NORTH LONDON WASTE AUTHORITY

NORTH LONDON HEAT AND POWER PROJECT

HEALTH IMPACT ASSESSMENT

The Planning Act 2008 The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5 (2) (q)

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Glossary

Refer to Project Glossary (AD01.05)

Executive summary

i.i Introduction

i.i.i This Health Impact Assessment (HIA) has been prepared to support the Development Consent Order (DCO) application for the North London Heat and Power Project (the Project).

i.i.ii The London Boroughs of Enfield (LB Enfield) and Waltham Forest (LB Waltham Forest), along with Public Health England (PHE) have been consulted on the scope of the HIA as part of the pre-application process. This related to the potential health issues likely to be associated with the Project and the methodology used to assess impacts associated with these issues.

i.i.iii Subsequent consultation was undertaken as part of both Phase One and Phase Two Consultation.

i.i.iv Key health issues addressed within the HIA include:

a. the potential emissions from the Project;
b. the effect on the health of the local population as a result of the Project;
c. accessibility in and around the Application Site through walking and cycling; and
d. the effect of the Project on the local transport network, including public transport and the prevalence of commercial vehicles.

i.ii Planning policy review

i.ii.i European, national, regional and local policy and guidance pertinent to health has been reviewed. This includes:

a. The Amsterdam Treaty – ensuring health protection as part of European Union Community activities;
b. The Waste Incineration Directive (Directive 2000/76/EC) – prevents harm to the environment and human health arising from the incineration;
c. National Policy Statements – relating to how health is addressed as part of an Environmental Statement (AD06.02) and the technology specific considerations that should be taken into account for renewable energy applications;
d. Government White Papers – provide principles for making healthy lifestyle choices, how public health can be tackled and how health impact assessments can be required for policies, plans and projects;
e. National Planning Policy Framework (NPPF) – encourages the use of health impact assessments within the development process and states that development should address barriers to health and well-being;
f. National Waste Policy – states how local authorities should consider waste impacts associated with developments and that human health should be a consideration of waste management processes;

g. National Health Guidance – produced by the National Institute for Health and Care Excellence (NICE), a number of policies have been published in relation to physical activity, injury prevention among children, and walking and cycling;

h. The London Plan (2015) – health and well-being forms part of its vision and crosscutting themes;

i. London Health Inequalities Strategy – sets out objectives for tackling health inequality and outlines importance of health impact assessment in decision making;

j. Health Issues in Planning Best Practice Guidance (2007) – states that health impacts should be considered at the very outset of developing planning proposals;

k. Healthy Urban Development Unit (HUDU) Planning for Health in London: The ultimate manual for primary care trusts and boroughs (2009) - supports the reasoning that there is a need to manage the relationship between a person's health and the social and environmental context within which they live;

l. Mayoral Strategies and Supplementary Planning Guidance – health is considered within the Municipal Waste Management Strategy (2011), the Transport Strategy (2010), the Climate Change Adaptation Strategy (2011) and Air Quality Strategy (2011), as well as SPG for dust and emissions, and green infrastructure;

m. LB Enfield Local Plan – the Enfield Core Strategy 2010-2025 sets the strategic objective to promote healthier lifestyles and address inequalities in health;

n. LB Waltham Forest Local Plan – the Waltham Forest Core Strategy (2012) includes strategic objectives for waste to be managed in an environmentally friendly way to protect human health and the environment;

o. Draft North London Waste Plan – the Draft North London Waste Plan published for consultation in July 2015 requires developers to identify the health implications of waste developments and any development which requires an Environmental Impact Assessment to submit a health impact assessment; and

p. Health and Well-being Strategies - LB Enfield has a series of relevant strategies that aim to improve health and well-being, covering joint health and well-being, sustainable communities and community cohesion.

i.ii.ii This policy and guidance has informed the development of the HIA.

i.iii The Application Site

i.iii.i The Application Site, as shown on the Site Location Plan (A_0001 and A_0002), extends to approximately 22 hectares and is located wholly within LB Enfield. The Application Site comprises the existing waste management site known as the Edmonton EcoPark where the permanent

facilities would be located, part of Ardra Road, land around the existing water pumping station at Ardra Road, Deephams Farm Road, part of Lee Park Way and land to the west of the River Lee Navigation, and land to the north of Advent Way and east of the River Lee Navigation (part of which would form the Temporary Laydown Area and new Lee Park Way access road). The post code for the Edmonton EcoPark is N18 3AG and the grid reference for the proposed development is TQ 35750 92860.

i.iii.ii The Application Site includes all land required to deliver the Project. This includes land that would be required temporarily to facilitate the development.

i.iii.iii Both the Application Site and the Edmonton EcoPark (existing and proposed) are shown on Plan A_0003 and A_0004 contained within the Book of Plans (AD02.01). Throughout this report references to the Application Site refer to the proposed extent of the Project works, and Edmonton EcoPark refers to the operational site. Upon completion of the Project the operational site would consist of the Edmonton EcoPark and additional land required to provide new access arrangements and for a water pumping station adjacent to the Deephams Sewage Treatment Works outflow channel.

i.iv The Project

i.iv.i The Project would replace the existing EfW facility at Edmonton EcoPark, which is expected to cease operations in 2025, with a new and more efficient ERF which would produce energy from residual waste, and associated development, including temporary works required to facilitate construction, demolition and commissioning. The proposed ERF would surpass the requirement under the Waste Framework Directive (Directive 2008/98/EC) to achieve an efficiency rating in excess of the prescribed level, and would therefore be classified as a waste recovery operation rather than disposal.

i.iv.ii The main features of the Project once the proposed ERF and permanent associated works are constructed and the existing EfW facility is demolished are set out in the Book of Plans (AD02.01) and comprise:

a. a northern area of the Edmonton EcoPark accommodating the proposed ERF;
b. a southern area of the Edmonton EcoPark accommodating the RRF and a visitor, community and education centre with offices and a base for the Edmonton Sea Cadets (EcoPark House);
c. a central space, where the existing EfW facility is currently located, which would be available for future waste-related development;
d. a new landscape area along the edge with the River Lee Navigation; and
e. new northern and eastern Edmonton EcoPark access points.

i.v Health Impact Assessment Process

i.v.i The methodology used for the HIA of the Project was derived from elements of two recognised methodologies; the Merseyside Guidelines for Health Impact Assessment[1] and the HUDU Planning for Health 'Rapid HIA Tool checklist'[2].

i.v.ii The HIA has been undertaken through a systematic process of:

a. scope definition;
b. policy review;
c. baseline data gathering;
d. identifying relevant health determinants
e. linking relevant health determinants to health effects;
f. assessment of health impacts; and
g. development of evidence based recommendations.

i.v.iii An HIA Scoping Report was submitted to the Directors of Public Health at LB Enfield and LB Waltham Forest, as well as PHE. These organisations were consulted on the findings of the process outlined above.

i.vi Potential health effects

i.vi.i In line with the implemented HIA methodology, potential health impacts (both positive and negative) were initially identified for relevance against the following health determinants, taken from the HUDU guidance:

a. housing quality and design;
b. access to healthcare services and other social infrastructure;
c. **access to open space and nature;**
d. **air quality, noise and neighbourhood amenity;**
e. **accessibility and active travel;**
f. **crime reduction and community safety;**
g. access to healthy food;
h. **access to work and training;**
i. **social cohesion and lifetime neighbourhoods;**
j. **minimising the use of resources;** and
k. **climate change.**

i.vi.ii Those determinants above in bold were identified as potentially being affected by the Project and were assessed further.

[1] Merseyside Health Impact Assessment Steering Group (May 2001) The Merseyside Guidelines for Health Impact Assessment
[2] London Healthy Development Unit (2013) HUDU Planning for Health: Rapid Health Impact Assessment Tool.

i.vi.iii From information available in the Design and Access Statement (AD05.07), the Environmental Statement (ES) (AD06.02) and the Code of Construction Practice (CoCP) (AD05.12) an assessment of potential health impacts was made.

i.vi.iv Overall, the Project is likely to have beneficial health effects at regional and local levels.

i.vi.v During construction there would be limited loss of publically accessible open space and limited loss of access to open space. There would be some permanent loss of space for pedestrian, cyclists and horse riders along Lee Park Way, however the route would gain a new improved route surface and formal footway. In addition, access to the main carriageway would be maintained for cyclists should they wish to do so.

i.vi.vi During construction would be when the majority of negative effects would be experienced by existing local communities. This primarily relates to the loss, or perceived loss, of residential amenity, which concerns air quality, noise, traffic and visual impacts.

i.vi.vii There would be a small permanent loss of foot and cycle path space along Lee Park Way as a result of changes to the road to enable better access to the Application Site, though this would be off-set by the improved surfacing for this path.

i.vi.viii Older people, children and young people, those with disabilities and those with young children, could be most affected during construction without mitigation measures being implemented.

i.vi.ix During operation, there would be a permanent loss of some jobs from the existing EfW facility as the new facility requires a smaller operational workforce. There would also be new improved community facilities including a replacement facility for the Edmonton Sea Cadets.

i.vi.x Recommendations were suggested after initial assessment as a way of promoting health and wellbeing as part of the Project during construction. These recommendations have been revisited as a result of Phase Two Consultation and many have been included in the CoCP (AD05.12) submitted with this Application.

1 Introduction

1.1.1 This Health Impact Assessment (HIA) has been prepared to support North London Waste Authority's (the Applicant's) application (the Application) to the Secretary of State for Energy and Climate Change for a Development Consent Order (DCO) pursuant to Section 37 of the Planning Act 2008 (as amended).

1.1.2 The Application is for the North London Heat and Power Project (the Project) comprising the construction, operation and maintenance of an Energy Recovery Facility (ERF) capable of an electrical output of around 70 megawatts (MWe) at the Edmonton EcoPark in north London with associated development, including a Resource Recovery Facility (RRF). The proposed ERF would replace the existing Energy from Waste (EfW) facility at the Edmonton EcoPark.

1.1.3 The Project is a Nationally Significant Infrastructure Project for the purposes of Section 14(1)(a) and section 15 in Part 3 of the Planning Act 2008 (as amended) because it involves the construction of a generating station that would have a capacity of more than 50MWe.

1.2 Purpose of this report

1.2.1 This Assessment forms part of a suite of documents accompanying the Application submitted in accordance with the requirements set out in section 55 of the Planning Act 2008 (as amended) and Regulations 5, 6 and 7 of the Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009 (APFP Regulations 2009), and should be read alongside those documents (see Project Navigation Document AD01.02).

1.2.2 The scope of this HIA has been reviewed and agreed with stakeholders, including London Borough of Enfield (LB Enfield), London Borough of Waltham Forest (LB Waltham Forest) and Public Health England (PHE).

1.3 Document structure

1.3.1 This report qualitatively assesses the potential health impacts of the Project and its influence on relevant health determinants (see Section 2.3) The structure of the report is:

a. Section 2: Background to Health – sets out the purpose of HIA, the legislative and policy context and the definitions and determinants of health;

b. Section 3: Assessment methodology – sets out the scope, structure and method for the assessment of health impacts;

c. Section 4: Community profile summary – summarises the demographic and health profile of the neighbourhood, local, regional and national levels and identifies vulnerable groups;

d. Section 5: Assessment of health outcomes and recommendations – assesses the health outcomes of the Project for relevant health

determinants and makes recommendations to mitigate and enhance outcomes; and

e. Section 6: Conclusions – summarises the overall health effect of the Project and summarises key health outcomes of the Project.

1.4 The Applicant

1.4.1 Established in 1986, the Applicant is a statutory authority whose principal responsibility is the disposal of waste collected by the seven north London boroughs of Barnet, Camden, Enfield, Hackney, Haringey, Islington and Waltham Forest (the Constituent Boroughs).

1.4.2 The Applicant is the UK's second largest waste disposal authority, handling approximately 3 per cent of the total national Local Authority Collected Waste (LACW) stream. Since 1994 the Applicant has managed its waste arisings predominantly through its waste management contract with LondonWaste Limited (LWL) and the use of the EfW facility at the existing Edmonton EcoPark and landfill outside of London.

1.4.3 LWL is a private waste management company wholly owned by the Applicant, and is the freeholder of the Edmonton EcoPark and the operator of the existing EfW facility. LWL has a current contract with the Applicant for management of its waste which expires in December 2025 with flexibility for termination sooner. The contract includes:

a. the reception, treatment and disposal of residual wastes;

b. the operation of Reuse and Recycling Centres (RRC), including the recycling of wastes and the transfer of residual wastes to a disposal point;

c. the reception and treatment of separately collected organic wastes;

d. the reception and transportation of other separately collected wastes for recycling by third parties; and

e. the reception and transportation of other separately collected clinical and offensive wastes for treatment by third parties.

1.5 The Application Site

1.5.1 The Application Site, as shown on the Site Location Plans (A_0001 and A_0002) in the Book of Plans (AD02.01), extends to approximately 22 hectares and is located wholly within the London Borough of Enfield (LB Enfield). The Application Site comprises the existing waste management site known as the Edmonton EcoPark where the permanent facilities would be located, part of Ardra Road, land around the existing water pumping station at Ardra Road, Deephams Farm Road, part of Lee Park Way and land to the west of the River Lee Navigation, and land to the north of Advent Way and east of the River Lee Navigation (part of which would form the Temporary Laydown Area and new Lee Park Way access road). The post code for the Edmonton EcoPark is N18 3AG and the grid reference is TQ 35750 92860.

1.5.2 The Application Site includes all land required to deliver the Project. This includes land that would be required temporarily to facilitate the development.

1.5.3 Both the Application Site and the Edmonton EcoPark (existing and proposed) are shown on Plan A_0003 and A_0004 contained within the Book of Plans (AD02.01). Throughout this report references to the Application Site refer to the proposed extent of the Project works, and Edmonton EcoPark refers to the operational site. Upon completion of the Project the operational site would consist of the Edmonton EcoPark and additional land required to provide new access arrangements and for a water pumping station adjacent to the Deephams Sewage Treatment Works outflow channel.

Edmonton EcoPark

1.5.4 The Edmonton EcoPark is an existing waste management complex of around 16 hectares.

1.5.5 Current use of the Edmonton EcoPark comprises:

a. an EfW facility which treats circa 540,000 tonnes per annum (tpa) of residual waste and generates around 40MW_e (gross) of electricity;

b. an In-Vessel Composting (IVC) facility which processes food, landscaping and other green waste from kerbside collections and Reuse and Recycling Centres (RRCs) as well as local parks departments. The facility currently manages around 30,000tpa, and has a permitted capacity of 45,000tpa;

c. a Bulky Waste Recycling Facility (BWRF) and Fuel Preparation Plant (FPP) which receive bulky waste from RRCs and direct deliveries. These facilities respectively recycle wood, metal, plastic, paper, card and construction waste; and separate oversized items and shred waste suitable for combustion. These integrated facilities manage over 200,000tpa;

d. an Incinerator Bottom Ash (IBA) Recycling Facility which processes ash from the existing EfW facility;

e. a fleet management and maintenance facility which provides parking and maintenance facilities for the Edmonton EcoPark fleet of operational vehicles;

f. associated offices, car parking and plant required to operate the facility; and

g. a former wharf and single storey building utilised by the Edmonton Sea Cadets under a lease.

1.5.6 In order to construct the proposed ERF, the existing BWRF and FPP activities would be relocated within the Application Site; the IVC facility would be decommissioned and the IBA recycling would take place off-site.

Temporary Laydown Area and eastern access

1.5.7 The proposed Temporary Laydown Area is an area of open scrubland located to the east of the River Lee Navigation and north of Advent Way. There is no public access to this area. The Temporary Laydown Area would be reinstated after construction and would not form part of the ongoing operational site.

1.5.8 In addition to the Temporary Laydown Area the Application Site includes land to the east of the existing Edmonton EcoPark which would be used for the new Lee Park Way entrance and landscaping along the eastern boundary.

Northern access

1.5.9 The Application Site also includes Deephams Farm Road and part of Ardra Road with land currently occupied by the EfW facility water pumping station between the junction of A1005 Meridian Way and Deephams Farm Road.

1.6 Surrounding area

1.6.1 The Application Site is located to the north of the A406 North Circular Road in an area that is predominantly industrial. The Lee Valley Regional Park (LVRP) is located to the east of the Edmonton EcoPark.

1.6.2 Land to the north and west of the Application Site is predominantly industrial in nature. Immediately to the north of the Edmonton EcoPark is an existing Materials Recovery Facility (MRF) which is operated by a commercial waste management company, alongside other industrial buildings. Further north is Deephams Sewage Treatment Works. Beyond the industrial area to the north-west is a residential area with Badma Close being the nearest residential street to the Application Site (approximately 60m from the nearest part of the boundary) and Zambezie Drive the nearest to the Edmonton EcoPark at approximately 125m west.

1.6.3 Eley Industrial Estate located to the west of the Application Site comprises a mixture of retail, industrial and warehouse units.

1.6.4 Advent Way is located to the south of the Application Site adjacent to the A406 North Circular Road. Beyond the A406 North Circular Road are retail and trading estates; this area is identified for future redevelopment to provide a housing-led mixed use development known as Meridian Water.

1.6.5 The LVRP and River Lee Navigation are immediately adjacent to the eastern boundary of the Edmonton EcoPark, and Lee Park Way, a private road which also forms National Cycle Network (NCN) Route 1, runs alongside the River Lee Navigation. To the east of the River Lee Navigation is the William Girling Reservoir along with an area currently occupied by Camden Plant Ltd. which is used for the crushing, screening and stockpiling of waste concrete, soil and other recyclable materials from construction and demolition. The nearest residential areas to the east of the Application Site and LVRP are located at Lower Hall Lane,

approximately 550m from the Edmonton EcoPark and 150m from the eastern edge of the Application Site.

1.7 The Project

1.7.1 The Project would replace the existing EfW facility at Edmonton EcoPark, which is expected to cease operations in around 2025, with a new and more efficient ERF which would produce energy from residual waste, and associated development, including temporary works required to facilitate construction, demolition and commissioning. The proposed ERF would surpass the requirement under the Waste Framework Directive (Directive 2008/98/EC) to achieve an efficiency rating in excess of the prescribed level, and would therefore be classified as a waste recovery operation rather than disposal.

1.7.2 The main features of the Project once the proposed ERF and permanent associated works are constructed and the existing EfW facility is demolished comprise:

a. a northern area of the Edmonton EcoPark accommodating the proposed ERF;

b. a southern area of the Edmonton EcoPark accommodating the RRF and a visitor, community and education centre with offices and a base for the Edmonton Sea Cadets (‘EcoPark House’);

c. a central space, where the existing EfW facility is currently located, which would be available for future waste-related development;

d. a new landscape area along the edge with the River Lee Navigation; and

e. new northern and eastern access points to the Edmonton EcoPark.

1.7.3 During construction there is a need to accommodate a Temporary Laydown Area outside of the future operational site because of space constraints. This would be used to provide parking and accommodation for temporary staff (offices, staff welfare facilities), storage and fabrication areas, and associated access and utilities.

1.7.4 There are some aspects of the Project design that require flexibility and have therefore yet to be fixed, for example, the precise location and scale of the buildings associated with the Project. It would not be possible to fix these elements in advance of the detailed design and construction which would be undertaken following appointment of a contractor should the DCO be granted. In order to accommodate this and ensure a robust assessment of the likely significant environmental effects of the Project, the Application is based on the limits of deviation set out in the Book of Plans (AD02.01), which identifies:

a. works zones for each work or group of works (to establish the area in which the development can be located); and

b. maximum building envelopes (to establish the maximum building length, width, height and footprint).

1.7.5 The Book of Plans (AD02.01) is supplemented by Illustrative Plans (included in the Design Code Principles, AD02.02) that set out the indicative form and location of buildings, structures, plant and equipment, in line with the limits of deviation established by the draft DCO (AD03.01).

1.7.6 A separate Environmental Permit would need to be obtained from the Environment Agency (EA) for the operation of the waste facility under the Environmental Permitting (England and Wales) Regulations 2010. The existing EfW facility at the Edmonton EcoPark is subject to an Environmental Permit issued by the EA. The Applicant is currently in discussions with the EA regarding an application for the new Environmental Permit(s) associated with the proposed ERF with a view to submitting an application in parallel with the DCO process.

Principal development (Works No.1a)

1.7.7 The principal development comprises the construction of an ERF located at the Edmonton EcoPark, fuelled by residual waste and capable of an electrical output of around 70MW_e (gross) of electricity. The principal development consists of the following development, located within the limits of deviation shown on Drawing C_0002 and within the building envelopes shown on Drawing C_0003 (in the Book of Plans (AD02.01)):

(i) a main building housing:

(a) a tipping hall;

(b) waste bunker and waste handling equipment;

(c) two process lines (with each line having a capacity of 350,000 tonnes of waste per annum), consisting of a moving grate, furnace, boiler and a flue gas treatment plant;

(d) facilities for the recovery of incinerator bottom ash and air pollution control residue;

(e) steam turbine(s) for electricity generation including equipment for heat off-take; and

(f) control room containing the operational and environmental control and monitoring systems, and offices.

(ii) entry and exit ramps to the ERF;

(iii) a stack containing flues for flue gas exhaust;

(iv) cooling equipment; and

(v) an observation platform enclosure.

Associated development (Works No. 1b – 7)

1.7.8 Associated development within the meaning of section 115(2) of the Planning 2008 Act (as amended) in connection with the Nationally Significant Infrastructure Project referred to in Works No.1a, comprising:

(a) Works No.1b – works required to provide buildings, structures, plant and equipment needed for the operation of the ERF as shown on Drawing C_0002 (AD02.01) comprising:

(i) a wastewater treatment facility;

(ii) a water pre-treatment plant;

(iii) external stores and workshops;

(iv) a fuelling area and fuel storage, vehicle wash, transport offices and staff facilities, toilets, natural gas intake and management compound, and fire control water tank(s); and

(v) electrical substation(s).

(b) Works No.2 – the construction of a resource recovery facility comprising the following building, structures and plant, as shown on Drawing C_0004 and within the building envelope shown on Drawing C_0005 (AD02.01):

(i) a Recycling and Fuel Preparation Facility (RFPF);

(ii) a RRC;

(iii) offices, and staff and visitor welfare facilities;

(iv) odour abatement and dust suppression plant and equipment; and

(v) fire control water tank(s) and pump house and equipment.

(c) Works No.3 – the construction of a building to provide visitor, community and education facilities, office accommodation, and a boat canopy, as shown on Drawing C_0006 and within the building envelope shown on Drawing C_0007 (AD02.01).

(d) Works No.4 – utilities and infrastructure work, landscaping, access, security and lighting, and weighbridges, as shown on Drawing C_0008 (AD02.01), comprising:

(i) With regard to the following

(a) potable water;

(b) waste water;

(c) surface water;

(d) foul water;

(e) raw water;

(f) electricity;

(g) gas; and

(h) CCTV, telecoms and data,

works could include:

- the diversion, repositioning, decommissioning, removal, replacement, modification or upgrading of existing pipes, cables, systems and associated apparatus;
- the laying or installation of new pipes, cables, systems and associated apparatus; and
- the creation of connections to existing or new pipes, cables, systems and associated apparatus.

(ii) the erection of a raw water pumping station;

(iii) stabilisation works to the eastern bank of Salmon's Brook;

(iv) the construction of surface water pumps, pipework and attenuation tanks;

(v) landscaping works;

(vi) the installation of areas of green roof and/or brown roof;

(vii) the widening of the existing entrance into the Edmonton EcoPark from Advent Way, including modification or replacement of the bridge over Enfield Ditch;

(viii) construction within the Edmonton EcoPark of vehicle and cycle parking, vehicle, cycle and pedestrian routes, and weighbridges;

(ix) construction of an access into the Edmonton EcoPark from Lee Park Way, including bridging over Enfield Ditch;

(x) improvements to Lee Park Way including vehicle barriers and the creation of segregated pedestrian and cycle paths;

(xi) improvements to Deephams Farm Road and use of Deephams Farm Road as an access to the Edmonton EcoPark;

(xii) the resurfacing of Ardra Road (if required);

(xiii) security, fencing, and lighting works and equipment;

(xiv) the erection of security facilities and equipment and gatehouses within the operational site at access points from Advent Way, Ardra Road, and Lee Park Way;

(xv) the upgrade and maintenance of the existing bridge over the River Lee Navigation; and

(xvi) the installation of photovoltaic panels at roof level of the ERF and RRF.

(e) Works No.5 – works for the creation of the Temporary Laydown Area and its temporary use, as shown on Drawing C_0009 (AD02.01), as follows:

(i) areas of hardstanding;

(ii) the erection of fencing, hoarding or any other means of enclosure;

(iii) the erection of security facilities and equipment and gatehouses;

(iv) vehicle parking;

(v) office and staff welfare accommodation;

(vi) storage, fabrication, laydown area;

(vii) foul water storage and pumps and surface water attenuation storage and pumps;

(viii) utility works including electricity, water, CCTV, telecoms and data;

(ix) the creation of vehicular, cycle and pedestrian access from Lee Park Way to the Temporary Laydown Area; and

(x) restoration of the Temporary Laydown Area.

(f) Works No.6 – site preparation and demolition works within the area as shown on Drawing C_0010 (AD02.01), comprising:

(i) demolition of existing buildings, structures and plant excluding demolition of the existing EfW facility;

(ii) construction of a temporary ash storage building;

(iii) realignment of the exit ramp from the existing EfW facility; and

(iv) works to prepare the land shown on Drawing C_0008 (AD02.01) for the construction of works numbers 1a, 1b, 2, 3, 4 and 5.

(g) Works No.7 – as shown on Drawing C_0011 (AD02.01), comprising decommissioning and demolition of the existing EfW facility and removal of:

(i) the existing stack;

(ii) demolition of the existing water pumping station on Ardra Road; and

(iii) making good the cleared areas.

1.7.9 The draft DCO also identifies such other works as may be necessary or expedient for the purposes of or in connection with the construction, operation and maintenance of the authorised development which do not give rise to any materially new or materially different environmental effects from those assessed and set out in the Environmental Statement (ES) (AD06.02).

1.8 Stages of development

1.8.1 The proposed ERF is intended to be operational before the end of 2025, but with the precise timing of the replacement to be determined. In order to do this, the following key steps are required:

a. obtain a DCO for the new facility and associated developments;

b. obtain relevant environmental permit(s) and other licences, consents and permits needed;

c. identify a suitable technology supplier;

d. agree and arrange source(s) of funding;

e. enter into contract(s) for design, build and operation of new facility and associated development;

f. move to operation of new facility; and

g. decommission and demolish the existing EfW facility.

1.8.2 Site preparation and construction would be undertaken over a number of years and it is expected that the earliest construction would commence is 2019/20, although this may be later. Construction would be implemented in stages to ensure that essential waste management operations remain functioning throughout. This is especially relevant for the existing EfW facility and associated support facilities.

1.8.3 The stages of the Project are as follows:

a. Stage 1a: site preparation and enabling works;
b. Stage 1b: construction of RRF, EcoPark House and commencement of use of Temporary Laydown Area;
c. Stage 1c: operation of RRF, EcoPark House and demolition/clearance of northern area;
d. Stage 1d: construction of ERF;
e. Stage 2: commissioning of ERF alongside operation of EfW facility, i.e. transition period;
f. Stage 3: operation of ERF, RRF and EcoPark House, demolition of EfW facility; and
g. Stage 4: operation of ERF, RRF and EcoPark House, i.e. final operational situation.

Stage 1a

1.8.4 Stage 1a involves a series of site preparation and enabling works required for the Project. The works would include:

a. enabling works along Deephams Farm Road to create the Deephams Farm Road access;
b. demolition of clinical waste building and maintenance workshop building;
c. infill of artificial pond and clearance of landscaped area to form temporary storage and parking area;
d. layout of replacement fleet parking areas and temporary support buildings on the site of the maintenance workshop;
e. establishment of hoarded demolition work sites with safe pedestrian and vehicular access to the existing EfW facility main entrance and staff car parks. Access to the existing EfW facility would continue to be from the existing Edmonton EcoPark access;
f. relocation of Edmonton Sea Cadets to existing EfW facility meeting rooms with safe pedestrian and vehicular access via the existing Edmonton EcoPark access at Advent Way to the main entrance and staff car parks; storage of Edmonton Sea Cadets equipment in a container located at front of the existing EfW facility and relocate their boats to an off-site location provided by the Edmonton Sea Cadets;
g. diversion of utilities and services affected by demolition and clearance works including diversion of the sewer trunk main owned by Thames Water Utilities Limited (TWUL) which runs under the proposed location of the RRF;
h. demolition and clearance of EcoPark House and RRF construction zones;
i. creation of new Lee Park Way access and temporary diversion of footpaths and cycleways; and

j. establishment of the Temporary Laydown Area to the north of Advent Way and east of the River Lee Navigation to provide for site offices; storage of construction materials, plant and machinery; fabrication/sub-assembly; and construction staff/contractor vehicle parking. Temporary diversion of footpaths and cycleways at the Temporary Laydown Area access points.

1.8.5 The existing EfW facility would continue to operate at current capacity. The existing IBA recycling facility would continue to process ash from the existing EfW facility. The existing BWRF, FPP and IVC would continue to operate in this period.

1.8.6 Operational vehicles would continue to access the Edmonton EcoPark via the access at Advent Way. This accounts for approximately 1,063 one way vehicle movements per day.

1.8.7 Traffic associated with the Stage 1a demolition and enabling works would arrive at the Edmonton EcoPark via the existing access on Advent Way.

Stage 1b

1.8.8 During Stage 1b, the RRF and EcoPark House buildings would be constructed in the southern part of the Edmonton EcoPark. It would be necessary to construct these buildings prior to the construction of the proposed ERF and demolition of the operations north of the existing EfW facility. The works required during this stage of construction would include:

a. commencement of use of Temporary Laydown Area;

b. relocation of LWL vehicle fleet to the north of existing EfW facility;

c. construction of EcoPark House;

d. construction of RRF and its weighbridges;

e. erection of temporary ash storage building;

f. layout of staff and visitor parking area immediately adjacent to EcoPark House;

g. commencement of use by staff and visitor vehicles of the new Lee Park Way access;

h. construction of the attenuation tank and associated drainage of the RRF sub-catchment; and

i. existing EfW facility exit ramp arrangements aligned with RRF construction area and required RRF operational vehicles routes.

1.8.9 The existing EfW facility would continue to operate at current capacity. The Edmonton Sea Cadets would continue to occupy space in the existing EfW facility.

1.8.10 The existing BWRF, FPP and IVC would continue to operate in this period, until the RRF is completed (see Stage 1c). The IBA recycling facility would continue to process ash from the existing EfW facility.

1.8.11 Operational vehicles would continue to access the Edmonton EcoPark via the existing Edmonton EcoPark access from Advent Way. The new Lee Park Way access would become available and be used by some staff and Edmonton Sea Cadets traffic.

1.8.12 Traffic associated with the construction of the RRF and EcoPark House would arrive at the Edmonton EcoPark via the existing access on Advent Way. Some traffic may arrive at the Temporary Laydown Area, travelling from the Temporary Laydown Area to the Edmonton EcoPark via Walthamstow Avenue and the existing access. Some light vehicles including construction staff shuttle buses may travel to the Edmonton EcoPark via the new Lee Park Way access.

Stage 1c

1.8.13 During this stage of construction the facilities to the north of the existing EfW facility would be demolished to make way for the proposed ERF. The works required involve:

a. completion of RRF and transfer of FPP/BWRF operations;
b. completion of EcoPark House and occupation by the Edmonton Sea Cadets;
c. relocation of Edmonton EcoPark stores;
d. disconnection of obsolete services and utilities within demolition zones;
e. demolition and clearance of existing FPP area;
f. demolition and clearance of existing BWRF area;
g. demolition and clearance of existing IBA area; and
h. demolition and clearance of existing IVC facility – composting activities to be relocated off-site and bulking facilities provided within the RRF to enable transport to third party treatment sites.

1.8.14 The existing EfW facility would continue to operate at current capacity, with a temporary ash storage building provided to replace the existing IBA area and allow the transfer of ash off-site for recycling.

1.8.15 The Recycling and Fuel Preparation Facility (RFPF) operations would commence within the RRF, with capacity to treat around 390,000 tpa. The RRC element of the RRF building would be open to members of the public and small businesses with access via the new Lee Park Way access. On completion of EcoPark House this would be available for community and education activities, the Edmonton Sea Cadets and for office accommodation associated with operation of the Edmonton EcoPark.

1.8.16 Operational vehicles would continue to access the Edmonton EcoPark via the existing access on Advent Way to serve both the existing EfW facility and proposed RRF. Members of the public and small business vehicles visiting the RRC element of the RRF, users of EcoPark House and staff would access the Edmonton EcoPark via the new Lee Park Way access.

1.8.17 Traffic associated with the northern Application Site clearance would use the new Deephams Farm Road access.

Stage 1d

1.8.18 During Stage 1d, the main build for the proposed ERF would occur within a defined work zone at the northern area of the Edmonton EcoPark. The works involve:

a. construction of ERF including piling and excavation works, civil and structural works, establishment of new utilities connections;

b. construction of the surface water attenuation tank(s) and associated drainage of the ERF sub-catchment;

c. erection of a new pumping station and associated pipework to provide raw water from Deephams Sewage Treatment Works outflow channel; and

d. partial landscaping.

1.8.19 The majority of heavy goods vehicles associated with the construction of the proposed ERF would arrive at the Edmonton EcoPark via the Deephams Farm Road access. Vehicle movements associated with the delivery of concrete would be undertaken directly to the Edmonton EcoPark while approximately 50 per cent of all other construction vehicle movements would be to the Temporary Laydown Area, with onward movement to the Edmonton EcoPark when required. The majority of these vehicles would travel via the A406 North Circular Road and A1055 Meridian Way to the Deephams Farm Road access. However, any abnormal loads may travel between the Temporary Laydown Area and the Edmonton EcoPark via the existing access. This would be undertaken at a time that minimises any conflict with Edmonton EcoPark operational vehicles.

1.8.20 The existing EfW facility would continue to operate at current capacity and the proposed RRF and EcoPark House would be operational.

1.8.21 Operational vehicles would continue to access the Edmonton EcoPark via the existing access on Advent Way to serve both the existing EfW facility and RRF. Members of the public and small businesses visiting the RRC element of the RRF, users of EcoPark House and staff would access the Edmonton EcoPark via the new Lee Park Way access.

Stage 2

1.8.22 This stage marks the completion of the proposed ERF, commissioning of the facility and start of operations. The existing EfW facility would then be ready for decommissioning and demolition. The works required involve:

a. commissioning of proposed ERF;

b. installation of ERF weighbridges;

c. relocation of operations contractors compound from adjacent to the existing EfW facility to adjacent to the southern side of the ERF;

d. relocation of operational stores adjacent to the ERF;

e. relocation of operational fleet depot to adjacent to ERF; and

f. completion of landscaping works that are not linked to or affected by the EfW facility demolition.

1.8.23 The commissioning stage of the proposed ERF is estimated to take between six and twelve months. The commissioning stage is necessary in order to test all of the equipment and processes before the proposed ERF is fully operational. During this stage both the existing EfW facility and the proposed ERF would be operational as waste inputs are gradually transferred from the existing EfW facility to the proposed ERF.

1.8.24 Landscaping and relocation of support facilities would take place during the ERF commissioning stage with use of the Deephams Farm Road access remaining in place for the operations contractor's use, alongside staff shuttle buses from Lee Park Way as required.

1.8.25 The existing EfW facility would continue operation at a reduced capacity as incoming waste is transferred to the proposed ERF to allow its commissioning. The proposed ERF would increase the proportion of the waste that it takes as its commissioning progresses and both treatment lines are brought online.

1.8.26 The proposed RRF and EcoPark House would be operational.

1.8.27 Operational vehicles would continue to access the Edmonton EcoPark via Advent Way as before to serve both the existing EfW facility and proposed ERF and RRF. Some operational vehicles travelling to the ERF would use the Deephams Farm Road access. Members of the public and local businesses visiting the RRC element of the RRF would access the Edmonton EcoPark via the new Lee Park Way access.

Stage 3

1.8.28 Decommissioning, stripping out and demolition of the existing EfW facility would commence after the proposed ERF is fully commissioned and tests including the reliability period have been successfully completed. The works required would involve:

a. hoarding of the demolition work zone;

b. clearance of northern half of existing EfW facility site – once cleared the northern area of the EfW facility site would be used as a laydown for demolition equipment which is required before the demolition of the main EfW facility building can proceed;

c. completion of fleet parking and facilities area;

d. construction of widened southern entrance and new security gatehouse;

e. demolition and decommissioning of water pumping station;

f. demolition of main EfW facility building;

g. excavation of bunker and infilling with suitable material;

h. levelling of site and make good;

i. completion of Edmonton EcoPark landscaping works;

j. completion of staff car parks and surface water attenuation tanks on removal of EfW facility exit ramp; and

k. restoration of the Temporary Laydown Area.

1.8.29 The proposed ERF would operate at the capacity required with each process line capable of 350,000 tonnes per annum with a total capacity of the facility at 700,000 tonnes per annum. The proposed RRF and EcoPark House would also be operational.

1.8.30 Operational vehicles would continue to access the Edmonton EcoPark via the existing access on Advent Way as existing to serve both the ERF and RRF. Members of the public and small businesses visiting the RRC element of the RRF, users of EcoPark House and staff would access the Edmonton EcoPark via the new Lee Park Way access.

1.8.31 Traffic associated with the decommissioning and demolition of the existing EfW facility would travel to and from the Edmonton EcoPark via the existing Edmonton EcoPark access on Advent Way to minimise any conflicts with the operational ERF. Some vehicles associated with the removal of materials may be marshalled at the Temporary Laydown Area, waiting there until required on the Edmonton EcoPark. The new Deephams Farm Road access may also be used, if necessary.

Stage 4

1.8.32 Stage 4 would see the full operation of all new facilities. The proposed ERF would operate at full required capacity with each process line capable of processing 350,000 tonnes per annum with a total capacity of the facility at 700,000 tonnes per annum. The RRF would operate with a capacity of around 390,000tpa.

1.8.33 EcoPark House would be occupied by the site operator and the Edmonton Sea Cadets, and would also be available for other community and education activities.

1.8.34 Operational vehicles would continue to access the Edmonton EcoPark via the existing access on Advent Way to serve both the ERF and RRF while some movements would be undertaken using the Deephams Farm Road access. Members of the public and small businesses visiting the RRC element of the RRF, users of EcoPark House and staff would access the Edmonton EcoPark via the new Lee Park Way access.

2 Background to Health Impact Assessment

2.1 What is Health Impact Assessment?

2.1.1 The purpose of a HIA is to assess the health consequences of a policy, programme or project and to use this information in the decision-making process to maximise the positive and minimise the negative health impacts of a proposal.

2.1.2 HIA is a multi-disciplinary activity that cuts across the traditional boundaries of health, public health, social sciences and environmental sciences.

2.1.3 The most commonly used definition of HIA is taken from the World Health Organisation (WHO) Gothenburg Consensus Paper: "*…a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population"*[3].

2.2 Legislative and policy context

2.2.1 The legislative policy context for HIA for the Project is set by a range of documents at the European, national, regional and local levels. A review of relevant policy is provided in Appendix A and summarised in Table 2.1.

2.2.2 The review considered policies for LB Enfield and LB Waltham Forest because of the potential effects of the Project on existing and future communities in the surrounding areas, located within those boroughs. Further details on how the study area for the HIA was selected is reported in section 3.2.

Table 2.1: Summary of relevant national, regional and local policy

Document	Policy
European	
Amsterdam Treaty	States that European Union member states should ensure high levels of health protection should be ensured by undertaking HIAs for all Community policies and activities.
The Waste Incineration Directive (Directive 2000/76/EC)	Aims to prevent harm to the environment and human health arising from the incineration and co-incineration of waste.
National	
National Policy Statements	EN-1 Section 4.13 states that the ES should assess any impacts of the proposed development on human beings, identifying adverse health impacts and any necessary mitigation measures. Given that this HIA has been undertaken in addition to the Environmental Impact Assessment (EIA), for the purpose of the Project health impacts have been assessed as part of this report.
	EN-3 sets out the 'Technology Specific Considerations' to

[3] WHO European Centre for Health Policy (1999) Health impact assessment: main concepts and suggested approach. Gothenburg consensus paper. WHO Regional Office for Europe.

Document	Policy
	be taken into account in the preparation and assessment of applications for renewable energy infrastructure, including impacts and matters including EfW facility.
Government White Papers	Saving Lives, Our Healthier Nation (1999) acknowledges the need for HIA in the UK of policies, plans and projects at a local and regional level.
	Choosing Health – Making Choices Easier (2004) sets out the key principles for supporting the public to make healthier and more informed choices in regards to their health.
	Healthy Lives, Healthy People: Our strategy for public health in England (2010) adopts the framework for tackling the wider social determinants of health.
National Planning Policy Framework (NPPF)	The NPPF Suggests that proposed development should be assessed for any expected changes and barriers to health and well-being and encourages the preparation of HIA in paragraph 171.
	Planning Practice Guidance requires local authority planners to consult the Director of Public Health on planning applications that are likely to have a significant impact on health and well-being.
National Waste Policy	The National Planning Policy for Waste (2014) requires local authorities to consider the likely impact on the local environment and on amenity and the locational implications of any advice on health from the relevant health bodies.
	The Waste Management Plan for England (2013) relays the objective for waste management policies to *"protect the environment and human health by preventing or reducing the adverse impacts for the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use."*
National Guidance	National Institute for Health and Care Excellence (NICE) public health guidance includes policies relating to physical activity in the environment (PH8), promoting physical activity active play and sport for pre-school, school-age children and young people in family, pre-school and community settings (PH17), preventing unintentional injuries among children and young people under 15 (PH31), and walking and cycling (PH41).
Regional	
Draft North London Waste Plan (2015)	Requires developers to identify the health implications of waste developments and any development which requires an EIA to submit a HIA.
The London Plan (2015)	Health and well-being forms part of its vision and crosscutting themes of the London Plan consolidated with alterations since 2011. It provides direct support for HIA of development proposals in Policy 3.2C. This policy states that the impacts of major development proposals should be considered in terms of the health and wellbeing effects on communities through tools such as HIA.
London Health Inequalities Strategy	Sets out objectives for tackling health inequality and outlines importance of HIA in decision making and aims to ensure that *"major initiatives consistently evaluate potential*

Document	Policy
	negative or positive health impacts".
Health Issues in Planning Best Practice Guidance (2007)	The significance of new developments, the importance of coordinated planning and the consideration of health impacts has been outlined as follows: *"Major developments ... should make a significant positive contribution to the health of Londoners. Health impacts should be considered at the very outset of developing planning proposals or strategies to ensure positive health outcomes."*
Healthy Urban Development Unit (HUDU) Planning for Health in London: The ultimate manual for primary care trusts and boroughs (2009)	Supports the reasoning that there is a need to manage the relationship between a person's health and the social and environmental context within which they live. Furthermore, it surmises that *"No spatial plan can be sound without addressing health issues"* and it specifically recommends using the HUDU Wider Determinants of Health model which has been used in the HIA.
Mayoral Strategies and Supplementary Planning Guidance	Health and well-being and the wider determinants of health have also been considered in the vision and objectives for Mayor of London strategies including: • Municipal Waste Management Strategy (2011); • Transport Strategy (2010); • Climate Change Adaptation Strategy (2011); and • Air Quality Strategy (2011). Supplementary Planning Guidance include the Control of Dust and Emissions during Construction and Demolition (2014) and All London Green Grid (2012) on green infrastructure. Greater London Authority (GLA) guidance on environmental issues and health is provided in Better Environment, Better Health (2013).
Local	
LB Enfield Local Plan	The Enfield Core Strategy 2010-2025 sets the strategic objective to promote healthier lifestyles and address inequalities in health. Core Policy 7 sets a requirement for HIA to be undertaken for major developments. The Core Strategy and Development Management Document include policies relating to the wider health determinants relevant to the Project such as community cohesion, economic prosperity, sustainable energy and climate change, high quality and inclusive design, air quality and open space and the natural environment.
LB Waltham Forest Local Plan	The Waltham Forest Core Strategy (2012) includes strategic objectives for waste to be managed in an environmentally friendly way to protect human health and the environment as well as to *"improve the health and wellbeing of residents by positively influencing the wider and spatial determinants of health, such as physical activity, pollutions and food choices"*. Policy CS13 sets a requirement for new development *"to consider how it will contribute to improving health and reducing health inequalities."* Policy DM23 of Waltham Forest Development Management Policies (2013) states that LB Waltham Forest *"will support major applications with positive health impacts on the health and well-being of communities demonstrated through the*

Document	Policy
	use of HIA".
Health and Well-being Strategies	LB Enfield has a series of relevant strategies that aim to improve health and well-being including: • Enfield Joint Health and Wellbeing Strategy 2014-2019 • Enfield's Future: A sustainable community strategy for Enfield 2009-2019 • Enfield Together: Enfield's Community Cohesion Strategy 2010-2014 LB Waltham Forest Health and Wellbeing Strategy (2013) responds to health issues set out in LB Waltham Forest's Joint Strategic Needs Assessment. The Waltham Forest Sustainable Community Strategy (2008) additional objective is to build a more sustainable, prosperous and integrated community with priorities relating to managing population growth and change, creating wealth and opportunity for all residents and retaining more wealth in Waltham Forest.
Sub-local guidance	At a sub-local level the Central Leeside Area Action Plan (2014) identifies key health issues for the Action Plan area within which the Application Site sits. The Edmonton EcoPark Planning Brief Supplementary Planning Document (SPD) (2013) guides future development including how policies relating to health and environmental impacts should be met at the Application Site. The SPD states that an HIA should be undertaken. The Meridian Water Masterplan covers an area of land to the south of the Application Site and includes proposals to improve access to healthy living corridors.
Other guidance	The Enfield Section 106 SPD (2011) and Waltham Forest Planning Obligations SPD (2008) sets out the likely contributions associated with health services relate only to residential development.

2.3 Definitions and determinants for health

2.3.1 Many groups concerned with health, including the WHO, advocate a wider social understanding of health. The broader understanding of health is captured in the WHO definition: *"Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity"*[4]*.*

2.3.2 The social model of health[5] considers the full range of environmental, social, economic and fixed factors (or determinants) that influence health and well-being. The key determinants of health can be categorised as follows:

a. pre-determined factors such as age, genetic make-up and gender are largely fixed and strongly influence a person's health status;

[4] WHO (2007) Constitution of the World Health Organization, Geneva, 1946.
[5] Dahlgren and Whitehead (1991) Social model of health.

b. social and economic circumstances such as poverty, unemployment and other forms of social exclusion strongly influence health, and improving them can significantly improve health;

c. how the environment in which people live, work and play is managed – its air quality, built environment, water quality – can damage health, or provide opportunities for health improvement;

d. lifestyle factors such as physical activity, smoking, diet, alcohol consumption and sexual behaviour, can have significant impacts on health; and

e. accessibility of services such as the National Health Service (NHS), education, social services, transport (especially public transport) and leisure facilities influence the health of the population.

2.3.3 Of these, only the pre-determined factors are unlikely to be influenced by a development proposal. The HIA has therefore considered all relevant health determinants other than pre-determined factors. Age and gender are considered in terms of the potential for the Project to generate unequal impacts on children and young people, older people and women.

3 Assessment methodology

3.1 Health Impact Assessment Guidance

The assessment methodology of the HIA, including the determination of impacts at scoping and the assessment of significance of impacts, was developed from that outlined in the 'The Merseyside Guidelines for Health Impact Assessment' [6] and the Planning for Health 'Rapid HIA Tool checklist' and guidance produced by the NHS London Healthy Urban Development Unit[7].

3.2 Methodology

3.2.1 The methodology described below provides robust information on the health effects of the Project, to assist the Planning Inspectorate in its examination of the Application prior to its determination by the Secretary of State.

3.2.2 The HIA has been undertaken through a systematic process of:

a. scope definition;

b. policy review;

c. baseline data gathering;

d. identifying relevant health determinants;

e. linking relevant health determinants to health effects;

f. assessment of health impacts; and

g. development of evidence based recommendations.

Geographical scope

3.2.3 The Project has the potential to affect the health of existing and future communities in the surrounding areas, located within the London Boroughs of Enfield and Waltham Forest. As described in the scoping report included in Appendix C, a 600m offset from the Application Site was selected as the study area. As such, this study area incorporates Lower Super Output Areas (LSOAs) of these two boroughs.

3.2.4 For a detailed analysis the area has been subdivided into a number of geographical units. These comprised Middle and Lower Super Output Areas, where data was available, as well as ward boundaries which are the geographical areas that are used for the collection and publication of small area statistics. These geographical areas are defined as follows:

a. LSOAs – originally developed for the 2001 Census and updated for the 2011 Census. They currently have a minimum size of 1,000 residents and 400 households and a maximum size of 3,000 residents and

[6] Merseyside Health Impact Assessment Steering Group (May 2001) The Merseyside Guidelines for Health Impact Assessment
[7] London Healthy Development Unit (2013) HUDU Planning for Health: Rapid Health Impact Assessment Tool, January 2013

1,200 households. There are currently 34,753 LSOAs in England and Wales.

b. Middle Super Output Areas (MSOAs) – generated from groups of LSOAs. They currently have a minimum of 5,000 residents and 2,000 households and a maximum size of 15,000 residents and 2,000 households. There are currently 7,201 MSOAs in England and Wales with an average population of 7,200.

c. wards – electoral wards on average contain approximately 5,500 residents. In the relation to the baseline neighbourhood area the wards cover a slightly wider area than MSOAs.

3.2.5 The geographical scope generally aligns with those used in the 2011 Census. The defined geographical levels for the HIA are the:

a. regional level comprising London;

b. borough level comprising LB Enfield and LB Waltham Forest;

c. neighbourhood level comprising the LSOAs of; Enfield 025C; Enfield 025E, Enfield 025F, Enfield 025G, Enfield 030B, Enfield 030C, Enfield 033A, Enfield 033F, Waltham Forest 006A, Waltham Forest 006B, Waltham Forest 006C, Waltham Forest 006E and Waltham Forest 009B. The neighbourhood level assessment area is shown in Figure 3.1.

3.2.6 For some types of baseline information LSOA level datasets are not available. For this information the next smallest geographical level was considered. In the case of the neighbourhood level this included MSOA or ward level datasets which cover the neighbourhood area. As MSOAs and wards take into account a slightly larger geographical area there is a potential for these datasets to not be comparable to the LSOA level datasets. However, as there are no alternative datasets this approach was considered reasonable given the available data. The datasets that this applies to include health statistics from PHE and Greater London Authority (GLA) profiles (see Appendix B).

Temporal scope

3.2.7 Impacts on health tend to change throughout the different phases of a development. For the purposes of the HIA the following assessment phases have been considered[8]:

a. construction of Edmonton EcoPark and demolition of existing EfW facility - impacts on local residents and community facilities from demolition and construction activity; and

b. operation of Edmonton EcoPark - impacts on local residents and community facilities as a result of operating the Project.

[8] A Decommissioning Phase has not been considered as decommissioning will be similar to the Demolition and Construction Phase where an existing facility is being replaced by a new one.

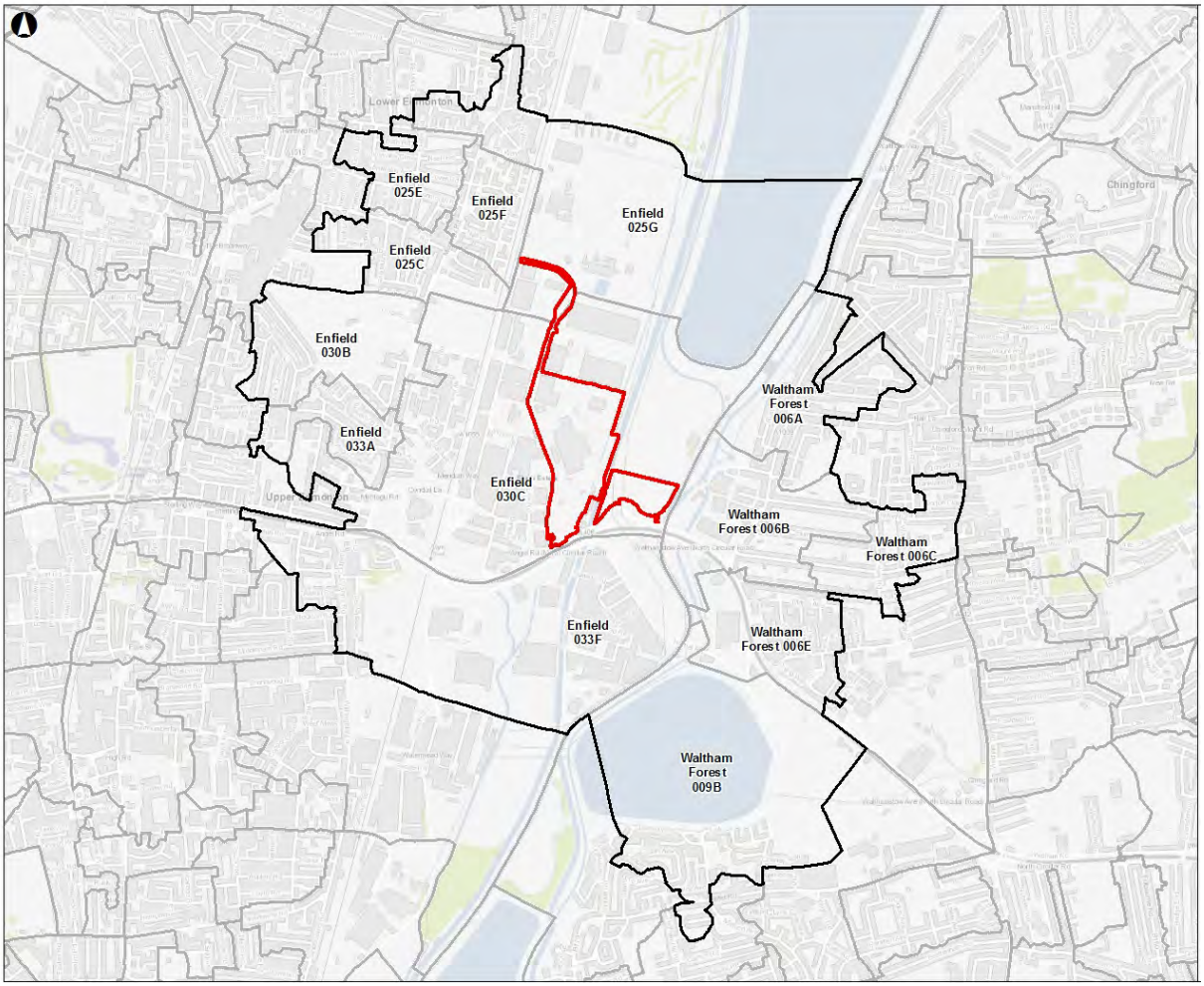

Figure 3.1: HIA neighbourhood level assessment area

3.3 Structure and method of the assessment

Policy review

3.3.1 National, regional and local policies, plans and strategies relevant to health, NICE public health guidance, have been reviewed as part of the HIA. The local policies relevant to health that were reviewed included:

a. local plan documents;

b. health and well-being strategies;

c. sustainable community strategies; and

d. supplementary planning documents.

3.3.2 The aim of the policy review was to provide a rationale for the HIA and to ascertain whether and how the Project may impact on these policies (neutral, positive or negative).

3.3.3 Policies reviewed as part of the HIA are presented in Appendix A.

Baseline data gathering

3.3.4 Baseline data has been collated from a range of sources to provide an overview of the existing population, their existing health status, socio-

economic conditions in the local community and the physical environment in the locale.

3.3.5 The data reviewed includes, but is not limited to:

a. PHE ‘Health Profiles’ 2014;

b. The Department of Communities and Local Government (DCLG) ‘The English Indices of Deprivation’ 2010;

c. Office for National Statistics, Census 2011 data;

d. Health and Wellbeing Strategy for LB Enfield and LB Waltham Forest;

e. Joint Strategic Needs Assessment for Waltham Forest; and

f. Greater London Authority Better Environment, Better Health profiles for LB Enfield and LB Waltham Forest.

3.3.6 The existing and future community profile applicable to the HIA is reported in Appendix B and summarised in Section 4.

Identifying health determinants

3.3.7 An internal scoping workshop was undertaken in June 2014 with members of the HIA team from Arup and including a specialist in public health, to agree and finalise the list of health determinants and issues for consideration in the HIA.

3.3.8 The scoping workshop was structured around the key areas influencing health as described in the Merseyside Guidelines for Health Impact Assessment and based on an understanding of the characteristics of the Project and the local area.

3.3.9 The HIA scoping report included in Appendix C provides more information regarding the findings of the scoping workshop.

3.3.10 The shortlist of health determinants and issues identified in the scoping workshop were then assessed against and aligned with the health determinants described in the HUDU Rapid HIA Checklist. The HUDU checklist identifies the following potential health determinants that may be relevant to any given development:

a. housing quality and design;

b. access to healthcare services and other social infrastructure;

c. access to open space and nature;

d. air quality, noise and neighbourhood amenity;

e. accessibility and active travel;

f. crime reduction and community safety;

g. access to healthy food;

h. access to work and training;

i. social cohesion and lifetime neighbourhoods;

j. minimising the use of resources; and

k. climate change.

3.3.11 The following determinants were omitted from any further assessment within the HIA as there were no health issues identified during scoping that were attributable to them:

a. housing quality and design - there would be no homes created or removed as a result of the Project. The Project is not located in an area currently used for or proposed to be used for housing. Therefore access to and availability of decent and adequate housing would not be affected by the Project;

b. access to healthcare services and other social infrastructure - the Project would not impact on existing health or social care services or influence the demand and/or capacity of other public services. General issues relating to access and connectivity to local services were considered under 'accessibility and active travel'; and

c. access to healthy food – no land on-site is currently used in the production or distribution of food. No land is earmarked for reallocation to food production, e.g. allotment, or food sale or distribution e.g. shop or food bank. Currently some of the compost produced on-site is distributed freely to local residents. The relocation of the IVC will mean residents will not have access to this free resource during relocation and may have to travel further to obtain compost in the future. However, access to free compost is not considered a significant issue with regards to access to healthy food.

Linking health determinants and health impacts

3.3.12 Using current, publically available literature, including previous health studies and recent research[9], an evidence base was collated to identify links between the relevant determinants and health impacts.

3.3.13 Key reference material that has been reviewed as part of the HIA includes:

a. government health policies, programmes and strategies;

b. public health reports and research papers from a range of sources, including:

- Department of Health (DH);
- WHO;
- NICE;
- Health Development Agency;
- previous HIAs for major infrastructure projects; and
- peer-reviewed journal articles.

3.3.14 The evidence base linking the health determinants and health effects is found in Appendix D.

[9] A literature review was undertaken, as reported in Appendix D.

Assessment of health impacts

Impacts of the Project on health determinants

3.3.15 The potential impacts of the Project on the remaining determinants of health that have been scoped in to the HIA (see 3.3.10 and 3.3.11), have been identified in a number of other documents that form part of the Application. Information from these studies has been used to inform the assessment of the health impacts of the Project as shown in Table 3.1 .

Table 3.1: Application documents relating to scoped health determinants

Health determinant	DCO documents
Access to open space and nature	Design and Access Statement (AD05.07) Environmental Statement (ES) – Ecology (AD06.02)
Air quality, noise and neighbourhood amenity	Code of Construction Practice (CoCP) (AD05.12) Air quality assessment (Vol 2 Section 2 of the ES (AD06.02)) Noise and vibration (Vol 2 Section 8 of the ES (AD06.02)) Ground conditions and contamination (Vol 2 Section 7 of the ES (AD06.02))
Accessibility and active travel	Transport (Vol 2 Section 10 of the ES (AD06.02)) Transport Assessment (TA) (AD05.11) Travel Plan (included in TA) Design and Access Statement (AD05.07)
Crime reduction and community safety	CoCP (AD05.12) Design and Access Statement (AD05.07)
Access to work and training	Socio-economic assessment (Vol 2 Section 9 of the ES (AD06.02)
Social cohesion and lifetime neighbourhoods	Design and Access Statement (ADO5.07)
Minimising the use of resources	CoCP (AD05.12) Waste-Fuel Management Assessment (AD05.05)
Climate change	Water Resources and Flood Risk (Vol 2 Section 11 (AD06.02))

Impacts on health and well-being

3.3.16 The potential impacts of the Project on the determinants of health can have knock-on effects, both positive and negative, on the health and well-being of the populations. The health and well-being effects were identified on the basis of known causal linkages described in the scientific research literature and summarised in Appendix D.

3.3.17 The assessment of health impacts has been undertaken qualitatively. The purpose of the assessment was to identify opportunities to improve the factors affecting the health and well-being of local communities by minimising the potential negative and maximising the potential positive health and well-being impacts.

3.3.18 Distinctions have been made between the following impact types:

a. timing of impact: whether the impact occurs during the demolition and construction or the operation phases;

b. source of impact: whether the source of the impact is construction activities, the construction workforce, traffic (both construction and operational), physical infrastructure, etc.; and

c. receptors: whether the impact occurs in certain geographical areas (within LB Enfield and LB Waltham Forest), or on particular vulnerable groups (the elderly, young people, socially deprived groups, etc.).

Assessing the significance of impacts

3.3.19 The significance of potential health effects have been assessed using an adapted version of the Merseyside Guidelines for Health Impact Assessment [10]. Health effects were considered along the following dimensions:

a. the nature of the impact, positive or negative;

b. the spatial and temporal extent of the impact;

c. the characteristics of the impact, e.g. are impacts intermittent or continuous, predictable or unpredictable;

d. the degree of certainty of the impact, using the terms speculative, probable and definite:

- speculative effects occur where linkages between the determinant and health effects have been established but where a reasonable level of action would be required to take up the opportunities available;
- probable effects are generally those where linkages between the determinant and health have been established and where the effects do not require individuals or organisations to take a particular course of action; and
- definite effects are those which are considered to be inevitable.

e. health inequalities and the potential for disproportionate impacts on certain vulnerable groups have been taken into account in the assessment; and

f. where possible, the cumulative effects of changes in a number of determinants on a given receptor have also been taken into account (e.g. cumulative impacts from changes in the air quality, noise and visual environment on a residential receptor).

Recommendations and monitoring

3.3.20 Where impacts are identified in the HIA, recommendations are proposed to reduce any negative impacts and maximise any positive impacts on health from the Project.

3.3.21 A number of potential health issues identified in the HIA have been partially or fully mitigated through measures incorporated into the design

[10] Scott-Samuel et al. (2001) Merseyside Guidelines for Health Impact Assessment

and as reported in the ES (AD06.02). These are identified and cross-referenced. Where necessary, further recommendations are proposed to reduce the negative impacts and maximise the positive impacts on health.

3.3.22 Where recommendations are put forward in this HIA, the responsibility and timing of actions required to implement them has also been suggested. In some cases the responsibility rests with the Applicant at a later design and planning stage. In such cases the recommendations should be seen as pointers to guide the future planning and management of the Project, rather than as commitments to action on the part of the Applicant or third parties. A number of issues raised would be taken forward through statutory processes as part of the DCO application process, such as the CoCP (AD05.12).

Limitations of the study

3.3.23 Literature and baseline data used in the study has been limited to readily available published sources, and the information contained within the ES (AD06.02) and other Application documents has been heavily relied on to characterise the study area and identify health impacts.

3.3.24 Feedback from Phase One and Phase Two Consultations has been referred to in this HIA where relevant. It is understood that such feedback may be influenced to some degree by the views of the individuals consulted, and as such any anecdotal evidence has been clearly identified.

3.3.25 The assessment has not attempted to quantify the potential changes in population health resulting from the Project as the value of quantification was judged to be limited given the range of other factors that affect the health and well-being of local communities.

3.4 Consultation and engagement

Scoping consultation

3.4.1 As part of the HIA process, the HIA Scoping Report (Appendix C) was circulated to the Directors of Public Health for LB Enfield and LB Waltham Forest, as well as PHE.

3.4.2 Responses were received from LB Enfield and PHE. Consultees generally agreed with the proposed scope of the assessment. The key issues raised by the consultees are detailed in Table 3.2.

Table 3.2: Scoping consultation comments and responses

Consultee	Comment	Response
LB Enfield	Emphasise the point that 'public perception' (of mental health issues) is more grounded than specific scientific research and can lead to apprehension regarding health impacts associated with projects.	The perception associated with mental health issues has been included within the various components of the assessment as appropriate and has helped form recommendations where relevant.
	A communications strategy should	We have included the requirement

Consultee	Comment	Response
	be put in place to relay information to stakeholders.	of a communications strategy as part of the recommendations emanating from the assessment.
	HIA should consider the effects of visual smoke and steam in terms of perceived dispersion and deposition; plume analysis; and waste mix.	Where relevant, these aspects have been considered against relevant health determinants.
	Seek clarification on whether permits to burn clinical or animal waste will be sought.	The current Environmental Permit for the EfW facility at Edmonton allows the receipt of "Mixed municipal waste and other commercial wastes" and "Group E clinical waste". It is expected that the new Environmental Permit issued by the EA for the proposed ERF would be largely similar to the current one and that clinical waste that is separately collected will only be acceptable if it contains only materials such as nappies, dressings, stoma bags etc. that are contaminated with urine and faeces but no other blood or infectious materials. Waste from the keeping of animals such as soiled bedding would be accepted under the permit, but individually identifiable or load(s) of dead animals would not.
PHE	Note that duplication is unnecessary and that certain topics will be dealt with in the EIA. However, these should be summarised in the HIA so that there is a single report covering health issues.	The HIA has summarised information from the ES that has informed that assessment of health impacts. Documents submitted with the Application relevant to health determinants are listed in Table 3.1.
	Statements on key information, risk assessments, proposed mitigation measures, conclusions and residual impacts relating to human health should be reported as appropriate.	The assessment process against the retained health determinants addresses this.
	Compliance with National Policy Statements and relevant guidance and standards should be highlighted. Most recent guidelines and standards should be used where appropriate.	The HIA has been informed by relevant legislation and policy (see Section 2.2), a community profile based on baseline data (see Section 4) and an evidence base linking health determinants and health impacts (see Appendix D). The approach to HIA has drawn upon the HUDU Rapid HIA Checklist and the Merseyside Guidelines for Health Impact Assessment.
	Any assessments undertaken	The relevant health impacts

Consultee	Comment	Response
	should be proportionate to the potential impact; therefore some assessments of health might not be required. A clear justification for this must be made where appropriate.	assessed as part of the HIA and justifications for that scope are set out in Section 3.3.
	Health based guideline values should be used when quantifying the risk to human health from chemical pollutants.	The HIA has been informed by an evidence base linking health determinants and health impacts (see Appendix D).
	When assessing the risk of emitted chemicals, the background exposure from other sources should be considered.	This requirement was discussed with the EIA team's air quality specialists in terms of ensuring that the identification of potential cumulative impacts from other sources was undertaken where relevant. Existing industrial processes within 5km of the Edmonton EcoPark have been identified in Vol 2 Section 2 of the ES (AD06.02).
	When quantitatively assessing the health risk of genotoxic and carcinogenic pollutants, mathematical models to extrapolate high dose levels are not used and instead the 'Margin of Exposure' approach is adopted.	Noted. If relevant this would be included within the assessment of relevant health determinants.
	Where relevant, the Chemical Abstract Service (CAS) numbers should be used alongside chemical names.	Noted. If relevant this would be included within the assessment of relevant health determinants.
	It is noted that issues associated with electromagnetic fields and radiation are not being assessed – consideration may be given for including these.	The potential for impacts associated with electromagnetic fields was discussed as part of the scoping process. Given that any plant would need to meet all current standards, it is unlikely that health effects would be experienced.
	Noted that the 600m boundary has been selected – this is appropriate for sensitive receptors, but may not take into account issues associated with visual amenity and any subsequent health impacts.	Noted. If relevant this would be included within the assessment of relevant health determinants.

Phase One Consultation

3.4.3 The Planning Act 2008 (as amended) requires stakeholder consultation to be undertaken during the preparation of the application for a DCO. The first phase of consultation ran from 28 November 2014 to 27 January 2015, for a period of 61 days. Consultees prescribed by Section 47 and Section 42 of the Planning Act 2008 (as amended) were consulted.

3.4.4 Detailed information on consultation is reported in the Consultation Report (AD05.01) (see Sections 3 and 4). Key health issues identified within consultation responses related to:

a. perceived dangers associated with electrical equipment;

b. whether Hazardous Substances Consent is required due to the waste likely to be processed;

c. the health impact of emissions in relation to cancer, respiratory and pulmonary diseases; and

d. the requirement for compliance with health and safety regulations.

3.4.5 These issues have been addressed as part of this HIA where appropriate.

Phase Two Consultation

3.4.6 The second phase of consultation ran from 18 May 2015 to 30 June 2015, for a period of 44 days. Consultees prescribed by Section 47 and Section 42 of the Planning Act 2008 (as amended) were consulted, along with any additional consultees identified during the Phase One Consultation.

3.4.7 Detailed information on consultation is reported in the Consultation Report (AD05.01) (see Sections 5 and 6).

3.4.8 No additional comments relating to health were raised by LB Enfield, LB Waltham Forest and PHE.

3.4.9 One local community comment was received from a residents group, which identified the following points related to health:

a. the pollution from the existing facility;

b. that this will be an expanded facility compared to the existing facility, with other boroughs bringing their waste to it;

c. reduced quality of life;

d. adverse health effects linked to increases in air pollution, noise and traffic, and consequential impacts e.g. congestion, traffic accidents;

e. lack of benefit to local community, e.g. local employment; and

f. level of community access to on-site facilities e.g. visitor centre.

3.4.10 These concerns have been considered as part of the analysis of impacts and development of mitigation measures where appropriate.

4 Community profile summary

4.1 Introduction

4.1.1 The community profile in Appendix B, provides a summary of the characteristics of the communities within the neighbourhood, local, regional and national areas (see Figure 3.1 for neighbourhood assessment area) which are likely to be affected by the Project.

4.2 Demographic profile

4.2.1 The demographic profile sets out the key characteristics of the community.

4.2.2 The neighbourhood area is less densely populated than the borough and London levels reflecting the lower density of land uses. The workday population is lower than the usual resident population at the borough level.

4.2.3 The age profile showed that there is a high proportion of children, adolescents and young adults in the neighbourhood area, 39.8 per cent of residents are aged between 0 and 24 years, compared to 34.3 per cent at the local level and 32.2 per cent for London.

4.2.4 The neighbourhood area is ethnically diverse with residents of black ethnic backgrounds almost double that of the borough and London levels.

4.2.5 Unemployment in the neighbourhood area is high, and a greater proportion of the economically inactive population are long-term sick or disabled.

4.2.6 The neighbourhood area is characterised by a comparatively low proportion of residents in higher skilled occupations. Those in elementary occupations represent a high proportion of residents.

4.2.7 Deprivation is generally high in the neighbourhood area with the majority of LSOAs being in the 14 per cent most deprived LSOAs in England.

4.3 Health profile

4.3.1 The health profile highlights indicators of health and well-being in the neighbourhood and local areas.

4.3.2 Self-rated health[11] in the neighbourhood area is broadly in line with borough, London and England levels although there is a lower proportion of residents rating their health as very good or good.

4.3.3 Average life expectancy of people aged 65 years varies at the borough level. Although LB Enfield has a life expectancy higher than that of the

[11] As part of the 2011 UK Census, respondents were asked their general state of health on a five point scale: very good, good, fair, bad or very bad. See Appendix B, section B3.2 for further details

England average, the Central Leeside area, within which the Application Site is situated, is below the LB Enfield average.

4.3.4 Health and disability deprivation varies across the neighbourhood area with LSOAs being in the top 21 per cent to 51 per cent most deprived LSOAs in England for this deprivation domain. Child poverty and older people in deprivation are significantly worse than the England level.

4.3.5 The number of Disability Living Allowance claimants at the borough level is broadly in line with London and England levels. However Central Leeside is recorded to have a higher proportion of disabled residents and the highest number of Disability Living Allowance claimants compared to the rest of LB Enfield.

4.3.6 All causes of deaths in the neighbourhood area are recorded to be higher than the England average with the exception of cancer, which is lower than average. Circulatory diseases are significantly higher than the England average.

4.3.7 Accessibility to open space is deficient at the borough level with the majority of wards in the neighbourhood area having just 20-30 per cent of households with access to open space.

4.3.8 Physical activity is low at the borough level and obesity in adults and children is notably higher in the neighbourhood area in comparison to England.

4.3.9 Low numbers of people participate in active travel at the borough level and there are higher proportions of people using motor vehicles. Road injuries and deaths are low in comparison to London and England.

4.3.10 Mental health service users in the local area are marginally higher than the London and England average, however depression, suicide rates and emergency admissions for self-harm are significantly lower than the England average.

4.3.11 LB Enfield and LB Waltham Forest are the 7th and 14th most affected by air quality in London and are both wholly designated as Local Air Quality Management Areas (LAQMA). The findings of the ES (AD06.02) show that the majority of local air pollution is associated with the local highway network.

4.3.12 The neighbourhood area is recorded to be at high risk of fuel poverty.

4.4 Vulnerable groups within the community

4.4.1 The following groups have been identified as being particularly vulnerable to health effects based on the community profile:

a. children and young people;

b. older people;

c. people with disabilities; and

d. socially deprived groups.

5 Assessment of health outcomes and recommendations

5.1 Access to open space and nature

5.1.1 This section considers the potential effects on health from changes in access to open space and nature associated with the construction and operation of the Project.

5.1.2 This topic is concerned with:

a. opportunities for physical activity;

b. access to open and natural space;

c. formal and informal outdoor play spaces;

d. maintenance of open space and sports facilities; and

e. integration with outdoor uses such as food growing.

Existing conditions

5.1.3 Footways are provided along the main routes leading to and from the Application Site and public transport nodes. However, the pedestrian environment in the vicinity of the Application Site is generally poor and the quality of the environment is reduced by noise associated with high traffic flows on the A406 North Circular Road. The quality of footways and availability of crossing facilities is mixed. A pedestrian route is available along the east side of the Lee Navigation although there is no direct access to this pedestrian route from the Application Site. Access from Lee Park Way to this pedestrian route is available via stepped and ramped access.

5.1.4 There are a number of cycle routes within the vicinity of the Application Site, including a north to south route along the River Lee Navigation, an off-carriageway route adjacent to the A406 North Circular Road to the east of the Edmonton EcoPark and along Advent Way to the west and an off-carriageway route in a north to south direction along Meridian Way both to the north and south of the A406 North Circular Road. The London Cycle Network Plus (LCN+) is also accessible from the Edmonton EcoPark.

5.1.5 The River Lee Navigation path/towpath provides a route for horse riders. Lee Park Way, which is part of the National Cycle Network (NCN) (Route 1), can also be used by horse riders.

5.1.6 At the eastern boundary of the Edmonton EcoPark on the River Lee Navigation, is a wharf which is currently leased to the Edmonton Sea Cadets. The wharf is typically used two evenings per week and is currently accessed through the Application Site. Given the wharf's waterside location, it is also occasionally utilised by other cadet groups from LB Waltham Forest and LB Haringey as it offers direct waterside access.

5.1.7 The Lee Valley Regional Park (LVRP) is located to the east of Edmonton EcoPark, with parts located within the Application Site such as along the

River Lee Navigation path/towpath. The Temporary Laydown Area in the east of the Application Site covers green space within the LVRP which is not currently publically accessible.

5.1.8 Publically accessible open space provision in proximity to the Application Site is provided by Kenninghall Open Space and Montagu Recreation Ground, which are approximately 600m and 500m respectively from the red line boundary. Kenninghall Open Space is approximately 1.5 hectares and consists of open grass areas and a path network. Montagu Recreation Ground is a larger site of approximately 5 hectares, which includes more formal play areas as well as informal open space.

Impact assessment

Construction

5.1.9 Construction activities, including traffic movements and associated noise, dust, vibration and visual impacts have the potential to affect the setting of and people's enjoyment of those open spaces within the study area.

5.1.10 No areas of publically accessible open space or outdoor play spaces are likely to be directly affected by construction activity; with Kenninghall Open Space and Montagu Recreation Ground both being more than 500m away from the red line boundary. However, cumulative amenity impacts (visual, air quality and noise) may be experienced, to varying degrees at intermittent periods of the construction programme. Further details of interactive effects that may cause amenity impacts are reported in Vol 2 Section 12 of the ES (AD06.02).

5.1.11 Lee Park Way (NCN Route 1) would remain open during construction, with access retained for pedestrians, cyclists and horse riders. The formal space provided for these users would be temporarily reduced as a result of construction of new access arrangements to the Application Site, though temporary access arrangements are likely to include a tarmacked surface. This would be likely to result in a negative impact on route amenity, a negligible impact on route distance and a noticeable improvement in route surface quality.

5.1.12 Construction trips undertaken between the Temporary Laydown Area and the Application Site would access Lee Park Way directly from the Temporary Laydown Area. However the provision of the Temporary Laydown Area and the access to Lee Park Way from it would interrupt the Public Right of Way (PRoW) that exists between the River Lee Navigation towpath and Lower Hall Lane. An alternative route would be available via NCN Route 1 or via Walthamstow Avenue and Lee Park Way using the existing footways. The existing route would be reinstated following completion of the construction.

Operation

5.1.13 Lee Park Way would be used by operational employees and for public access to the Reuse and Recycling Centre (RRC), a safe cycle crossing point would be provided where NCN Route 1 crosses Lee Park Way. There would also be provision for pedestrians and horse riders at this crossing point.

5.1.14 The Lee Park Way access would be used by public traffic accessing the RRC and persons employed on-site. The presence of vehicles along the route is expected to cause a slight reduction in route amenity but no reduction in route safety because of the physical segregation of pedestrians, cyclists and horse riders from vehicles accessing the Application Site along this route due to separated infrastructure. As there is currently no formal footpath along Lee Park Way, the addition of this as a permanent feature, in particular one that is segregated from traffic, is a benefit to non-motorised users. As a recreational route, the overall impact of vehicle trips along Lee Park Way on route amenity and safety is considered to be not significant within the ES (AD06.02) and is therefore unlikely to result in significant health effects.

Assessment of health effects

5.1.15 There would be no direct effects on existing open space provision at Kenninghall Open Space or Montagu Recreation Ground, though visual, air quality and noise impacts associated with construction may have a temporary, slight negative effect on people's enjoyment of these open spaces within the wider locality. For example, this may be through visual intrusion, such as construction plant being visible. This can adversely affect mental well-being of those most directly affected, particularly the residents to the west of the Application Site whose interaction and enjoyment may be compromised at these locations.

5.1.16 There would be a short term and probable adverse effect on people's use of the PRoW between the River Lee Navigation towpath and Lower Hall Lane, which would be temporarily realigned via the NCN Route 1. Impacts on health and well-being from the change to the NCN Route 1 are not likely to be significant as the changes during construction would be temporary and the reduction in space while permanent would reduce the route amenity but not affect its usability.

Recommendations

5.1.17 The following recommendations were identified for inclusion as part of the Project to promote health and wellbeing. Details have been provided regarding how these recommendations are addressed within the Project (in italics): any temporary closures or diversions of highways or public rights of way during construction of the Project (including demolition of the existing EfW facility) should be well communicated to local residents and businesses. The duration of any temporary closure of highways and Public Rights of Way should be as short as practicable. Pedestrian access to premises will be maintained. The construction works will take account of people with reduced mobility. *Status: this recommendation is included as a requirement of the CoCP (AD05.12).*

5.2 Air quality, noise and neighbourhood amenity

5.2.1 This section considers the potential effects on health as a result of changes in air quality, noise and neighbourhood amenity associated with the construction and operation of the Project. This section is based on the

preliminary findings of the air quality assessment and will be updated once the air quality assessment is complete.

5.2.2 This topic is concerned with:

a. construction impacts;

b. air quality;

c. land contamination;

d. noise, vibration and odour;

e. quality of the local environment; and

f. provision of green space and trees.

Existing conditions

5.2.3 LB Enfield, LB Haringey and LB Waltham Forest declared their whole boroughs as Air Quality Management Areas (AQMAs) in 2001 for exceedences of the annual mean NO_2 objective and 24-hour mean PM_{10} objective. The extent of the AQMAs are reported in the air quality chapter of the ES.

5.2.4 Recent monitoring by LB Enfield is presented in the air quality chapter of the ES (AD06.02). This identifies that the NO_2 objective (annual mean objective 40µg/m3) was exceeded at a number of sites in 2012 and 2013: Derby Road, Bowes Road and Sterling Way, and at the Derby Road site in 2014. The Bowes Road and Sterling Way sites are located on the A406 North Circular Road, which experiences heavy traffic. Derby Road is located near to the eastern periphery of the Application Site, just north of Kenninghall Open Space.

5.2.5 Defra background pollutant concentrations indicate that there are no predicted exceedences of national NO_2 and PM_{10} objectives and this is supported by the air quality modelling undertaken as part of the EIA which also identifies that there are no predicted exceedences of the national NO_2 and PM_{10} objectives.

5.2.6 No continuous monitoring of Volatile Organic Compounds (VOCs) is available within the vicinity of the monitoring locations therefore annualisation of the data could not be undertaken, however, monitored results show that pollutant concentrations are very low (highest benzene concentration recorded was 1.1µg/m3, which is well below the 5µg/m3 air quality objective) and results are considered highly unlikely to exceed the annual mean limit values.

5.2.7 No monitoring for trace metals is undertaken in LB Enfield, LB Waltham Forest or LB Haringey. The closest trace metals monitoring sites to Edmonton EcoPark are Cromwell Road in Kensington and Chelsea London and Detling in Kent. Concentrations of trace metals for 2012 to 2014 are shown in Vol 2 Table 2.13 of the ES (AD06.02).

5.2.8 Concentrations for all trace metals at both monitoring sites are below the relevant air quality objectives or determined assessment criteria.

5.2.9 No monitoring for dioxins (polychlorinated dibenzo-p-dioxins) and furans (polychlorinated dibenzofurans) is undertaken in LB Enfield, LB Waltham Forest or LB Haringey. Non-automatic monitoring for dioxins and furans is undertaken at one site in London, Nobel House in Westminster, which is the closest monitoring site to Edmonton EcoPark. Data was not available for this site after 2010, and so concentrations for 2008 to 2010 are shown in Vol 2 Table 2.12 of the ES (AD06.02). Further details on baseline air quality information can be found in Volume 2 of the ES (AD06.02).

5.2.10 Levels of all cancers and lung cancers within the study area are in line with borough level averages and lower than the England average in the wards surrounding the Application Site.

5.2.11 An analysis of asthma, cancer and chronic obstructive pulmonary disease (COPD) prevalence at General Practitioner (GP) practice level shows no significant difference from the wider Clinical Commissioning Group area average or the England average.

5.2.12 Levels of hospitalisation for asthma and COPD are also generally in line with borough and England level averages.

5.2.13 Baseline noise monitoring undertaken as part of the EIA indicates that generally the surrounding areas are fairly quiet, residential areas with low/moderate ambient noise levels. However, as expected, traffic noise levels are high near busier roads such as the A406 North Circular Road.

5.2.14 There have been a number of historic complaints relating to odour in the vicinity of the existing Edmonton EcoPark, which are likely to be related to the current composting facility.

Impact Assessment

Construction

5.2.15 Dust is not generally associated with negative health effects (unless contaminants would be present), although it can cause ‘nuisance’ effects through amenity loss or perceived damage caused. Dust control measures are included as part of the CoCP (AD05.12).

5.2.16 With respect to road traffic emissions, the annual average daily traffic (AADT) change between the future baseline and development phase scenarios would not exceed 5 per cent on any road link, and there would not be an increase in the number of heavy goods vehicles (HGVs) greater than 200, for any road with more than 10,000 AADT. It is also not anticipated that average speeds on the local road network would be significantly affected.

5.2.17 Noise and vibration effects from construction activity are only likely to arise at sensitive receptors within 300m[12] of the Temporary Laydown Area. Appropriate mitigation measures would reduce noise effects to

[12] The noise assessment considers construction noise from the Temporary Laydown Area to receptors within approximately 300m of the Application Site boundary in accordance with British Standard 5228-1.

acceptable levels and therefore no residual noise or vibration effects are expected from construction activities.

5.2.18 The risks associated with contamination are low as the Application Site is not publically accessible.

5.2.19 Implementation of procedures outlined in the CoCP (AD05.12) relating to contamination should ensure that no risks would be present to the construction workforce or permanent employees on-site.

Operation

5.2.20 In terms of emissions from operational traffic, the AADT change during operation is not predicted to exceed 5 per cent on any road link, and there would not be an increase in the number of HGVs greater than 200, for any road with more than 10,000 AADT. It is also not anticipated that average speeds on the local road network would be significantly affected.

5.2.21 The largest source of emissions associated with the Project would be from the stack associated with the proposed ERF and the existing EfW facility during the (up to one year as a worst case assessment) overlap period, when the proposed ERF and existing EfW facility are both in operation. It is envisaged that the amount of waste processed at the Edmonton EcoPark during the overlap period would be the same as that which is currently processed on-site. The flue gas emissions would leave the stack and subsequently disperse into the atmosphere.

5.2.22 Noise control measures would be included on all operational plant items as part of the design process to limit noise increases to within appropriate noise limits to avoid disturbance. Noise limits have not been set, and are currently under discussion with the Environment Agency and would be relative to the existing background noise levels at each receptor, in line with appropriate methodologies.

5.2.23 Operational noise effects from a change in vehicle flows would be low, as these change in flows would be less than +/- 25 per cent (representative to a change of 1db(A)).

5.2.24 Further details of the operational air quality and noise findings from modelling are reported in the ES (AD06.02).

Assessment of health effects

5.2.25 While there is not likely to be any significant residual impacts associated with air quality, noise and contaminated land which might affect neighbourhood amenity, there would be a definite small negative effect on local communities during construction as a result of an increase in emissions from construction activity including plant use and HGV trips. During operation a similar number of HGVs would bring in waste as currently. Even small increases in air emissions, particularly in an area with existing high levels of air pollution, can have effects on, for example, children who make up a high proportion of the population and can be particularly susceptible.

5.2.26 However, these impacts during construction are likely to be minimal if the procedures set out in the CoCP (AD05.12) are implemented.

5.2.27 The potential adverse health effects of the air pollution generated by the Project, other on-site equipment and associated HGV and motor vehicle traffic is likely to be small.

5.2.28 As well as direct effects associated with the emissions, water vapour plumes, for example, can lead to a negative perception about the local environment and health concerns i.e. that there would be high levels of ambient air pollution around the Application Site.

5.2.29 Effective implementation of the CoCP (AD05.12), would help to limit the small negative effect of large commercial vehicles, including HGVs during construction. The Project would be designed to maximise on-site efficiencies for the delivery and processing of waste material, so there is not likely to be any adverse effects compared to the current site operations. There would be potential beneficial effects relating to well-being, arising from the continued good management of waste traffic to the Edmonton EcoPark.

Recommendations

5.2.30 The following recommendations were identified for inclusion as part of the Project to promote health and wellbeing. Details have been provided regarding how these recommendations are addressed within the Project (in italics):

a. where possible and practicable, noise monitoring, in the form of physical measurements and visual checks, should be undertaken during noisy construction periods that may affect existing residential receptors. *Status: this recommendation is included as a requirement within the CoCP (AD05.12) in conjunction with any Section 61 consent*[13] ;

b. site audits should be undertaken to ensure that construction activities are in accordance with the CoCP (AD05.12). *Status: this recommendation is included as a requirement within the CoCP (AD05.12) under various environmental topics*;

c. ensure local residents are kept informed of construction activity through regular communications via implementation of the community relations plan. *Status: this recommendation is included as a requirement within the CoCP (AD05.12), for a community relations plan to be implemented by the Applicant;*

d. where practicable, provision for low emission vehicles should be provided on-site, such as electric vehicle charging points. *Status: This aspect will be included as part of the scope of the future procurement process relating to the demolition, construction and operation of Edmonton EcoPark*; and

e. where practicable, the demolition and construction process, and procurement of services during the operation of Edmonton EcoPark, should recognise the benefit of low emission vehicles when procuring

[13] Section 61 of the Control of Pollution Act 1974 sets out procedures seeking and obtaining local authority consent to measures for the control of noise and vibration on construction sites.

contracts. *Status: This aspect will be included as part of the scope of the future procurement process relating to the demolition, construction and operation of Edmonton EcoPark.*

5.3 Accessibility and active travel

5.3.1 This section considers the potential effects on health as a result of accessibility and active travel associated with the construction and operation of the Project.

5.3.2 This topic is concerned with:

a. streetscape;

b. opportunities for walking and cycling;

c. access to public transport;

d. minimising the need to travel;

e. discouraging car use; and

f. road traffic injuries.

Existing conditions

Walking and cycling

5.3.3 There are a number of existing walking and cycling routes surrounding and adjoining the Application Site including a PRoW that connects the River Lee Navigation towpath and Lower Hall Lane, footways and cycleways, such as the NCN Route 1. These are described in Section 5.1 and further information is available in Vol 2 Section 10 of the ES (AD06.02).

Public transport

5.3.4 The Application Site currently has a Public Transport Accessibility Level (PTAL) of 1b[14]. This is rated as 'very poor' (with 1a being the lowest accessibility and 6b being the highest accessibility).

5.3.5 The closest London Underground station to the Application Site is Tottenham Hale which is over 3km (straight line distance) to the south of the Application Site. Victoria line London Underground trains are accessible at this station and operate to Walthamstow Central in the northbound direction and to Brixton in the southbound direction.

5.3.6 National Rail services are available at Angel Road station, located approximately 600m (walking distance) to the west of the Application Site. National Rail services from Angel Road operate to Stratford in the southbound direction. Trains services to and from Angel Road are operated by Abellio Greater Anglia.

5.3.7 There are no direct trains to Liverpool Street station. However, services operating to and from Liverpool Street can be accessed by interchanging at Tottenham Hale station.

[14] Transport for London WebCAT http://www.webptals.org.uk/

5.3.8 There are two London Bus routes operating in close proximity to the Application Site. Routes 34 and 444 are served by bus stops on the eastbound off-slip and westbound on-slip at the junction of the A406 North Circular Road and Advent Way. These bus stops are almost 500m walking distance from the Application Site. One additional route, Route 192, is accessible on Meridian Way to the north and south of the A406 North Circular Road.

Road Traffic Accidents and Injuries

5.3.9 Personal injury accident data recorded within the study area for the three year period up to 30 November 2014 has been obtained from Transport for London (TfL). The data covers the area in the immediate vicinity of the Application Site as well as the A406 North Circular Road as far as its junction with A10 Great Cambridge Road. Table 5.1 shows the number of accidents by vehicle type as well as the number of accidents involving pedestrians and cyclists.

Table 5.1: Summary of accidents by vehicle type

Casualty type	Slight	Serious	Fatal	Total
Pedestrian	42	10	2	54
Pedal cycle	17	0	1	18
Motorcycle	50	6	0	56
Car	240	7	0	247
Taxi	7	0	0	7
Bus/coach	23	1	0	24
Goods vehicle	17	1	0	18
Other	1	0	0	1
Total	**397**	**25**	**3**	**425**

5.3.10 Of the total number of accidents, 71 per cent occurred during daylight hours. In terms of road conditions at the time of each accident, 20 per cent occurred when the road was either wet, icy or in snowy conditions. Only 18 (4 per cent) of the total of 425 accidents in the area of interest in the three year period up to the end of November 2014 involved goods vehicles. Accidents involving pedestrians totalled 54 (13 per cent) and cyclists was 17 (4 per cent).

5.3.11 The causes of the three fatal accidents were:

a. a pedestrian ran from behind a stationary bus into the path on an oncoming vehicle;

b. a pedestrian ran from in front of a stationary bus into the path of an oncoming vehicle; and

c. a goods vehicle overturned trapping a cyclist.

Impact assessment

Construction

5.3.12 Construction HGV routes have not been finalised but given, apart from the Edmonton Sea Cadets, there is no public access and the few bus stops are located near to the North Circular the level of disruption to these bus stops from additional HGV traffic is likely to be low.

5.3.13 The CoCP (AD05.12) states that across the Application Site PRoW (including diversions) for pedestrians and cyclists affected by the scheme, will be maintained including reasonable adjustments within the approved zones of diversion under the DCO to maintain or achieve inclusive access. Consultation will be held with LB Enfield and TfL to determine how this should be progressed. Subsequent, phase-specific consultation will determine how the affected PRoW would be dealt with.

5.3.14 As reported in section 5.1, there would be reduced space for pedestrians and cyclists as a result of revised access arrangements to the Application Site.

Operation

5.3.15 There would be no disruption to bus stops due to the movement of waste HGVs going to and from the new ERF.

5.3.16 While existing pedestrian and cycle routes would be reinstated, the quality of these routes would be affected as a result of reduced space for non-motorised users. This is considered a negative impact, though the route would continue to be segregated from motorised vehicles. However, as there is currently no formal footpath along Lee Park Way, the addition of this as a permanent feature, in particular one that is segregated from traffic, is a benefit to non-motorised users. Operational impacts are therefore considered negligible.

Assessment of health effects

5.3.17 During construction, there would be no negative effect directly related to accessibility and active travel as the PRoW would be maintained through the CoCP (AD05.12) and by managing the movements of HGV traffic effectively.

5.3.18 During operation there would be a probable permanent, negative effect associated with the reduction of cycling infrastructure.

5.3.19 A reduction in the use of private cars would also be encouraged via the Framework Construction Travel Plan (FCTP) (AD05.11, Appendix J) and the Framework Operation Travel Plan (FOTP (AD05.11, Appendix K), which should highlight new active transport provision available for workers, potentially leading to a positive health and well-being effect.

Recommendations

5.3.20 The following recommendations were identified for inclusion as part of the Project to promote health and wellbeing. Details have been provided

regarding how these recommendations are addressed within the Project (in italics):

a. promotion of the FCTP and FOTP to employees to highlight alternative transport provision that would be available to them, particularly cycling opportunities. *Status: This requirement is included within the FCTP and FOTP; and*

b. during construction and operation, it is recommended that a programme of monitoring of pedestrian and cyclist movements be undertaken. Data collected can be used to monitor the effectiveness of the implemented active travel design features and help shape future practices, as well as providing monitoring of the Project Travel Plans. *Status: This requirement is included in the FCTP and FOTP.*

5.4 Crime reduction and community safety

5.4.1 This section considers the potential effects on health as a result of changes in crime and community safety associated with the construction and operation of the Project.

5.4.2 This topic is concerned with:

a. designing out crime;

b. security and street surveillance;

c. mix of uses that avoid creating under-used spaces; and

d. community engagement.

Existing conditions

5.4.3 To the year ending February 2015 there were 533 violent and sexual crimes recorded within the neighbourhood area. There were 684 instances of anti-social behaviour and 840 instances of theft of burglary. In addition, there were 361 instances of vehicle crime.

5.4.4 Crime and fear of crime has been identified as a key issue on some of Central Leeside's industrial estates including Eley Industrial Estate adjacent to the Application Site[15].

Impact Assessment

Construction

5.4.5 During construction, there may be opportunities for crime resulting from the presence of construction sites, which can attract vandalism and fly-tipping, and encourage theft. Of particular concern would be the potential theft of building materials from the Application Site.

5.4.6 The Temporary Laydown Area is approximately 200m from residential properties on Lower Hall Lane. Areas like this used for construction can increase fear of crime as they have no active frontages and often have reduced lighting and are largely unpopulated during evenings and night time.

[15] Enfield Council (2014) Central Leeside: Proposed Submission Area Action Plan, November 2014

5.4.7 Effective implementation of site security measures, as outlined in the CoCP (AD05.12), should help minimise potential impacts and reduce the fear of crime.

5.4.8 The Edmonton Sea Cadets will be temporarily relocated within the EfW facility during construction. A safe and secure access through the Edmonton EcoPark would be provided.

Operation

5.4.9 Crime and fear of crime resulting from the Project would be minimised through the incorporation of security principles throughout the Project, that protect buildings on-site as well as providing a strong message to the local community that the whole Application Site would be secure. This is consistent with the current site operations. These principles aim to design out the opportunities for crime and the fear of crime, and include:

a. on-site security personnel;

b. site parking permits;

c. motion detector systems/CCTV; and

d. segmented/restricted on-site access.

5.4.10 EcoPark House would be occupied by the Edmonton Sea Cadets and also be available for other community activities and North London Waste Authority (NLWA)/LondonWaste Ltd. (LWL) office requirements. EcoPark House would benefit from secure access arrangements and greater natural surveillance from its wider range of uses.

Assessment of health effects

5.4.11 The potential reduction in safety during construction would be a speculative, negative effect relating to perceived anti-social behaviour, vandalism and theft. However, given the implementation of appropriate security measures on-site, including adequate security lighting, site hoarding and the implementation of a CoCP (AD05.12) during construction that would outline appropriate construction traffic routes and controls, issues of site safety are not considered to be significant. In addition, the measures in the CoCP (AD05.12) would assist in reducing the potential effects on health.

5.4.12 During operation there would be a probable, positive effect associated with new, safe access for the Edmonton Sea Cadets, the availability of new community facilities with associated safe access, and the improved natural surveillance provided by EcoPark House to that part of the Application Site. Opportunities for crime and the fear of crime would be reduced through making security principles inherent within the design process. These principles aim to design out opportunities for crime and the fear of crime for the Project through the careful consideration of design aspects, while ensuring a good level of security, in order to create a safe and secure facility that would not be imposing on local communities.

Recommendations

5.4.13 The following recommendations were identified for inclusion as part of the Project to promote health and wellbeing. Details have been provided regarding how these recommendations are addressed within the Project (in italics):

a. implement security measures during construction including security staff, lighting, fencing off of supplies and storage of supplies in locked containers to help prevent opportunistic crime. *Status: This recommendation is included within the CoCP (AD05.12)*;

b. undertake on-going consultation with local crime prevention officers on security proposals to help build and maintain positive attitudes towards the Project during construction. *Status: This recommendation is already included within the CoCP (AD05.12) with respect to community relations, specifically the requirement for the Applicant to prepare a community relations plan*; and

c. work in conjunction with local police, community wardens and local councils during operation to review crime rates and fear of crime in relation to the Project to assess the effectiveness of the design of the Project to tackle crime and safety. This would help to identify and mitigate any emerging problem areas or issues. *Status: This recommendation would require consideration as part of the community relations plan, which is to be prepared by the Applicant*.

5.5 Access to work and training

5.5.1 This section considers the potential effects on health as a result of access to work and training associated with the construction and operation of the Project.

5.5.2 This topic is concerned with:

a. access to quality employment and training;

b. job diversity; and

c. business support.

Existing conditions

5.5.3 The Edmonton EcoPark operates 24 hours a day, seven days a week. There are approximately 193 full-time equivalent (FTE) people employed at the Edmonton EcoPark, approximately 96 of whom are directly related to the existing EfW facility. The remaining employees are responsible for other site operations and or the management of the company and the Edmonton EcoPark as a whole.

5.5.4 An understanding of the employment characteristics of the neighbourhood and local area provide an indication of the likely relevance of employment opportunities in the context of the local workforce.

5.5.5 The 2011 Census shows that the economically active population in the neighbourhood area was 64 per cent compared to 70 per cent in the local

area and 72 per cent in London. Around 7 per cent of the local population were unemployed in the neighbourhood area, notably higher than the local and London level. This provides an indication of the proportion of residents seeking employment.

5.5.6 LB Enfield as a whole had also experienced an increase in the proportion of the population claiming out of work benefits between the 2001 and 2011 Census. Of those claimants, Edmonton Green, where the Application Site is located, was the fourth most deprived ward in London in 2011. This contrasted with the west of the LB Enfield which has a lower proportion of people claiming benefits. This, together with unemployment levels in the neighbourhood area, provides an indication of the comparatively high proportion of residents seeking employment.

5.5.7 In terms of the highest level of qualifications in the 2011 Census, the majority in the neighbourhood area held no qualifications at 29 per cent, followed by 20 per cent holding level 4 qualifications and above. This indicates notable contrasts in skills levels within the neighbourhood area. The percentage of no qualifications held is high compared to the local and London level where the majority related to level 4 qualifications at 29 per cent and 38 per cent respectively. There is therefore potential for some employment requiring higher skills sets to be sourced from outside the neighbourhood area.

5.5.8 According to the 2011 Census, fewer residents in the neighbourhood area were employed in managerial, professional and technical occupations (30 per cent) than at the local (41 per cent) and London (50 per cent) level. There was a comparatively higher proportion of residents in all other types of occupations such as skilled trades and process, plant and machine operative occupations. This provides an indication of the types of occupation that local people are likely to be able to access.

5.5.9 Census 2011 data on industry shows that the majority of residents were employed in wholesale and retail trade in the neighbourhood area, such as repair of motor vehicles, at 19 per cent and in human health and social work activities at 14 per cent. Both of these were comparatively greater than that for the local and London levels. The proportion of residents employed in construction was 8 per cent, compared to 9 per cent in the local area and 7 per cent in London indicating average potential for the take up of construction employment opportunities. Water supply, sewerage, waste management and remediation activities made up around 1 per cent of employment industries for residents of the neighbourhood area. This is approximately double the proportion at the local and London levels and is likely linked to the nearby Deepham’s Sewage Treatment Works.

5.5.10 According to Business Register Employment Survey data, the neighbourhood area supported a total of 8,238 workplace based employees in 2013, an increase of 2.5 per cent on 2009. Approximately 5 per cent of those employees were in construction which is comparable to the borough level and greater than at the London level. Equally, 5 per cent were employed in water supply, sewerage, waste management and

remediation activities. This was notably higher compared to the local (0.7 per cent) and London levels (0.3 per cent).

5.5.11 The Application Site has historically supported employment in an area of relative deprivation. According to the Indices of Multiple Deprivation 2010, the overall deprivation in the neighbourhood area ranges from LSOAs in the top 6 per cent most deprived to the top 60 per cent least deprived showing a contrast across the area. The Application Site is located in LSOA Enfield 030, which was in the top 6 per cent most deprived areas in England overall. The area was particularly deprived in relation to income, employment and barriers to housing and services.

Impact Assessment

Construction

5.5.12 The construction of the Project is expected to support a total of approximately 2,623 FTE net additional jobs across the UK comprising around 971 FTE net additional direct construction jobs and 1,651 FTE indirect and induced employment jobs.

5.5.13 Of the total net additional construction jobs, around 1,311 FTE net additional jobs are expected to be located at the Greater South East level. Around 486 of those FTE jobs are expected to be net additional direct construction jobs and an estimated 826 FTE jobs are expected to arise through indirect and induced effects based on the net additional direct construction jobs.

5.5.14 Given the 5.5 year timeframe of the construction process, the number of FTE jobs does not give an indication of the peak level of employment on-site. Rather, it gives a more rounded indication of the employment effects on a comparable basis with on-going employment effects. The estimated average direct employment on-site per construction year would be approximately 1,766.

5.5.15 The existing conditions identified that the construction workforce was comparable to local and regional levels and it is therefore likely that less specialised construction employment opportunities could be accessed locally. The CoCP (AD05.12) states that the Applicant would require the Contractor to employ an appropriately qualified and suitably experienced workforce. The Contractor would be responsible for identifying the training needs of their personnel to enable appropriate training to be provided and engaging suitably qualified and experienced professionals for this purpose. Employment policies relating to opportunities for skills and training opportunities would be in line with LB Enfield policies. Furthermore, the Section 106 Draft Agreement (AD03.03) addresses the approach to employment associated with the project.

5.5.16 Employment effects from construction would be important considering the level of people seeking employment in the area. Employment effects are considered to be temporary as the construction process has a limited timeframe. Based on the magnitude of employment and the potential for employment opportunities, the employment effects from construction are considered to be temporary, beneficial and significant.

Operation

5.5.17 Employment from operation is expected to support a total of approximately 229 FTEs in the UK of which 197 FTEs would be at the local level. Of the 197 FTEs at the local level, 153 are expected to be direct operational jobs.

5.5.18 The overall employment effect from operation would therefore be a net reduction in employment of around 49 FTEs for the UK and around 52 FTEs at the local level. The reduction in direct employment would be primarily related to the ERF and associated with improvements in facilities, operational efficiency and a reduced requirement for maintenance in comparison to existing facilities. This is likely to contribute to improved productivity but may result in employment worries within existing staff, though this is unlikely to be significant within the local study area as it is assumed that the majority of employees are not local residents living in the study area, based on the low percentage of local residents employed in the water supply, sewerage, waste management and remediation industries (see 5.5.9).

5.5.19 The jobs likely to be supported in operation range from managerial and specialist positions associated with the ERF, as well as maintenance, transport, administration and support staff. Employment is therefore expected to be similar to baseline conditions, relating to a range of skills sets with the potential for local people to access employment opportunities. Employment policies relating to opportunities for skills and training opportunities would be in line with LB Enfield policies.

5.5.20 The installation of the new Reuse and Recycling Centre would provide additional opportunities (an estimated eight FTEs). This would offset an expected loss of around six FTEs from the removal of the IVC facility. It is expected that all other parts of the Project are likely to remain broadly similar to the existing numbers.

5.5.21 Incinerator Bottom Ash operations would be relocated off-site with limited associated displacement of employment related to Incinerator Bottom Ash processing at the local level. The IVC facility would also be relocated off-site, however the associated FTEs are expected to be reallocated to other on-site activities under LWL operations. LWL employment is expected to be retained on-site but the location of the relocated facility for Incinerator Bottom Ash operations is unknown. There would therefore be some potential for some third party employees to find it more difficult to travel to a new location.

5.5.22 The jobs likely to be supported in operation range from managerial and specialist positions associated with the ERF, as well as maintenance, transport, administration and support staff. Employment is therefore expected to relate to a range of skill sets with the potential for local people to access employment opportunities. Employment policies relating to opportunities for skills and training opportunities would be in line with LB Enfield policies.

5.5.23 Once the existing EfW facility is demolished the central area of the Edmonton EcoPark would become available for other waste management

activities. Since the site is allocated for employment, this area would therefore be likely to provide further employment opportunities in the future.

5.5.24 Because of the reduction in jobs at the ERF compared to the EfW facility and the relocation of other existing facilities off-site with the potential that some staff may find it more difficult to travel to the new locations, the employment effect from operation would be adverse. The net reduction in employment is not expected to be significant at the borough level given the magnitude of employment at that scale, however it would be significant at the local level, particularly for staff living locally given the poor socio-economic characteristics of the area.

Assessment of health effects

5.5.25 There would be a positive effect for those who obtain employment within the construction workforce, including those local residents who take up construction work employment. Although some employment associated with the Project would be specialised and likely to be sourced from outside of the local area, there would also be potential for local labour sourcing, particularly considering high unemployment levels in the area.

5.5.26 The creation of new job opportunities during both the construction and operational phases of the development would have a beneficial effect on health and well-being. This is based on the known links between employment and mental health, and associated benefits due to increased income and access to opportunities that employment and income brings e.g. educational and leisure services and a range of foods.

5.5.27 There would also be a probable positive effect associated with an increase in the opportunities available for local employment-related training and work experience. This can reduce social gradients and provide physical and mental health benefits for young people in both the new and existing communities in conjunction with improving longer-term social development.

5.5.28 There would be a probable negative effect for those who become unemployed following reduction in jobs at the ERF. There would also be a potential negative effect on those workers working on operations that need to be relocated and may find it more difficult to travel to new location and would spend more time and money travelling to those places.

Recommendations

5.5.29 The following recommendations were identified for inclusion as part of the Project to promote health and wellbeing. Details have been provided regarding how these recommendations are addressed within the Project (in italics):

a. where practicable, review of potential contractors' employment policies and inclusion of measures to improve short and long-term opportunities for provision of skills and training opportunities. This might include criteria such as local labour sourcing, apprenticeships and other means of enhancing local ability to compete for local

employment opportunities. *Status: This recommendation would require consideration as part of the Section 106 agreement*;

b. provide support to enable any staff losing jobs to find alternative forms of employment through career counselling, re-training and time on-the-job to apply for new jobs. *Status: This recommendation would require consideration as part of any future human resources policy implemented on site by the operator of Edmonton EcoPark*; and

c. monitor the uptake of new employment and training opportunities by young people within local communities *Status: This recommendation would require consideration as part of any future human resources policy implemented on site by the operator of Edmonton EcoPark.*

5.6 Social cohesion

5.6.1 This section considers the potential effects on health as a result of impacts on social cohesion associated with the construction and operation of the Project.

5.6.2 This topic is concerned with:

a. social interaction;

b. access to community facilities;

c. voluntary sector involvement; and

d. community severance.

Existing conditions

5.6.3 There are relatively few community facilities located within the neighbourhood area which is likely to be a reflection of the location of the Application Site in a relatively industrial area. The Craig Park Youth Centre is located to the west of the Application Site and the Heathcote Table Tennis club is located to the far east of the neighbourhood area. There are also various places of worship and halls for hire in the neighbourhood area. The closest residential communities are located on Badma Close approximately 60m west of the Application Site, on Zambezie Drive approximately 125m to the west and on Lower Hall Lane approximately 150m east.

5.6.4 To the east of the Application Site on the River Lee Navigation is a wharf which is currently leased to the Edmonton Sea Cadets. The unit is typically used two evenings per week and is currently accessed through the Application Site. Given the facilities waterside location it is also occasionally utilised by other cadet groups from LB Waltham Forest and LB Haringey.

Impact assessment

Construction

5.6.5 During Stage 1a of construction Edmonton Sea Cadets would be relocated to the existing EfW facility meeting rooms for a temporary period of approximately two years. Equipment would be stored in a container

located at front of the existing EfW facility and boats would be relocated to alternative facility off-site temporarily (see Book of Plans). The Edmonton Sea Cadets would have restricted access to the water from the Edmonton EcoPark during this time but would be able to access boats for use elsewhere. The Edmonton Sea Cadets would continue to follow safe and secure access routes shared with EfW facility staff.

5.6.6 The parade hours of the Edmonton Sea Cadets would not be altered in relation to the Project. On completion, EcoPark House would be occupied by Edmonton Sea Cadets and also be available for other community activities, visitor and Project information and NLWA/LWL office requirements. This situation would continue for Edmonton Sea Cadets in Stages 2 and 3.

5.6.7 It is anticipated that typical Edmonton Sea Cadets activities would be able to continue as usual, with the exception of activities that require access to the water since access to the water would be restricted during the two years that Edmonton Sea Cadets would be relocated. These activities may be relocated off-site to other facilities in neighbouring London Boroughs. Overall, it is considered that operation of facilities would be able to continue with some disruption associated with waterside access for approximately two years during the time that Edmonton Sea Cadets would be relocated to the EfW facility. The effect on Edmonton Sea Cadets from construction is therefore considered to be adverse, but not significant.

Operation

5.6.8 On completion of EcoPark House this would be occupied by Edmonton Sea Cadets and also be available for other community activities, visitor and Project information, and NLWA/LWL offices. The use of EcoPark House would continue into the operation of the ERF the same as during Stage 2 and 3 of construction.

5.6.9 The Project would provide a modern and enhanced Edmonton Sea Cadets facility with additional space for other community uses. It would also improve the accessibility to the LVRP through an enhanced gateway at Lee Park Way. Based on the low scale of effect and alteration from baseline conditions, the effect on Edmonton Sea Cadets from operation is considered to be beneficial and significant.

Assessment of health effects

5.6.10 During construction there would be a temporary probable negative effect on the Edmonton Sea Cadets as they would be relocated to temporary facilities, however the alternative would enable them to continue with the majority of their activities and the disruption would be expected to be for a limited time only.

5.6.11 During the operational stage there would be a small to moderate positive effect on the Edmonton Sea Cadets and the community through improved quality of facilities and the additional space available for wider community activities associated with EcoPark House in an area where there are few existing facilities. EcoPark House would include space for visitor

information and raising awareness relating to waste management and the Project. This would have positive health effects. A Community Liaison Group would provide the opportunity to facilitate activities and to build and maintain a positive attitude to the Project which would also be associated with mental health and well-being benefits.

5.6.12 Waste facilities tend to generate community concerns about the potential for adverse health effects from the operation of such facilities. This can lead to a heightened perception of risk in local communities which can lead to reduced well-being and in some cases mental health disorders such as anxiety and depression and can also, importantly, affect social cohesion. Where there are negative health effects associated with the perception of the water vapour plume that the existing EfW facility produces, these effects would be reduced as a result of air cooling being selected for the proposed ERF. Some comments were expressed during Phase One and Phase Two Consultations about health and well-being concerns related to potential increases in air pollution, noise and traffic, and in particular the potential for air pollution from the ERF to increase levels of cancer and asthma. The Air Quality, Noise and Neighbourhood Amenity Section has already considered the likely effects of air pollution. Given the existing baseline levels of these conditions and the summary of the findings of the scientific literature review on the health impacts of Energy Recovery Facilities undertaken by Ramboll (see Appendix D9.6) the likely health effects would be small.

5.6.13 Since no community facilities or access to community facilities would be affected by the Project except, temporarily, for the Edmonton Sea Cadets facility and the level of community concern is judged to be low the adverse effect from changes to social cohesion would be small.

Recommendations

5.6.14 The following recommendations were identified for inclusion as part of the Project to promote health and wellbeing. Details have been provided regarding how these recommendations are addressed within the Project (in italics):

a. consideration should be given to build on the existing schools outreach programme to help communities to better understand waste management and engage communities positively on the benefits of the Project. *Status: This recommendation would require consideration as part of existing outreach programmes and is not directly related to the Project*; and

b. promote the use of the community facilities at EcoPark House through active promotion and joint community outreach including events and open days. *Status: This requirement would require consideration as part of any future operations strategy*.

5.7 Minimising the use of resources

5.7.1 This section considers the potential effects on health as a result of impacts on resource use associated with the construction and operation of the Project.

5.7.2 This topic is concerned with:

a. recycling and reuse;

b. sustainable design and construction;

c. waste management; and

d. potential hazards.

5.7.3 Reducing or minimising waste including disposal processes for construction as well as encouraging recycling at all levels can improve human health directly and indirectly by minimising environmental impact, such as the safe treatment and disposal of organic and inorganic waste, the production of air pollution from, for example, electricity generation, from non-renewable fossil fuels, and the refining of metal ores.

Existing conditions

5.7.4 In 2012/13 the Constituent Boroughs collected around 827,000 tonnes of recyclable and residual waste comprising household waste (679,000 tonnes) and waste produced by businesses (102,000 tonnes). The remainder was made up of a variety of minor waste streams arising from street cleaning, fly tipping, construction and demolition, and highways cleaning.

5.7.5 Local Authority Collected Waste (LACW) arisings in the Constituent Boroughs are handled through a number of facilities in north London. Waste is delivered by the boroughs to either the Edmonton EcoPark for treatment at the EfW facility or for bulking up at waste transfer stations.

Impact Assessment

Construction

5.7.6 The CoCP (AD05.12) includes provision for the implementation of sustainable construction, which would include:

a. provision of sustainable site drainage systems;

b. promotion of sustainable travel for site staff;

c. providing environmental awareness training for staff; and

d. compliance with the Considerate Contractor's Scheme.

Operation

5.7.7 A Sustainability Statement (AD05.13) has been produced for the Project which sets out how the Project would be delivered as a sustainable development. The Sustainability Statement (AD05.13) covers the themes of design, energy, water, waste management, procurement, health and well-being, ecology and travel, and sets out key objectives, targets and

commitments to deliver a sustainable development that aligns with sustainable development policy for the district.

5.7.8 As part of the operational phase of the Project, all types of waste ash (boiler ash, bottom ash, fly ash, etc.) would be stored and removed off-site for additional treatment and, where possible, recycling. Waste products would be treated and recycled where possible, with residual waste disposed of in an appropriate manner.

Assessment of health effects

5.7.9 Reducing or minimising the amount of construction materials to build the Project would have a beneficial effect in terms of the efficient and effective use of resources.

5.7.10 Providing robust waste management procedures as outlined in the CoCP (AD05.12) during the construction on-site, would help to create a clean and pleasant environment that people would enjoy living and working in.

5.7.11 The Project would be built to BREEAM 'very good' standard, which is likely to mean that the building itself would be more energy efficient than the existing EfW facility and therefore minimise the use of natural resources. This is considered to be a likely beneficial effect.

5.7.12 The Project inherently contributes to this determinant by contributing towards implementing policies and targets relating to improving regional waste management. It is therefore considered a moderate beneficial effect in terms of reuse and recycling of waste, minimisation the use of fossil fuels for power and reducing use of landfill.

5.7.13 There is also a potential beneficial effect resulting from any future link to a local district heating network should the opportunity arise. Waste heat from the facility could be used within a local area, but would depend on the required heat loading that is available. As the benefits are unknown at this stage, the effects are considered negligible.

Recommendations

5.7.14 The following recommendations were identified for inclusion as part of the Project to promote health and wellbeing. Details have been provided regarding how these recommendations are addressed within the Project (in italics):

a. in so far as practicable, the sourcing and transport of all construction material, where possible, should minimise travel distance and consider sustainability credentials of source. *Status: This aspect would be included as part of the scope of the future procurement process relating to the demolition, construction and operation of Edmonton EcoPark*;

b. complaints relating to litter and waste should be monitored during construction and operation, and subsequent corrective action should be taken. *Status: this recommendation is included as a requirement within the CoCP (AD05.12) (enquiries and complaints)*;

c. consideration should be given to implementing outreach programmes, in order for communities to understand the Project and benefits of resource management. *Status: This recommendation would require consideration as part of existing outreach programmes and is not directly related to the Project*; and

d. minimise and make efficient use of resources across the Edmonton EcoPark. *Status: This recommendation has been incorporated in to the design principles of the Project.*

5.8 Climate change

5.8.1 This section considers the potential effects on health as a result of impacts related to climate change associated with the construction and operation of the Project.

5.8.2 This topic is concerned with:

a. renewable energy;

b. sustainable transport;

c. building design;

d. biodiversity; and

e. flood risk and drainage.

5.8.3 There are a range of health impacts associated with climate change due to changes in short and long term weather patterns, e.g. temperature extremes and flooding, that can lead to fuel poverty and disruption to services.

Existing conditions

5.8.4 The Application Site is located within existing industrial land use in an urban area.

5.8.5 As set out in section 5.3 there are a number of existing walking and cycling routes, however the Application Site falls within a PTAL of 1b which is rated as ‘very poor’.

5.8.6 Flood risk issues are detailed as part of the Flood Risk Assessment (FRA) (AD05.14). Hydrology features at the Application Site include:

a. the River Lee Navigation approximately 20m east of the red line boundary, which is part of the River Lee catchment;

b. the Enfield Ditch is located adjacent to the Lee Navigation to the west and mostly falls within the red line boundary;

c. Salmons Brook runs south along, and immediately outside the west of the red line boundary; and

d. William Girling Reservoir is an offline water supply reservoir to the north-east of the Application Site.

5.8.7 The Application Site is partly within Flood Zones 1 and 2 and part of the Temporary Laydown Area is in Flood Zone 3. The geology at the

Application Site includes primary and secondary aquifers so there is groundwater present. The majority of surface water from the Application Site drains via the pumped discharge to the Enfield Brook, or to the Chingford foul sewer, which crosses the Application Site.

5.8.8 The FRA (AD05.14) considers flood risk from fluvial sources, groundwater, sewers and drainage infrastructure, artificial sources (e.g. William Girling Reservoir), overland flows (surface water run on and run off).

5.8.9 Chingford Reservoirs Site of Special Scientific Interest (SSSI) is located approximately 240m to the north-east of the Application Site and comprises a series of drinking water storage basins. Lee Valley Site of Metropolitan Importance for Nature Conservation (SMINC) is a non-statutory designation located partly within the Application Site.

5.8.10 The Application Site is dominated by hard standing and buildings associated with the existing facilities. Natural and semi-natural habitats within the Application Site include scattered broadleaved trees; standing open water; ruderal vegetation; introduced shrub; amenity grassland; and young broadleaved plantation woodland. Species present at the Application Site include bats and breeding birds such as the starling. Effects of the Project in relation to ecology including the designations described in Paragraph 5.8.10 are assessed as Vol 2 Section 5 of the ES (AD06.02).

5.8.11 According to Department for Energy and Climate Change Data in 2012 carbon dioxide emissions per capita were 4.0 tons at the local area compared to 5.2 for London and 7.0 for England.

5.8.12 The current facility provides power for approximately 72,000 homes.

Impact assessment

Construction

The CoCP (AD05.12) includes provision for the implementation of sustainable construction, which would include:

a. provision of sustainable site drainage systems;

b. promotion of sustainable travel for site staff;

c. providing environmental awareness training for staff; and

d. compliance with the Considerate Contractor's Scheme.

Operation

5.8.13 The Project would not increase flood risk, as discussed in Vol 2 Section 11 of the ES (AD06.02).

5.8.14 The recovery of EfW materials obviates the need to use fossil fuels for energy and reduces the need for landfill, which in turn reduces the instances of landfill methane being released into the atmosphere.

5.8.15 The Framework Operation Travel Plan at Appendix K of the TA (AD05.11) would be focussed on employees and visitors to the Application Site when the ERF would be completed and operational. The measures suggested

within the Framework Operation Travel Plan would be intended to encourage travel by modes of transport more sustainable than by private car as far as would be reasonably practicable.

5.8.16 The overarching aims of the Framework Operation Travel Plan for the Project seek to:

a. influence the travel behaviour of operational employees and visitors;

b. encourage, where practical, travel by cycle, on foot and by public transport by highlighting their availability;

c. minimise the number of single-occupancy car trips generated by the Project; and

d. promote healthy lifestyles and sustainable travel.

Assessment of health effects

5.8.17 There would be a beneficial continuation of on-going waste management activities on-site, which has regional beneficial effects.

5.8.18 Proposed landscaping would have a small beneficial effect on climate change and would strengthen green infrastructure connections with the LVRP.

Recommendations

5.8.19 The following recommendations were identified for inclusion as part of the Project to promote health and wellbeing. Details have been provided regarding how these recommendations are addressed within the Project (in italics): consideration should be given to build on the existing outreach programme to help communities to better understand waste management and engage communities positively on the benefits of the Project. *Status: This recommendation would require consideration as part of existing outreach programmes and is not directly related to the Project.*

6 Conclusions

6.1.1 Overall, the Project is likely to have beneficial health effects at regional and local levels.

6.1.2 During construction there would be limited loss of publically accessible open space and limited loss of access to open space. There would be some permanent loss of space for pedestrian, cyclists and horse riders along Lee Park Way however the route would gain a new improved route surface and formal footway. In addition, access to the main carriageway would be maintained for cyclists should they wish to do so.

6.1.3 During construction would be when the majority of negative effects would be experienced by existing local communities. This primarily relates to the loss of residential amenity, which concerns air quality, noise, traffic and visual impacts.

6.1.4 Older people, children and young people, those with disabilities and those with young children, could be most affected during construction without mitigation measures being implemented.

6.1.5 During operation, there would be a permanent loss of some jobs from the existing EfW facility as the new facility requires a smaller operational workforce. There would also be a new improved set of community facilities including the existing facility for Edmonton Sea Cadets.

6.1.6 Recommendations have been suggested as a way of promoting health and wellbeing as part of the Project during construction, and many of these measures are included within the CoCP (AD05.12).

6.1.7 The recommendations contained within this report are addressed by the mitigation outlined within the ES (AD06.02) and CoCP (AD05.12), which would help to reduce the effects of construction activity and maximise potential enhancement opportunities, where these would be feasible.

6.1.8 The Project would help to maintain the ability of the London region to manage waste sustainably in a way that minimises the use of natural resources, recovers energy, maintains recycling levels and reduces waste ending up in landfill.

6.1.9 There would be opportunities with the development of a visitor and information resource to improve engagement with local communities particularly through educational visits and lessons with local school children at primary and secondary school levels.

6.1.10 Continued close working between the Applicant and LB Enfield is likely to ensure that health and well-being impacts would be appropriately monitored and managed throughout the lifecycle of the Project.

Appendix A – Policy Review

A1 Introduction

A1.1.1 The Policy context for HIA for the Project is set by a range of documents at the national, regional and local levels.

A1.1.2 National and Regional policy relevant to health and wider determinants of health relevant to the Project are set out in this Appendix. At the local level detailed policy guidance is provided by the Core Strategies, Development Management Documents, Health and Wellbeing Strategies and Sustainable Community Strategies for LB Enfield and LB Waltham Forest. See also the legislative and policy context in the Planning Statement.

A2 National Policy

A2.1 National Policy Statements

A2.1.1 National Policy Statements provide the primary basis for decisions on applications for nationally significant infrastructure projects.

EN-1: Overarching National Policy Statement for Energy (2011)

A2.1.2 EN-1 covers Government policy on energy and energy infrastructure development, the assessment principles for deciding applications and how impacts from new energy infrastructure should be considered in applications.

A2.1.3 In relation to health Section 4.13 states that the ES (AD06.02) should assess any impacts of the proposed development on human beings, identifying adverse health impacts and any necessary mitigation measures. The potential direct impacts on health referenced are those relating to increased traffic, air or water pollution, dust, odour, hazardous waste and substances, noise, exposure to radiation and increases in pests. Indirect effects could relate to key public services, transport or use of open space for recreation and physical activity.

A2.1.4 Elements of energy infrastructure which may negatively affect health are generally subject to separate regulation and thus these are unlikely to be used as a reason for refusal under the Planning Act 2008 (as amended).

EN-3: National Policy Statement for Renewable Energy Infrastructure (2011)

A2.1.5 EN-3 sets out the 'Technology Specific Considerations' to be taken into account in the preparation and assessment of applications for renewable energy infrastructure, including impacts and matters including EfW.

A2.1.6 In relation to waste impacts on air quality and emissions, EN-3 states that *"where a proposed waste combustion generating station meets the requirements of WID and would not exceed the local air quality standards,*

the IPC should not regard the proposed waste generating station as having adverse impacts on health."

A2.2 Government White Papers

Saving Lives: Our Healthier Nation (1999)

A2.2.1 In the White Paper Saving Lives: Our Healthier Nation, the Government made a commitment to apply HIA to all relevant key policies, so that the consequences for health can be considered when policies are developed and implemented. The paper also acknowledges a need for HIA of policies, plans and projects at a local and regional level.

Choosing Health – Making Healthy Choices Easier (2004)

A2.2.2 This 2004 White Paper sets out the key principles for supporting the public to make healthier and more informed choices in regards to their health.

A2.2.3 The paper sets out how the opportunities, support and information that people want to enable them to choose health should be made available. Furthermore it aims to inform and encourage individuals to help shape the commercial and cultural environment they live in so that it is easier to choose a healthy lifestyle.

A2.2.4 It also considers non-health interventions on population health that should be incorporated before implementing policies (such as HIAs for example) and afterwards through monitoring and evaluation.

Healthy Lives, Healthy People: Our strategy for public health in England (2010)

A2.2.5 This 2010 White Paper responds to Marmot's Fair Society Healthy Lives report (Final Report 2010) and adopts the framework for tackling the wider social determinants of health. It presents the government commitment to protecting the population from serious health threats; helping people live longer, healthier and more fulfilling lives; and improving the health of the poorest, fastest.

A2.2.6 Local governments and communities are at the heart of health and well-being for their populations and tackling inequalities and they are responsible and accountable for creating healthy planning through planning, transport, schools and housing.

A2.2.7 It has been noted that the Department for Communities and Local Government (DCLG) will support areas that streamline planning policy which aligns social, economic, environmental and health priorities into one place.

A2.2.8 It also noted that health considerations are an important part of planning and that public health should be better integrated with areas such as social care, transport, leisure, planning and housing to keep people connected, active, independent and in their own homes and around the community.

A2.3 National Planning Policy Framework

National Planning Policy Framework (2012)

A2.3.1 The NPPF sets out the government's planning policies for England. It also provides a framework for local people and their accountable councils to produce their own distinct local and neighbourhood plans so it is of material consideration in planning decisions.

A2.3.2 The NPPF suggests that proposed development should be assessed for any expected changes and barriers to health and well-being. It therefore encourages the preparation of an HIA for a planning application within paragraph 171 which states *"Local planning authorities should work with public health leads and health organisations to understand and take account of the health status and needs of the local population (such as for sports, recreation and places of worship), including expected future changes, and any information about relevant barriers to improving health and well-being."*

Planning Practice Guidance

A2.3.3 Planning Practice Guidance sets out guidance to assist practitioners. The guidance states that health and well-being should be considered in planning decision making. It requires local authority planners to consult the Director of Public Health, on any planning applications *"that are likely to have a significant impact on the health and wellbeing of the local population or particular groups within it"* and suggests that "*a health impact assessment may be a useful tool to use where there are expected to be significant effects".*

A2.4 National Waste Policy

National Planning Policy for Waste (2014)

A2.4.1 The National Planning Policy for Waste sets out the government's key planning objectives for sustainable waste management, requirements for waste plan-making authorities and the approach for the determination of planning applications.

A2.4.2 Objectives of the Policy include helping to secure the re-use, recovery or disposal of waste without endangering human health and without harming the environment.

A2.4.3 In decision making, local authorities are required to consider the likely impact on the local environment and on amenity and the locational implications of any advice on health from the relevant health bodies.

The Waste Management Plan for England (2013)

A2.4.4 The Waste Management Plan for England provides a summary of the current waste management situation, gives guidance on site identification and summarises general waste management policies.

A2.4.5 The Plan sets out the principles for waste management that aim to ensure a high level of protection for the local environment and for human health. It states that the objective for waste management policies to deliver the Waste Framework Directive is *"to protect the environment and human health by preventing or reducing the adverse impacts for the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use."*

A2.5 National guidance

National Institute for Health and Care Excellence Public Health Guidance

A2.5.1 NICE sets the standards for high quality healthcare and encourages healthy living. It is used by the NHS, local authorities and those involved with delivering care and promoting well-being. It has published a range of public health guidance. A summary of some of the policies is provided below.

A2.5.2 PH8: Physical activity and the environment (2008) provides evidence-based recommendations on improving the physical environment to encourage physical activity. These include increasing pedestrian access, prioritising active transport and increasing walking route networks.

A2.5.3 PH17: Promoting physical activity, active play and sport for pre-school and school-age children and young people in family, pre-school and community settings (2009) provides guidance on promoting physical activity for these groups. It recommends consulting these groups, high level strategic planning, methods for increasing physical activity and active travel and the provision of these facilities in new developments.

A2.5.4 PH31: Preventing unintentional injuries among children and young people under 15: road design and modification (2010) provides guidance on the coordination of work to make road environments safer through engineering measures.

A2.5.5 PH41: Walking and cycling (2012) sets out the guidance on how people can be encouraged to increase active travel and recreational walking and cycling undertaken, by reducing dangers and creating a more supportive environment.

A3 Regional Policy

A3.1 The London Plan consolidated with alterations since 2011 (2015)

A3.1.1 The London Plan[16] is the Mayor's Spatial Development Strategy for London to 2036. It deals with matters of strategic importance to Greater London, taking account of crosscutting themes including:

[16] Greater London Authority (2015) The London Plan Spatial Development Strategy for London Consolidated with Alterations Since 2011, March 2015

a. reducing health inequality and promoting Londoners health;

b. equality of opportunity; and

c. London's contribution to sustainable development in the UK.

A3.1.2 The vision set out in the London Plan aims to ensure that London *"excel*[s] *among global cities"* and embody sustainable development. The objectives of the London Plan which underpin that vision include:

a. to meet growth challenges while ensuring a sustainable, good and improving quality of life for all Londoners and tackle of deprivation and inequality, including inequality in health outcomes;

b. to provide opportunities for all Londoners to realise and express their potential and a high quality environment for individuals to enjoy, live together and thrive;

c. to ensure London has the best modern architecture, which optimises and extends open and green spaces, natural environments and waterways to improve Londoner's health, welfare and development; and

d. to lead in tackling climate change, reducing pollution, developing a low carbon economy and consuming fewer resources.

A3.1.3 The London Plan provides direct support for HIA of development proposals as Policy 3.2C states that *"the impacts of major development proposals on the health and wellbeing of communities should be considered, for example through the use of Health Impact Assessments."*

A3.2 The London Health Inequalities Strategy (2010)

A3.2.1 The London Health Inequalities Strategy[17] sets out five core objectives for tackling health inequality in London:

a. to empower individuals and communities to improve health and well-being;

b. to improve access to high quality health and social care services particularly for Londoners who have poor health outcomes;

c. to reduce income inequality and the negative consequences of relative poverty;

d. to increase the opportunities for people to access the potential benefits of good work and other meaningful activity; and

e. to develop and promote London as a healthy place for all.

A3.2.2 The strategy outlines the importance of HIA in decision making, supporting policy and identifying new ways of working. It also commits to leading by example and ensuring that *"major initiatives consistently evaluate potential negative or positive health impacts".*

[17] Greater London Authority (2010) The London Health Inequalities Strategy.

A3.3 Health Issues in Planning Best Practice Guidance (2007)

A3.3.1 The Greater London Authority's Health Issues in Planning Best Practice Guidance (BPG) [18] is referenced in policy 3.2 of the London Plan mentioned in paragraph A3.1.3.

A3.3.2 The BPG provides guidance to local authorities on promoting better health through planning policy and development and introduces the *"link between how places are planned and developments delivered and the health of communities who live in them."*

A3.3.3 The significance of new developments, the importance of coordinated planning and the consideration of health impacts has been outlined as follows: *"Major developments ... should make a significant positive contribution to the health of Londoners. Health impacts should be considered at the very outset of developing planning proposals or strategies to ensure positive health outcomes."*

A3.4 Healthy Urban Development Unit Planning for Health in London: The ultimate manual for primary care trusts and boroughs (2009)

A3.4.1 The HUDU planning for health in London manual[19] emphasises the role of local partnership approaches and local authorities in promoting healthier communities through the spatial planning system.

A3.4.2 It supports the reasoning that there is a need to manage the relationship between a person's health and the social and environmental context within which they live. Furthermore it surmises that *"No spatial plan can be sound without addressing health issues"* and it specifically recommends using the HUDU Wider Determinants of Health model which has been used in the HIA.

A3.5 London's Wasted Resource: The Mayor's Municipal Waste Management Strategy (2011)

A3.5.1 The Mayor's Municipal Waste Management Strategy[20] highlights the need to reduce CO_2eq emissions to respond to climate change and also that *"waste authorities must also take into account any adverse impact on human health their waste management activities might have, such as on local air quality".*

A3.5.2 The Strategy acknowledges the need to manage London's municipal waste more effectively and efficiently. It reiterates that the waste hierarchy requires non-recycled waste to be used to generate energy after reduction, reuse and recycled options has been exhausted.

[18] Greater London Authority (2007) Health Issues in Planning Best Practice Guidance, June 2007.
[19] NHS London Healthy Urban Development Unit (2009) Planning for health in London: The ultimate manual for primary care trusts and boroughs.
[20] Greater London Authority (2011) London's Wasted Resource: The Mayor's Municipal Waste Management Strategy, November 2011.

A3.6 Mayor's Transport Strategy (2010)

A3.6.1 The Strategy encourages transport enhancements which address health inequalities in London while implementing sustainable development and mitigating and/or adapting to climate change.

A3.6.2 The Mayor's vision highlights the requirement for efficient and integrated transport that addresses some of the key health determinants by endorsing:

a. physically active modes of transport including walking and a mode shift to cycling;

b. new developments that are planned in a way to increase the attractiveness of walking and cycling;

c. improved public transport and consistent way-finding;

d. the provision of transport that is accessible, fair to users and offers value for money;

e. safe and secure transport that contributes to improving quality of life and the environment; and

f. transport that offers improved opportunities for the entirety of London.

A3.7 Managing risks and increasing resilience: The Mayor's climate change adaptation strategy (2011)

A3.7.1 The Climate Change Adaptation Strategy[21] is part of a series of strategies that aim to improve quality of life for Londoners and make the city more sustainable. The strategies are based on retrofitting London, greening London and cleaner air for London. The strategy highlights the direct and indirect threats of climate change to health.

A3.8 Clearing the air: the Mayor's Air Quality Strategy (2011)

A3.8.1 The Mayor's Air Quality Strategy[22] sets out the health impacts of poor air quality and aims to reduce air pollution to improve the health of Londoners by achieving European Union air quality limit values as soon as possible.

A3.9 The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance (2014)

A3.9.1 This 2014 Supplementary Planning Guidance (SPG)[23] emphasises the impact of air pollution on health and well-being and seeks to reduce emissions of dust, PM_{10} and $PM_{2.5}$ from construction and demolition activities in London.

[21] Greater London Authority (2011) Managing risks and increasing resilience: the Mayor's climate change adaptation strategy, October 2011
[22] Greater London Authority (2011) Clearing the Air: the Mayor's Air Quality Strategy, December 2011
[23] Greater London Authority (2014) The Control of Dust and Emissions during Construction and Demolition, July 2014

A3.10 All London Green Grid Supplementary Planning Guidance (2012)

A3.10.1 The All London Green Grid (ALGG) promotes a shift from grey to green infrastructure to secure environmental, social and economic benefits.

A3.10.2 The ALGG Supplementary Planning Guidance (SPG)[24] provides guidance on the implementation of Policy 2.18 of the amended London Plan to deliver a multifunctional green infrastructure network.

A3.10.3 One of the key objectives of the ALGG SPG is the promotion of healthy living by improving access and enjoyment opportunities for the green space network and the provision of social infrastructure. This is undertaken at a landscape scale to provide a context for development and thus achieve greater local health impacts.

A3.11 Better Environment, Better Health (2013)

A3.11.1 The GLA produced guides for London Boroughs which set out environmental issues and their relationship to health including:

a. green spaces;
b. active travel and transport;
c. surface water flood risk;
d. air quality;
e. healthy food;
f. fuel poverty; and
g. overheating.

6.1.11 The guide provides information and potential actions for health and aims to maximise opportunities for improving health and well-being. The documents relating to LB Enfield[25] and LB Waltham Forest[26] set out the environment and health picture for each borough which are included as part of the community profile in Appendix B where relevant.

A4 Local policy

A4.1 North London Joint Waste Strategy (2009)

A4.1.1 The North London Joint Waste Strategy (NLJWS) is the result of partnership working between the Constituent Boroughs and the North London Waste Authority to provide efficient sustainable management of residential and commercial waste in north London.

[24] Greater London Authority (2012) Green infrastructure and open environments: The All London Green Grid Supplementary Planning Guidance, March 2012
[25] Greater London Authority (2013) Better Environment, Better Health: A GLA Guide for London Boroughs, London Borough of Enfield, November 2013
[26] Greater London Authority (2013) Better Environment, Better Health: A GLA Guide for London Boroughs, London Borough of Waltham Forest, November 2013

A4.1.2 The requirement for this partnership comes under section 32 of the Waste and Emissions Act 2003, which introduced a requirement for north London authorities to produce a joint waste strategy that includes management arrangements for all municipal waste.

A4.1.3 Agreement between the north London authorities was that the NLJWS will:

a. form the primary strategic document setting out how the Partner Authorities will manage municipal waste for the period 2004 – 2020;

b. replace all existing Partner Authority Statutory Waste Recycling Plans and local waste strategies including the North London Waste Authority Waste Disposal Plan (1992);

c. conform with the Government's "Guidance on Municipal Waste Management Strategies" (2001) and the Waste and Emissions Trading Act (2003); and

d. have regard to the Government's Waste Strategy for England 2007 and be in general conformity with the Mayor of London's Municipal Waste Management Strategy (2003).

A4.1.4 The North London Partner authorities have agreed to work together to implement the NLJWS.

A4.1.5 A crucial aspect of the NLJWS was to identify the best option for waste management in North London and identify the potential ways of implementing this option.

A4.1.6 A Strategic Environmental Assessment (SEA) was undertaken to identify how options performed against key sustainability objectives, one of which was *"to maximise the health and well-being of a population"*. The performance of EfW options performed well against the health objective.

A4.1.7 In terms of implementing the best option, the SEA indicated that there should be a clearer commitment to developing previously developed land, where practicable.

A4.2 Draft North London Waste Plan

A4.2.1 The North London Waste Plan (NLWP) is prepared jointly by seven Constituent Boroughs. The NLWP will cover the period 2017 to 2032 and, once adopted, it will form part of the statutory Development Plan for these areas.

A4.2.2 The draft NLWP was published for consultation on 30 July 2015. The NLWP states that developers of waste facilities will need to fully identify the health implications of the development and plan the most appropriate scheme to protect the surrounding uses and community. Any proposed waste development which is required to have an EIA will also require a HIA.

A4.3 Enfield Plan Core Strategy 2010-2025

A4.3.1 Enfield Plan Core Strategy 2010-2025 sets out the spatial framework for the long term development of the borough until 2025. The Core Strategy identifies that reducing inequalities in health and well-being is a key issue for Enfield. The key priorities for health and well-being for the future are stated to be to:

a. reduce poverty and inequality in health across the Borough;

b. reduce obesity levels;

c. particularly amongst young people; and

d. tackle infant mortality which is well above the national average.

A4.3.2 The Core Strategy emphasises that promoting healthier lifestyles, addressing the fear of crime and supporting vulnerable groups are all vital to improving well-being.

A4.3.3 The vision for Enfield is to be a healthy, prosperous and sustainable borough and Strategic Objective 5 relates to education, health and well-being to promote healthier lifestyles and to address inequalities in health particularly in areas such as Edmonton Green.

A4.3.4 Core Policy 1 Strategic Growth Areas designate Central Leeside, within which the Application Site is located, is a focus for future growth where the *"greatest opportunities for change to improve the quality of life for Enfield's residents"*.

A4.3.5 Core Policy 7 Health and Social Care and the Wider Determinants of Health states that *"for major developments, the applicant will be required to undertake a Health Impact Assessment"*. The Policy commits to promoting a pattern of land uses to encourage healthier lifestyles and to ensuring that new development helps to *"promote healthy communities and places, and to address health inequalities, by influencing the wider determinants of health"*.

A4.3.6 The Core Strategy includes Core Policies relevant to HIA and wider health determinants for the Project relate to:

a. supporting community cohesion, access to facilities and community safety;

b. economic prosperity and skills improvement;

c. sustainable energy and climate change;

d. sustainable waste and water management;

e. public transport, pedestrians and cyclists;

f. pollution and air quality; and

g. quality of the built environment, open space and recreation.

A4.4 Enfield Development Management Document

A4.4.1 LB Enfield's Development Management Document (DMD) provides both detailed criteria and standard based policies for assessing planning applications and guides future development at the Application Site. It builds on the Core Strategy to enable the delivery of its vision and principles for Edmonton. The DMD guides planning decisions within Enfield, and each policy is linked to one (or more) of those set out in the Core Strategy.

A4.4.2 Leading policies of the DMD include to support healthy living and to tackle climate change. The DMD includes relevant policies relating to:

a. sustainable design and construction;

b. high quality and inclusive design;

c. low and zero carbon technology;

d. pollution, air quality and noise; and

e. open space and the natural environment.

A4.5 Enfield Joint Health and Wellbeing Strategy 2014-2019

A4.5.1 Enfield's Health and Wellbeing Board produced a Joint Health and Wellbeing Strategy in 2014[27] which sets out how the board will work with people in Enfield to improve health and well-being.

A4.5.2 Key issues in Enfield include:

a. the largest cause of death in Enfield is Cardiovascular disease, followed by cancer;

b. the population is not physically active enough to maximise health benefits;

c. high proportions of adults and young people smoking

d. adult and child obesity; and

e. contrasts in the life expectancy of residents in the East and West of Enfield.

A4.5.3 The vision of the Health and Wellbeing Board is *"working together to enable you to live longer, healthier, happier lives in Enfield"* and the health and well-being priorities for Enfield are identified to be:

a. ensuring the best start in life;

b. enabling people to be safe, independent and well and delivering high quality health and care services;

c. creating stronger, healthier communities;

d. reducing health inequalities, narrowing the gap in life expectancy; and

e. promoting healthy lifestyles and making healthy choices.

[27] Enfield Council (2014) Enfield Joint Health and Wellbeing Strategy 2014-2019: Your Health and Wellbeing, April 2014

A4.6 Enfield's Future: A sustainable community strategy for Enfield 2009-2019

A4.6.1 Enfield's sustainable community strategy[28] has been produced by the Enfield Strategic Partnership (ESP) of public sector, local business, community and voluntary groups. The strategy has a vision to make Enfield *"a healthy, prosperous, cohesive community living in a borough that is safe, clean and green."* The strategy sets out a series of objectives relating to children and young people, safer and stronger communities, healthier communities, older people and improving quality of life. The principles for achieving the vision are:

a. increasing prosperity and promoting sustainable and cohesive communities;

b. promoting opportunities to improve education, skills and training;

c. facilitating economic prosperity through inward investment, enterprise and business support;

d. tackling discrimination, promoting equality of access and facilitating community cohesion between all citizens; and

e. continuing to maintain and improve the quality of our homes and neighbourhoods.

A4.6.2 The vision for Central Leeside-Meridian Water and Edmonton Green is to *"work with our partners to transform the area into a series of vibrant, sustainable communities that maximise the benefits of their proximity to the regional park and develop new employment opportunities, embracing new technologies as well as consolidating its existing commercial role."*

A4.7 Enfield Together: Enfield's Community Cohesion Strategy 2010-2014

A4.7.1 The ESP also produced a community cohesion strategy[29] which aims to *"build a borough which all people can identify with, feel proud of and where everyone is valued, built upon positive relationships within local communities, which create a sense of belonging."*

A4.7.2 The five key aims of the vision are:

a. local people play an active part in civic and community life, and contribute to local decision making;

b. local people of all ages and backgrounds have opportunities to mix together;

c. local people have learning and employment opportunities and feel there are good prospects;

d. local people feel safe and are safe; and

[28] Enfield Strategic Partnership (2009) Enfield's Future: A sustainable community strategy for Enfield, 2009-2019.
[29] Enfield Strategy Partnership (2010) Enfield Together: Enfield's Community Cohesion Strategy, September 2010.

e. the ESP provides community leadership, celebrates diversity and promotes equality to enhance community cohesion.

A4.8 Central Leeside Area Action Plan

A4.8.1 The Proposed Submission Area Action Plan for Central Leeside was published in November 2014[30] for consultation between 5 January 2015 and 16 March 2015. It outlines the planning framework for delivery of employment, housing and community facilities for Central Leeside within which the Application Site sits. In terms of health the following key issues are identified for the Action Plan area:

a. life expectancy is below the Enfield average;

b. a higher proportion of disabled residents than the rest of Enfield;

c. the highest number of disability allowance claimants; and

d. childhood obesity and barriers to active travel and accessing open space.

A4.9 Edmonton EcoPark Planning Brief

A4.9.1 The Edmonton EcoPark Planning Brief SPD[31] was adopted in May 2013, and guides future development at the Application Site. It provides detailed guidance on how policies should be meet at the Application Site including in relation to health and environmental impacts. The SPD indicates that a HIA should be undertaken.

A4.10 Meridian Water Masterplan

A4.10.1 The Meridian Water Masterplan was published in July 2013[32]. It covers the area of land to the south of the Application Site, and identifies how the Council and its partners can deliver the regeneration of this area to provide up to 5,000 new homes and 3,000 jobs by 2045, along with complementary infrastructure. One of the guiding principles of the masterplan is to improve access to healthy living corridors, making the most of opportunities to connect to the LVRP.

A4.11 Enfield Section 106 Supplementary Planning Document

A4.11.1 The Section 106 Supplementary Planning Document[33] forms part of the Local Plan for Enfield and details the requirements for S106 agreements. It includes requirements for health facilities and services however this is associated with residential development and therefore not relevant to the Project. Contributions to sustainable transport, business and employment

[30] Enfield Council (2014) Central Leeside: Proposed Submission Area Action Plan, November 2014.
[31] Enfield Council (2013) Edmonton EcoPark Planning Brief: Supplementary Planning Document to the Local Plan, May 2013.
[32] Enfield Council (2013) Meridian Water Masterplan, July 2013.
[33] Enfield Council (2011) Enfield's Local Development Framework: Section 106 Supplementary Planning Document, November 2011.

initiatives, public realm provision, green infrastructure and biodiversity are also set out that are relevant to the Project and the HIA.

A4.12 Waltham Forest Core Strategy

A4.12.1 LB Waltham Forest adopted the Core Strategy in 2012[34] and sets the overall framework for the future of the borough, dealing with issues such as health, community safety, climate change, social cohesion, employment, education, transport, environment and regeneration. Strategic Objective 6 of the Core Strategy aims to ensure that waste is managed in an environmentally friendly way to protect human health and the environment and Strategic Objective 7 seeks to ensure Waltham Forest is a safe, vibrant and healthy place to live and work. Strategic Objective 13 also aims to *"improve the health and wellbeing of residents by positively influencing the wider and spatial determinants of health, such as physical activity, pollutions and food choices"*.

A4.12.2 Policy CS13 Promoting Health and Wellbeing sets LB Waltham Forests aim to create healthy and sustainable communities. The Policy states this will be done by:

a) "requiring all new developments to meet appropriate environmental standards that minimise air, water, noise and light pollution and address the risks arising from contaminated land and hazardous substance and ensuring satisfactory amenity is provided for future and surrounding occupiers;

b) requiring new development to consider how it will contribute to improving health and reducing health inequalities. Where adverse impacts are identified, the development will be expected to demonstrate how it will address or mitigate against these impacts;

c) improving both pedestrian and cycle access to green and open spaces, particularly the Olympic Park, Lea Valley Regional Park and Epping Forest;

d) improving access to the Borough's health facilities and services, leisure and sports and recreation facilities whilst ensuring they are accessible by all;

e) promoting higher levels of regular exercise by making the public realm and pedestrian and cycle routes more attractive and safer;

f) reducing the proliferation of any land use which reduces people's ability to be healthy; and

g) maximise the benefits of the Olympic Legacy for the benefit of the Borough's residents."

A4.12.3 Further objectives and policies relevant to the HIA and the wider determinants are set out in the Core Strategy including policies relating to:

a. infrastructure;

[34] London Borough of Waltham Forest (2012) Core Strategy, March 2012

b. minimising and adapting to climate change;
c. enhancing green infrastructure and biodiversity;
d. promoting sustainable waste management and recycling;
e. developing sustainable transport;
f. reducing inequalities, unemployment and worklessness; and
g. creating well designed, safe and inclusive environments.

A4.13 Waltham Forest Development Management Policies

A4.13.1 LB Waltham Forest's Development Management Policies were adopted in 2013[35]. It provides detailed policies to guide development in line with policies of the Core Strategy. Policy DM23 Health and Well Being states that LB Waltham Forest *"will support major applications with positive health impacts on the health and well-being of communities demonstrated through the use of Health Impact Assessments".* It also seeks to ensure that new development promotes everyday exercise through links to walking and cycling routes and easily accessible facilities. The document additionally contains wider policies relevant to the HIA which support those in the Core Strategy described in Paragraph A4.12.3.

A4.14 Waltham Forest's Health and Wellbeing Strategy

A4.14.1 Cabinet recommended the Health and Wellbeing Strategy[36] prepared by the Waltham Forest Health and Wellbeing Board for adoption in 2013. The strategy commits LB Waltham Forest, health services and other partners to working together to improve health and well-being. The strategy responds to issues for Waltham Forest set out in the Joint Strategic Needs Assessment (JSNA) (see Section A4.15). It identifies the following themes for health and well-being in Waltham Forest:

a. a good start in life for children;
b. building skills and resilience for young people, along with strong educational achievement;
c. good employment and work opportunities;
d. a thriving retirement;
e. prevention opportunities across the life course;
f. a sustainable environment that enables residents to take control of their health and lives and embeds opportunities for preventing health and social problems; and
g. safeguarding the well-being of all children, young people and vulnerable adults in Waltham Forest.

[35] London Borough of Waltham Forest (2013) Development Management Policies Local Plan Adoption Version, October 2013.
[36] Waltham Forest Health and Wellbeing Board (2013) Waltham Forest's Health and Wellbeing Strategy: Creating the Place for a Good Life.

A4.15 Waltham Forest Joint Strategic Needs Assessment Refresh 2014/15

A4.15.1 The Waltham Forest JSNA[37] examines the health needs of local people in Waltham Forest. Key health issues identified for Waltham Forest include:

a. health of people is mixed compared to England;

b. life expectancy is lower than the England average, and lower in the most deprived areas of Waltham Forest;

c. all course mortality rates have fallen in the past ten years. Early death rates from cancer and heart disease and stroke have fallen but not as quickly as for England;

d. health inequalities and poor health outcomes demand higher levels of social care services; and

e. deprivation and child poverty is high.

A4.16 Waltham Forest Sustainable Community Strategy

A4.16.1 The Sustainable Community Strategy[38] is a collective, long-term set of ambitions and priorities for Waltham Forest. The strategy identifies what LB Waltham Forest and partner organisations, such as the Police and health services, will do to build a more sustainable, prosperous and integrated community in Waltham Forest. The priorities of the Strategy are:

a. managing population growth and change:

- create a more economically balanced population, to increase local spending power, generate jobs and tackle concentrations of deprivation and low aspirations;
- cultivate civic participation, cohesion and independent living so everyone feels they belong; and
- respond to climate change in a practical and effective way.

b. creating wealth and opportunity for all residents:

- provide children and young people with the skills and confidence to compete in a global economy;
- achieve full employment;
- ensure residents are fit and healthy for work; and
- make the most of the regeneration of East London.

c. retaining more wealth in Waltham Forest:

- create vibrant town centres with an attractive cultural, leisure and commercial offer;

[37] Waltham Forest Clinical Commissioning Group and London Borough of Waltham Forest (2014) Waltham Forest Joint Strategic Needs Assessment (JSNA) Refresh 2014/15, May 2014
[38] Waltham Forest Local Strategic Partnership (2008) Waltham Forest Sustainable Community Strategy

- transform the design and quality of public space; and
- improve community safety and reduce anti-social behaviour.

A4.17 Waltham Forest Planning Obligations Supplementary Planning Document

A4.17.1 The Waltham Forest Planning Obligations Supplementary Planning Document[39] is guidance to assist the process of preparing and negotiating planning obligations. It sets out the likely types of contributions and developments that would be subject to planning obligations. Contributions associated with health relate to residential development only, however contributions relating to employment and training, regeneration and economic development, transport and highways, environmental improvements, nature conservation, amenity and open space, trees, air quality, recycling and renewable energy and climate change and sustainable development, would be relevant to the Project and the HIA.

[39] London Borough of Waltham Forest (2008) Waltham Forest Local Development Framework Planning Obligations Supplementary Planning Document, November 2008

Appendix B – Community Profile

B1 Introduction

B1.1.1 The community profile provides a summary of the characteristics of the communities within the neighbourhood area (LSOAs within a 600m catchment of the red line boundary) compared to local (LB Enfield and LB Waltham Forest), regional (London) and national (England) levels which are likely to be affected by the Project.

B2 Demographic Profile

B2.1 Population

B2.1.1 The 2011 census shows that the neighbourhood area had a population of 22,650, with more female than male residents at 52.3 per cent (similar to local, regional and national percentages). The neighbourhood area was less densely populated compared to the local and regional levels at 39.6 people per hectare compared to 47.7 people at the local and 52.0 at the London levels. This reflects the lower density of land uses such as for employment and industry in the neighbourhood area.

B2.1.2 The workday population of the borough level was approximately 87 per cent of the resident population according to the 2011 census, suggesting that some people may be working outside of the borough level.

B2.2 Age

B2.2.1 The age profile of the relevant areas, according to the 2011 Census, is shown in Figure B2.2. This shows that there was a greater proportion of young people in the neighbourhood area. Each of the age groups aged from 0 to 24 years made up a greater comparative proportion at the neighbourhood level with a total of 39.8 per cent of residents aged between 0 and 24 years in comparison to the local (34.3 per cent), London (32.2 per cent) and England (30.8 per cent) levels.

B2.2.2 There was also a lower proportion of residents aged over 65 years in the neighbourhood area, at 9.4 per cent, in contrast to the national trend of a more significant ageing population with 16.3 per cent of England's residents over 65 years of age. This compared to 11.3 per cent at the local and 11.1 per cent at the London levels.

B2.2.3 Given the higher proportion of children and young people it followed that the working age population in the neighbourhood area was lower in comparison to the local (66.8 per cent) and London (69.1 per cent) levels, however it was in line with the national level at 64.8 per cent.

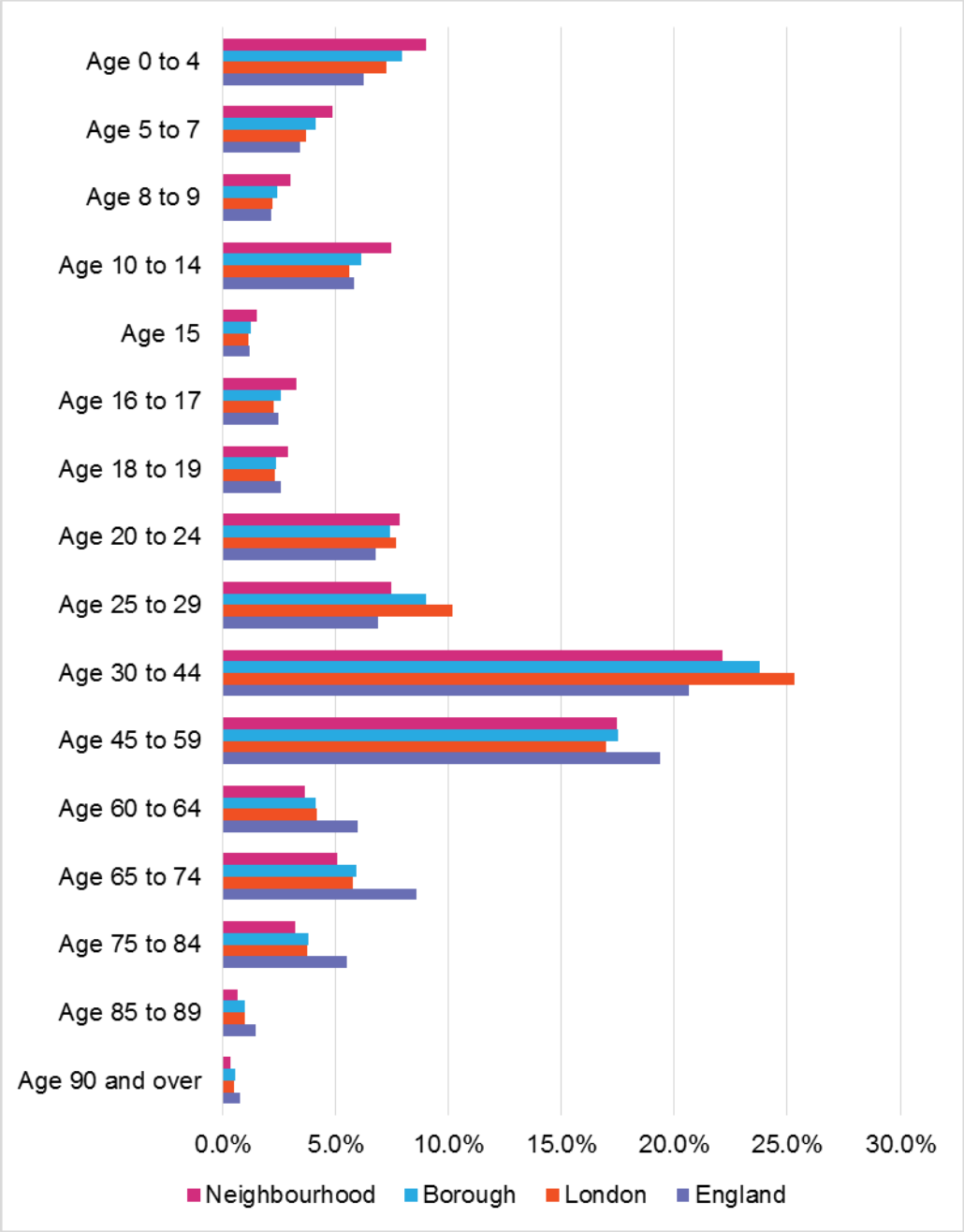

Figure B2.2: Age profiles (%), Census 2011

B2.3 Ethnic diversity

B2.3.1 Census 2011 data shows that the neighbourhood area was ethnically diverse similar to the local and London profile as shown in Figure B2.3. Each of these areas was more ethnically diverse than the national picture.

B2.3.2 Within the neighbourhood area there was a lower proportion of residents from white ethnic backgrounds at 46.6 per cent compared to 57.0 per cent at the local and 59.8 per cent at the London levels. There was also a significantly greater proportion of residents from black ethnic backgrounds (African and Caribbean backgrounds in particular) at the neighbourhood area level at 29.5 per cent, almost double that of the borough level (17.3 per cent) and more than double that of the London level (13.3 per cent).

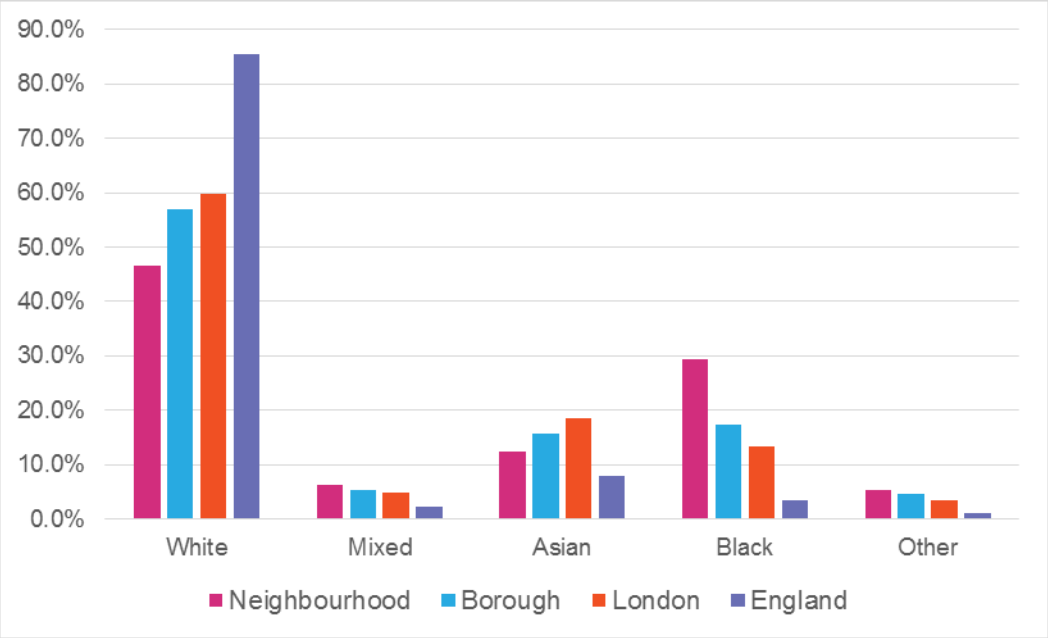

Figure B2.3: Ethnic group (%), Census 2011

B2.3.3 At the borough level, there was a comparatively higher percentage of residents of Asian ethnicity (Pakistani, Indian and other Asian backgrounds in particular) at 15.6 per cent compared to a total of 12.3 per cent for residents from Asian ethnicity backgrounds at the neighbourhood area.

B2.4 Socio-economic classification

B2.4.1 The socio-economic classification provides an indication of the number of individuals in more vulnerable socio-economic groups.

B2.4.2 The 2011 Census shows that the economically active population (employed, self-employed, unemployed but actively seeking work, and full-time students) in the neighbourhood area was 10,113 (63.9 per cent). This was lower than the 69.5 per cent at the local and 71.7 per cent at the London levels.

B2.4.3 As shown in Table B2.1, 7.4 per cent of residents were unemployed and actively seeking work in the neighbourhood area, notably higher than the local, London and England levels. There was also a lower proportion of employees (43.7 per cent) and self-employed residents (8.6 per cent) in the neighbourhood area. The percentage of full-time students was similar to the local and London levels and higher than the England level.

Table B2.1: Economic activity (%), Census 2011

	Neighbourhood	Borough	London	England
Employee	43.7	47.6	50.7	52.3
Self-employed	8.6	11.8	11.7	9.8
Unemployed	7.4	6.0	5.2	4.4
Full-time student	4.2	4.1	4.1	3.4

The economically inactive population of the neighbourhood area was 36.1 per cent, which was comparatively higher than the local, London and England levels. There was a higher proportion of people looking after the home or family in the neighbourhood area than at other spatial scales at 7.4 per cent and also a high proportion of long-term sick or disabled residents at 5.6 per cent compared to the borough level of 4.0 per cent (which is in line with London and England levels). These comparisons are set out in Table B2.2:. This means that there were a greater proportion of vulnerable residents in the neighbourhood area than at other spatial scales.

Table B2.2: Economic inactivity (%), Census 2011

	Neighbourhood	Borough	London	England
Retired	8.1	9.0	8.4	13.7
Student	9.4	7.8	7.8	5.8
Looking after home or family	7.4	6.0	5.2	4.4
Long-term sick or disabled	5.6	4.0	3.7	4.0
Other	5.6	3.7	3.2	2.2

B2.4.4 The profile of occupations at the different spatial levels shows that the neighbourhood area had a high proportion of residents employed in elementary occupations (14.6 per cent) in comparison to the local (11.7 per cent), London (9.6 per cent) and England (11.1 per cent) levels. The neighbourhood area also had the lower proportion of managers, directors, professional occupations and technical occupations than the other spatial scales. This provides an indication that the residents of the neighbourhood area have a comparatively lower skill set compared to the local, London and England levels.

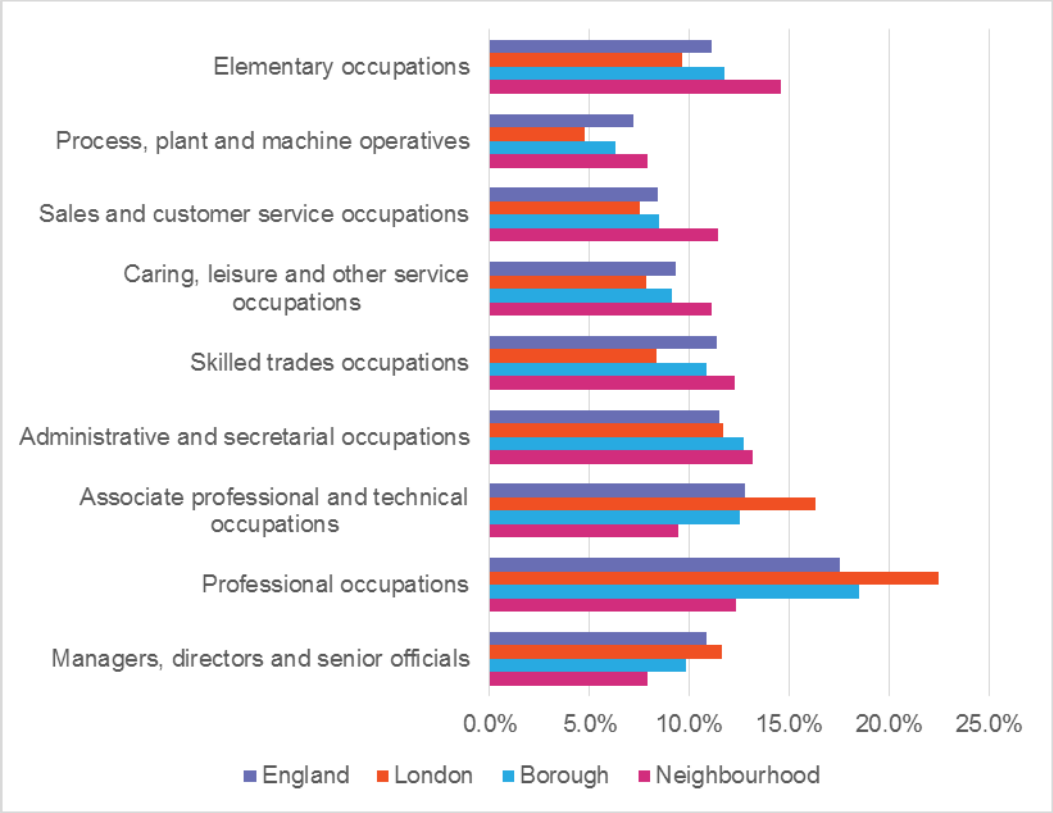

Figure B2.4: Occupation (%), Census 2011

B2.5 Deprivation

B2.5.1 According to the Indices of Multiple Deprivation 2010, the overall deprivation in the neighbourhood area ranged from LSOA in the top 6 per cent most deprived to the top 60 per cent least deprived showing a large contrast across the area (see Figure B2.5).

B2.5.2 The majority of LSOAs were within the top 14 per cent most deprived LSOAs in England. The Application Site is located in LSOA Enfield 030, which was in the top 6 per cent most deprived LSOAs in England overall. The area was particularly deprived in relation to income, employment and barriers to housing and services.

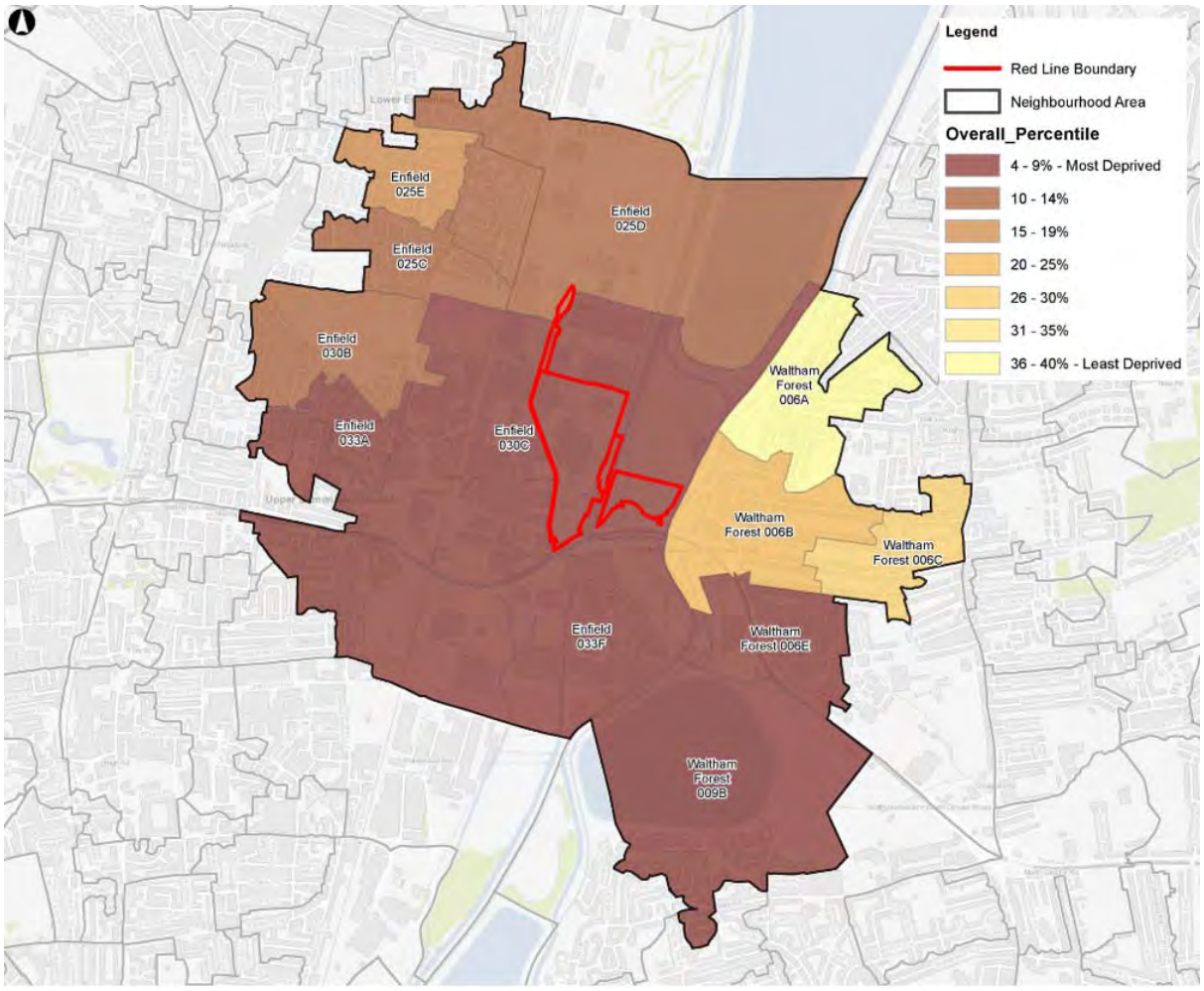

Figure B2.5: Overall deprivation in the neighbourhood area

B3 Health Profile

B3.1.1 This section sets out available data from the Census, PHE and publically available reports to provide an understanding of the existing community health status of residents. Where neighbourhood area information was not available the borough level has been used and compared to London and England.

B3.1 Self-rated health

B3.1.1 The 2011 Census asked residents to rate their health. This data indicates that the residents of the neighbourhood area rated their self-perceived health broadly in line with the local, London and England levels as set out in Table B3.3.

B3.1.2 The neighbourhood area did however have a lower proportion of residents indicating very good (45.1 per cent) or good health (34.8 per cent) compared to the borough level. The neighbourhood area also had a higher proportion of residents who perceived themselves to be in bad and very bad health at 5.1 per cent and 1.7 per cent.

Table B3.3: Self rated health (%), Census 2011

	Neighbourhood	Borough	London	England
Very Good Health	45.1	47.0	50.5	47.2
Good Health	34.8	35.3	33.3	34.2
Fair Health	13.3	12.4	11.2	13.1
Bad Health	5.1	4.0	3.7	4.2
Very Bad Health	1.7	1.3	1.2	1.2

B3.1.3 The 2011 Census also showed that those with a long-term health problem or disability, who indicated that day-to-day activities were limited a lot, made up 8.2 per cent of residents in the neighbourhood area. This is in line with the national level but was higher than the local (7.1 per cent) and London (6.7 per cent) levels.

B3.2 Life expectancy

According to the 2013 Older People's Health and Wellbeing Atlas data, average life expectancy at 65 years is higher in LB Enfield and lower in LB Waltham Forest than the average for males and females in England (see Table B3.4). Life expectancy in Central Leeside was worse than LB Enfield[40].

[40] Enfield Council (2014) Central Leeside: Proposed Submission Area Action Plan, November 2014

Table B3.4: Average life expectancy at 65 years, Older People's Health and Wellbeing Atlas 2013

Life expectancy at 65	LB Enfield	LB Waltham Forest	England
Males	18.9	17.4	18.2
Females	21.2	20.2	20.8

B3.3 Health and disability deprivation

B3.3.1 The health and disability domain of the IMD 2010 measures premature death and impairment of quality of life by poor health. It considers both physical and mental health. The health and disability deprivation profile of the neighbourhood area shown in Figure B2.6 indicated that health and disability deprivation varied greatly within the neighbourhood area; the percentile rank ranged from being in the 21 per cent most deprived in Waltham Forest 006E, to 49 per cent least deprived in Waltham Forest 006B. LSOAs in LB Enfield were typically between the 30 per cent and 50 per cent most deprived in England.

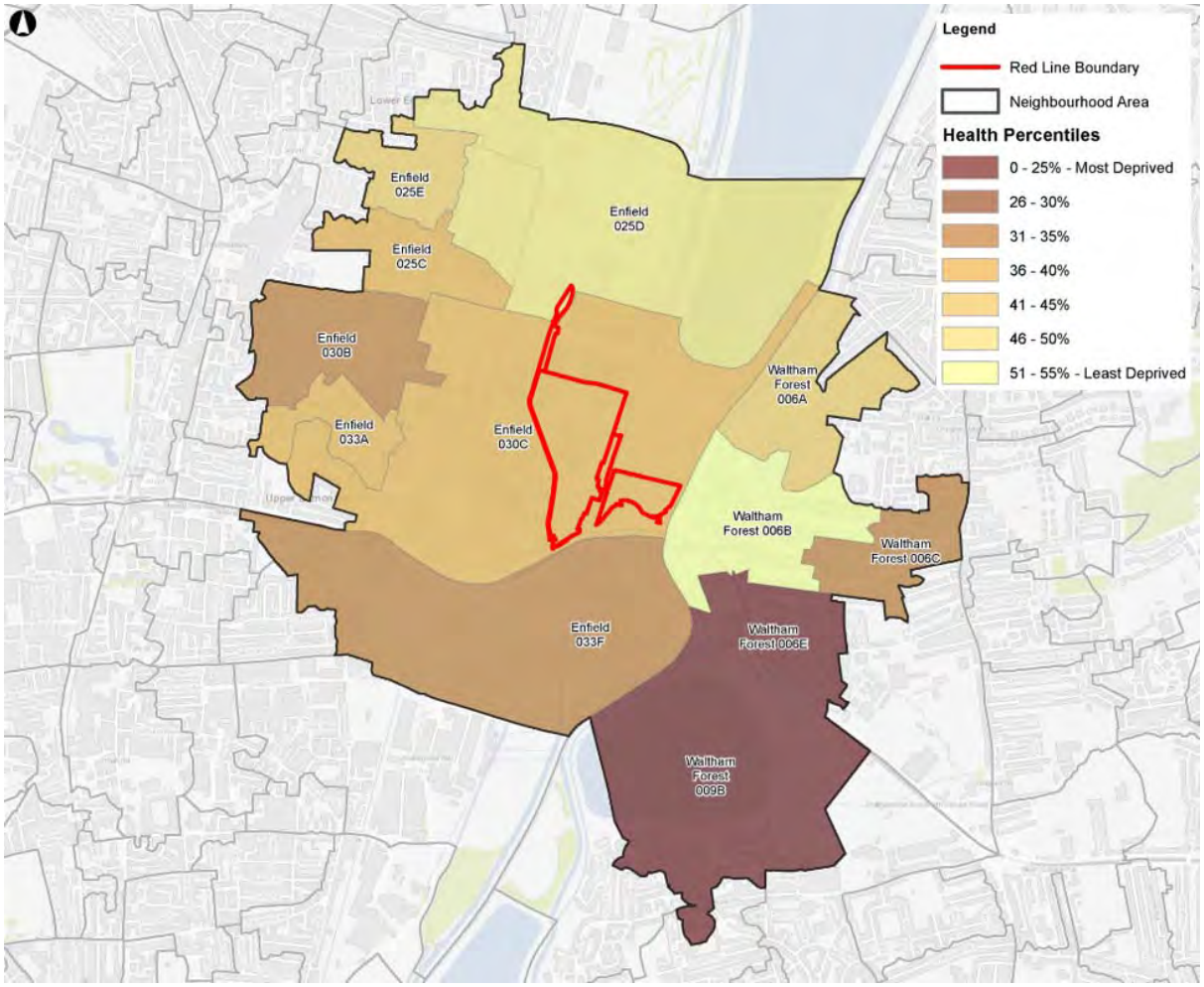

Figure B2.6: Health and disability deprivation, IMD 2010

B3.3.2 According to PHE[41], the IMD 2010 data for the MSOAs relating to the neighbourhood area showed that 56.1 per cent of children live in poverty and 37.7 per cent of older people in deprivation, both significantly worse than the England level.

B3.4 Disability Living Allowance

B3.4.1 Disability Living Allowance (DLA) is payable to people who are aged under 65 years, are disabled and who have personal care needs, mobility needs, or both.

B3.4.2 The most recent ONS data for August 2014 showed that there were 22,910 claimants at the borough level. The majority (75.2 per cent) were claimants for five years and over which was comparable to the London and England average. Central Leeside, within which the Application Site is located, is recorded to have a higher proportion of disabled residents than the rest of LB Enfield and the highest number of DLA claimants[42].

B3.5 Rates and incidence of disease

B3.5.1 PHE data for the MSOAs relating to the neighbourhood area, all causes of deaths were recorded to be at a higher ratio than the England average with the exception of cancer. Cancer incidence was lower than the England average for all types with the exception of prostate cancer. Circulatory disease was significantly worse than the England level.

B3.6 Mental well-being

B3.6.1 According to the Census 2011, mental health service users made up 2.6 per cent of the borough level population, marginally higher than the London and England levels (2.4 per cent). At the borough level, depression was significantly lower than the England average in 2012/2013[43]. Suicide rates and emergency admissions for self-harm (per 100,000 of the population) were also significantly lower than the England average.

B3.7 Access to open space and nature

B3.7.1 Greater London Authority profiles[44] show that the borough level is fairly green with green space coverage greater than the London average for LB Enfield and equal in LB Waltham Forest. However accessibility is recorded to be deficient with between 20 per cent and 30 per cent of households in wards covering the neighbourhood area having access to

[41] Public Health England: Local Health http://localhealth.org.uk/GC_preport.php?lang=en&s=165&view=map7&id_rep=r01 (accessed 1 April 2015)
[42] Enfield Council (2014) Central Leeside: Proposed Submission Area Action Plan, November 2014
[43] Public Health England (2014) Community Mental Health Profile 2014
[44] Greater London Authority (2013) Better Environment, Better Health (LB Enfield and LB Waltham Forest), November 2013

open space, with the exception of the north of the neighbourhood area (Edmonton Green at 83.7 per cent).

B3.8 Physical activity and obesity

B3.8.1 Physical activity at the borough level is below the London and England average at approximately 59 per cent in 2012[45], and adult obesity prevalence was 23 per cent in 2013[46], which is higher than the London rate (21 per cent) but lower than the national rate (24 per cent). This compares to an adult obesity percentage in MSOAs covering the neighbourhood area of 27.5 per cent and a child obesity (year 6) percentage of 28.1 per cent, both of which are notably worse than the England average (24.1 per cent and 19.1 per cent respectively)[47]. Childhood obesity and barriers to accessing open space have been noted as particular issues in Central Leeside[48].

B3.9 Active travel and transport

B3.9.1 Low numbers of people participate in active travel at the borough level with a lower proportion of people cycling to work in comparison to London[46]. Use of motor vehicles varied greatly at the borough level with 14 per cent more than the London average in LB Enfield and 3 per cent more than the London average in LB Waltham Forest.

B3.9.2 Road injuries and deaths at the borough level were around 35 per cent which is low in comparison to the London and England levels. This represents a total of 495 incidents between 2009 and 2011 at the borough level, an annual average of 163[49].

B3.10 Air quality

B3.10.1 Statistics on the comparative impact of different air quality factors on mortality show that LB Enfield is the 7th most affected borough in London, whereas LB Waltham Forest is the 12th most affected[50].

B3.11 Fuel poverty

B3.11.1 Fuel poverty indicators across housing, health, older people, worklessness and poverty show that the wards covering the neighbourhood area are at high risk of fuel poverty[41].

[45] Public Health England (2012) Physically active adults
[46] Ibid
[47] Public Health England: Local Health http://localhealth.org.uk/GC_preport.php?lang=en&s=165&view=map7&id_rep=r01 Detailed Report (accessed 1 April 2015)
[48] Enfield Council (2014) Central Leeside: Proposed Submission Area Action Plan, November 2014
[49] Public Health England (2013) Road injuries and deaths
[50] Ibid

B3.12 Overheating

B3.12.1 Average temperatures vary greatly at the borough level, with generally higher temperatures in the south-east of LB Enfield and in LB Waltham Forest which cover the neighbourhood area[50].

B4 Vulnerable groups within the community

B4.1.1 The following groups within the neighbourhood area have been identified from the community profile as being particularly vulnerable to adverse health effects (see Appendix D):

B4.1.2 Children and young people: although all groups are shown to benefit from regular exercise, benefits to children are particularly emphasised as it links to health status later in life. Mental health for children is also particularly improved by an enhanced living environment. Mental health and general well-being improvements have also been linked to young adults who undertake training compared to those who are unemployed. The community demographic profile showed a significantly higher proportion of children and young people in the neighbourhood area.

B4.1.3 People with disabilities: people with disabilities often lack the mobility to access services outside the local vicinity and rely more heavily on access to reliable public transport services. The community health profile showed that there was a comparatively higher proportion of disabled people living in the neighbourhood area.

B4.1.4 Lower socio-economic groups: differences in social-economic status are linked to health inequalities. Links between access to work and health are often related to the negative impacts of unemployment and poor quality, insecure employment. It is also often the poorest people who experience the poorest quality outdoor environments. The community demographic profile indicated a high proportion of unemployed people in the neighbourhood area compared to the local and London levels.

B4.1.5 Ethnic minority groups: many of the Capital's ethnic minority communities suffer elevated levels of poverty, violence, unemployment and ill health. Most of London's ethnic minority groups are likely to experience unemployment rates at twice the national average, with direct impacts upon wealth and socio-economic status. Those in high-risk groups for poverty are also more likely to suffer health problems. The community profile shows that the neighbourhood area is ethnically diverse, with a higher proportion of residents from black ethnicity backgrounds.

Appendix C – HIA Scoping Report

North London Waste Authority

North London Heat and Power Project

Health Impact Assessment Scoping Report

PS5

Issue 4

23 December 2014 | 235271

Arup

ARUP nlwa north london waste authority

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Figure 4.1: Neighbourhood (LSOA) level to be assessed in the HIA

Glossary

Application	Application for Development Consent Order (DCO)
Authority	North London Waste Authority
Constituent Boroughs	The seven north London boroughs that make up the Authority: London Borough of Barnet, Camden, Enfield, Hackney, Haringey, Islington, Waltham Forest
DCO	Development Consent Order
EfW	Energy-from-Waste
ERF	Energy Recovery Facility
EIA	Environmental Impact Assessment
FPP	Fuel Preparation Plant
GWh	Gigawatt hour
ha	Hectares
HIA	Health Impact Assessment
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
HWRC	Household Waste Recycling Centre
IBA	Incinerator Bottom Ash
IVC	In-Vessel Composting
km	Kilometre
LB	London Borough
LWL	London Waste Limited
m	Metre
MRF	Materials Recycling Facility
MW	Megawatt
NICE	National Institute for Health and Care Excellence
NLHPP	North London Heat and Power Project
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
LVHN	Lee Valley Heat Network
PINS	Planning Inspectorate
Project	North London Heat and Power Project
RCVs	Refuse Collection Vehicles
tpa	Tonnes per annum
WCAs	Waste Collection Authorities

1 Introduction

1.1.1 This Scoping Report sets out the proposed scope of the Health Impact Assessment (HIA) to be submitted with the application for Development Consent Order (DCO) for a new Energy Recovery Facility (ERF), in the London borough (LB) of Enfield, that will be submitted by the North London Waste Authority (the "Authority"). The Authority is a statutory authority, which was established in 1986 after the abolition of the Greater London Council. The Authority's principal statutory responsibility is for the disposal of waste collected by the London Boroughs of Barnet, Camden, Enfield, Hackney, Haringey, Islington and Waltham Forest (the constituent boroughs). The constituent boroughs are also waste collection authorities (WCAs).

1.1.2 The Authority is the UK's second largest waste disposal authority handling approximately 3% of the total national municipal waste[1] stream. For the past 20 years the Authority has managed waste arisings predominantly through the use of the energy-from-waste (EfW) facility at the EcoPark in Edmonton ('the site') operated by LondonWaste Limited (LWL). The Authority is now seeking a DCO for the development of a replacement ERF, as set out in paragraph 1.1.3, to replace the current facility which was opened in the early 1970s and has a projected remaining operational life to approximately 2025. Details of the site and current uses (including the current facility) are provided in Sections 2.1 and 2.2.

1.1.3 The proposed development (known as the North London Heat and Power Project) would comprise of an electricity generating station using waste that is not suitable for recycling as a fuel and capable of an electrical output of approximately 70 megawatts (MW). As the North London Heat and Power Project would generate energy over 50 MW it is classified as a Nationally Significant Infrastructure Project (NSIP) under section 14(1)(a) and section 15(2)(a) of the Planning Act 2008. National Policy Statements (NPS) EN-1 (Overarching National Policy Statement for Energy and EN-3 (National Policy Statement for Renewable Energy Infrastructure) both apply to the North London Heat and Power Project.

1.1.4 The proposed development is detailed further in Section 2.4. This HIA Scoping Report sets out the purpose and proposed scope of the HIA to be submitted with the application for the DCO in Sections 3 and 4 respectively. It also provides an opportunity for feedback from stakeholders on the health determinants to be assessed and the proposed methodology for the HIA outlined in Section 5.

[1] The European Union (EU) Directive on the Landfill of Waste (Council Directive 99/31/EC) defines municipal waste as waste from households as well as other waste similar in nature or composition e.g. from businesses.

2 Project description

2.1 Site and community

Site and surrounds

2.1.1 The site is approximately 16 hectares (ha) in size and is located in the LB Enfield between Edmonton to the west and Chingford to the east. It lies approximately 1km from the border with the LB Haringey to the south and 400m from the LB Waltham Forest to the east. The site is located on Advent Way to the north of the A406 North Circular (Angel Road) and approximately 200m east of the A1055 Meridian Way. Land to the north and west of the site is predominantly industrial in nature. The site boundary and site context are shown in Figure 2.1.

2.1.2 Immediately to the north of the site boundary lies an existing Materials Recycling Facility (MRF) which is operated by a commercial waste management company, alongside other industrial occupiers. Beyond the MRF lies Deephams Sewage Treatment Works (STW). To the west lies the Eley Industrial Estate which comprises a mixture of retail units, industrial, warehousing and a scrap yard. The A406 North Circular Road is located to the south beyond which are retail and trading estates contained within the wider Meridian Water area.

2.1.3 Salmon's Brook runs along the western boundary of the site and the Enfield Ditch runs along the eastern and southern edges of the site, before discharging into the Salmon's Brook in the south-west corner of the site.

2.1.4 Immediately to the east of the site lies the River Lee Navigation, a canalised river which flows through the Lee Valley Regional Park (LVRP). The LVRP, which comprises of waterways, reservoirs and green space, is designated as Green Belt. Part of the LVRP is designated as a Site of Metropolitan Importance for Nature Conservation (SMINC), the boundary of which just extends within the site (along eastern boundary). Within the LVRP and approximately 600m north-east of the site, is the William Girling Reservoir, beyond this is the King George's Reservoir. The William Girling and King George's reservoirs are known collectively as the Chingford Reservoirs which are designated as a Site of Special Scientific Interest (SSSI). Approximately 1km south-east of the site, and also within the LVRP, lies the Banbury Reservoir. Beyond that, approximately 2km from the site, is the Lockwood Reservoir which is one of the ten reservoirs that form the Walthamstow Reservoirs. The Walthamstow Reservoirs are part of the designated Lee Valley Special Protection Area (SPA) and Lee Valley Ramsar site[2]. Ainslie Wood Local Nature Reserve (LNR) is also located approximately 2km east of the site.

2.1.5 To the east of the River Lee Navigation is a site occupied by Camden Aggregates which is used for the crushing, screening and stockpiling of concrete and soil other recyclable materials. The planning permission for

[2] Ramsar sites are wetlands (or riparian habitats e.g. banks of rivers or streams) of international importance, designated under the Ramsar Convention.

this site has expired and the Meridian Water Masterplan (a mixed use development site to the south of the site) has identified the potential to clear the site occupied by Camden Aggregates for use as flood mitigation and formal playing fields.

2.1.6 The closest residential receptors to the site are located on Zambezie Drive which is approximately 600m west of the site and approximately 600m east of the site on Lower Hall Lane on the east side of the LVRP.

Community profile

2.1.7 The site is located in LB Enfield but only 400m from the boundary with LB Waltham Forest. The site is approximately 1.5km from the LB Haringey boundary and is therefore outside of the HIA study area.

2.1.8 The average population density in both LB Enfield and LB Waltham Forest is higher than the London average. This is particularly pronounced in those areas nearest the site, notwithstanding that the site does not immediately adjoin any residential areas. LB Enfield and LB Waltham Forest have an ethnically diverse population and socio-economic conditions in both boroughs indicate that unemployment and elementary and lower skilled occupations are high relative to the London average. The age profile is generally aligned with that of the London region, however there are slightly higher proportions of elderly people in both of the boroughs.

2.1.9 The self-rated health of people in both boroughs was slightly poorer than the London and national average. Deprivation is higher than the national average in both boroughs.

2.1.10 Health inequalities are also evident and local priorities have been outlined in the Joint Strategic Needs Assessment and 2014 Health Profiles for both boroughs. Priorities in LB Enfield include tackling childhood obesity, reducing the gap in life expectancy and improving the diagnosis of hypertension, hypercholesterolemia and diabetes. Priorities in LB Waltham Forest include helping adults and children achieve a healthy weight, reducing alcohol related harm and hospital admissions, and tackling poor health associated with child poverty.

A3

Legend

- Local Authority Boundary
- Site Boundary

Issue	Date	By	Chkd	Appd
P1	19-08-14	DMc/AF	KK	NW

ARUP

13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7636 1531 Fax +44 20 7580 3924
www.arup.com

Client
North London Waste Authority

Job Title
North London Heat and Power Project

Metres
0 120 240 480

Site Boundary and Site Context

Scale at A3
1:10,000

Job No	Drawing Status
235271-10	**Issue**

Drawing No	Issue
001	**P4**

MXD Location

2.2 Existing site use and operations

Overview

2.2.1 The existing site is occupied by waste management facilities operated on behalf of the Authority through a waste management contract with LWL. The components that form these facilities are illustrated in Figure 2.2.

2.2.2 Figure 2.2 shows that the EfW facility dominates the centre of the site along with a bottom ash and metal recovery clinical waste transfer building, effluent treatment plant and northern weighbridge. At the northern end of the site there is an in-vessel composting (IVC) facility, incinerator bottom ash (IBA) reprocessing plant, bulky waste recycling facility (BWRF) and fuel preparation plant (FPP). In the east of the site, on the River Lee Navigation is a wharf which is leased to the Edmonton Sea Cadets. South of the EfW is a refuse vehicle depot (transport depot), some open landscaped areas, security gate and southern weighbridge.

Operation

2.2.3 The site operates 24 hours a day, seven days a week. There are approximately 200 full-time equivalent people employed at the site, approximately 100 of whom are directly related to the existing EfW facility. The remaining people are responsible for other site operations and or the management of LWL and the site as a whole.

2.2.4 The EfW facility treats approximately 530,000 tonnes per annum (tpa) of household waste and generates approximately 40MW (gross) of electricity. The EfW is a “five line” facility, with each combustion line comprised of a boiler, heat exchange chambers, flue gas treatment plant and cooling plant. The capacity of each boiler is approximately 120,000tpa. An animated schematic of the EfW is available on the LWL website[3]:The main elements of the EfW facility are set out below: ,

[3] http://www.londonwaste.co.uk/media/schematic.html

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REV DATE FOR

NOTE
ERF GROUND LEVEL SET AT +12.5m AOD

CLIENT
NORTH LONDON WASTE AUTHORITY

nlwa
north london waste authority

DRAWING KEY

SITE BOUNDARY

LONDON BOROUGH BOUNDARY

PROJECT
NORTH LONDON HEAT AND POWER PROJECT

ADDRESS
EDMONTON ECOPARK
ADVENT WAY, LONDON
N18 3AG

GRIMSHAW PROJECT NO.
14047

NORTH

SCALE
1:1000 @ A0
0 50m 100m

STATUS
-

DRAWING
SITE PLAN
EXISTING

DRAWN	CHECKED	AUTHORISED
BWN	—	—

DRAWING NUMBER 14047_GAL_A01_1001
REVISION X

a. In ramp, tipping hall and out ramp: Refuse collection vehicles (RCVs) and bulk delivery heavy goods vehicles (HGVs) deliver waste via the in ramp and reverse into tipping bays in the tipping hall. Vehicles exit via the out ramp. A one way system is operated for safety and operational efficiency.

b. Bunkers, hoppers and boilers: Waste from vehicles is deposited into one of the five bunkers and transferred by overhead grabs into the five hoppers. Each hopper leads to a combustion chamber (furnace). The waste enters the boiler at the top of a sloping grate comprised of slowly rotating bars. As the material burns, it is drawn across the bars towards the lower end of the grate. Bottom ash drops off the end of the grate while the hot gases pass along the boiler to generate steam and then onwards to the flue gas treatment plant.

c. Turbine hall: The turbine hall houses four 12.5MW and one 2.7MW steam turbines, all of which are driven by high pressure steam raised by the boilers.

d. Flue gas treatment plant: Following extraction of the thermal energy in the flue gases, the partially cooled gases pass through a series of treatment stages to remove particulates and other pollutants. The main forms of flue gas treatment are filters, electrostatic precipitators and chemical removal.

e. Stack: Treated flue gas is discharged to the atmosphere via a 100m tall stack. The stack is made of two separate flues housed within a concrete windshield for structural stability.

f. Water cooled condensers: Residual heat in the steam used to drive the turbines is removed by passing the steam through a condenser unit. The remaining water is recirculated and when it is no longer suitable for recirculation it is discharged to the Chingford sewer. If it is not suitable for direct discharge it is sent to the wastewater treatment plant for clean up before being discharged.

g. Effluent treatment plant: Water used within the EfW facility is discharged to the sewer main. Surface water from hardstanding areas is collected and treated on site to remove grit and oils before being discharged to Enfield Ditch.

h. Bottom ash conveyor: Ash which falls off the boiler grates (called incinerator bottom ash or IBA) is collected from below the grates, quenched in a water bath and conveyed out of the main building. The ash is then passed under an electromagnet which separates out ferrous metals. Ferrous metals recovered by LWL are transferred to a recycling facility. The remaining incinerator bottom ash is transported to the on-site IBA reprocessing facility where non-ferrous metals are separated and aggregates suitable for use in construction are produced.

2.3 Project background

2.3.1 The proposed development would replace the existing EfW which has a limited operational life remaining and is expected to cease operations in approximately 2025.

2.3.2 Substantial site survey work and pre-application discussion has been undertaken by the Authority to support previous procurement proposals on the site.

2.3.3 The Authority has the benefit of the availability of the EcoPark site at Edmonton, which has an established waste use. Waste management use of this site is therefore incorporated into the Authority's strategic planning for future waste services. At the time of the development of the strategy which led to the procurement proposals referred to above, local and regional planning policy did not support the use of energy from waste facilities, and the proposal was therefore to use the site to treat waste to produce a refined waste fuel, which would be transported to an energy production facility in association with an identified requirement for that energy. In the light of changed planning policies[4,5] which favoured energy from waste production on site, this strategic approach, requiring double treatment of the waste and transport between the two facilities, was assessed to be significantly more expensive than single treatment of the waste to produce energy.

2.3.4 In considering future energy from waste activity at the EcoPark, the Authority received advice on available technologies, and concluded that the advanced moving grate technology was the most suitable for its needs, as it has a proven record of reliability at the scale required for the waste arisings in the Authority's area.

2.3.5 The Authority is expected to have stopped sending waste directly to landfill by 2025. The anticipated total waste arisings in the north London area for 2025/2026 are 996,904 tonnes per annum, of which approximately 50% will be recycled.

2.3.6 The site is therefore expected to be the principal waste management site for the Authority's area. The precise location of the various waste management operations within the site is the subject of design work at present.

2.4 Proposed development

2.4.1 The proposed development would replace the existing EfW facility with a new and more efficient ERF that would produce energy from municipal waste. Having a greater efficiency than the existing EfW, the ERF will surpass the requirement under the Waste Framework Directive (Directive

[4] Enfield Council (2013) Edmonton EcoPark Planning Brief: Supplementary Planning Document to Local Plan, Adopted May 2013.
[5] Department of Energy and Climate Change (2011) National Policy Statement for Renewable Energy Infrastructure (EN-3), July 2011.

2008/98/EC) to achieve an R1 rating of 0.65, and would therefore be classified as a recovery operation rather than disposal[6].

2.4.2 The replacement ERF is intended to be constructed by 2024/5 with operations moved and the existing plant to be demolished by 2026/27. The replacement ERF would be developed in the northern-most section of the site currently occupied by the in-vessel composting, bulky waste recycling facility, fuel preparation plant and ash recycling facility. The ERF would also have the potential to provide a heat supply connection to the planned Lee Valley Heat Network (LVHN) which is being promoted by LBs of Enfield and Haringey. This would provide a low carbon source of heat to commercial and residential customers in the local area.

2.4.3 The description below sets out the draft project description that has informed this Scoping Report. The elements set out in paragraphs 2.4.9-2.4.10 are likely to form part of the DCO.

2.4.4 The proposed development contained within this section has been considered thus far during the HIA Scoping and any material changes to these proposals prior to submission of the HIA will be incorporated into the assessment.

Construction

2.4.5 Details of construction phasing and proposed construction methods are currently being developed.

2.4.6 It is anticipated that construction would commence in 2022 at the latest and that the proposed development would be fully operational by 2026/7. The indicative phasing of construction is as follows:

a. The procurement of technology and construction needed to build the replacement ERF will be undertaken during 2017 to 2020.

b. The latest planned date for site preparation and construction is 2022.

c. During 2024 to 2026/7 operations will be moved from the existing EfW to the ERF and the exisiting EfW facility would be demolished.

Operation

2.4.7 The components that would form the proposed development are illustrated in Figure 2.3.This section of the report sets out the components that would form the ERF, developments that would be associated with the ERF and the assumed ERF operation process is also set out.

[6] European Commission. Non-paper on the background of the development of the Commission proposal on the distinction between energy recovery and disposal of waste in municipal incinerators. Available at http://ec.europa.eu/environment/waste/pdf/background.pdf (Accessed 22nd August 2014)

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ERF GROUND LEVEL SET AT +12.5m AOD

CLIENT

NORTH LONDON WASTE AUTHORITY

DRAWING KEY

PROJECT

NORTH LONDON HEAT AND POWER PROJECT

ADDRESS

EDMONTON ECOPARK
ADVENT WAY, LONDON
N18 3AG

GRIMSHAW PROJECT NO.

14047

NORTH

SCALE

1:1000 @ A0

STATUS

-

DRAWING

Proposed Site Plan
Phase 2

DRAWN	CHECKED	AUTHORISED
BWN	—	

DRAWING NUMBER	REVISION
14047_[illegible]AL_[illegible]02_1002	X

DRAFT

Principal Development

2.4.8 The principal development comprises:

2.4.9 Development of an **Energy Recovery Facility** (ERF) generating electricity using residual waste as a fuel and capable of an electrical output of around 70 MW comprising:

a. two process lines, with each line having a capacity of 350ktpa, a moving grate, furnace, boiler and a flue gas treatment plant and stack;

b. a steam turbine and generator set;

c. "heat off-take" equipment within the ERF which will generate energy such that it can provide an initial heat supply through a connection to a separate heat network centre that is proposed to be located on the site. This separate heat network centre is not part of the Project and is being developed by LB Enfield;

d. a waste bunker with two overhead cranes and capacity to hold a minimum equivalent of five days of processing capacity;

e. Flue Gas Treatment system consisting of a wet treatment and a Selective Catalytic Reduction system (currently proposed)

f. [air or water] cooled condenser(s);

g. a plant control and monitoring system;

h. an emergency diesel generator; and

i. tipping hall and one way access ramp.

Associated Development

2.4.10 The following elements are proposed as part of the development:

a. the decommissioning of the existing Edmonton EfW facility and making site good (timed to take place following commissioning of ERF and transition period of up to a year);

b. a Resource Recovery Facility (RRF) encompassing a Reuse and Recycling Centre, transfer hall, and bulky waste / fuel preparation facility;

c. administrative building and visitor centre;

d. new internal weighbridges, roads and parking areas;

e. hard and soft landscaping directly related to main building works; and

f. new site access points from the Lee Park Way and Deephams Farm Road.

2.4.11 The following associated development may also be required (and has therefore been considered in this Scoping Report), however this is subject to confirmation as part of the scheme design development:

a. upgrade of the electricity connection to the National Grid;

b. relocation of LWL vehicle depot and servicing;

c. offsite works, including potential construction lay down areas;

d. provision of an onsite water pumping station if needed for a water cooling system;

e. other new site accesses (construction and operational); and

f. facilities for the recycling of incinerator bottom ash and recovery of metals.

ERF Operational Process

2.4.12 This section sets out the assumed ERF operation process. Figure 2.4 provides an illustration of a typical ERF plant process including heat output to a DEN.

2.4.13 The ERF would include weighing, reception and waste unloading facilities. Waste delivered by vehicles is tipped into a storage bunker for mixing and subsequent supply to hoppers for feeding to the grate and combustion furnace. Heat released from waste combustion would be used to raise high pressure steam that is routed through an extraction condensing steam turbine generator unit for power generation.

a. Waste would be delivered to the site by RCVs or HGVs, via an in-bound weighbridge, and enter the ERF along an access ramp to bring the vehicles to the elevated tipping hall. From the tipping hall waste would be deposited directly into the waste bunker where it is mixed. The tipping hall would encompass sufficient area for vehicles to manoeuvre and deposit waste.

b. The hydraulic volume of the bunker would be of a capacity to hold a minimum of five days of processing capacity with the plant operating at full capacity. The bunker would be used for the receipt and storage of waste which would be delivered by road 24 hours per day, seven days per week.

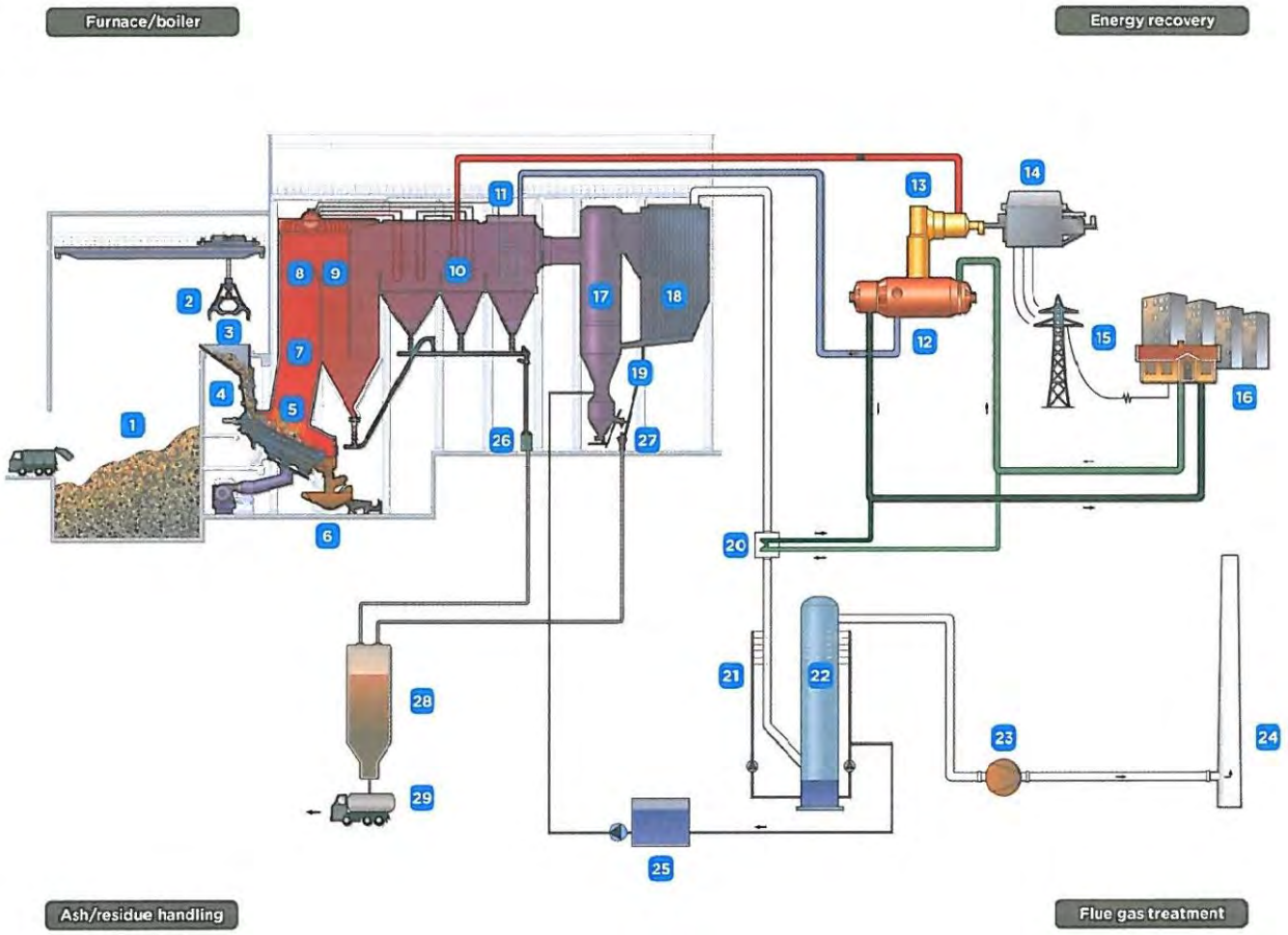
c. The receipt and storage of incoming waste in the bunker would enable the waste to be mixed by cranes, thus producing a homogenous feedstock. Two overhead cranes would be used to feed waste from the bunker into the thermal treatment lines. While one of the cranes is in operation, the second crane can be in standby mode or mixing waste to produce a homogenous fuel. Fuel would be deposited into the feed hoppers by the grab cranes. From there, waste would be guided from the hopper into the ERF through the feed chutes. The feed chutes (3) would be hydraulically operated and feed waste onto the grates in an even layer and control the amount of waste supplied to the grate.

d. The moving grates (5) would transport waste supplied from the feed to the hoppers at one end to the IBA extraction system (6) at the other end, ensuring that the fuel is thoroughly mixed and burnt out while it travels along the length of the grates.

e. IBA would be discharged from the end of the grate to a water bath. The IBA would then be transported to a designated area by a pusher and a conveyor belt.

2.4.14 The ERF plant would require air supply to the grate to support combustion. This would be provided as primary air, injected from under

the grate and as secondary air injected into the combustion gas stream above the grate. Combustion air would during operations be taken from the waste bunker through an intake screen, thereby preventing the release of odours from the tipping hall.



Furnace / boiler :1.Bunker; 2.Grab; 3.Hopper / feed chute; 4.Feeder ram; 5.Grate; 6.Botton ash discharger; 7.Furnace 8.Afterburning chamber; 9.Radiation part; 10. Convection part; 11.Economiser; **Energy recovery:** 12. Condenser 13. Turbine 14. Generator 15. Electrical output 16. Heat output **Flue gas treatment:** 17.Reactor for acid gas absorption; 18.Bag house filter; 19.Residue recirculation; 20.Economiser; 21.Quench; 22.Scrubber; 23.ID fan; 24.Stack; 25.Process water tank; **Ash /residue handling:** 26.Boiler ash conveying system; 27.Flue gas cleaning rescue transport system; 28.Ash / residue silo 29.Ash / residue discharge

Figure 2.4 Typical ERF Plant Process

2.4.15 The steam turbine and generator set would convert the energy within the steam into electrical power and provide a point for the extraction of heat for supply to the DEN. The ERF would export electricity from the steam turbine generator through transformers and power lines to the grid. The transformers would convert the electricity voltage from the generator to that required by the grid.

Access

2.4.16 Three entrance points for both construction and operational phases are currently being considered. These are:

a. access from the south of the site from Advent Way (the existing main access);

b. access from the east via a re-opened section of Lee Park Way; and

c. access from the northern corner of the site, via an existing private road.

For the purposes of this report all three options have been considered for both the construction and operational phases.

3 Background to Health Impact Assessment (HIA)

3.1 What is health impact assessment?

3.1.1 The consideration of health is an important aspect of any major policy programme or project within the UK. The purpose of a HIA is to assess the health consequences of a policy, programme or project and to use this information in the decision-making process to maximise the positive and minimise the negative health impacts of a proposal.

3.1.2 HIA is a multi-disciplinary activity that cuts across the traditional boundaries of health, public health, social sciences and environmental sciences. The most commonly used definition of HIA is taken from the World Health Organisation (WHO) Gothenburg Consensus Paper:

> *"……a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population"*[7]*.*

3.2 Policy context

3.2.1 HIA is promoted at European level in Article 152 of the Amsterdam Treaty; and at UK level in the Government White Paper Saving Lives: Our Healthier Nation (1999).

3.2.2 The Government White Paper: Choosing Health – Making Healthy Choices Easier (2004) outlined the importance of routinely considering the impact of 'non-health' interventions on population health both before implementing policies (through HIAs, for example) and afterwards through evaluation.

3.2.3 The Government White Paper: Healthy Lives, Healthy People: Our Strategy for Public Health in England (2010) does not identify a specific requirement for HIA, but its policies and guidance support this approach.

3.2.4 The overarching National Policy Statement for Energy (EN-1) identifies that indirect and direct impacts on health and wellbeing should be considered and it states that:

> *'where the proposed project has an effect on human beings, the ES should assess these effects for each element of the project, identifying any adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate.'*

3.2.5 The National Planning Policy Framework (NPPF, 2012), makes reference to the links between local planning authorities and health organisations. The national policy suggests future development should be assessed for any expected changes and barriers to health and wellbeing.

3.2.6 HIAs proactively seek to do just that, and therefore this policy can be noted in influencing the requirement to produce an HIA for new

[7] WHO European Centre for Health Policy. (1999). Health impact assessment: main concepts and suggested approach. Gothenburg consensus paper. WHO Regional Office for Europe.

developments. The specific statement within the NPPF is within paragraph 171, addressing health and well-being, which is cited below:

> *"Local planning authorities should work with public health leads and health organisations to understand and take account of the health status and needs of the local population (such as for sports, recreation and places of worship), including expected future changes, and any information about relevant barriers to improving health and well-being."*

3.2.7 The Planning Practice Guidance published in February 2014 provides guidance to ensure that local planning authorities ensure that:

> *"health and wellbeing, and health infrastructure are considered in local and neighbourhood plans and in planning decision making".*

3.2.8 At regional level, the London Plan (GLA, 2011), Policy 3.2C Improving Health and Addressing Health Inequalities states that:

> *"The impacts of major development proposals on the health and wellbeing of communities should be considered through the use of Health Impact Assessment (HIA)."*

3.2.9 The policy is not altered by the 'Revised Early Minor Alterations to the London Plan October 2013'.

3.2.10 The LB Enfield Core Strategy (2010) establishes that major developments may be required to undertake a HIA and that the Development Management Document would set out the criteria for proposals requiring a HIA. The LB Enfield Proposed Submission Development Management Document (2013) outlines that there should be submission of a HIA consistent with Policy 3.2 of the London Plan where appropriate.

4 Proposed HIA methodology and scope

4.1.1 The methodology described below has been designed to provide robust information on any effects on health and wellbeing that may arise as a result of the proposed development, to assist the Planning Inspectorate (PINS) in its consideration of the application for the DCO.

4.1.2 The HIA will be undertaken through a systematic process of:

a. Scope definition;

b. Policy review;

c. Baseline data gathering;

d. Identifying health determinants;

e. Linking health determinants with health effects;

f. Assessment of health impacts; and

g. Development of evidence based recommendations and monitoring.

4.2 Scope definition

Geographical scope

4.2.1 In order to assess the impact on the health of the existing communities in the surrounding areas geographical scopes have been defined. For a detailed analysis the assessment area has been subdivided into a number of geographical units based on encompassing a 600m radius[8] around the site boundary. These units are:

a. Regional level: London.

b. Local level: Borough level – LB of Enfield and LB of Waltham Forest.

c. Neighbourhood level: Lower Super Output Area groupings.

4.2.2 The neighbourhood level comprises Lower Super Output Areas (LSOAs[9]) within 600m radius of the site. The LSOAs shown in Figure 4.1 are within 600m of the site boundary and are therefore to be considered in the HIA as part of the neighbourhood level assessment area.

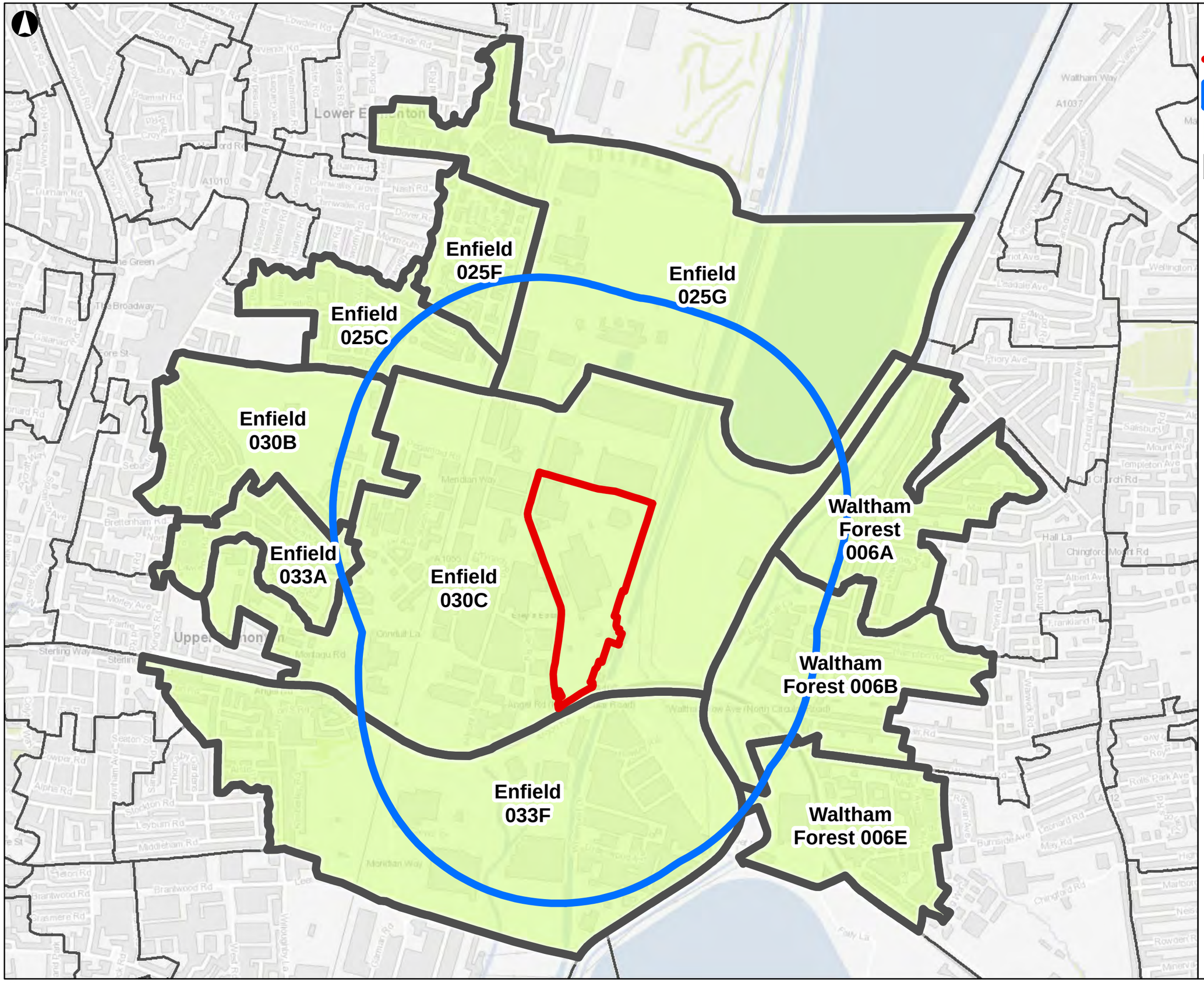
Temporal scope

4.2.3 The temporal scope of the HIA will be consistent with other relevant project assessments such as the EIA. The scope of the HIA will cover both the construction and operation of the proposed development including the demolition of the existing EfW facility. Where possible the likely duration of impacts will be identified within the assessment.

[8] A 600m study area has been selected as this encompasses the air quality and noise study areas within the Environmental Impact Assessment for identifying sensitive receptors.

[9] LSOAs are geographical units originally generated during the 2001 Census that were constrained by the Standard Table Wards. They were updated in the 2011 Census and there are now 34,753 LSOAs in England and Wales. They have a minimum size of 1,000 residents and 400 households.

A3



Legend

- Red Line Boundary
- 600m Catchment
- LSOA within 600m
- LSOA

Issue	Date	By	Chkd	Appd
P1	02-12-14	HC/AF	AF	SH

Metres
0 150 300 600

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Client
North London Waste Authority

Job Title
North London Heat and Power Plant HIA Scoping Report

Edmonton HIA Scoping Baseline

Scale at A3
1:11,000

Job No	Drawing Status
235271-17	Issue

Drawing No	Issue
001	P2

MXD Location

4.3 Methodology

Policy review

4.3.1 National, regional and local policies, plans and strategies relevant to health, including National Institute for Health and Care Excellence (NICE) public health guidance, will be reviewed. The aim will be to identify local health policy and review how the proposed development may impact on these positively and/or negatively. The policy review for the HIA will also include local policies for LB Enfield and LB Waltham Forest relevant to health, wellbeing and the health determinants such as:

a. Local Plans;

b. Health and wellbeing strategies;

c. Sustainable community strategies;

d. Supplementary Planning Documents.

Baseline data gathering

4.3.2 Baseline data will be collated from a range of sources to provide an overview of the existing population, existing health profile, socio-economic conditions in the local community and the physical environment in the assessment area.

4.3.3 This gathering of baseline data will be coordinated with other workstreams and deliverables for the application for the DCO such as the EIA.

4.3.4 The data reviewed will include, but is not limited to:

a. Public Health England 'Health Profiles' 2014;

b. The Department of Communities and Local Government (DCLG) 'The English Indices of Deprivation' 2010;

c. Office for National Statistics, Census 2011 data; and

d. Joint Strategic Needs Assessments.

Identifying health determinants - Scoping analysis

4.3.5 Structured around the Merseyside HIA Guidelines[10], scoping analysis was undertaken based on the understanding of the characteristics of the proposed development, the community profile and previous experience of similar projects for the Authority. An appropriate list of determinants was identified for scoping during the analysis and is discussed further in Section 5.

Linking health determinants and health effects

4.3.6 Using available literature, including previous relevant health studies and recent published research, an evidence base will be collated to identify

[10] Scott-Samuel, A., Birley, M., Ardern, K., (2001). The Merseyside Guidelines for Health Impact Assessment. Second Edition, May 2001

links between the selected determinants and effects on health and wellbeing.

4.3.7 Impacts may be direct or indirect and links may be causal or compounding. Key reference material that will be reviewed is likely to include:

a. Government health policies, programmes and strategies;

b. Previous HIAs for similar energy projects;

c. Public health reports and research papers from a range of sources, including:

- Department of Health (DH);
- WHO;
- National Institute for Health and Care Excellence (NICE); and
- Public Health England.

Assessment of health impacts

4.3.8 The expected impacts of the proposed development on the determinants of health will be identified, making use of a number of studies that form part of the documents that are being delivered for the application for the DCO e.g. the EIA.

Impacts of health and wellbeing

4.3.9 The impact of the proposed development has knock-on effects on the health and wellbeing of the populations affected by the proposed development. The determinants of health will be assessed on the basis of known causal linkages identified through the literature review as mentioned above.

4.3.10 A qualitative assessment of health impacts will be undertaken on a purely qualitative basis, except where quantitative estimates are provided by other assessments as part of the application for the DCO.

Assessing the significance of impacts

4.3.11 The significance of potential health impacts will be assessed according to the criteria described in the Merseyside HIA Guidelines. The Merseyside HIA Guidelines involve the classification of impacts in three different ways:

- Determining the nature of the impact:
  - The **nature** of the impact is classified either as positive or negative.
- Assessing its measurability:
  - The **measurability** is defined on a three point scale of qualitative, estimable or calculable.
- Estimating the degree of certainty or risk:
  - The **degree of certainty** of the impact is classified using the terms speculative, probable and definite.
    - **speculative** effects are those linkages between the determinant and health effects which have not been

established in the research literature but where a plausible argument can be made that this is possible in the case of an adverse health impact and in the case of a beneficial impact where a reasonable level of action is required to take up the opportunities available;

- **probable** effects are those linkages between the determinant and health effect that have been established in the research literature but there is uncertainty because other factors have the potential to influence whether the adverse health effect occurs and in the case of a beneficial impact where the effects do not require individuals or organisations to take a particular course of action; and
- **definite** effects are those which are considered to be inevitable.

4.3.12 The Merseyside HIA Guidelines stress that definite, quantifiable effects are not necessarily more important in the HIA than speculative and qualitative effects.

4.3.13 The HIA will also consider the in-combination effects of changes in a number of determinants on a given receptor (i.e. the combined impacts from changes in the air quality, noise and visual environment on a residential receptor).

4.3.14 Health inequalities and the potential for disproportionate impacts on certain vulnerable groups will be taken into account in the HIA.

Recommendations

4.3.15 Where impacts are identified in the HIA, recommendations will be proposed to reduce any negative impacts and maximise any positive impacts on health from the proposed development. Where possible, these recommendations will be fed into the design process through design workshops and on-going discussions and meetings with the design team to ensure that issues related to health influence the final design.

4.3.16 Commentary will be provided in the HIA on how the design of the proposed development has responded to any recommendations arising out of the HIA.

4.3.17 Where mitigation has already been identified in other assessments undertaken as part of the application for the DCO, for example through the EIA process, this mitigation will be cross-referenced in the HIA. The responsible organisation(s) and the timing of actions required to implement any recommendations made in the HIA will also be identified where appropriate.

Reporting

4.3.18 The findings of the HIA will be presented as a free standing HIA Report which will be submitted with the application for the DCO.

Consultation

4.3.19 In accordance with the application for the DCO there will be formal consultation with stakeholders and the local community to meet the requirements of Sections 42 and 47 of the Planning Act 2008. Opportunities will be sought during the consultation process to obtain feedback on health related issues and concerns.

4.3.20 There will also be other informal consultation through voluntary engagement with stakeholders and the local community. This scoping report represents the first stage of the informal consultation in respect of health impacts and will be circulated to the Directors of Public Health in LB Enfield and LB Waltham Forest as well as Public Health England and the borough planning officers. Any health issues raised through the consultation process will be taken into consideration in the HIA.

Limitations of the study

4.3.21 Literature and baseline data used in the study will be limited to readily available public and published sources. The information contained within the ES and other project documents will be used to characterise the study area and identify impacts on health determinants.

4.3.22 The approach to the assessment of health impacts will generally be qualitative, identifying likely positive and negative impacts based on the causal relationships between determinants and health effects identified within the literature reviewed.

5 Initial scoping outcomes

5.1.1 As discussed in para 4.3.5 scoping analysis was undertaken to allow the prioritisation of health determinants for further assessment in the HIA.

5.1 Health determinants identified

5.1.1 Those health determinants discussed and the reason for their inclusion or exclusion in the HIA, are identified in Table 5.1. The table lists the categories (e.g. physical environment) and health determinants (e.g. noise) which have the potential to be affected by the proposed development.

5.1.2 All of the activities likely to cause health impacts during construction or operation and all potential health impacts have been identified. Preliminary ratings on the nature (positive/negative) of the health impacts and their measurability and the degree of certainty of the impact have been undertaken. A preliminary set of possible measures to minimise negative impacts and maximise positive impacts have been developed.

5.1.3 The health determinant categories to be assessed in the HIA are:

a. Environmental determinants

- Air quality and odour
- Noise
- Traffic
- Ground contamination
- Minimising use of resources
- Climate change

b. Social and economic determinants

- Economics and employment/access to work and training
- Perceived effects

Table 5.1: Initial outcomes of the HIA scoping workshop

Categories / specific influences on health	Construction or operation of the project	Project development / operation activity	Predicted health impacts (nature and where possible, size of impact and how measurable impact is - i.e., is it qualitative (Q), estimable (E), or calculable(C)?)	Risk of impact - Is it definite (D), probable (P), or speculative (S)?	Possible mitigation measures for consideration
Social and economic factors:					
Employment	Construction	Construction employment	Positive for those who gain employment. Limited local effect expected due to large catchment area of construction workforce for most London locations and proportion/much of the workforce likely to be specialist construction workers. (Qualitative but could be estimated, using EIA socio-economic methods e.g. HM Treasury Green Book Appraisal and Evaluation etc.)	D/P	• Promote construction opportunities locally, where possible e.g. through partnerships with local colleges and job centres.
	Operation	Operational employment	Limited impact as replacement of existing EfW facility with ERF, so limited changes to workforce anticipated. Potential for positive health effects if increased capacity gives rise to new employment opportunities. (Qualitative but could be estimated, using EIA socio-economic methods e.g. green book, etc.)	D/P	• Promote new employment opportunities locally, where possible e.g. through partnerships with local colleges and job centres.

Categories / specific influences on health	Construction or operation of the project	Project development / operation activity	Predicted health impacts (nature and where possible, size of impact and how measurable impact is - i.e., is it qualitative (Q), estimable (E), or calculable(C)?)	Risk of impact - Is it definite (D), probable (P), or speculative (S)?	Possible mitigation measures for consideration
Crime and Safety	Construction	Managed by CoCP	No impacts identifiable therefore scoped out	None	None
	Operation	As per existing site arrangement	No impacts identifiable therefore scoped out	None	None
Social capital and community cohesion	Construction and operation	Operation and access of Edmonton Sea Cadets	Potentially negative impact if the Sea Cadets are required to move further away or pay more rent.	S	• Consider alternative transport access options • Retention of the Sea Cadets
	Operation	None	No impacts identifiable therefore scoped out	None	None
Environmental factors:					
Air quality	Construction	Construction traffic including increased HGV movements	Potential negative impact due to the increase in traffic related air emissions along construction traffic routes (Calculable)	D	• Traffic management plan and routing • Measures in CoCP to manage construction vehicle emissions.

Categories / specific influences on health	Construction or operation of the project	Project development / operation activity	Predicted health impacts (nature and where possible, size of impact and how measurable impact is - i.e., is it qualitative (Q), estimable (E), or calculable(C)?)	Risk of impact - Is it definite (D), probable (P), or speculative (S)?	Possible mitigation measures for consideration
	Operation	Operational emissions	Potential beneficial impacts due to newer technologies than existing facility Potential negative impacts due to possible increased capacity of new facility. (Calculable)	P/S	• Ensure facility and technology used is able to meet likely future, more stringent regulations (WHO guidelines for example). • Communication with community – Develop FAQ document and online material to raise awareness on technology and develop and feed into public consultation programme
		Perceived negative effects from new stack – potential for increased concern for period when two stacks are operational.	Negative impacts on mental health resulting from perceived health effects of air pollution from the two stacks and the visibility of plumes (Qualitative)		
		Odour – perceived effects	Negative impacts on amenity and mental health resulting from perceived health effects of odour (likely to arise from odour effects from other sources in area such as Deephams STW and the IVC which is to be demolished) (Qualitative)		

Categories / specific influences on health	Construction or operation of the project	Project development / operation activity	Predicted health impacts (nature and where possible, size of impact and how measurable impact is - i.e., is it qualitative (Q), estimable (E), or calculable(C)?)	Risk of impact - Is it definite (D), probable (P), or speculative (S)?	Possible mitigation measures for consideration
Noise	Construction	Construction activities will be managed through the CoCP and the nearest residential receptors are approximately 600m from the site Traffic noise during construction possibly an issue if access routes are changed.	No impacts identifiable therefore scoped out Potential annoyance and disturbance effects for properties along new routes if construction access routes are different from current operational access routes. This is dependent on existing noise levels. (Calculable)	None D/P	None • Traffic management plan and routing

Categories / specific influences on health	Construction or operation of the project	Project development / operation activity	Predicted health impacts (nature and where possible, size of impact and how measurable impact is - i.e., is it qualitative (Q), estimable (E), or calculable(C)?)	Risk of impact - Is it definite (D), probable (P), or speculative (S)?	Possible mitigation measures for consideration
	Operation	Traffic noise possibly an issue if number of HGV movements increases with increase in capacity Noise from operational facility	Potential annoyance and disturbance effects for properties along existing access routes depending on the existing noise levels (Calculable) Unlikely to be significant issue in light of the existing noise levels given the existing urban neighbourhood and industrial activities already taking place. The development is a replacement for the existing EfW facility. (Calculable)	D/P D/P	• Traffic management plan and routing • Low noise engines in HGVs.
Transport and Travel	Construction	Extra traffic movements (including HGVs) during construction.	Safety, congestion and annoyance impacts (Estimable) Congestion and delays resulting from increase in HGVs may impact negatively on access to local services and amenities (Estimable)	D/P	• Measures in CoCP and Traffic Management Plan

Categories / specific influences on health	Construction or operation of the project	Project development / operation activity	Predicted health impacts (nature and where possible, size of impact and how measurable impact is - i.e., is it qualitative (Q), estimable (E), or calculable(C)?)	Risk of impact - Is it definite (D), probable (P), or speculative (S)?	Possible mitigation measures for consideration
	Operation	Extra traffic movements due to increased capacity of the new facility	Safety, congestion and annoyance impacts (Estimable) Congestion and delays resulting from increase in RCVs may impact negatively on access to local services and amenities (Estimable)	D/P	• Measures in Traffic Management Plan
Minimising the use of resources	Operation	Potential connection to district heat network	Positive impact as reduced need for energy generation from other sources (Estimable)	D/P	None
Climate change – [Note: This may be considered under AQ]	Operation	Potential connection to the district heat network	Positive impact as the ERF reduces the need for fossil fuels and thus GHG emissions (Calculable)	D/P	None
Flood risk	Construction and operation	Unlikely to change level of flood risk to local communities.	No impacts identifiable therefore scoped out	None	None
Chemical/ Biological Contamination	Construction	Excavation and below ground structures.	Potential impacts on potable water as pathways to SPZ could be opened up during construction. Note - the impacts dependent on conclusions of Ground Contamination work.	P/S (Adverse)	

Categories / specific influences on health	Construction or operation of the project	Project development / operation activity	Predicted health impacts (nature and where possible, size of impact and how measurable impact is - i.e., is it qualitative (Q), estimable (E), or calculable(C)?)	Risk of impact - Is it definite (D), probable (P), or speculative (S)?	Possible mitigation measures for consideration
	Operation	Leaks and spills	Contamination of groundwater such that it exposes communities living near the site or contamination of water ways that pass nearby the site is unlikely.	S (Adverse)	• On-site control measures to avoid and clean up spills. • Manage any hazardous spill material through appropriate treatment and disposal.
		Poor water system maintenance leading to growth of Legionella bacteria	It is a legal requirement that the Authority is compliant with the Legionnaires' disease: The control of legionella bacteria in water systems Approved Code of Practice and guidance, the requirements of the Health and Safety at Work etc. Act 1974 and the Control of Substances Hazardous to Health Regulations. The premises and particularly water systems would be managed such that they would not pose a risk to the growth of or exposure to Legionella or other harmful pathogens and there are therefore no impacts identifiable.	None	
Lifestyle factors:					
Opportunities for exercise	Construction and operation	None	No impacts identifiable therefore scoped out	None	None

Categories / specific influences on health	Construction or operation of the project	Project development / operation activity	Predicted health impacts (nature and where possible, size of impact and how measurable impact is - i.e., is it qualitative (Q), estimable (E), or calculable(C)?)	Risk of impact - Is it definite (D), probable (P), or speculative (S)?	Possible mitigation measures for consideration
Diet	Construction and operation	None	No impacts identifiable therefore scoped out	None	None
Accessibility of services					
Access to health and social services; and social infrastructure	Construction and operation	None	No impacts identifiable therefore scoped out	None	None
Access to local services and amenities.	Construction and operation	None	No impacts identifiable therefore scoped out	None	None

6 Input to design

6.1.1 Starting the HIA an early stage allows time for issues that may influence the final design of the proposed development to be discussed, thus enhancing the health benefits of the proposed development and limiting any potential negative health effects of the proposed development. The aim is to set up a workshop to discuss the health aspects of the design of proposed development.

7 Next steps

7.1.1 The HIA team will continue to engage with the design team on health related issues until the design is finalised.

7.1.2 An HIA report will be produced for submission with the application for development consent in the third quarter of 2015.

Appendix D – Health Evidence Base

D1 Introduction

D1.1.1 The Health Evidence Base uses available literature, including previous relevant health studies and recent published research, to identify links between the selected determinants and effects on health and well-being. It is structured around the HUDU determinants checklist as well as those relevant to Energy Recovery Facilities:

a. access to open space and nature;

b. air quality, noise and neighbourhood amenity;

c. accessibility and active travel;

d. crime reduction and community safety;

e. access to work and training;

f. social cohesion and lifetime neighbourhoods;

g. minimising the use of resources;

h. climate change; and

i. Energy Recovery Facilities

D1.1.2 As set out in Section 4.3 of the HIA, the HUDU determinants and have been rationalised relevant to the Project.

D1.1.3 Impacts may be direct or indirect and links may be causal or compounding. Key reference material that has been reviewed included:

a. Government health policies, programmes and strategies;

b. Previous HIAs for similar energy projects;

c. Public health reports and research papers from a range of sources, including:

- DH;
- WHO;
- NICE; and
- PHE.

D2 Access to open space and nature

D2.1.1 Open space and nature can also improve community resilience and cohesion, (Section D5) reduce greenhouse gases (Section D9), reduce health inequalities, enhance our living environment and improve mental health particularly for children[51].

D2.1.2 A literature review of peer reviewed papers undertaken by the Forestry Commission[52] found evidence that proximity, size and amount of green space available to people in urban environments influenced physical and mental health outcomes. The review identified the key health benefits of green space as:

a. *"Long and short term physical benefits associated with obesity, life expectancy, heart rate and blood pressure;*

b. *attention and cognitive benefits associated with restoration, mood and self-esteem;*

c. *physical activity benefits associated with the use of green space;*

d. *self-reported benefits in terms of health and life satisfaction; and*

e. *community cohesion benefits through social contact fostered by green space".*

D2.1.3 The review suggested various mechanisms for the beneficial effects of green space including *"providing a space that promotes social interaction and inclusion, reducing social annoyances and crime' and 'reducing stress and restoring cognitive function and capacity to function with the demands of life"*.

D2.1.4 A literature review by Greenspace Scotland [53] also found a positive relationship between green space and general health. Importantly this study also identified that *"the attractiveness or quality of greenspace is an important determination of green space use"*.

D2.1.5 The Greenspace Scotland review also identified links to mental health, stating that *"studies consistently show a relationship between levels of stress and access to urban green spaces"* and identified *"activity and exercise, natural daylight, stimulation of the senses and aesthetic experience"* as potential factors in reducing stress.

D2.1.6 Another review of papers[54] examining the health effects of green space also supported the view that open space and nature has physical and mental health, well-being and social inclusion benefits. The review showed that the physical health benefits are related to an increase in

[51] Faculty of Public Health in association with Natural England (2010) Great Outdoors: How our natural health service uses green space to improve wellbeing – An action report
[52] O'Brien, L., Williams, K., Stewart, A. (2010) Urban health and health inequalities and the role of urban forestry in Britain: A review, The Research Agency of the Forest Commission
[53] Croucher, K., Myers, L., and Bretherton, J. (2007) The links between greenspace and health: a critical literature review, Greenspace Scotland
[54] Lee A.C.K and Maheswaran (2010) The health benefits of urban green spaces: a review of the evidence. Journal of Public Health 33

physical activity which in turn lead to the health effects described in Section D3.

D2.1.7 Research into the effects of the visual and aesthetic environment on well-being is mainly focused on the psychological effects of 'natural' versus 'man-made' or urban views. In general, evidence shows a preference for views of natural over man-made scenes. These links are often tied in with other, related issues such as opportunities for exercise and contact with nature.

D2.1.8 Maller et al[55] identified the lack of opportunity to experience contact with nature, as a strong determinant of health and well-being. It has been concluded[56] that *"exposure to natural spaces – everything from green parks and open countryside to gardens and other greenspace – is good for health"*.

D2.1.9 Other benefits cited by Douglas[57] include alleviation of symptoms of anxiety and depression, and restored capacity for concentration and attention.

D2.1.10 A review of empirical, theoretical and anecdotal evidence[55] has shown that contact with nature has positive health benefits through its positive effects on blood pressure, cholesterol and stress reduction, with particular relevance to mental health and cardiovascular disease.

D2.1.11 Overall, the literature is consistent in emphasising that open space and nature can improve physical health, comfort, and mental well-being, as well as provide opportunities to improve people's quality of life and social interactions[58].

D2.2 Vulnerable groups

D2.2.1 Often the poorest people experience the poorest quality outdoor environments and suffer disproportionately from a lack of equitable access to ecology and green spaces. Recent Dutch research has suggested that there is a positive association between the percentage of green space in a person's residential area and their perceived general health and that this relationship is strongest for lower socio-economic groups[59].

[55] Maller,C., Townsend,M., Pryor,A., Brown,P., and St Leger,L. (2005) Healthy Nature Healthy People: 'Contact With Nature' as an Upstream Health Promotion Intervention for Populations. Health Promotion International, Vol 21 No.1. Oxford University Press.
[56] Sustainable Development Commission (2008) Health, Place and Nature
[57] Douglas,I. (2005) Urban Greenspace and Mental Health. Prepared for the UK MAB Urban Forum.
[58] Royal Commission on Environmental Pollution (2007) The Urban Environment (RCEP Twenty-Sixth Report). RCEP.
[59] Maas J et al (2006) Green space, urbanity and health: how strong is the relation? Journal of Epidemiology and Community Health, 60, 587-592.

D3 Accessibility and active travel

D3.1 Accessibility

D3.1.1 Pedestrian routes can influence the number of destinations that can be reached within a given time-travel distance for a local population. Accessibility to and the provision of public services such as health, education and community facilities have been found to have a direct positive effect on human health[60].

D3.1.2 Recent research has stated that 5 per cent of adults in Great Britain reported feeling a sense of isolation due to difficulties accessing local shops and services. Accessibility was also an issue for over a fifth of adults who reported that they knew someone who felt a sense of isolation due to difficulties accessing local shops and services.

D3.1.3 The WHO[61] has also noted that access to local facilities such as shops, schools, health centres and places of informal recreation are important for health and well-being due to the physical activity taken in getting there and the social interaction on the way there or at the facilities.

D3.1.4 Accessibility for local residents to community facilities can play a significant role in promoting or discouraging physical activity. The key influential characteristics of an accessible community noted by Dannenberg et al[62] included proximity of recreation facilities, housing density, street design and accommodation for safe pedestrian, bicycle, and wheelchair use.

D3.2 Active travel

D3.2.1 Active travel applies to modes of transport that require physical activity, in contrast to modes that require little physical effort such as motor vehicles. Therefore it is the physical activity associated with active travel that brings about health effects.

D3.2.2 Research suggests that most sustained exercise is taken during the course of everyday activities such as travelling to work or going to the shops, rather than specifically for health purposes[63].

D3.2.3 A systemic review[64] has shown that transport infrastructure and the environment has an effect on people's participation in physical activity. The evidence identified the following transport and environmental factors influencing levels of physical activity:

[60] HUDU (2013) HUDU Planning for Health. Rapid Health Impact Assessment Tool. (NHS) London Healthy Urban Development Unit.
[61] WHO (2012) Addressing the social determinants of health: the urban dimension and the role of local government.
[62] Dannenberg A.L, Jackson R.J, Frumkin H, Schieber R.A, Pratt M, Kochtitzky C and Tildon H. N (2003) The Impact of Community Design and Land-Use Choices on Public Health: A Scientific Research agenda. American Journal of Public Health 93.
[63] Caldwell, L.L. (2005) Leisure and health: Why is leisure therapeutic?
[64] National Obesity Observatory (2011) Data sources: environmental influences on physical activity and diet.

a. access to physical activity facilities;
b. distance to destinations;
c. levels of residential density;
d. type of land use;
e. urban walkability scores;
f. perceived safety;
g. availability of exercise equipment; and
h. the provision of footways.

D3.2.4 Altering the environment, particularly an urban landscape, may lead to unintended changes in patterns of mobility and physical activity[65]. Transport systems designed to promote active travel such as cycling and walking can reap health benefits by increasing physical activity, reducing morbidity from air pollution and reducing the risk of road traffic accidents by decreasing the number of journeys undertaken using motor vehicles[66].

D3.2.5 A recent systemic review of the link between positive health benefits and physical activity has been undertaken by Saunders et al[67]. Although the review determined that there is no clear evidence of the effectiveness of active travel in reducing obesity, over longer periods and longer distances it may reduce the risk of diabetes. This systematic review and a child-focused systematic review found that there is some evidence particularly in relation to children and young people cycling that active travel contributes to healthy body weight/body composition, cardio-respiratory fitness and general physical (muscle) fitness[68].

D3.2.6 The positive effects of physical activity on physical health was summarised in a recent DH report[69] and stated that *"Regular physical activity can reduce the risk of many chronic conditions including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal conditions. Even relatively small increases in physical activity are associated with some protection against chronic diseases and an improved quality of life."*

D3.2.7 It has been shown that *"physical activity improves health throughout the life course – from childhood through to older age"*[70]. The health benefits of physical exercise occur across virtually the full range of diseases, and

[65] Ogilvile D, Mitchell R, Mutrie N, Petticrew M and Pratt S (2010) Shoe leather epidemiology: active travel and transport infrastructure in the urban landscape. International Journal of Behavioural Nutrition and Physical Activity 7.
[66] Sustainable Development Commission (2008) Health, Place and Nature
[67] Saunders LE, Green JM, Petticrew MP, Steinbach R, Roberts H (2013) What Are the Health Benefits of Active Travel? A Systematic Review of Trials and Cohort Studies. PLoS ONE 8(8)
[68] Lubans D, Boreham C, Kelly P, Foster C (2011) The relationship between active travel to school and health-related fitness in children and adolescents: a systematic review. International Journal of Behavioral Nutrition and Physical Activity 8.
[69] CMO (2011) Start Active, Stay Active: A report on physical activity from the four home countries' Chief Medical Officers, Department of Health, Physical Activity, Health Improvement and Protection.
[70] Harding, T. (1997) A Life Worth Living: the Independence and Inclusion of Older People, London: Help the Aged, cited in Beaumont, J. (2011) Measuring National Well-being, Discussion paper on domains and measures, Faculty of Public Health, Office for National Statistics

when this is combined with the prevalence of inactivity among the public, it *"makes physical activity one of the main contemporary public health issues"*.

D3.2.8 The link between physical exercise and positive mental health effects have been highlighted in some older evidence reviews by Sport England[71], Cave et al[72] and AEA Technology[73]. Mental health effects cited included improvements in people with generalised anxiety and stress disorders.

D3.3 Vulnerable Groups

D3.3.1 Although all groups are shown to benefit from regular exercise, the benefits to children and the elderly are particularly emphasised. The importance of exercise for children is highlighted in terms of benefits in building up bone density, avoidance of weight gain, links to health status in later life, and in establishing habits, which may be more difficult to begin in later life (British Medical Association, 2002 and DH, 2004). The benefits for the elderly include retention of mobility, cognitive function and independence[74].

D4 Crime reduction and community safety

D4.1.1 Community safety is important for health and well-being. The NHS Healthy Urban Development Unit has stated[63] that *"a healthy community protects and improves the quality of life for its citizens, promotes healthy behaviours, minimizes hazards for its residents, and preserves the natural environment."*

D4.1.2 The effects of crime on health include both being an actual victim of crime, and from perceptions about community safety i.e. fear of crime and feeling that your neighbourhood is unsafe[75].

D4.1.3 The same factors that affect local crime rates often seem to affect health[76]. A recent report on Measuring National Wellbeing[77] has also identified crime as a key indicator in determining well-being.

D4.1.4 The health effects of being a victim of crime and perceiving that your community is unsafe overlap.

[71] Sport England (2007) Active Design. Promoting opportunities for sport and physical activity through good design. Supported by CABE, DH and DCMS. Sport England.
[72] Cave. B, Curtis. S, Aviles. M, and Coutts. A, (2001) Health Impact Assessment for Regeneration Projects. Volume II Selected evidence base. East London and City Health Action Zone.
[73] AEA Technology (2000) Informing transport health impact assessment in London. Commissioned by NHS Executive, London.
[74] Department of Health (2004) Choosing Health Summaries: Diet and Nutrition. Public Health White Paper.
[75] British Medical Association (1999) Health and Environmental Impact Assessment: an Integrated Approach. Earthscan Publications Ltd.
[76] Greater London Authority (2005) 'Review of the London Health Strategy High Level Indicators'. London Health Commission
[77] Randall, C. (2012), Measuring National Well-being, Where we Live , Office for National Statistics

D4.1.5 The direct effects of crime include physical injuries and permanent disability and often longer lasting mental health, emotional and social difficulties.

D4.1.6 Hirschfield[78] showed that victimisation or fear of crime may manifest itself through symptoms such as stress, sleeping difficulties, loss of appetite, loss of confidence and health harming 'coping' mechanisms such as smoking and alcohol consumption. The research also suggested that community problems such as disorder and anti-social behaviour, which are not strictly criminal offences, can have adverse effects on health.

D4.1.7 A recent review undertaken by Lorenc et al[79] looked at qualitative evidence on the fear of crime and the environment. The report notes that most research on crime and health focused on the direct health effects suffered by victims of crime. However, indirect effects of crime and its broader influence on individuals and communities may also have important effects on well-being.

D4.1.8 Fear of crime has been shown in several studies to have a modest, but consistently significant, association with health and well-being. The report also noted that fear of crime was only weakly correlated with actual crime rates, and highlighted other community safety issues such as urban neglect and social cohesion as factors affecting fear of crime.

D4.1.9 The study by Lorenc et al examines the consequences of fear of crime, stating that *"relatively few participants see fear as having serious mental health effects, although several report some degree of psychological stress as a result of fear. A much more widely perceived consequence of fear is to limit people's activities, including social and cultural activities, sometimes leading to social isolation. Participants from across the population report such limitations, but they appear to be more serious for women, older people and people with disabilities. Parents also report placing serious restrictions on children's activities."*

D4.1.10 The design of the built environment can influence levels of crime and perceptions of community safety with design that promotes 'eyes on the street' (natural surveillance) and interventions, such as street lighting, helping to reduce crime and anti-social behaviour.

D4.2 Vulnerable groups

D4.2.1 Social inequalities are particularly marked in urban environments, with different population subgroups experiencing impacts to different degrees. Older people and women are identified as being particularly likely to suffer as a result of perceptions of community safety and fear of crime.

D4.2.2 Young people aged 16-24 years in the UK are more likely to be victims of violent crime. There is a similar age pattern across genders though the

[78] Hirschfield.A, (2003) The Health Impact Assessment of Crime Prevention. Sourced from NHS National Institute for Health and Clinical Evidence.
[79] Lorenc, T., Petticrew, M., Whitehead, M., Neary, D., Clayton, S., Wright, K., Thomson, H., Cummins, S., Sowden, A., Renton (2012) A. Fear of crime and the environment: systematic review of UK qualitative evidence, BMC Public Health. 13: 496.

rate is highest in young men. Young people are also more likely to be victims of theft. Vandalism was highest in urban areas with high levels of neighbourhood physical disorder.

D5 Social cohesion and lifetime neighbourhoods

D5.1 Social cohesion

D5.1.1 Social cohesion is defined as the quality of social relationships and existence of trust, mutual obligations and respect in communities or the wider society[80]. This is closely related to levels of inequality or exclusion within a given community.

D5.1.2 Social cohesion has been linked to volunteering, the empowerment of individuals and ethnic diversity. In contrast, inequalities within a population and crime and safety can erode social cohesion within a community[81].

D5.1.3 It is also closely linked to social capital which the World Bank has defined as *"…the institutions, relationships and norms that shape the quality and quantity of a society's social interactions... Social capital is not just the sum of the institutions which underpin a society – it is the glue that holds them together"*[82].

D5.1.4 The physical environment can directly influence social capital and social cohesion, as social networks rely on high quality, accessible spaces where people can meet to pursue their hobbies and interests and interact socially.

D5.1.5 Social cohesion is also linked to transport infrastructure which enables residents to both integrate within and move outside of their own community.

D5.1.6 Social cohesion and social capital have been shown to positively correlate with a reduced fear of social isolation and positive mental health[45].

D5.1.7 Opportunities for communities to participate in the planning of healthcare services and social infrastructure can also impact positively on mental health and well-being and improve community cohesion[62].

D5.1.8 According to one evidence review[83] social capital may:

a. protect health by buffering against the effects of life events which may be damaging to health;

b. have physiological effects, through the hormonal system, on the body's response to stress and functioning of the immune system;

[80] WHO (2003) Social determinants of health: the solid facts 2nd edition.
[81] Department for Communities and Local Government (2008) Predictors of community cohesion: multi-level modelling of the 2005 Citizenship Survey.
[82] The World Bank (1999) What is Social Capital? PovertyNet.
[83] Cave, B., Curtis, S., Aviles, M. and Coutts, A. (2001) Health Impact Assessment for Regeneration Projects. Volume II Selected evidence base, East London and City Health Action Zone, University of London.

c. reduce isolation, which is associated with disease, accidents and suicide;

d. enable people to cope with illness better and have better prognoses when ill; and

e. reduce or protect against mental health problems, such as anxiety and depression.

D5.2 Lifetime neighbourhoods

D5.2.1 The Communities and Local Government (CLG) document Towards Lifetime Neighbourhoods: Designing sustainable communities for all[84] describes lifetime neighbourhoods as being *"sustainable communities that offer a good quality of life to all generations".*

D5.2.2 They should aim to be:

a. accessible and inclusive;

b. aesthetically pleasing and safe (in terms of both traffic and crime), and easy;

c. pleasant to access; and

d. a community that offers plenty of services, facilities and open space.

D5.2.3 Furthermore, we can add that lifetime neighbourhoods are likely to foster:

a. a strong social and civic fabric, including volunteering, informal networks;

b. a culture of consultation and user empowerment amongst decision-makers; and

c. a strong local identity and sense of place.

D5.2.4 The potential health effects of the aspects outlined above, that contribute to the concept of a lifetime neighbourhood, are all further explored within the other determinant sections that make up this literature review.

D5.3 Vulnerable groups

D5.3.1 Some population groups are believed to be at particular risk of social exclusion, including black and minority ethnic (BME) groups, disabled people, lone parents, older people, carers, asylum seekers and refugees and ex-offenders (Wanless 2003[85]).

[84] Ed Harding, International Longevity Centre UK (2007) Towards Lifetime Neighbourhoods: Designing sustainable communities for all. Department for Communities and Local Government.
[85] Wanless.D (2003) Securing good health for the whole population. Population Health Trends. HM Treasury/Department of Health.

D6 Air quality, noise and neighbourhood amenity

D6.1 Air quality

Road traffic emissions

D6.1.1 Evidence on the links between road traffic emissions and health is well established. A WHO report in 2000 stated that about 36,000–129,000 adult deaths a year are brought forward due to long-term exposure to air pollution generated by traffic in European cities. The main health damaging air pollutants released by road traffic are Particulate Matter (PM_{10}[86]) and nitrogen dioxide (NO_2).

D6.1.2 PM_{10}, comprises of particles that are less than 10µm in diameter. Road transport is a major source of PM_{10}, which is emitted from the combustion of vehicle fuels. An important property is the extent to which these particles may be deposited within the lungs and this is dependent on size of particles (smaller particles have a greater chance of reaching the deeper parts of the lungs). There is growing evidence that smaller respirable particulate matter may be more relevant to health than larger particles. Recent studies[87] have found that ultra-fine particles (less than 0.1µm) have been associated with stronger effects on the lung function and symptoms in asthmatics than either PM_{10} or $PM_{2.5}$.

D6.1.3 Studies have also suggested that particulate pollution of various sizes may exacerbate pre-existing asthma[88].

D6.1.4 It should be noted that exposure in an urban setting is complex and cumulative and interactive effects need to be considered. Furthermore increasing temperatures related to climate change have also been shown to augment the negative health impact of Particulate Matter, resulting in increased mortality[89].

D6.1.5 The effects of road traffic related NO_2 on health are less well understood than the effects of PM_{10}. Numerous epidemiological studies have identified associations between NO_2 concentrations and respiratory health[90], but it may be that in these studies NO_2 is a key marker for traffic-related pollution such as PM more generally rather than having separate independent effects.

D6.1.6 Quantifying short and long term impacts of NO_2 pollution has been problematic due to uncertainties in the concentration-response functions available. It has been estimated that the direct effect of NO_2 on the health of the UK's population could be that between 600 and 6,000 deaths per

[86] Particulate Matter up to 10 micrometers in size.
[87] World Health Organization. (2000) Transport, environment and health. WHO Regional Publications, European Series. No.89.
[88] DoH Committee of the Medical Effects of Air Pollutants, (1998), Quantification of the Effects of Air Pollution on Health in the United Kingdom.
[89] Meng, X., Zhang, Y., Zhao, Z., Duan, X., Xu, X. and Kan, H., (2012), 'Temperature modifies the acute effect of particulate air pollution on mortality in eight Chinese cities', Science of The Total Environment 435– 436, 215–221.
[90] Health Scotland, MRC Social and Public Health Sciences Unit and Institute of Occupational Medicine (2007). Health Impact Assessment of Transport Initiatives: A Guide. NHS Health Scotland.

year may have been brought forward by a matter of days or weeks as a result of exposure to NO_2 in the ambient air. Likewise it has been estimated that between 1,400 and 14,000 hospital admissions and between 200,000 and 2 million GP consultations for respiratory illnesses may arise as a result of exposure to the ambient NO_2 in the UK each year. Ambient NO_2 is said to contribute to an average of 1-7 extra days of symptoms in asthmatics annually[91].

D6.2 Vulnerable groups

D6.2.1 Defra commissioned a study in 2006 to review recent research evidence on links between air quality and social deprivation in the UK[92]. The analysis for England showed that there is a tendency for higher relative mean annual concentrations of nitrogen dioxide (NO_2) and particulate matter (PM_{10}) in the most deprived areas of the country. This distribution can largely be explained by the high urban concentrations driven by road transport sources, and the higher proportion of deprived communities in urban areas. If exceedences of National Air Quality Standards are considered, the correlation between poor air quality and deprivation is stronger, showing that when the most polluted areas are considered, the greatest burden is on the most deprived communities, and very little on the least deprived.

D6.2.2 The review also identifies age as a key indicator of susceptibility to air pollution: *'children and elderly groups [are] deemed more susceptible to certain health impacts'.*

D6.3 Noise

D6.3.1 Sound is produced by mechanical disturbance propagated as a wave motion in air or other media and noise is therefore unwanted sound. According to the WHO, *"In some situations, but not always, noise may adversely affect the health and well-being of individuals or populations"*[93]. More recently, the WHO has stated that *"Environmental noise is a threat to public health, having negative impacts on human health and well-being"*[94].

D6.3.2 Hearing loss does not occur from typical exposure to environmental noise; it is more commonly associated with occupational exposure to much higher noise levels. In the everyday environment, the response of an individual to noise is more likely to be behavioural or psychological (i.e. non-auditory) than physiological. There are a wide range of non-auditory health effects that may be associated with exposure to environmental noise, although the pathways, strength of association, and possible causal

[91] Searl A. (2004) A review of the acute and long term impacts of exposure to nitrogen dioxide in the United Kingdom. Institute of Occupational Medicine.
[92] Defra, Netcen, Department for Communities and Local Government (2006) National Statistics. Air Quality and Social Deprivation in the UK: an environmental inequalities analysis - Final Report to Department of Environment, Food and Rural Affairs AEAT/ENV/R/2170, June 2006.
[93] World Health Organisation (1995) Community Noise. Edited by B. Berglund and T. Lindvall.
[94] World Health Organisation (2009) Night Noise guidelines for Europe.

mechanisms for these are not fully understood. The WHO[95] recognises the health linkages between environmental noise and disease including cardiovascular disease (mean blood pressure, hypertension, and ischaemic heart disease), sleep disturbance, tinnitus and annoyance. Other Effects on mental well-being include psychosocial effects, mental morbidity, impaired memory, impaired performance[96] communication and learning effects and impaired social behaviour[97]

D6.4 Neighbourhood amenity

D6.4.1 There is no established evidence linking airborne dust such as that from construction sites with adverse health effects. Dust can cause eye, nose and throat irritation and lead to deposition on cars, windows and property[98] therefore impacting on the neighbourhood amenity.

D6.4.2 Noise has been noted to impact on amenity for a local community by causing annoyance. As a result people may experience anger, disappointment, dissatisfaction, anxiety and stress amongst other symptoms[97].

D6.4.3 Notley et al [99] reports the preliminary results emerging from the UK National Noise Attitude Survey undertaken during 2012 which indicate that around 30 per cent of those who hear road traffic noise report being moderately, very or extremely bothered, annoyed or disturbed

D6.4.4 Furthermore families with lower income tend to have lower mobility but greater exposure to the adverse environmental conditions related to transport such as air and noise pollution and road traffic[100].

D7 Access to work and training

D7.1 Access to work

D7.1.1 The Marmot Review (2010)[101], which was commissioned by the DH to look into health inequalities in England, looks at the differences in health and well-being between social groups. The report identified six policy objectives for reducing health inequalities, one of which was to *"create fair employment and good work for all".* The Review identified the importance

[95] World Health Organisation (2011) Burden of disease from environmental noise, Quantification of health life years lost in Europe. World Health Organisation and JRC European Commission.
[96] Evans.G.W. and Lepore.S.J (1993) Non-auditory Effects on Children: A Critical Review. Children's Environments 10(1).
[97] EAA and JRCC (2013) Environment and human health. Report No 5/2013.
[98] GLA (2006). The control of dust and emissions from construction and demolition Best Practice Guidance, Greater London Authority.
[99] . Notley, C. Grimwood, G. Raw, C. Clark, R. Van de Kerckhove and G. Zepidou (2013), The UK national noise attitude survey 2012 - the sample, analysis and some results. Proc. Internoise 2013.
[100] WHO (2012) Addressing the social determinants of health: the urban dimension and the role of local government.
[101] Marmot, M., Allen, J., Goldblatt, P., Boyce, T., McNeish D., Grady, M. and Geddes, I., (2010), Fair society, healthy lives: Strategic review of health inequalities in England post-2010, The Marmot Review.

of work for health: *"being in good employment is protective of health. Conversely, unemployment contributes to poor health"*.

D7.1.2 Many of the documented linkages between access to work and health are often related to the negative impacts of unemployment, rather than the positive impacts of employment. However, it should follow that maintaining high levels of employment opportunities could be expected to be positive in health terms.

D7.1.3 Employment is related to social and psychological well-being; a study commissioned by the Department of Work and Pensions[102] found that *"work meets important psychosocial needs in societies where employment is the norm"* and that *"work is central to individual identity, social roles and social status".*

D7.2 Access to training

D7.2.1 Training is a form of work involving the application of physical or mental effort to improve skills, knowledge or other personal resources which can improve chances of employment and career progression.

D7.2.2 The Marmot review[101] highlighted the links between inequalities in educational outcomes and physical and mental health, and identified *"Reducing the social gradient in skills and qualifications"* as a priority objective to reduce health inequalities. The review made policy recommendations including increasing lifelong learning opportunities, including work-based learning, to improve health outcomes.

D7.2.3 Young adults who undertake training have been shown to have improved somatic and psychological symptoms compared with those who are unemployed. It was noted as particularly important for mental health, general well-being and for the longer-term social development of school leavers[103].

D8 Minimising the use of resources

D8.1.1 Reducing or minimising waste including disposal processes for construction as well as encouraging recycling at all levels can improve human health directly and indirectly by minimising environmental impact, such as air pollution[104].

D8.1.2 Sending out waste from a development site to be sorted or disposed can increase vehicle movements, emissions and cause significant disruption including noise and dust which can contribute towards health problems for residents. See section D6 for further details on the linkages to potential health effects from both air quality and dust, and noise impacts.

[102] Waddell, G., Burton, A. K.(2007) Is work good for your health and well-being? The Stationery Office.
[103] Waddell G and Buton A. K (2006) Is work good for your health and well-being? The Stationary Office.
[104] HUDU (2013). HUDU Planning for Health. Rapid Health Impact Assessment Tool. (NHS) London Healthy Urban Development Unit.

D9 Climate change

D9.1.1 Climate change is the projected rise in global temperatures as a result of anthropogenic development which is likely to contribute to continued changes in weather patterns, rising sea levels and increased frequency and intensity of extreme weather events.

D9.1.2 The most recent UK Climate Projections (UKC09) have stated that the UK should expect a shift generally towards wetter winters and a greater proportion of precipitation to fall as heavy events. There is a predicted rise in temperature and greater likelihood of drier summers has been suggested, but the various projections cover a wide range of outcomes from climate change.

D9.1.3 There are direct impacts linking the environment and health such as heat-related effects, flooding and poor air quality and indirect impacts such as fuel poverty, access to green space and disruption to services and access such as healthy food.

D9.1.4 Many of the health impacts are therefore interrelated with the health determinants and associated health impacts previously mentioned.

D9.2 Vulnerable groups

D9.2.1 Chalmers et al[105] concluded that certain people are expected to be the most vulnerable to climate change and this includes:

a. poorly housed or non-mobile individuals;

b. the population living in high risk places such as flood zones and coastal locations; and

c. socially isolated or those individuals otherwise unable to adapt to change.

D9.3 Heat-related effects

D9.3.1 Increasing temperatures would increase heat-related mortality which currently accounts for 1,100 premature deaths in the UK, with London being the area most affected[106]. This could further increase in the future in London, primarily as a result of the urban heat island effect.

D9.3.2 There are also particularly vulnerable groups who are at a greater risk of serious harm from heat extremes including babies, young children, the elderly, people taking diuretic drugs and those suffering from dementia, respiratory ailments, neurological conditions or diabetes[107].

[105] Chalmers H, Pilling A and Maiden T (2008) Adapting to the Differential Social Impacts of Climate Change in the UK.
[106] London Climate Change Partnership (2012) Linking environment and health: A resource for policy and decision makers working on Joint Strategic Needs Assessment.
[107] Defra (2012) UK Climate Change Risk Assessment: Health Sector Report.

D9.4 Allergens, infectious disease and vectors for disease

D9.4.1 Climate change can influence allergens, particularly allergenic plants by changing flowering times and distribution leading to negative impact for allergic people by lengthening the allergy season[108].

D9.4.2 The Inter-governmental Panel on Climate Change (IPCC)[109] also reported that the distribution and range of some infectious disease vectors along with the seasonal distribution of some allergenic pollen species has the potential to negatively impact on health.

D9.5 Increased precipitation, rising sea levels and flooding

D9.5.1 The Health Protection Agency[108] outlined the direct and indirect health effects of flooding. Direct effects include physical trauma, injuries and drowning. Indirect effects include damage from infrastructure, water supplies, displacement and disruption to people's lives.

D9.5.2 Flooding also has negative effects on mental health and well-being by increasing cases of anxiety, depression and sleeplessness after a flooding event[110].

D9.5.3 Rising sea levels and increased sea temperatures associated with climate change may also increase marine pathogens and harmful algal blooms which are harmful to human health[107].

D9.5.4 Increased precipitation, rising sea levels and flooding can also increase the risk of contamination to water supplies[108] however this is generally a low risk in the UK.

D9.6 Energy Recovery Facilities

D9.6.1 There tend to be public and local community concerns about the potential adverse health impacts of municipal solid waste incinerators, energy recovery facilities and EfW facilities (MSWI/ERF/EfW). A reasonably large number of studies have been conducted over the last thirty years and many reviews of primary research have also been undertaken.

D9.6.2 Ramboll[111] have recently reviewed key literature on the health impacts of MSWI/ERF/EfW. While there have been associations identified in research on older facilities the research on newer facilities over the last 10-20 years has found that no definitive associations can be made between MSWI/ERF/EfW and adverse health impacts. This has partly been due to the inability of studies to fully take account of socio-economic factors and the lower levels of emissions compared to the emissions produced by motor vehicle traffic and other industrial facilities e.g. power stations.

[108] Health Protection Agency (2012) Health Effects of Climate Change in the UK 2012
[109] IPCC (2007) IPCC Fourth Assessment Report: Climate Change 2007 (AR4) - Working Group II Report 'Impacts, Adaptation and Vulnerability'.
[110] Ahern M, Kovats R.S, Wilkinson P, Few R and Matthies F (2005) Global Health Impacts of Floods: Epidemiologic Evidence. Epidemiologic Reviews 27
[111] Ramboll (2014) North London Heat and Power Plant Health Impact Literature Review.

D9.6.3 The conclusions of the Ramboll report which are in line with other reviews of the literature are that *"MSW Incinerator contribution to local air pollution levels is minor in comparison to other activities such as traffic, local heating sources or emission intensive industries".*

D9.6.4 Older incinerators have been a potential source of pollution and may have contributed to adverse health impacts. However, emissions from modern, well operated ERFs in Europe have significantly decreased over the past decades in response to increasingly stringent regulations.

D9.6.5 No direct correlations between emissions from modern ERFs and adverse health impacts have been established. While potential adverse health impacts of MSWI/ERFs on the population living in the vicinity of the facilities cannot be completely discounted, the fact that it could not be detected strongly suggests that the impact is negligible.

D9.6.6 In 2009 The Health Protection Agency (now PHE, which has statutory responsibility to advise Governments and Local Governments on the potential health impact of incinerators) reviewed studies examining the suggested association between MSWIs emissions and effects on human health. PHE concluded that *"Modern, well regulated incinerators make only a small contribution to local concentrations of air pollutants. It is possible that such a small additions could have an impact on health but such effects, if they exist, are likely to be very small and not detectable."*

D9.6.7 These findings are supported by research commissioned by the Environmental Services Association, published in 2012[112]. This research refutes previous studies, which have stated that reduced air quality around EfW facilities is associated with cancer risk, infant mortality, congenital abnormalities and respiratory disease. The paper concludes that *"…it is concluded that emissions from EfW facilities would not be expected to give rise to any significant effects on health. Emissions from EfW facilities as currently operated in the UK are substantially lower than those from facilities operating prior to the implementation of the Waste Incineration Directive"*.

D9.6.8 PHE has recently commissioned a study to further extend the evidence base as to whether emissions from modern ERFs affect human health. It is expected that this study will further support/confirm PHE's 2009 study conclusions.

D9.6.9 However, there is still potential for communities to be concerned and worried about the potential health impacts despite the scientific evidence to date. Heightened perceptions of risk and concern can lead to reduced well-being and to an increase in anxiety and depression in some people. Community concern can often be addressed through community engagement, resolving community complaints promptly and being open about the monitoring and mitigation systems in place and any breaches of public health and environmental standards that occur.

[112] AEA Technology plc (2012) Review of health effects of EfW facilities

D9.7 Vulnerable groups

D9.7.1 As the main issue from of MSWI/ERF/EfW is air pollution the vulnerable groups are similar to that for air pollution from air quality changes from road traffic and other sources i.e. children and elderly groups.

D9.7.2 It is more difficult to identify which groups within a local community are more likely to be concerned about the perceived health impacts or risk of MSWI/ERF/EfW as these are likely to cut across socio-economic, gender and disability categories. However, families with young children and individuals with existing respiratory conditions are often more likely to be concerned.

Series 05 Technical Documents

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