no adverse water quality impacts will arise. To the contrary, the proposals will bring

about improvements to a number of watercourses and will assist in meeting the objectives, thus meeting the requirements of emerging LBE Policy DMD 63.

8.15.14 The Upgrade will be a significant step in meeting the Water Framework Directive water quality objectives and enhancing the Blue Ribbon Network as required by Policy 7.28 of the London Plan. The water quality improvements are likely to lead to a significant improvement in ecology if other local water quality pressures are reduced and work to enhance the hydro-morphological character of the watercourses is undertaken, particularly to address the lack of variability in the flow regime and the artificial river banks and beds.

## **8.16 Green Belt**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policies 7.16; Enfield Core Strategy – Core Policy 33; Enfield UDP Policy (II) G11, G20; Emerging Enfield DMD – Policies 82 & 83)*

8.16.1 None of the land within the planning application area for the Upgrade is identified as Green Belt. However, land immediately to the north and east of the application area is designated as Green Belt, extending to include William Girling Reservoir and the surrounding area of the Lee Valley, including the Lee Valley Athletics Centre.

8.16.2 As the proposed Upgrade will not directly affect designated Green Belt land the proposals accord with the NPPF; NPS for Waste Water; London Plan Policy 7.16; Enfield Core Policy 33; UDP Policy (II) G11, G19; and DMD Policy 82 and the Green Belt therefore remains protected from inappropriate development.

8.16.3 The Upgrade is considered to be similar in layout, scale, type, height and massing to the existing Deephams sewage works. Once landscape planting has matured the ES (Chapter 13) concludes that the landscape and visual impact of the proposed Upgrade will be of minor beneficial or negligible significance for different receptors. It is therefore considered that the Upgrade accords with the requirement to ensure the Green Belt is protected from any harm.

8.16.4 On a similar basis, the Upgrade is considered to accord with UDP Policy (II) G20 and emerging DMD Policy 83 which states that development located adjacent to the Green Belt will only be permitted if there is no increase in the visual dominance and intrusiveness of the built form and there is a clear distinction between the Green Belt and the urban area. The landscape planting included as part of the Upgrade will also achieve the aspirations of emerging DMD Policy 83 by improving the character of land adjacent to the Green Belt, and limiting any adverse impacts upon uses of public rights of way as required by the NPS for Waste Water.

## **8.17 Landscape and Visual**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policies 7.4 & 7.21; Green Infrastructure and Open Environments: Preparing Borough Tree and Woodland Strategies SPG; Shaping Neighbourhoods: Character and Context Draft SPG; Enfield Core Strategy 2011 – Core Policies 30, 31 & 32); Enfield UDP Policies (II) G7, G8, G17, G18, G19, G21, C36, C38 & C39; Emerging Enfield DMD Policies 69; 80, 81 & 84)*

8.17.1 ES Chapter 13 and related appendices include a detailed Landscape and Visual Impact Assessment of the Upgrade.

- 8.17.2 The Site is situated in a built up area of the Lee Valley adjacent to the Lee Valley Regional Park and Green Belt. Its visual context comprises industrial estates to the south, road and rail corridors and Edmonton town centre to the west, housing and the Lee Valley Leisure Complex to the north, and the River Lee Navigation and the William Girling Reservoir to the east. The landscape character of the site is of a built up industrial nature. The landscape character of the area is considered to be of low value as set out in the ES.
- 8.17.3 The Site is relatively flat and the density and height of built development around the site and the steep banks of the William Girling Reservoir currently contain views of the Site to within relatively close proximity. There is very limited visibility of the site to the north and west.
- 8.17.4 There are no protected views as defined in the London Plan. The LBE has identified a number of locally important views in the vicinity of the Site in relation to tall buildings including from Ponders End, however the Upgrade does not include any proposed tall buildings and therefore the locally important views will not be affected, except temporarily during construction, e.g through the use of tower cranes.
- 8.17.5 The proposed Upgrade is similar in layout, scale, type, height and massing to the existing Deephams Sewage Works. The urban and industrial nature of existing views including the existing Deephams Sewage Works and the adjacent Ardra Road Industrial Estate, and nearby road and rail infrastructure are considered to limit the landscape and visual impacts of the Upgrade.
- 8.17.6 The ES identifies that landscape and visual effects are likely to be greater during construction than operation due to the removal of trees at the eastern site boundary and the presence of tall structures such as cranes during the construction works.
- 8.17.7 As set out in Section 8.13, a Landscape Strategy and Outline Landscape Management Plan is included as part of the Planning Application (Environmental Statement Appendix 13.1). The Strategy was produced in tandem with the assessment of landscape and visual impacts and with input from ecologists and the design team. The Strategy seeks to reduce landscape and visual impacts of the proposed Upgrade works, provide replacement tree planting, to build in ecological mitigation and provide landscape enhancements on the Site where possible. The Strategy considers the landscape character of the Site itself, as well as views towards the Site from the Lee Valley Regional Park to the east.
- 8.17.8 The Strategy illustrates and describes the landscape proposals to be integrated as part of the Upgrade design. This includes proposed tree/ understory planting with native species to replace tree and vegetation losses as part of the works, enhanced landscape quality and landscape structure in the Site and at Site boundaries.
- 8.17.9 A number of additional measures have been built into the design of the Upgrade in order to reduce landscape and visual effects. These include:
- maintaining stockpile heights to the same height as existing bunds at the northern boundary to reduce visual impacts;
  - retaining the existing landscape buffer (strip of trees and scrub) and landscaped bund at the northern site boundary, albeit with localised vegetation losses due to the demolition and construction works; and

- retaining the Lea Valley Site of Metropolitan Importance for Nature Conservation (SMINC) within the site – this includes the wooded bund along the eastern boundary.
- 8.17.10 The ES concludes that the landscape and visual impact of the Upgrade will be of minor adverse significance, with the significance of the impact reducing as landscape planting matures. In the long term, the Landscape Strategy should provide a net enhancement to the Green Belt and to the setting of the Lee Valley Regional Park.
- 8.17.11 The Upgrade is therefore considered to accord with the requirements of the NPPF; NPS for Waste Water; London Plan Policy 7.4; the Draft Shaping Neighbourhoods SPG; Enfield Core Policies 30 and 31; Enfield UDP Policies (II) G17, G18 & G21; and emerging Enfield DMD policies 81 & 84. The Upgrade is also considered to accord with the aspirations of the Upper Lee Valley Opportunity Area Planning Framework.
- 8.17.12 The ES concludes that there will be impacts of minor temporary adverse significance, in part related to the loss of trees, but these will be addressed through the replanting included as part of the Landscape Strategy. The Upgrade is therefore considered to accord with the NPPF; London Plan Policy 7.21 and Green Infrastructure and Open Environments - Preparing Borough Tree and Woodland Strategies SPG; Enfield Core Policies 30 and 31; Enfield UDP Policies (II) G7, G8, C36, C38 and C39; and emerging Enfield Policy DMD 80.
- 8.17.13 During construction of the Upgrade there will be a need for temporary lighting or task lighting to meet health and safety requirements, however, this will be kept to the minimum necessary and be downward facing to minimise any light pollution or disruption to the surrounding area. These measures will also be set out in the Construction Environmental Management Plan.
- 8.17.14 Once operational the Upgrade will include replacement lighting for security purposes and to meet health and safety requirements for workers at the site. The details of this lighting are proposed to be secured by planning condition. This lighting will only be used where necessary to carry out operational maintenance and during emergencies. All lighting will be directed into the site, be downward facing and will be cowed to minimise any light pollution. The Upgrade is therefore considered to accord with the requirements of Enfield Core Policy 32 and emerging Enfield Policy DMD 69.

## **8.18 Historic Environment**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policy 7.8; Enfield Core Strategy 2011 – Core Policy 31; Emerging Enfield DMD – Policy 44)*

- 8.18.1 ES Chapter 12 includes a detailed assessment of the historic environment at the Site and within a surrounding 1km study area. The study area does not contain any Scheduled Monuments or Registered Parks and Gardens. A group of three Grade II Listed Buildings lies to the south-east of the site. There are two Conservation Areas, representing the Montague Road Cemeteries Conservation Area and the Crescent Conservation Area. The Crescent also contains one Grade II Listed Building. The study area does not contain any Locally Listed buildings as defined by the LBE, and there are not considered to be any buildings or structures of local historic importance on the Site.

- 8.18.2 The Site lies within an Area of Archaeological Importance, as defined in the Enfield Heritage Strategy (2008), which extends along the entire eastern side of the borough (from the M25 in the north to the Borough boundary in the south). The eastern edge of the study area contains the western edge of the Waltham Forest Archaeological Priority Zone.
- 8.18.3 The ES identifies that the site has the potential to contain a range of archaeological deposits of likely High and Medium Value. In particular it identifies that the Site has the high potential to contain Late Glacial organic deposits (Arctic Bed deposits) of potentially high significance. The potential loss of such deposits will be mitigated through the implementation of a programme of sampling, analysis and dating carried out prior to any disturbance of the deposits during the construction process.
- 8.18.4 The ES concludes that with the implementation of a programme of mitigation the construction of the Upgrade will have a residual effect of minor adverse significance. No operational impacts are predicted as a result of the Upgrade.
- 8.18.5 The Upgrade is considered to meet the requirements for the assessment of heritage assets and, with the implementation of a programme of mitigation measures, the protection of archaeological resources. The proposed development is therefore considered to accord with the NPPF; NPS for Waste Water; London Plan 2011 Policy 7.8; Enfield Core Policy 31; and emerging Enfield Policy DMD 44.

## **8.19 Air Quality**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policy 7.14; Draft Control of Dust and Emissions during Construction SPG 2013; Enfield Core Strategy – Core Policy 32; Draft Enfield DMD – Policies DMD 64 & 65)*

- 8.19.1 ES Chapter 7 includes a detailed air quality assessment to assess the impact of the proposed new Combined Heat Power plant and construction works associated with the Upgrade of the sewage works, including fugitive dust emissions and vehicle emissions.
- 8.19.2 The Site is within the borough wide Air Quality Management Area (AQMA), declared by the LBE as a result of a large number of exceedences of annual mean air quality objectives for NO<sub>2</sub> and PM<sub>10</sub> concentrations.
- 8.19.3 The ES concludes that the overall significance of the residual air quality impacts associated with the proposed Upgrade is negligible following appropriate mitigation measures which will be secured through the Construction Environment Management Plan. The mitigation measures include best practice measures such as:
- locating machinery and dust causing activities away from sensitive receptors;
  - erecting solid barriers around the Site boundary and ensuring these are kept clean at all times;
  - vehicle engines switched off when not in use i.e. no idling vehicles;
  - no site runoff of water or mud allowed;
  - stockpiles kept for the shortest time possible and if necessary, the use of sprinklers and hoses for dampening of exposed soil and materials employed;
  - providing an adequate supply of water on site where sprinklers and hoses are used for dust suppression;

- using enclosed chutes and covering skips where possible;
- observation of wind speed and direction prior to conducting dust-generating activities to determine the potential for dust nuisance to occur, avoiding potentially dust-generating activities during periods when wind direction may carry dust into sensitive areas and avoiding dust-generating operations during periods of high or gusty winds;
- stockpiles of soils and materials located as far as possible from sensitive properties, taking account of prevailing wind directions and seasonal variations in the prevailing wind;
- completed earthworks will be covered or vegetated as soon as is practicable;
- regular inspection of local highways and site boundaries to check for dust deposits (and removal if necessary);
- visual inspection of site perimeter to check for dust deposition (evident as soiling and marking) on vegetation, cars and other objects and taking remedial measures if necessary;
- use of dust-suppressed tools for all operations;
- all construction plant and equipment maintained in good working order;
- supply adequate equipment on Site to clean any dry spillages;
- use registered waste carriers to remove waste from Site; and
- no unauthorised burning of any material anywhere on Site.

8.19.4 The ES identifies that measures will be employed during construction of the Upgrade to reduce fugitive dust emissions and minimise vehicle emissions to mitigate the risk of adverse effects on air quality and sensitive receptors. The Upgrade is therefore considered to be in accordance with the NPPF; NPS for Waste Water; London Plan Policy 7.14; Draft Control of Dust and Emissions During Construction SPG; Enfield Core Policy 32; and emerging Enfield Policies DMD 64 and DMD 65.

8.19.5 The ES also identifies that once in operation the Upgrade will lead to an improvement in air quality with reduced pollutant concentrations from the new CHP Plant and, as set out Section 8.12 (Energy), reduced CO<sub>2</sub> emissions. The Upgrade will therefore accord with the requirements of NPPF; NPS for Waste Water; London Plan Policy 7.14; and emerging Enfield Policy DMD 65 to be at least air quality neutral.

## **8.20 Contaminated Land**

*(Relevant policies: NPPF; London Plan 2011 policy 5.21; Enfield Core Strategy – Core Policy 32; Emerging Enfield DMD – Policies 63, 64, 66 and 70)*

8.20.1 The Site is an operational sewage treatment works. The construction of the Upgrade will require demolition and excavation of areas previously developed and therefore carries a risk of encountering contamination. ES Chapter 8 includes a detailed assessment of contaminated land including the identification and assessment of the risks associated with contamination as required by the NPPF and emerging Enfield Policies DMD 66 and DMD 70.

8.20.2 The ES identifies that the mitigation of potential impacts will be through design, the inclusion of measures in the Construction Environment Management Plan (CEMP) (see Environmental Statement Appendix 5.3) and the excavation and removal of contaminated soil for disposal at a licensed or permitted waste management facility. A Remediation Strategy is included in ES Appendix 8.6, and as an Appendix to the

CEMP. These documents provide a detailed strategy for contaminated land, in accordance with national and local policy and guidance.

- 8.20.3 Based upon a comprehensive ground investigation the ES concludes that as a result of the construction of the Upgrade, together with the mitigation measures as outlined in the ES, the residual effect as a result of soil contamination and ground gases is considered to be negligible, and the residual effect of contaminants in the perched groundwater and shallow aquifer on surface waters and the deep Principal Aquifer is considered to be negligible to minor adverse significance.
- 8.20.4 Following construction and completion of mitigation, the ES concludes impacts of contaminated land are considered to be minor to moderate beneficial since the development itself will result in the permanent mitigation or removal of contamination which would otherwise have remained on Site. Once in operation the ES concludes that there are no significant residual impacts as a result of the Upgrade.
- 8.20.5 The proposed Upgrade is therefore considered to accord with the principles of the NPPF to prevent unacceptable risks from pollution and securing a safe development. Similarly, the proposed Upgrade is considered to meet with the requirements of London Plan Policy 5.21; Enfield Core Policy 32; and emerging Enfield DMD Policies 64, 66 and 70 ensuring that any contaminated land associated with the proposed development does not result in harm to human health, the environment or water quality.

## **8.21 Flood Risk**

*(Relevant policies: NPPF; Planning Practice Guidance; NPS for Waste Water; London Plan Policy 5.12; Enfield Core Strategy – Core Policies 28 & 29; Emerging Enfield DMD – Policies 59, 60, 61, 62 & 63)*

- 8.21.1 ES Chapter 10 contains a detailed assessment of potential Flood Risk and a Flood Risk Assessment (FRA) is included at Tab 9 in the Planning Application Folder.
- 8.21.2 The Site is predominantly in Flood Zone 1 with small sections located in Flood Zones 2 and 3. The proposed Upgrade of Deephams Sewage Works can be defined as 'Water-Compatible Development' as set out in the NPPF and therefore deemed appropriate across all flood zones. The Site is located approximately 13 km from the Tidal River Thames and is therefore not considered at risk of flooding from Sea/Tidal Influences.
- 8.21.3 The ES and the FRA conclude that it is not anticipated that any of the proposed works will result in a significant increase in the level of flood risk from rivers affecting the site or immediately surrounding area. The risk of flooding from sewers does not alter through the phases of the project as the inflow from sewers is managed by site operation.
- 8.21.4 The Site is susceptible to high groundwater levels following prolonged periods of rain and/or high river levels in the vicinity, although this is to be mitigated by designing for groundwater at ground level.
- 8.21.5 The Site is deemed to be at risk of flooding as a result of failure from the nearby impounding William Girling reservoir. However, this risk is managed by regular

inspections and associated maintenance of the reservoirs and therefore it can be deemed unlikely to occur.

8.21.6 Surface water flood risk during the construction stages is mitigated to an extent through the temporary excavations created acting as flood storage areas. The sustainable urban drainage systems (SuDS) identified for incorporation across the Site include:

- Pervious paving on the car park
- Rainwater harvesting across the proposed PSTs and Education Facility
- Living (brown) roofs on the RAS / SAS and FTFT pumping station buildings
- Attenuation for the road drainage

8.21.7 The proposed Upgrade therefore accords with the NPPF, Planning Practice Guidance, London Plan Policy 5.12, Enfield Core Policies 28 and 29, emerging Enfield DMD Policies 59, 60 and 62 as a FRA has been carried out to demonstrate there will be no increased flood risk up or down stream, and as the Upgrade has been designed to take account of the need to remain operational during a flood event.

8.21.8 As set out above the proposed Upgrade includes a number of measures to mitigate surface water and ground water flood risk and is therefore considered to accord with the requirements of emerging Enfield DMD Policies 61 and 63 to manage surface water and protect surrounding watercourses.

## **8.22 Noise and Vibration**

*(Relevant policies: NPPF; NPS for Waste Water; London Plan 2011 Policy 7.15; Enfield Core Strategy 2011 – Core Policy 32; Enfield UDP Policy E15; Emerging Enfield DMD – Policies 64 & 68).*

8.22.1 ES Chapter 14 contains a detailed assessment of potential Noise and Vibration, including the identification of noise sensitive receptors.

8.22.2 The Upgrade will generate temporary noise as a result of the associated demolition and construction activities. A series of mitigation measures are included in the Construction Environment Management Plan (Environmental Statement Appendix 5.3) to minimise the noise during construction including:

- Agreement of noise limits with LBE under the Control of Pollution Act 1974;
- Adopting restricted hours of working for noisy plant and activities;
- Site supervision arrangements to reduce noise and vibration to a minimum in accordance with best practicable means;
- Plant will be procured with specified noise limits and be properly maintained and operated in accordance with manufacturer's recommendations;
- Electrically powered plant will be preferred, where practicable, to mechanically powered alternatives;
- Where feasible, all stationary plant will be located so that the noise effect is minimised and, if practicable, static plant will be sound attenuated;
- Areas of the site where particularly noisy works are required will be surrounded where practicable by a hoarding, and will provide some acoustic shielding at ground level;

- The existing bund along the northern boundary and the associated 2.5m close boarded fence along the western section of the bund to the north of the construction compound, will remain in place for the duration of construction; and
- Residents living in locations identified as noise sensitive receptors will be kept informed of the progress of the construction works and will be contacted by letter prior to any activities which are likely to cause noise disturbance.

8.22.3 The ES concludes that with the above mitigation measures the residual impact from construction noise will range from negligible to minor adverse significance. The exception to this is at one residential property, Picketts Lock Cottage (Lock Keepers Cottage) where, due to the low ambient noise levels the impact is assessed to be of moderate adverse significance for a temporary period of approximately 3 months. Construction working hours for noisy activities will be limited to those specified by LBE. The ES identifies that the impact from construction vibration and construction traffic will be negligible.

8.22.4 Once the Upgrade is operational, the main sources of noise will be the plant, machinery and pumps which, in common with the existing operations, will run continuously, day and night. It is understood that there has been no history of noise complaints from residential areas around the Site. The assessment in the ES identified that the main sources of plant noise affecting receptors are those associated with existing plant (i.e. plant unaffected by the Upgrade). The new plant and equipment to be installed for the Upgrade is not likely to increase operational noise levels at nearby receptors, and the ES concludes that the impact from operational noise and vibration will be minor adverse to negligible.

8.22.5 It is considered that with the measures to minimise and mitigate the noise from construction and demolition in the Construction Environment Management Plan for the Upgrade, the proposals accord with the requirements of planning policies and guidance. Once in operation the noise associated with the Upgrade is not considered to require mitigation. It is therefore considered that the Upgrade accords with the NPPF and NPS for Waste Water through effective management of noise to avoid adverse impacts on health and quality of life. The Upgrade is also considered to meet the requirements of the London Plan Policy 7.15; Enfield Core Policy 32; Enfield UDP Policy (II) E15; and emerging Enfield Policies DMD 64 & 68.

## 8.23 Transport

*(Relevant policies: NPPF; NPS for Wastewater; Planning Practice Guidance; London Plan 2011 Policies 5.18, 6.1, 6.3, 6.9, 6.10, 6.13, 6.14, 7.24, 7.26, 7.27, 7.30, and related TfL and GLA guidance; Enfield Core Strategy 2011 – Core Policies 24, 25, 26 & 27; Enfield UDP Policies GD6, GD8, T1, T13, T30 & T32; Emerging Enfield DMD – Policies DMD 45, 47, 48 & 75)*

8.23.1 The planning application for the Upgrade is supported by a detailed assessment of transport issues in ES Chapter 16, together with a Transport Statement (Planning Application Folder – Tab 8), a Construction Travel Traffic Plan (ES Appendix 16.1) and a Construction Traffic Management Plan (ES Appendix 16.2) in lieu of a Delivery and Servicing Plan. These when read together form the Construction and Logistics Plan.

8.23.2 The Construction Travel Traffic Plan aims to reduce car use by construction staff, encouraging a modal shift away from single occupancy car use to more sustainable

means of travel such as public transport, walking and cycling. A package of measures is proposed to be implemented, to facilitate this shift during the construction phase.

- 8.23.3 A comprehensive Construction Traffic Management Plan will be implemented to provide clear direction on all traffic management activities relating to the access and egress for construction activities at the Deephams Sewage Works and is intended to be a living document, updated as required, in response to management and site changes. The purpose is to ensure that the impact and risk to residents, local community, businesses, highway network users and construction staff is kept to a minimum. This will include construction vehicle routing via Meridian Way (A1055) and Picketts Lock Lane, with traffic routed away from residential areas.
- 8.23.4 Access to the site during site construction and operation will be from Picketts Lock Lane and Ardra Road, with Picketts Lock Lane being the main access. The visibility of the access points is assessed in the Transport Statement and considered acceptable.
- 8.23.5 The Site has good road access off the A1055 Meridian Way with the adjacent highway network having capacity to cope with both construction and operational traffic without impacting on capacity or highway safety.
- 8.23.6 Due to the proximity to the site of the Lee Navigation, the use of water freight as part of construction of the Upgrade has been considered in accordance with London Plan Policy 6.14, 7.24, 7.30; Enfield Core Policy 27; emerging DMD 75. A Water Freight Assessment has been submitted as part of the planning application (Environmental Statement Appendix 16.3), the conclusion of which is that there are a combination of factors, including the nature and volume of materials, the availability of local supplies, and the additional costs and handling associated with water freight, that mean road transport is the most appropriate transport solution during the construction phase. A pre-application draft of this assessment has been shared with TfL, the GLA, LBE and the Canals and Rivers Trust.
- 8.23.7 The Transport Statement and ES establish that, as a worst case, construction of the Upgrade may result in 304 one way trips a day, including 60 HGV daily trips. The ES concludes that with the implementation of the Construction Travel Traffic Plan and Construction Traffic Management Plan, the transport impact as a result of construction of the Upgrade will be negligible. Therefore no significant residual effects on transport are predicted for the construction phase of the Upgrade.
- 8.23.8 Traffic movements during operation of the upgraded sewage works are not expected to change from the existing situation, therefore the ES concludes that there will be no significant effects on transport in the operational phase.
- 8.23.9 The effects of the Upgrade have been assessed and are not considered to adversely affect the capacity or safety of the network. The Upgrade is therefore considered to be in accordance with the NPPF; NPS for Waste Water; London Plan Policy 6.3; Enfield Core Policy 24; Enfield UDP Policies (II) GD6, GD8, T1 & T13; and emerging Enfield Policies DMD 47 & DMD 48.
- 8.23.10 The Upgrade has had regard to the NPPF; NPS for Waste Water; London Plan Policies 5.18, 6.1, 6.14, 7.24, 7.26, 7.27, 7.30; Enfield Core Policy 27; and emerging

Enfield policy DMD 75, however, as set out above it is not considered practical or cost-effective to import or export materials from the site by rail or water.

- 8.23.11 The planning application for the Upgrade is supported by a Transport Statement, a Construction Travel Traffic Plan and a Construction Traffic Management Plan (in lieu of a Delivery and Servicing Plan). These when read together form the Construction and Logistics Plan. The Upgrade is therefore considered to accord with the NPPF; the PPG; NPS for Waste Water; London Plan Policies 6.1, 6.3, 6.14; and emerging Enfield Policy DMD 48.
- 8.23.12 Through the implementation of the Construction Travel Traffic Plan the Upgrade is considered to accord with the requirements of the NPPF; NPS for Waste Water; London Plan Policies 6.1, 6.9 & 6.10; Enfield Core Policies 24, 25 & 26; and Enfield UDP Policy (II) GD6 to encourage walking, cycling and the use of public transport.
- 8.23.13 As set out in the Transport Statement, during the construction phase of the Upgrade 160 car parking spaces, including 3 disabled spaces and 20 cycle parking spaces and on-site changing facilities will be provided in the construction compound area in the north west part of the Site, which is considered to meet the requirements of the London Plan Policy 6.13; Enfield UDP Policy (II) T30 & T32; and emerging Enfield Policy DMD 45 based upon the expected number of staff during peak construction. 20% of the spaces will be provided for electric vehicles, in accordance with London Plan Policy 6.13; Enfield Core Policy 24 and emerging Enfield Policy DMD 45.
- 8.23.14 The construction phase parking area is proposed to be retained as a surfaced tarmaced area following completion of the Upgrade, for use as a parking and storage area.

## **8.24 Waste**

*(Relevant policies: NPPF; NPS for Waste Water; PPS10; London Plan 2011 Policies 5.16, 5.18; Enfield Core Strategy – Core Policy 22)*

- 8.24.1 The impact of waste arisings generated during the construction phase of the Upgrade is considered in detail in Chapter 17 of the ES and in the Construction Waste Management Plan (Environmental Statement Appendix 17.1). The principal waste streams arising from the Upgrade will be demolition, excavation and construction waste.
- 8.24.2 Significant quantities of demolition, excavation and construction waste will be generated from the enabling works, demolition of existing structures and construction of the Upgrade. Much of the demolition waste will be recovered for recycling elsewhere or processed for reuse as secondary aggregate on Site to minimise the net quantity requiring disposal. Similarly, excavation waste will be reused as far as possible on site as general fill and in landscaping, except where it is unsuitable for these uses due to its contamination. A range of measures for minimising construction waste together with a target of reusing or recycling 95% of the waste produced will ensure very low residual waste quantities.
- 8.24.3 In respect of National Policy, the scheme accords with the NPPF in that will use natural resources prudently and minimise waste and PPS10 as it drives waste management up the waste hierarchy and addresses waste as a resource. Thames Water has set out the arrangements for managing the waste produced during construction and also prepared a Site Waste Management Plan as required by the

NPS for Waste Water (section 4.14.5). Furthermore, as indicated in the NPS, the scheme has been designed to balance cut and fill of excavated soils.

8.24.4 With a target of reusing or recycling 95% of the waste produced during construction, the Upgrade scheme meets the levels set by policy 5.16 of the London Plan. In addition, the provision of on-site recycling to create secondary aggregate adheres to the requirements of policy 5.18 of the London Plan. LBE's Core Policy 22 is also met by the re-use of materials on site and recycling of construction, demolition and excavation waste.

## **8.25 Planning Obligations and the Community Infrastructure Levy**

*(Relevant policies: NPPF; London Plan 2011 Policies 8.2 & 8.3; Enfield Core Strategy 2011 – Core Policy 46)*

8.25.1 A draft 'Heads of Terms' for a s106 agreement is submitted as part of the planning application (see Planning Application Folder – Tab 10). In addition, the application submission includes a completed 'CIL Additional Information Form' (see Planning Application Folder – Tab 2).

8.25.2 London Plan Policies 8.2 and 8.3, together with related Mayoral guidance, and the LBE Core Policy 46 and related guidance seek to ensure that provision is made through the determination of planning applications for necessary legal obligations and contributions to be secured through s106 agreements and the payment of CIL.

8.25.3 A s106 agreement will be drafted alongside LBE's consideration of the planning application. It is anticipated that this will secure the measures included within the Draft Heads of Terms document, as amended through the determination process. This will include:

- The provision of a connection pipe to the proposed future Lee Valley Heat Network;
- The implementation of an agreed Local Employment Strategy; and
- The payment of a Business and Employment Initiative Contribution, if the agreed training specified in the Local Employment Strategy is not provided.

8.25.4 These measures are additional to measures and commitments that will be secured through the imposition of conditions attached to any grant of planning permission. Thames Water considers that with the completion of a s106 agreement, the Upgrade proposals accord with relevant planning policies and guidance on planning obligations.

8.25.5 In relation to CIL, it is considered that a CIL payment will become due for the additional floorspace created through the construction of the proposed Control Room building as part of the Upgrade. Other new buildings that will be constructed are exempt from CIL payment as they are classed as buildings into which people "do not normally go" – e.g. pumping stations or other buildings containing plant and equipment that would only be visited for maintenance or other reasons.

8.25.6 Subject to confirmation of the information on the CIL Additional Information Form, and the grant of planning permission and implementation of the Upgrade, the LBE will issue a CIL Liability notice requiring payment of the CIL contribution on commencement of the development. With the payment of the CIL contribution, it is

considered that the Upgrade proposals accord with relevant planning policies and guidance on CIL.