
NORTH LONDON WASTE AUTHORITY

NORTH LONDON HEAT AND POWER PROJECT

DESIGN AND ACCESS STATEMENT

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

AD05 . 07

Arup | Grimshaw

Revision 0 |

October 2015

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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1.1 INTRODUCTION

This Design and Access Statement (DAS) has been prepared to support North London Waste Authority's (the Applicant's) application (the Application) for a Development Consent Order (DCO) made pursuant to the Planning Act 2008 (as amended).

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) 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.

This Statement, produced pursuant to Regulation 5 (2) (q) of the Applications: Prescribed Forms and Procedure Regulations 2009 (as amended) and Appendix 1 to the Planning Inspectorate Advice Note 6 (June, 2012) should be read alongside the other information that has been submitted with the Application, in accordance with the statutory requirements set out in Regulation 5, 6 and 7 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended).

1.2 PURPOSE OF THIS DAS

No specific statutory requirement is set out in the Planning Act 2008 (as amended) for the production of a DAS to support DCO applications. This DAS has therefore been prepared in line with guidance set out in:

- a. National Policy Statements for Energy (NPS EN-1)¹ and for Renewable Energy Infrastructure (NPS EN-3)² outline criteria for good design which should be followed in applications for energy infrastructure including functionality, fitness for purpose, sustainability alongside good aesthetics. Section 4.5 of NPS EN-1 sets out the requirement to demonstrate in application documents how the design process was conducted and how the proposed design evolved;
- b. In addition, the Edmonton EcoPark Planning Brief Supplementary Planning Document (Edmonton EcoPark SPD)³ (Paragraph 4.2.16) and Core Policy 38 of LB Enfield's Core Strategy⁴, set out a requirement for the production of a DAS for any proposed development on the Edmonton EcoPark; and
- c. Section 9 of the Town and Country Planning (Development Management Procedure) (England) (Amendment) Order 2015 sets out the requirements for DAS preparation for planning applications under the Town and Country Planning Act 1990, alongside National Planning Practice Guidance (NPPG)⁵ (Paragraphs 030 to 034) published in March 2014.

In line with this guidance, this DAS explains the design principles and concepts, the steps taken to appraise the context and the design development and response to context as well as the approach to access.

It should be noted that in respect of design the Application is seeking consent for a series of parameters that define the location, size and shape of the proposed buildings alongside design principles that would guide the detailed appearance of the Project. The Application is based on the parameters set out in the Book of Plans, which identify:

- a. Works Zones for each work or group of works (to establish the area in which the development can be located); and
- b. Building Envelopes (to establish the maximum building length, width, height and footprint).

This approach is proposed as there are some aspects of the Project design that require design flexibility and cannot be finalised in advance of the detailed design which would be undertaken following appointment of a contractor should the DCO be granted. As such, all illustrations provided in this DAS (see any figure name prefixed with 'Illustrative') should be read as an expression of how the parameters and proposed design principles could be delivered.

The Design Code Principles (AD02.02) provide further design guidance to ensure that the Project is implemented consistently and in accordance with the design objectives established in this DAS, and as considered within the Application. The proposed design parameters set the framework for detailed design and would be used as the guiding framework for discharge of the relevant requirements in the DCO. This approach has been proposed to provide certainty to all parties as to the scope of the detailed design.

¹ Department of Energy and Climate Change (2011) Overarching National Policy Statement for Energy (EN-1)

² Department of Energy and Climate Change (2011) National Policy Statement for Renewable Energy Infrastructure (EN-3)

³ LB Enfield (2013) Edmonton EcoPark Planning Brief Supplementary Planning Document to the Local Plan

⁴ LB Enfield (2010) Enfield Plan Core Strategy 2010-2025

⁵ Department for Communities and Local Government (2015) National Planning Practice Guidance

1.3 DAS STRUCTURE

In addition to this introduction, this DAS comprises the following sections:

- a. Section 2 Project brief - summarises the background to the Project, the Applicant's objectives for waste management in north London and the Project brief;
- b. Section 3 The Project - summarises the key Project components and operational requirements;
- c. Section 4 Site and context – describes the Application Site as existing, including the Edmonton EcoPark and Temporary Laydown Area, and its wider context including key contextual elements which have informed the design;
- d. Section 5 Design objectives and process – describes the design objectives that respond to the context and that have informed the design as well as the iterative design process that has shaped the Project; and
- e. Section 6 The proposals – outlines the proposals for key components of the Project and design development.

1.4 THE APPLICANT

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) as shown in Figure 1.1.

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 existing EfW facility at the existing Edmonton EcoPark and landfill outside of London.

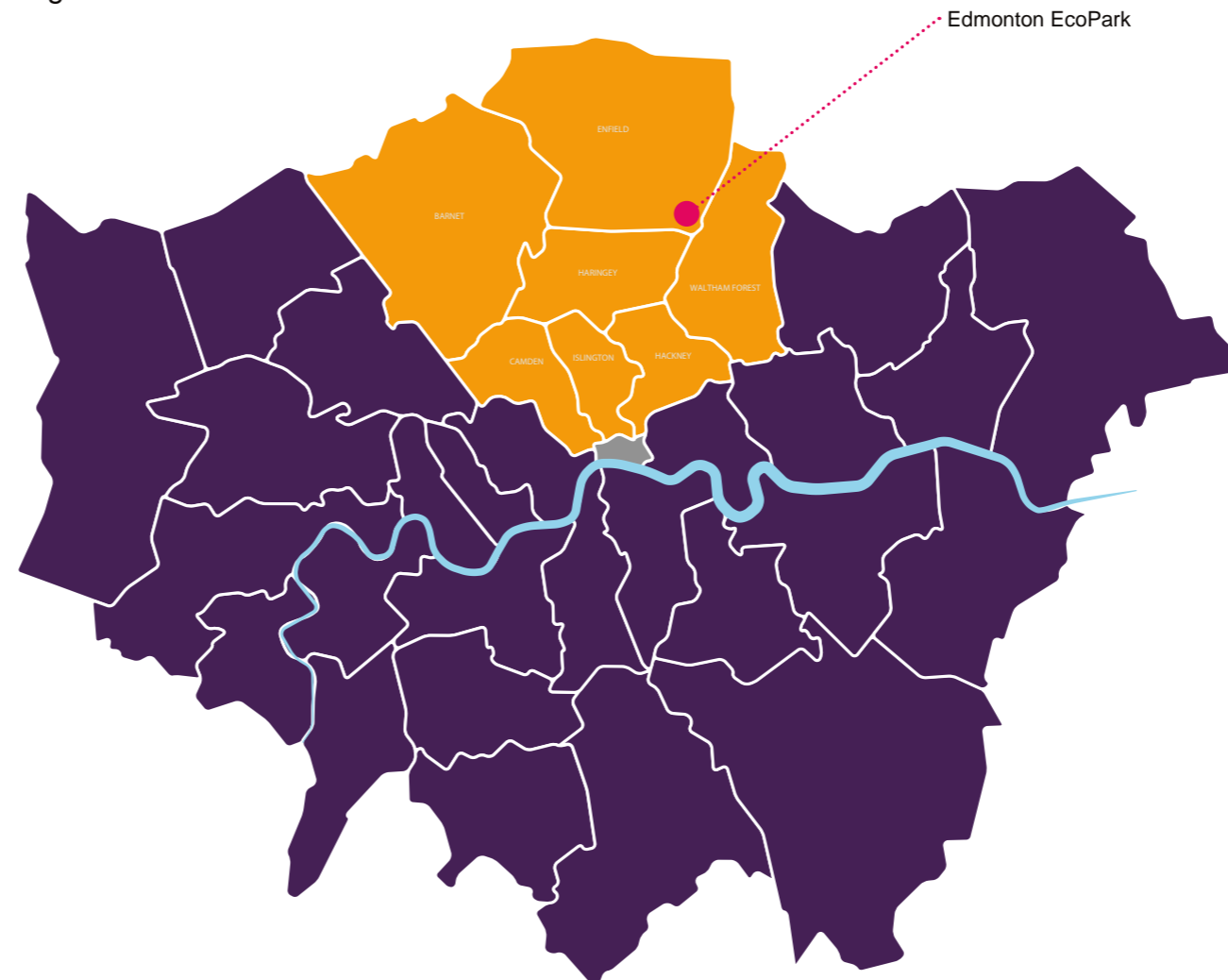


Figure 1.1: North London Waste Authority (Constituent Boroughs)

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2.1 CONTEXT

Working with the Constituent Boroughs, North London Waste Authority (NLWA) encourages and promotes the three messages of reduce, re-use and recycle through waste prevention work in the community.

In 2012/13 households in north London achieved a re-use, recycling and composting rate of approximately 32 per cent. By 2020, NLWA wants at least half of all north London's waste to be recycled.

Even if this 50 per cent target is reached there would still be waste left over that needs to be dealt with. NLWA wants to divert waste currently sent to landfill and instead use it to generate power to homes and businesses.

Landfill isn't a long-term option because:

- it produces methane which is a potent greenhouse gas;
- landfill sites are almost all outside London; and
- taxation makes it very expensive.

Today, waste from households in north London is collected by the Constituent Boroughs (the waste collection authorities). Recycling is delivered either directly or dropped off then delivered in larger vehicles to a materials recovery recycling facility where it is sorted before being passed on to a reprocessor such as a paper mill. North London's recycling either goes to a recycling facility in Bow in east London or to a recycling facility in the London Borough of Enfield (LB Enfield) for sorting. Garden and kitchen waste from six of the Constituent Boroughs is delivered directly to a composting plant at the Edmonton EcoPark. The composting facility is run by LWL, which is a company wholly owned by NLWA. Enfield's garden and kitchen waste is delivered elsewhere.

Household waste that isn't recycled or composted is delivered to the existing EfW facility at the Edmonton EcoPark, where it is used to generate electricity, enough to power 72,000 homes. Any waste that cannot be processed in the existing EfW facility is sent to landfill sites outside of London.

⁶ Mayor of London (2015) The London Plan: The Spatial Development Strategy for London Consolidated with Alterations since 2011

⁷ North London Waste Authority (2015) Draft North London Waste Plan Regulation 18

2.2 BRIEF

The Project includes:

- an ERF and associated buildings, plant and works;
- relocation of any existing facilities to be retained on the Edmonton EcoPark; and
- demolition of the existing EfW facility and safeguarding of that area of the Edmonton EcoPark for future waste development.

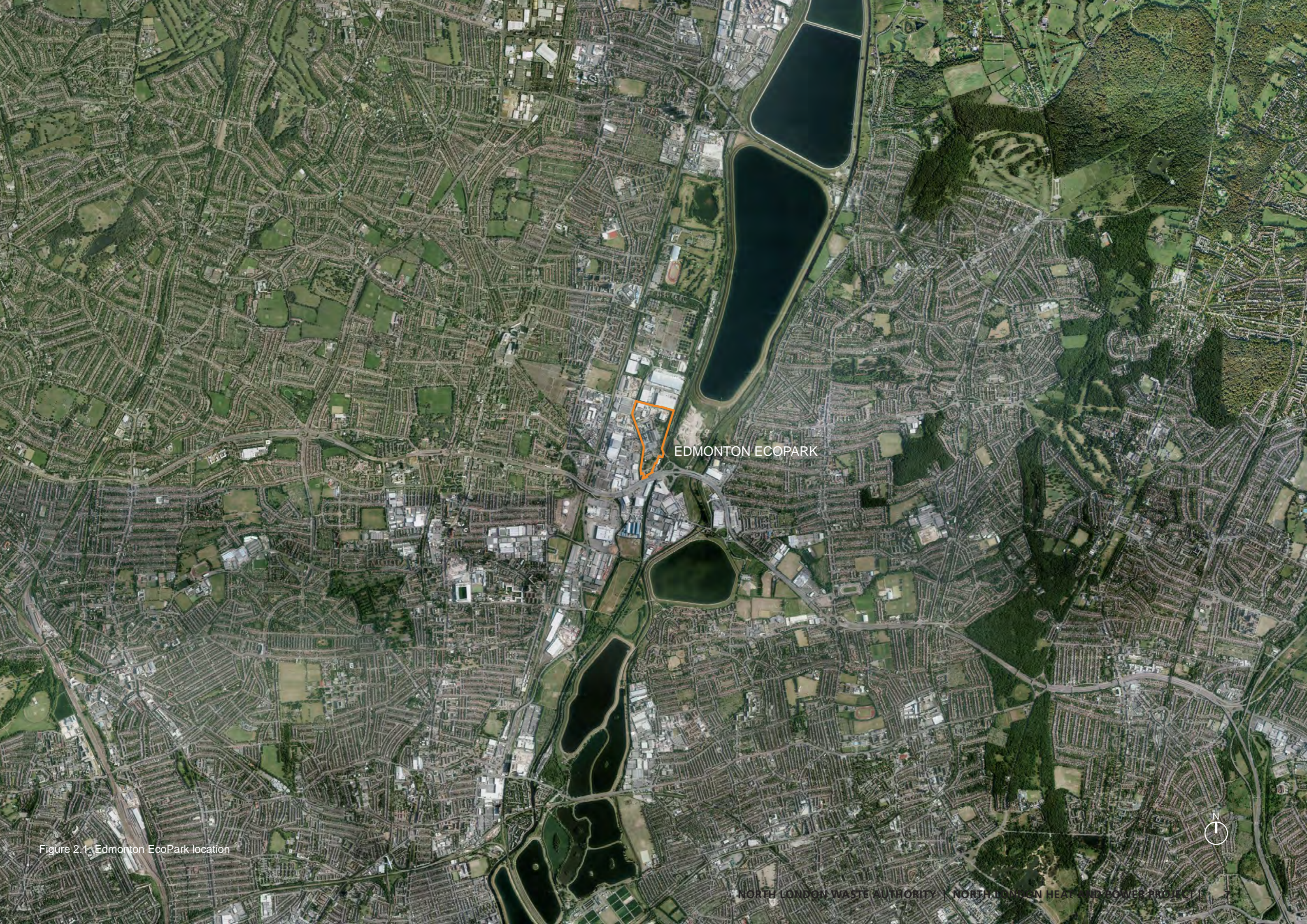
The Edmonton EcoPark is a site of about 16 hectares which is used for waste management and is protected by planning policies as a waste site. Current waste management activities on the Edmonton EcoPark include the existing EfW facility; an In-Vessel Composting (IVC) facility; a Bulky Waste Recycling Facility (BWRF) and a Fuel Preparation Plant (FPP).

The existing EfW facility has served north London well for almost 45 years and has diverted more than 21 million tonnes of the waste which would have otherwise gone to landfill. It's had multi-million pound investments over the decades but it is likely to reach the end of its useful life in around 10 years.

A site selection exercise (refer to the Alternatives Assessment Report (AD05.03) for further details) identified the Edmonton EcoPark as the most suitable site for a new ERF as it is identified as an existing waste site in the London Plan⁶ and draft North London Waste Plan (NLWP)⁷, is available to the Applicant for use for waste management purposes, and is of sufficient size to accommodate new facilities while ensuring continuity of waste treatment during the period of construction of new facilities.

Waste forecasts for the future show that the amount of waste created in north London will increase. Even reaching recycling targets, the proposed facility would be able to manage up to 700,000 tonnes of waste a year at a peak level. In this way, the proposed ERF would safeguard an existing waste management site and help provide a solution to the whole of north London's waste volume while reducing the need for fossil fuels for energy generation.

The replacement facility would be built using today's most advanced and proven technology. It would be one of the most effective of its kind by current standards and have even better emission controls than the existing EfW facility.



EDMONTON ECOPARK

Figure 2.1: Edmonton EcoPark location



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3.1 THE PROJECT

The Project would replace the existing EfW facility at the Edmonton EcoPark, which is expected to cease operations in around 2025, with a new and more efficient ERF which would produce energy from 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 recovery operation rather than disposal. Figure 3.1 shows an illustrative schematic of the ERF process. The components and operational requirements of the proposed ERF are described in Section 3.2.

The DCO is being sought for the works set out in the Book of Plans (AD02.01).

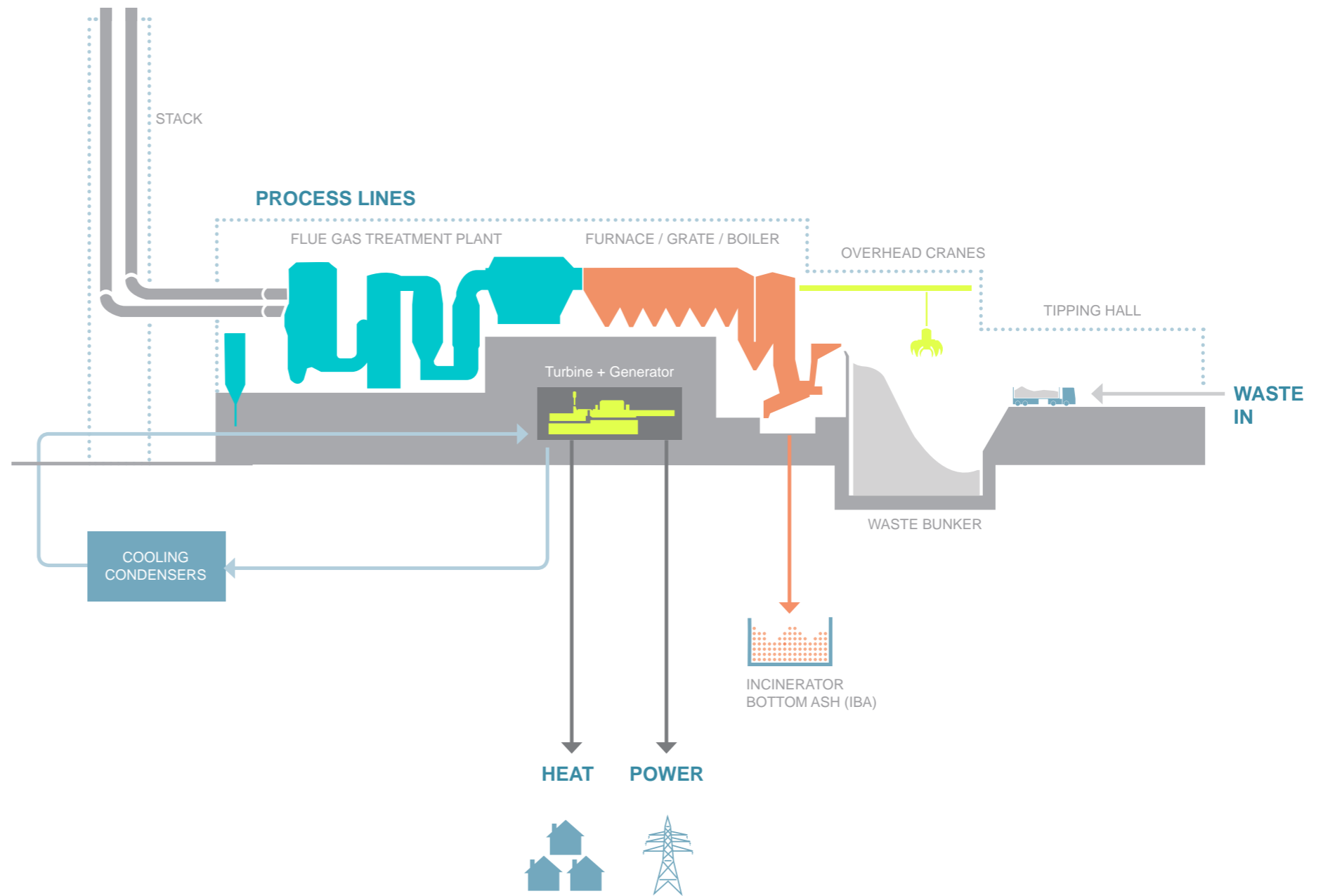


Figure 3.1: ERF schematic

3.2 PRINCIPAL DEVELOPMENT

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 70MWe (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 residual 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.

Further details of the core components follow.

Tipping hall

The tipping hall is the starting point for the process where the waste (now regarded as fuel) would be delivered to the proposed ERF and emptied into the storage bunker.

Refuse collection vehicles (RCVs) would enter the proposed ERF along an access ramp to bring the RCVs to the elevated tipping hall where the waste is delivered into the waste bunker. One way traffic flow is maintained within the tipping hall with vehicles exiting via the down ramp to rejoin the internal circulation route. Access to and from the ramps would be controlled and queuing on the ramps would be avoided or minimised.

Design of the tipping hall would control odour, for example by fast acting roller shutters at the tipping hall entrance and exit doors, shutter doors on the tipping bays from the tipping hall to the bunker, and managed ventilation within the tipping hall to provide air intake through louvre openings and exhaust air flowing into the bunker.

Bunker and cranes

The waste storage bunker serves a number of purposes as follows:

- a. receive waste and enable effective mixing of wastes (by overhead cranes) to create a homogeneous fuel that facilitates stable operations and optimisation of plant performance;
- b. maintain sufficient fuel in the bunker for continuous plant operations; and
- c. enable continued waste reception in the event of plant shutdown, both planned and unplanned.

The hydraulic volume of the bunker would be of sufficient capacity to hold a minimum of five days of processing capacity with the plant operating at full capacity. This provides the Applicant with sufficient space to adequately mix the waste as well as providing a greater buffer/capacity to manage both waste deliveries and plant shutdown related disruptions.

Two overhead grab cranes would be used to feed waste from the bunker into the feed hoppers. Each crane would have one grabber and would be able to:

- a. pick up material in the refuse bunker and transfer it into the boiler feed hoppers;
- b. stack the mixed waste within the bunker for feedstock management;
- c. keep the tipping areas clear of waste to enable continuous reception of waste; and
- d. regularly move/turn the waste to avoid decomposition and compaction.

Grate and boiler

Fuel would be deposited into the feed hoppers by the grab cranes. From there, fuel would be guided from the hopper into

the furnace through the feed chutes. The feed chutes would be hydraulically operated and feed fuel onto the grates in an even layer and control the amount of waste supplied to the grate.

The moving grates would transport fuel supplied from the feed hoppers at one end to the bottom ash extraction system at the other end, ensuring that the fuel is thoroughly mixed and burnt out while it travels along the length of the grates. The grates would be capable of treating fuel with varying calorific value, meeting combustion requirements and producing the required bottom ash quality. Grate designs would be such that the accumulation of unburned material under the grate is prevented.

Incinerator Bottom Ash (IBA) resulting from waste combustion 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 slag pusher and a conveyor belt.

IBA would be transported to an off-site treatment area for metal recovery and processing into construction aggregates.

A second waste combustion residue would be the finer ash in the combustion gases that would be collected in the boiler, and is thus known as boiler ash. Boiler ash is mixed with either bottom ash or the air pollution control (APC) residue from the Flue Gas Treatment (FGT) process which would then be transported off-site for suitable management by a licensed competent contractor.

3.2 PRINCIPAL DEVELOPMENT

Heat and power generation

The boilers would be designed as a natural circulation steam generator, capturing the heat energy from the combustion gases through a series of boiler tubes filled with water.

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 potential future heat or energy networks. The turbine would be an extraction condensing type turbine, as it combines high efficiency with robustness and a compact design. In line with current best practice, there would be a single common turbine for the two boiler lines.

Air or water cooled condensers

The proposed ERF would be equipped with an Air Cooled Condenser (ACC). The condenser would be designed for the following modes of operation:

- steam turbine operation (with varying ambient temperatures);
- bypass operation; and
- combined steam turbine and bypass mode.

With an ACC the low pressure exhaust steam from the turbine would pass through a large duct to rows of condenser units cooled by air, forced through heating surfaces by large fans. The condensate would be collected in a tank and pumped back to the turbine building. This condensing method only has minor water requirements as there are no evaporative losses. Therefore, wastewater disposal requirements would be limited to that needed for cleaning of heating surfaces. An ACC system produces no visible plume. This is because an ACC system is an enclosed system and therefore no moisture is lost to the surrounding atmosphere.

Flue gas treatment and chimney stack

Waste combustion results in the production of gases mainly consisting of water vapour, carbon dioxide and excess air. This mixture of combustion gases is termed 'flue gas' and carries components including acid gases, organic substances, heavy metals and fly ash particles. Although these components represent a much smaller part than the water, carbon dioxide or excess air, the ERF would treat flue gases to mitigate the impact of pollutants.

Flue gas technologies would be employed that offer the highest degree of air emission abatement in order to minimise emissions into the atmosphere which are strictly controlled. This would comprise either a wet or combined flue gas treatment solution together with selective catalytic reduction (SCR) Nitrogen Oxides (NOx) abatement.

Both wet and combined FGT plants achieve the same emission limit values which are far below emission limits required by the European Union (EU) Industrial Emissions Directive (IED).

Treated flue gas would be discharged to the atmosphere via a 100-105m (above ground level) tall stack made of two separate flues.

Plume visibility from the proposed ERF stack depends on ambient meteorological conditions, i.e. air temperature and humidity, and flue gas humidity and temperature at stack outlet. A visible plume is formed when the temperature of the ambient air mixed with the cleaned flue gas is lower than the saturation temperature of the water vapour emitted with flue gas. The proposed ERF is likely to generate a visible plume for some periods of the year.

Electricity network connection

The proposed 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.

Upgrade works would be required to the electricity connection to the National Grid. These works would be pursued separately by UK Power Network (UKPN) under their statutory powers and therefore they are not included in the Application Site.

ERF offices

The ERF facility would be operated from a central control room with a view over the waste storage bunker to monitor and control ERF operations. The central control room would be located within the ERF offices and would also have live views from a suite of cameras feeding pictures from across the ERF.

The ERF offices would also provide office and support facilities for ERF staff and Edmonton EcoPark administration.

Visitor facilities

A route through the ERF would be made available for the general public and children/adults from schools, other educational establishments and/or organisations. The route would afford views towards the plant, bunker and tipping hall and access to the control room.

3.3 ASSOCIATED DEVELOPMENT

The following elements are proposed as associated development:

WORKS NO.1B – WORKS REQUIRED TO PROVIDE BUILDINGS, STRUCTURES, PLANT AND EQUIPMENT NEEDED FOR THE OPERATION OF THE ERF:

- 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).

WORKS NO.2 – THE CONSTRUCTION OF A RRF COMPRISING THE FOLLOWING BUILDING, STRUCTURES AND PLANT:

- i) a recycling and fuel preparation facility;
- ii) a reuse and recycling centre;
- iii) offices and staff and visitor welfare facilities;
- iv) odour abatement and dust suppression plant and equipment; and
- v) fire control water tank(s), pump house and equipment.

WORKS NO.3 – THE CONSTRUCTION OF A BUILDING TO PROVIDE VISITOR, COMMUNITY AND EDUCATION FACILITIES, OFFICE ACCOMMODATION, AND A BOAT CANOPY.

WORKS NO.4 – UTILITIES AND INFRASTRUCTURE WORK, LANDSCAPING, ACCESS, SECURITY AND LIGHTING, AND WEIGHBRIDGES:

- i) With regard to the following
 - a. potable water;
 - b. wastewater;
 - 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 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 the RRF.

WORKS NO.5 – WORKS FOR THE CREATION OF THE TEMPORARY LAYDOWN AREA AND ITS TEMPORARY USE:

- 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.

WORKS NO.6 – SITE PREPARATION AND DEMOLITION WORKS:

- i) demolition of existing buildings, structures and plant excluding demolition of the EfW facility;
- ii) construction of a temporary ash storage building;
- iii) realignment of the exit ramp from the existing EfW facility;
- iv) works to prepare the land for the construction of works numbers 1a, 1b, 2, 3, 4 and 5.

3.3 ASSOCIATED DEVELOPMENT

WORKS NO.7 – 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.

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).

RESOURCE RECOVERY FACILITY

For waste not delivered direct to the ERF, the RRF would receive and sort a variety of wastes to recover items for reuse, recycling or further processing thereby maximising diversion from landfill. Equipment would be used to remove some recyclables from the waste (e.g. metals) and the remaining waste suitable for thermal treatment would be transported to the ERF for energy recovery. Collected food and garden wastes would also be received and bulked for transport to composting facilities (off-site).

The facility would have capacity to manage around 386,200 tonnes of waste annually.

The RRF would encompass the following areas:

- a. Recycling/Fuel Preparation Facility (RFPF);
- b. Reuse and Recycling Centre (RRC) for public use;
- c. staff facilities; and
- d. associated odour abatement and dust suppression plant, a fire water tank and pump house.

Recycling/Fuel Preparation Facility:

The RFPF would consist of a reception hall; sorting/preparation areas and storage areas.

Discrete areas for different material streams and sources would be provided, for example, trade waste, RRC waste, bulky waste, green waste etc. The RRF would use movable push walls for long term design flexibility.

Bulky waste containing materials suitable for recycling would be delivered to the RFPF where it would be sorted and stockpiled. The RFPF would include a series of bays that would be suitable for tipping, storage, and loading of pre-sorted waste, with appropriate access for loading shovels and other required vehicles for the collection of waste with:

- a. recyclable waste being transferred to a reprocessing facility; and
- b. waste unsuitable for combustion being transported to a landfill for disposal.

Waste that is suitable for combustion after pre-treatment would be deposited in the fuel preparation area for sorting and size reduction. After shredding, waste suitable for the ERF would be moved to the waste bunker.

The fuel preparation area would handle and shred waste, creating the potential for dust and odour. Food and gully wastes may be particular sources of odour. Control systems would include a combination of:

- a. dust suppression misting system;
- b. de-duster unit (e.g. external tower system); and
- c. odour control such as carbon filters.

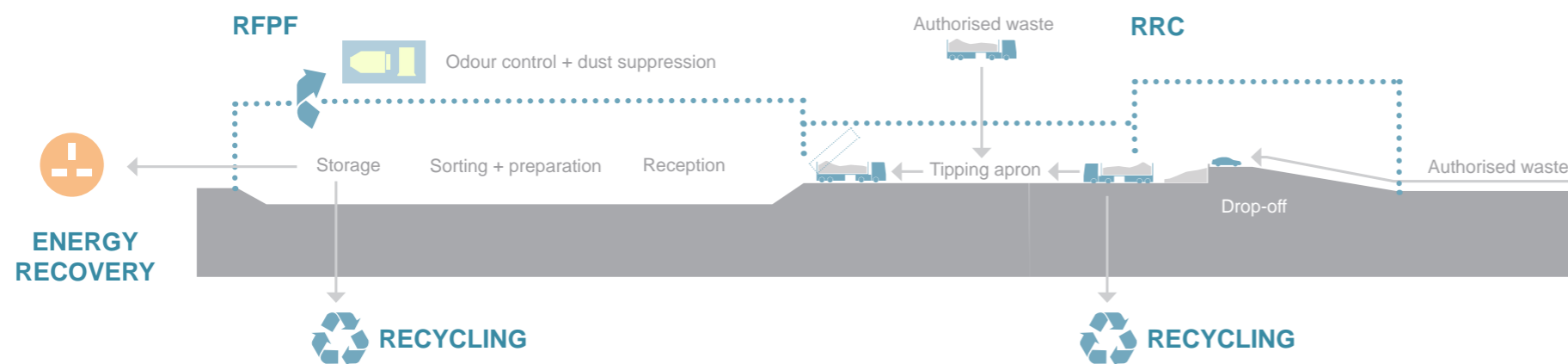


Figure 3.2: RRF schematic

Reuse and Recycling Centre

The RRC would receive waste from the general public and small traders. The RRC has been sized to handle approximately 8,000 tonnes of waste per year.

The RCC would comprise a main reception area with sufficient space for the safe circulation of vehicles and pedestrians, parking areas. A separate access route and entry would be created for the RRC.

The public area would be elevated above the operational area and users would deposit waste through the chutes into containers or bays at the base of the chutes. The containers would be arranged in such a way to permit the removal and transport of containers without impacting on the public's ability to use the RRC area.

A roll on-roll off (RoRo) container lorry or front end loader would remove the containers/empty the bays as necessary. Material would be deposited in an appropriate bay in the storage area of the RRF. RRC users and members of the public would be isolated from container handling operations.

Staff facilities

Offices and welfare areas for administration and operational staff would be provided within the new facility. Staff facilities would have views into both the public and operational areas for ease of management and control.

ECOPARK HOUSE

EcoPark House would be a two storey building used to accommodate the requirements of non-operational staff, visitors and the Edmonton Sea Cadets. The building would provide for visitor, community and education facilities, space for offices, and a base for the Edmonton Sea Cadets including a launch into the River Lee Navigation. Each component of EcoPark House is as follows (and shown in Figure 3.3):

Visitor, community and education facilities

EcoPark House would offer an opportunity to provide a learning programme related to the issues of waste and its impact on the environment. The facility would feature a dedicated lecture room and exhibition space to be used for hosting tours and making presentations on sustainable waste management and energy generation.

Edmonton Sea Cadets

The Edmonton Sea Cadets are part of the national Sea Cadets organisation. This is a non-service organisation with charitable status which works in partnership with the Royal Navy.

The Edmonton Sea Cadets' existing facility is located within the Edmonton EcoPark at the Sea Cadets facility T.S. Plymouth and is accessed through the Application Site. T.S. Plymouth is a single storey shed currently located in the east of the Application Site adjacent to the River Lee Navigation.

Within EcoPark House a new facility would be provided for the Edmonton Sea Cadets with continued access to the wharf area (as they currently have). Facilities for the Edmonton Sea Cadets would include a drill hall shared with other community users, classrooms, offices, wardroom (staff room), toilets, showers, changing rooms, yard storage for canoes, toppers and dinghies (secure) and boatshed on the ground floor.

Boat canopy

Provision is made for construction of a boat canopy to service the requirements of the Edmonton Sea Cadets.

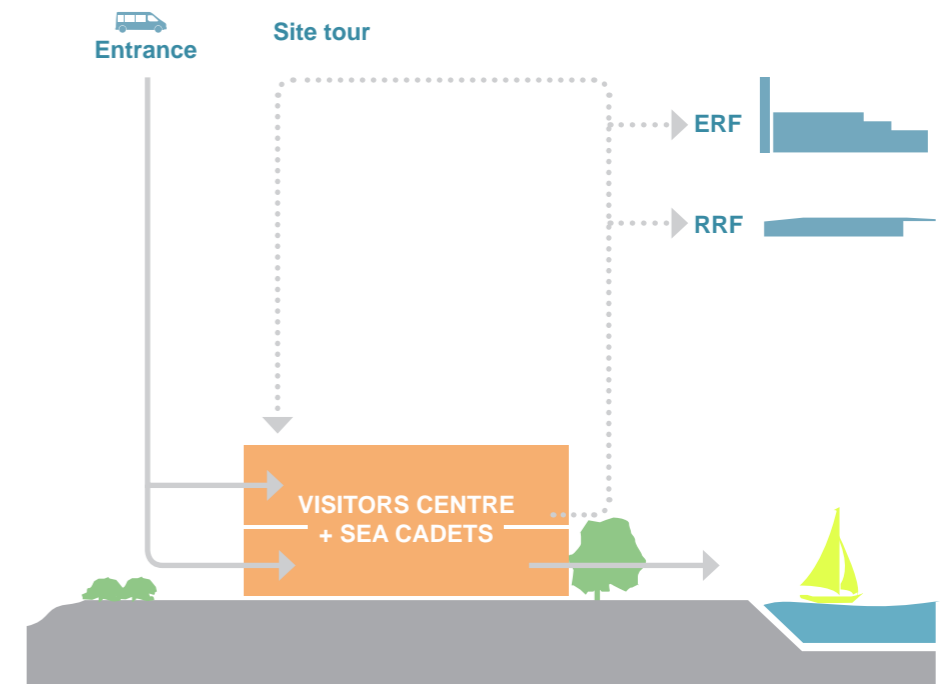


Figure 3.3: EcoPark House schematic

3.3 ASSOCIATED DEVELOPMENT

OTHER:

EfW facility decommissioning and demolition

The ERF would replace the existing EfW facility and the Applicant is committed to removing the existing facility once the ERF is operational. Since the decommissioning and demolition of the EfW facility require consent they have been included in the Application.

Utility works

The following utility works are proposed:

- diversion of the Chingford and Angel sewers to move the sewer junction point further north;
- connection to the main sewer;
- new gas supply and gas compound;
- new raw water intake from Deephams Sewage Treatment Works outfall;
- upgrade of the electricity connection to the National Grid;
- minor internal site utility works; and
- construction of surface water pumps, pipework and water attenuation tanks to provide storage on site.

Landscape works

Permanent hard and soft landscaping, including utilisation of areas of cut and fill to create new landform, marginal planting along Enfield Ditch, native and ornamental tree planting and shrub planting.

Circulation and parking works within the Edmonton EcoPark

- construction within the Edmonton EcoPark of new internal circulation routes, incorporating new weighbridges;
- layout of up to 132 new car parking spaces (including up to 20 accessible/enlarged accessible spaces, up to 26 spaces with charging for electric vehicles and up to 13 spaces with potential for charging of electric vehicles); up to 3 coach parking spaces, up to 6 motorcycle spaces and up to 26 bicycle spaces;

- installation of two cycle shelters to provide secure, covered parking for staff and visitors; and
- pedestrian routes across the Edmonton EcoPark for visitors and employees, with the potential for a covered walkway.

Artificial lighting, site security and means of enclosure works

- erection of gatehouses at each Edmonton EcoPark entrance. The primary gatehouse would be located at the main site entrance (Advent Way). The other gatehouses would be located at the Lee Park Way and Deephams Farm Road access to the Edmonton EcoPark;
- installation of a site perimeter fence along the northern, eastern and southern boundaries of the Edmonton EcoPark;
- installation of a fence within the Edmonton EcoPark to separate the public and operational site areas; and
- installation of artificial lighting and CCTV associated with the Project. Lighting would also be provided for the new Lee Park Way access for vehicular, pedestrian and cycle paths along new route (from Advent Way to the Lee Park Way access), and for operational vehicles entering from the new Deephams Farm Road access.

Site access and street works

- widening of the existing access point from Advent Way. This access would continue to be used by the majority of operational waste vehicles transporting waste to and from the Edmonton EcoPark;
- creation of a new Lee Park Way access including a new bridge over Enfield Ditch. This access would be used during construction for construction staff to access the Edmonton EcoPark and during operation by staff and members of the public visiting the Edmonton EcoPark;

- associated works/improvements to Lee Park Way incorporating: road and drainage improvements, signage, lighting and CCTV, and the installation of new barriers;
- improvements to Deephams Farm Road to create the new Deephams Farm Road access into the Edmonton EcoPark, comprising: road and drainage improvements, lighting and CCTV, and installation of a new barriers at the northern end of Deephams Farm Road. This new Deephams Farm Road access would be used by some operational waste vehicles transporting waste to and from the existing EfW facility and proposed ERF and RRF and during construction; and
- possible resurfacing to roads within the Application Site to ensure that they are suitable for the proposed use.

Creation of a Temporary Laydown Area

A Temporary Laydown Area would be required due to the constrained space on the Edmonton EcoPark for construction and the need to maintain continuous operation of waste management during development.

The Temporary Laydown Area would comprise parking spaces; temporary accommodation (offices, staff welfare facilities), storage/laydown, creation of vehicular, cycle and pedestrian access from Lee Park Way, and temporary flood water attenuation storage.

Works to restore the current landscaping in the area used for the Temporary Laydown Area, including removal of the temporary vehicular, cycle and pedestrian access into the Temporary Laydown Area from Lee Park Way.

4.1 INTRODUCTION

NPS EN-1 recognises the importance of high quality and inclusive design for energy projects that is sensitive to place, and which delivers functionality (fitness for purpose and sustainability) as well as aesthetics (contribution to the quality of the area in which it would be located).

The development of the Project design was based on an understanding of the existing local character and circumstances. This section describes the principal features and characteristics of the existing Edmonton EcoPark and its context that have informed the definition of drivers that the design has responded to.

4.2 APPLICATION SITE

The Application Site, as shown on the Application Site Location Plan- North London Context (A_0001) and Application Site Location Plan - Local Context (A_0002) in the Book of Plans (AD02.01), 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 site is N18 3AG and the grid reference is TQ 35750 92860.

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

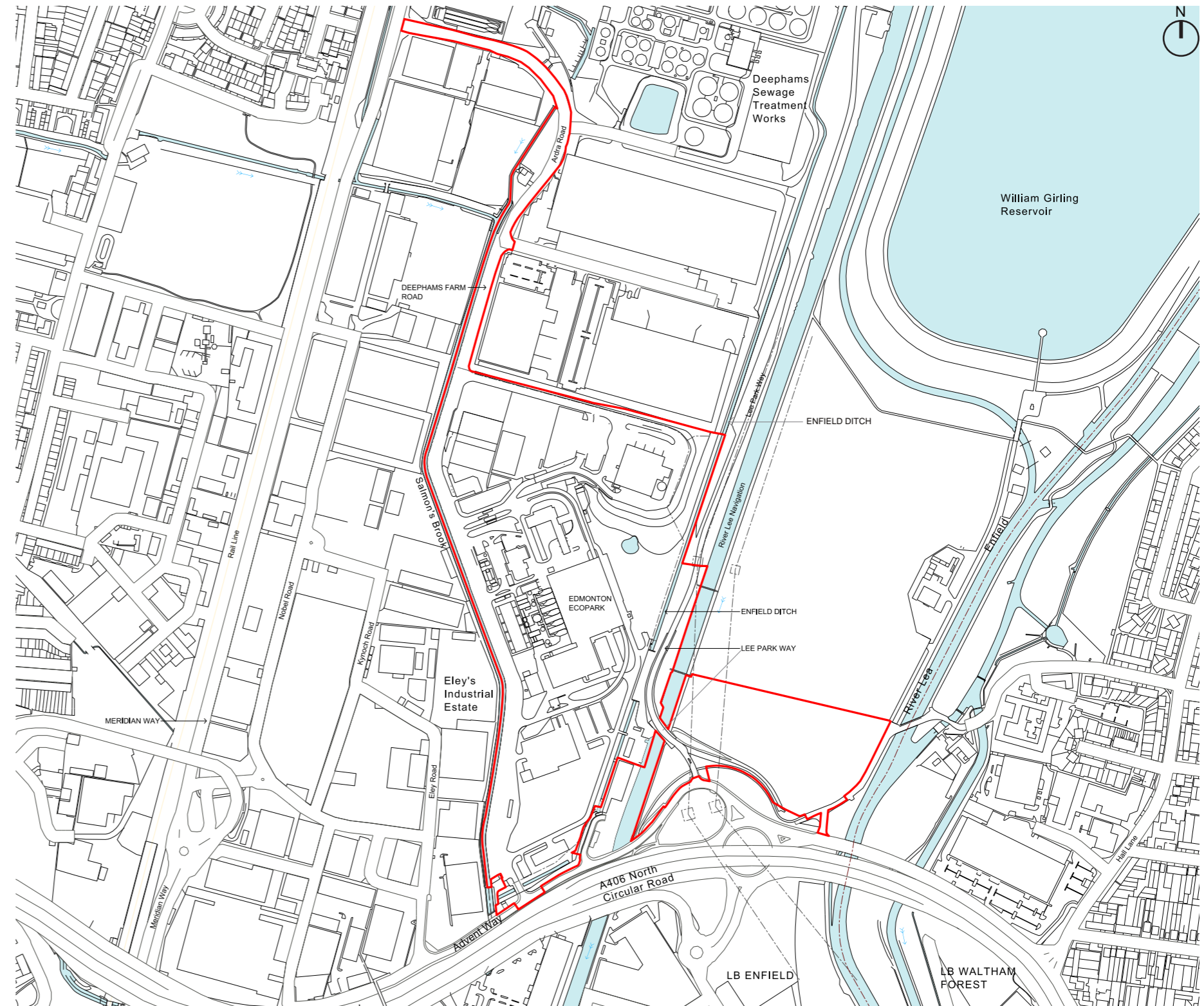


Figure 4.1: Application Site

Edmonton EcoPark

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

Current use of the Edmonton EcoPark comprises:

- an EfW facility which treats circa 540,000 tonnes per annum (tpa) of residual waste and generates around 40MWe (gross) of electricity;
- an IVC facility which processes food, landscaping and other green waste from kerbside collections and RRCs as well as local parks departments. The facility currently manages around 30,000tpa, and has a permitted capacity of 45,000tpa;
- 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;
- an IBA Recycling Facility which processes ash from the existing EfW facility;
- a fleet management and maintenance facility which provides parking and maintenance facilities for the Edmonton EcoPark fleet of operational vehicles;
- associated offices, car parking and plant required to operate the facility; and
- a former wharf and single storey building utilised by the Edmonton Sea Cadets under a lease.

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.



— Edmonton EcoPark
 — Application Site

Figure 4.2: Edmonton EcoPark and Application Site



a. Energy from Waste (EfW) facility



b. In-Vessel Composting (IVC)



c. Fuel Preparation Plant (FPP)

Figure 4.3: Photos of Edmonton EcoPark

4.3 SURROUNDING AREA

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 and part of the Application Site falls within the LVRP.

Land to the north and west of the Application Site is predominantly industrial use. Immediately to the north of the Edmonton EcoPark is an existing Materials Recycling Facility 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 street, approximately 600m from the Edmonton EcoPark and 60m from the nearest part of the Application Site boundary. Residential properties at Zambezie Drive are approximately 125m west of the Edmonton EcoPark.

The Eley Industrial Estate located to the west of the Application Site comprises a mixture of retail units, industrial and warehousing uses.

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. Meridian Water is proposed to create up to 8,000 new homes and 3,000 new jobs by 2045 in a new sustainable, mixed neighbourhood, which would change the neighbouring uses and character of this area.

The LVRP and River Lee Navigation are immediately adjacent to the eastern boundary of the Edmonton EcoPark, and the Lee Park Way, a private road along which National Cycle Network (NCN) Route 1, runs alongside the River Lee Navigation. The LVRP is located to the east of the River Lee Navigation where the William Girling Reservoir is located along with an area currently occupied by Camden Plant Ltd. which is used for the crushing, screening and stockpiling of concrete, soil and other recyclable materials. 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.

The character and mix of uses in the surrounding area and planned future developments form the context to which the design should respond in its massing, appearance and materials, accounting for the sensitivity of those different areas.

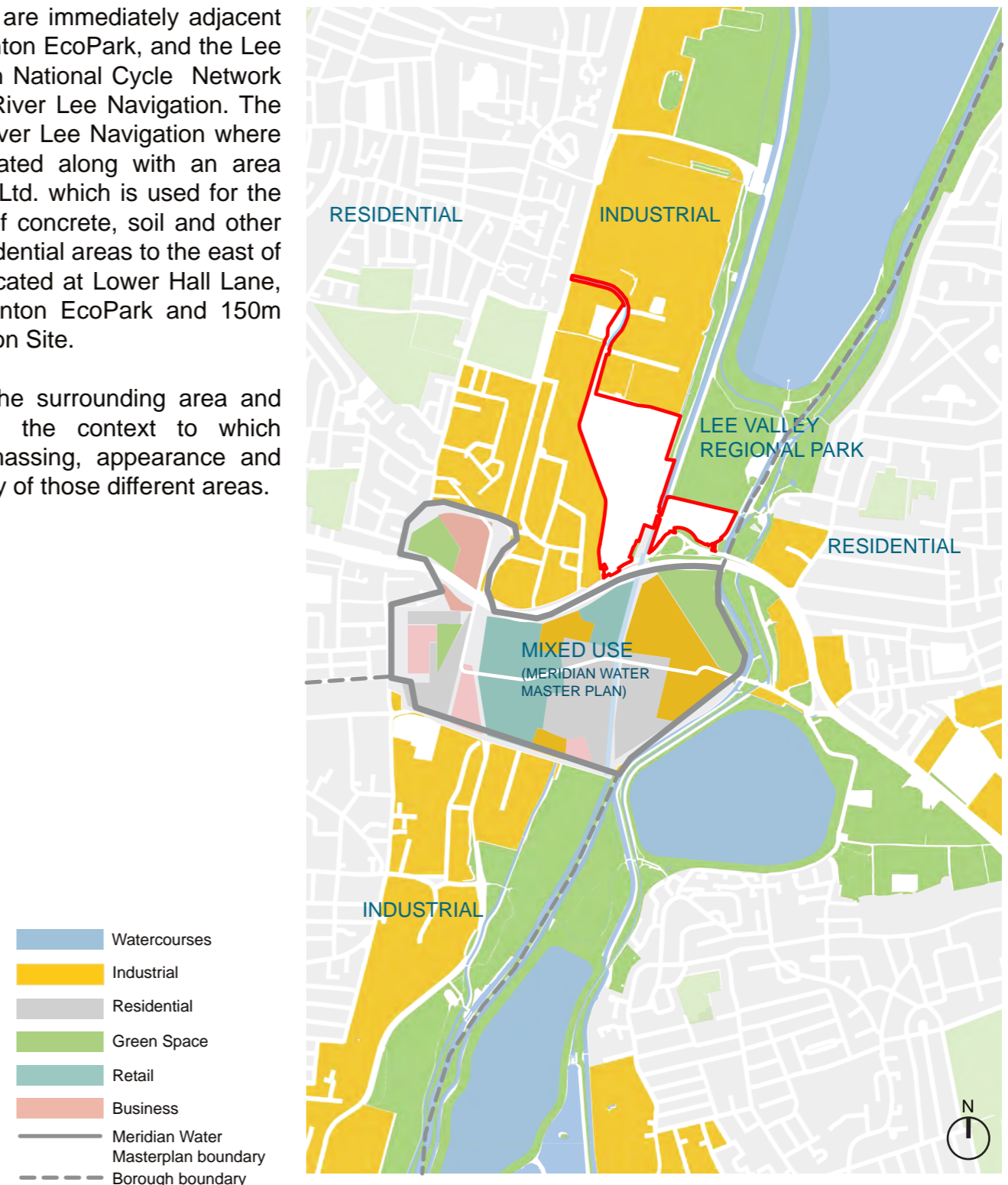
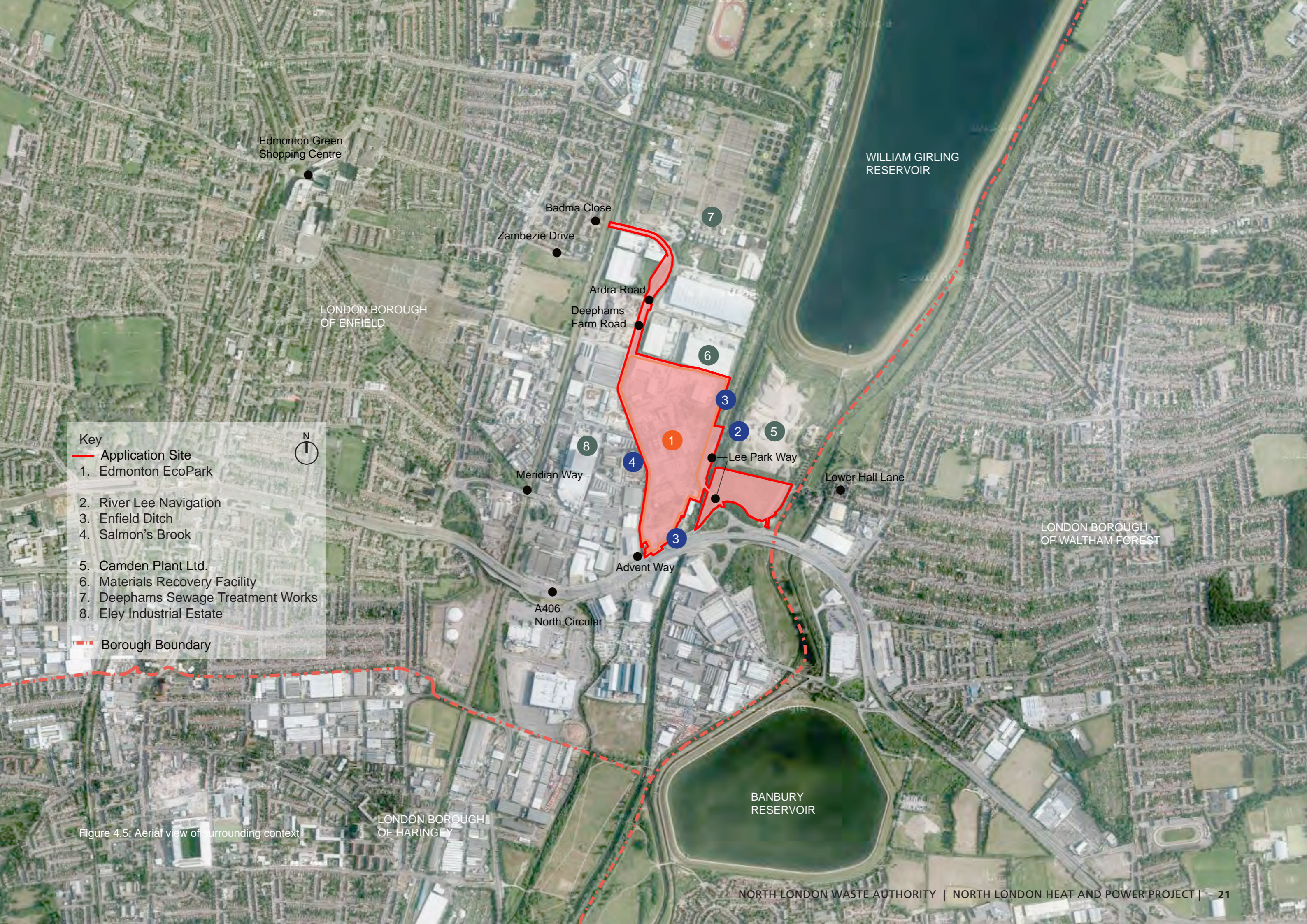


Figure 4.4: Uses surrounding the Application Site



Key

- Application Site
- 1. Edmonton EcoPark
- 2. River Lee Navigation
- 3. Enfield Ditch
- 4. Salmon's Brook
- 5. Camden Plant Ltd.
- 6. Materials Recovery Facility
- 7. Deephams Sewage Treatment Works
- 8. Eley Industrial Estate
- - - Borough Boundary



Figure 4.5: Aerial view of surrounding context

4.4 HISTORIC CONTEXT

The Lee Valley has a significant industrial heritage, once home to a diverse range of industries, gravel pits, waterworks sites, distilleries and munitions factories. It has also been used as a significant transport corridor as well as providing water supply for London. The industrial activities initially developed in the Lee Valley corridor due to its distance from London, and the general availability of water power.

In the 20th century the combination of transport, wide expanses of flat land and electricity from riverside and canal-side plants led to the expansion of diverse industries, later replaced by warehousing and retail parks.

Today the Lee Valley corridor, shown in Figure 4.6, is characterised by reservoirs, parks, industrial estates and some residential suburbs. The Application Site is part of this industrial and recreational setting.

The Application Site is located in the former Edmonton Marsh which formed a band about 800m wide along the River Lee Navigation, bordered and crossed by many watercouses.

The flood prone nature of the area adjacent to the River Lee Navigation resulted in development being slower in this area than on the drier ground to the west. In the 1870s the area of the Application Site was still open marshland, although the first traces of industrialisation of the landscape were appearing with the establishment of the Angel Works of Messrs Ridley, Whitley and Co and the Tottenham and Edmonton Gas Works approximately 500m to the south of the Application Site.

Completion of the A406 North Circular Road in 1927 further encouraged industrialisation of the area. By 1938 the Application Site was surrounded to the west and south by a variety of factories producing furniture, wirelesses, zinc sheets, soda siphons and clothing.

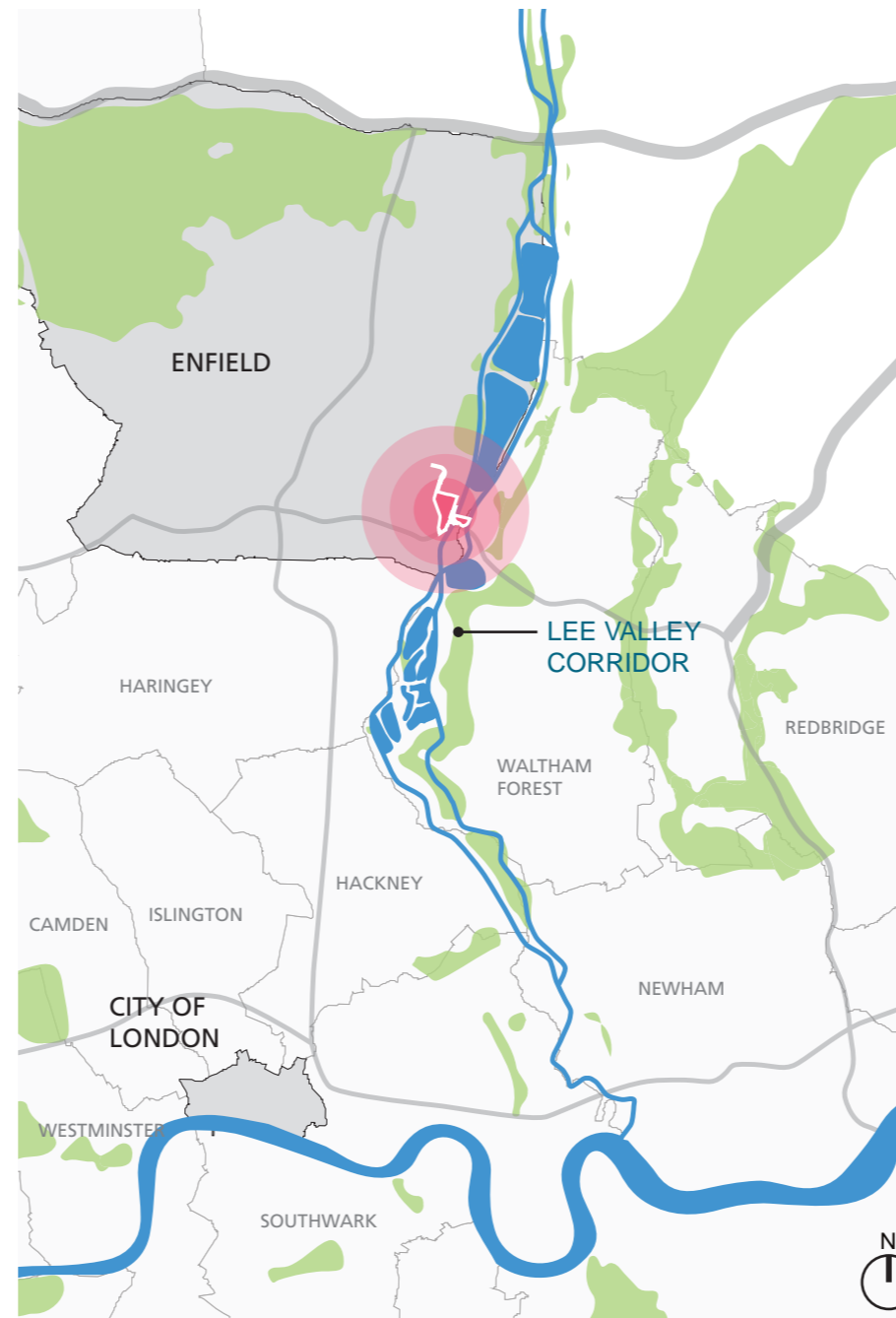


Figure 4.6: The Application Site within the Lee Valley corridor

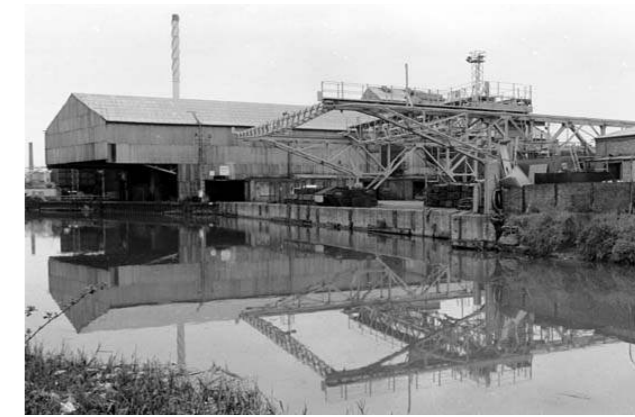


Figure 4.7: Examples of Lee Valley character

A sewage works was established in the 1870s at Deephams Farm to the north of the Application Site. The works were expanded to the south in 1927 leading to the construction of filtration beds within 150m of the northern boundary of the Edmonton EcoPark. By 1976 the sewage works had extended further south with the construction of sludge lagoons which overlapped the northern part of the Application Site.

On the Essex side of the River Lee Navigation, the Chingford Pumping Station was built for the East London Waterworks Company in 1895. In 1904 the Metropolitan Water Board took over the local water companies, including the new Banbury Reservoir. In 1935 work started on the very large William Girling Reservoir, which was finally completed in 1951. These reservoirs are now both owned and managed by Thames Water Utilities Ltd (TWUL).

The Lee Valley was identified for its regenerative potential as part of Sir Patrick Abercrombie's Greater London Plan in 1944. In 1963 the Civic Trust were invited to appraise the potential of the Lee Valley as a leisure and recreational resource and was positive in its report. The Lee Valley Regional Park Authority (LVRPA) was formally constituted on 1 January 1967, following Royal Assent to the Lee Valley Regional Park Bill in December 1966. Plans to transform the Lea riverside into a recreational area led by the LVRPA began in 1967.

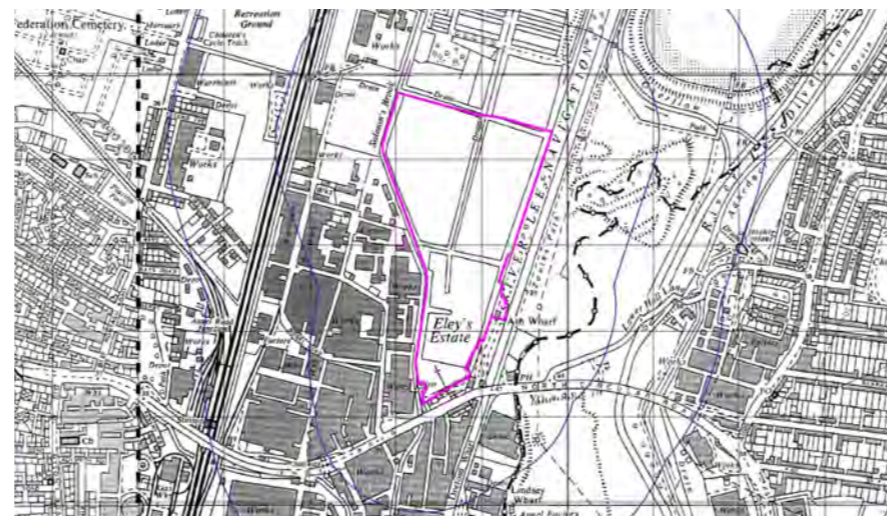
The Edmonton EcoPark has been home to a number of waste management facilities for over 50 years and the existing EfW facility commenced operations in 1971.



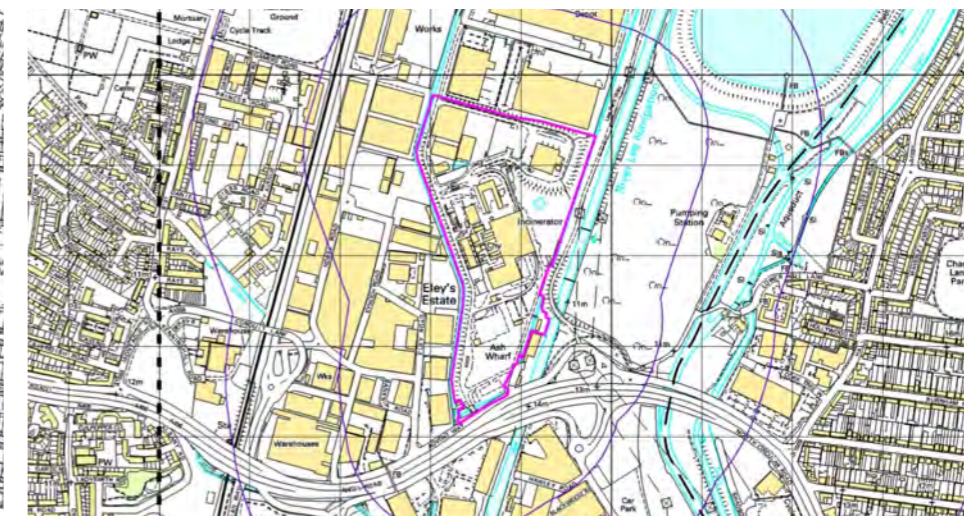
1898



1938



1966



2010

Figure 4.8: Evolution of Edmonton EcoPark and the surrounding area

4.5 SOCIO-ECONOMIC CONTEXT

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 operation of the existing EfW facility. The remaining employees are responsible for other site operations and for the management of LWL and the Edmonton EcoPark as a whole.

In the east of the Edmonton EcoPark, adjacent to 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 Edmonton EcoPark. Given its waterside location adjacent to the LVRP, the Edmonton Sea Cadets facility is also occasionally utilised by other cadet groups from LB Waltham Forest and LB Haringey.



Figure 4.9: Edmonton Sea Cadets

According to the Indices of Multiple Deprivation 2010, the Application Site was in the top 6 per cent most deprived areas in England overall. Unemployment around the Edmonton EcoPark is also high at 7.4 per cent in the 2011 Census, almost double the England average. There were also notable differences in skills levels in the area, with a high proportion of residents holding no qualifications.

The area around the Edmonton EcoPark supported a total of 8,238 workplace based employees in 2013⁸. The industry sector including water supply, sewerage, waste management and remediation activities was a notable employer with 445 employees in the neighbourhood area in 2013, and contributing 1 per cent of employment for residents. This is significantly higher than the London average for this industry sector, reflecting the nature of industry in the area.



Figure 4.10: Images of industrial areas around the Application Site

⁸ Office of National Statistics (2013) Business Register and Employment Survey



Figure 4.11: Image of the Edmonton EcoPark from the River Lee Navigation

4.6 TOPOGRAPHY AND GEOLOGY

Topography

Set within the Lee Valley, the area around the Application Site itself is relatively flat with the exception of William Girling Reservoir and Banbury Reservoir which are enclosed by raised bunds. Around the Application Site the ground level is generally between 10m and 20m above sea level and remains below 20m for approximately 3km east-west. The topography rises towards Chingford and Woodford to the east and towards Southgate and Wood Green to the west. The level difference is up to 60m to the highest areas. Figure 4.12 shows the wider topography with 5m ground contours.

The topography of the Application Site ranges from around 10m to 13.5m above ordnance datum (AOD), with some isolated areas at higher levels than this. Levels are highest across the north-eastern part of the Application Site (18m above sea level). Levels fall generally from north towards the south of the Application Site. There is a localised high point in the southern part of the Application Site at the grass landscaped area, where the earth embankment ranges between 11m and 13m above sea level ordnance datum. The Lee Park Way bridge is also a

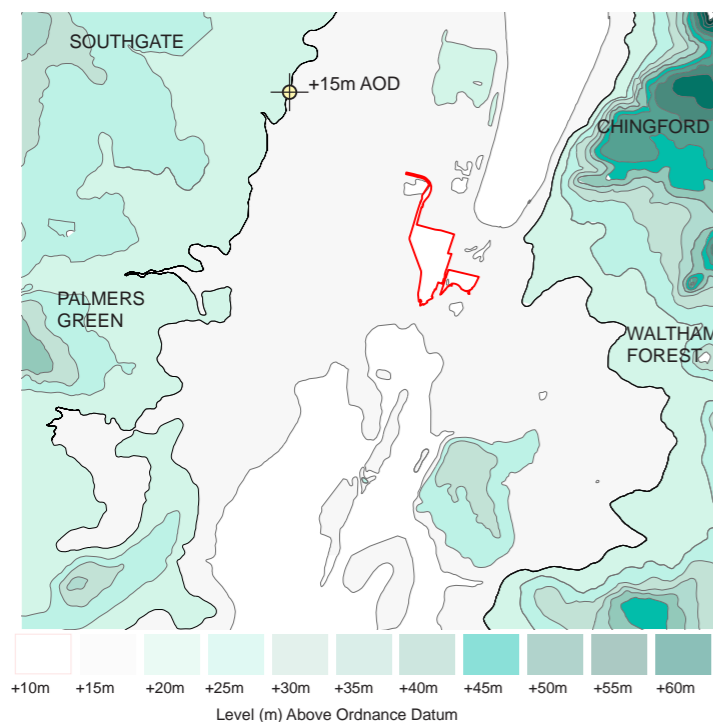


Figure 4.12: Illustrative wider topography

high point at 14.7m above sea level. Low points are located in the north-west of the Application Site adjacent to the effluent treatment plant. Figure 4.16 illustrates the topography of the Application Site with 0.5m ground contours.

The topography of the area therefore provides important context for the scale, massing and landscaping approach for the Project.

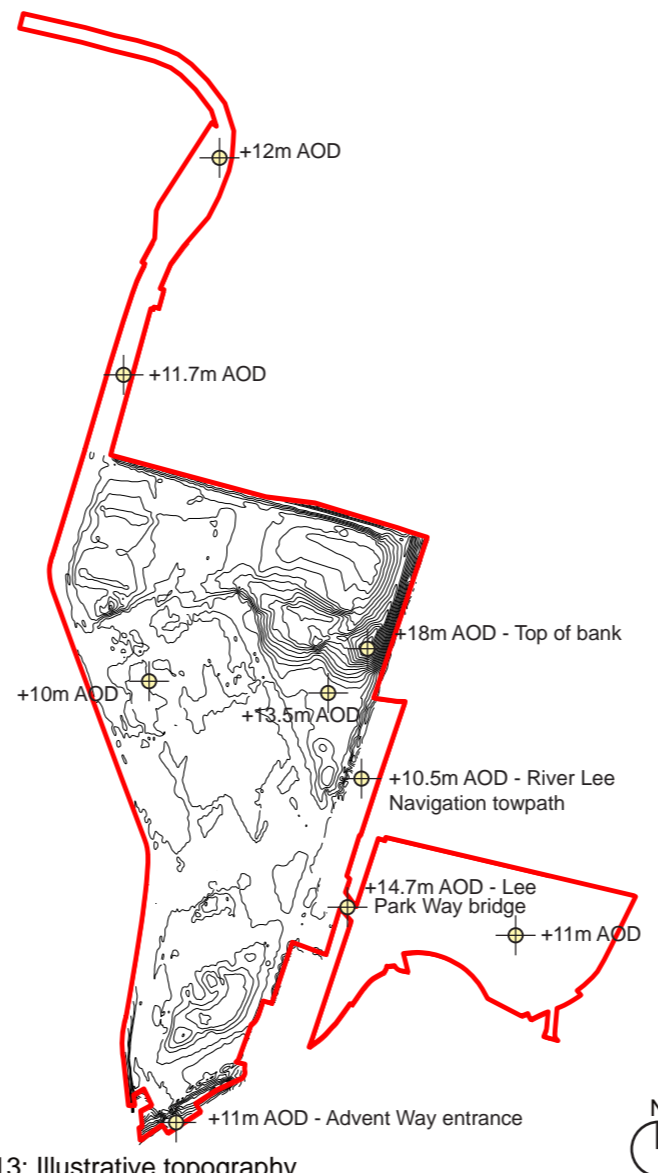


Figure 4.13: Illustrative topography

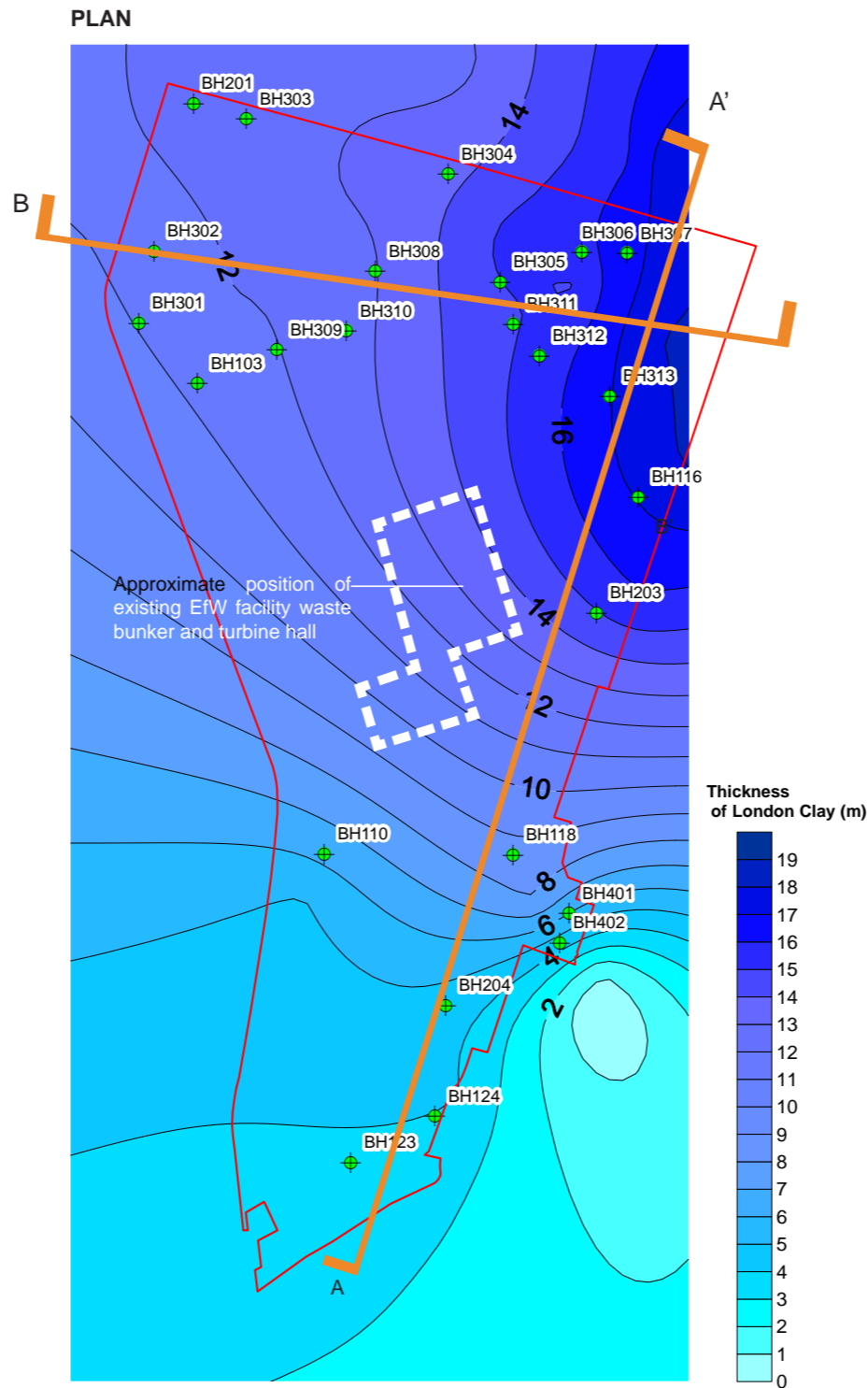
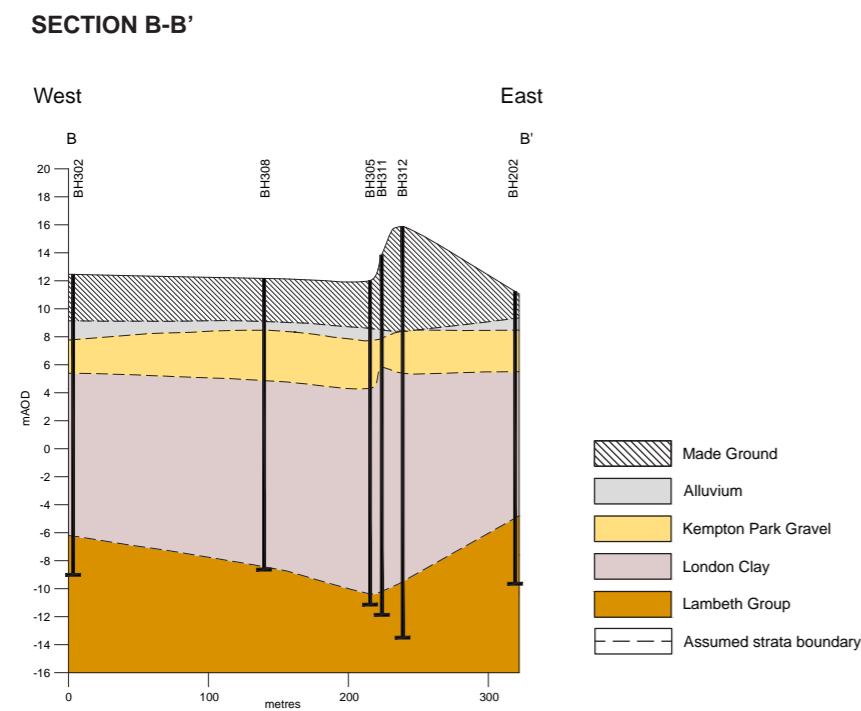
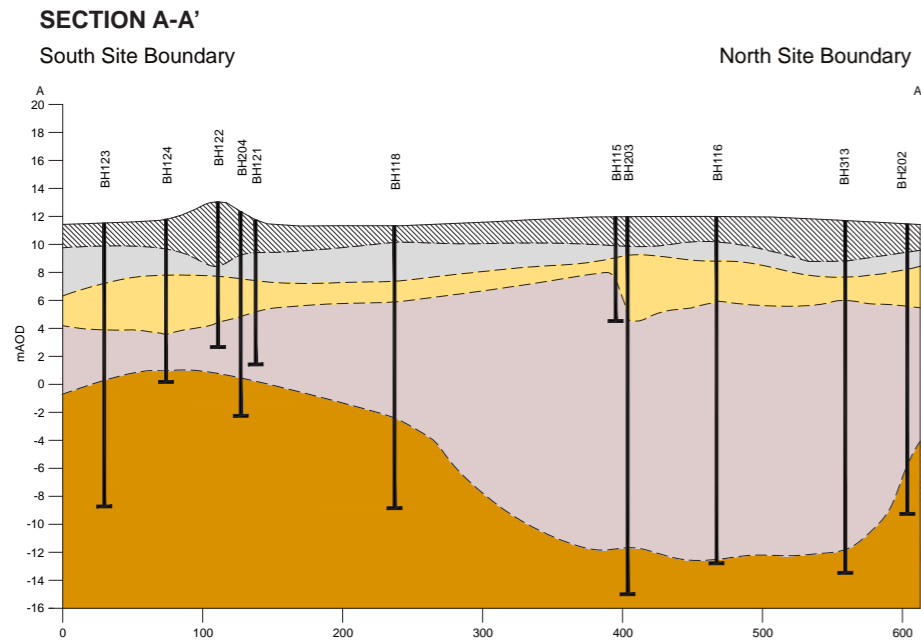
Geology

The geology at the Application Site comprises Made Ground, Alluvium, Kempton Park Gravels, London Clay, Lambeth Group, Thanet Sand and White Chalk as shown in Figure 4.19. There are aquifers (water bearing rocks and soils) beneath the Application Site including the Upper Chalk which is a principal aquifer estimated to be up to 50m thick, and the Alluvium, Kempton Park Gravels, Lambeth Group and Thanet Sand which are secondary aquifers, see Figure 4.16.

The Application Site is located within an Environment Agency (EA) designated groundwater Source Protection Zone (SPZ) 1 and 2 which protects groundwater resources from the Lambeth Group, Thanet Sand and Chalk aquifers. There are no licensed groundwater abstractions within the existing Edmonton EcoPark. The SPZs are shown in Figure 4.14.

The London Clay provides protection to the underlying aquifers by limiting vertical movement of groundwater. The thickness of London Clay is shown in Figure 4.16. It thins from the north to the south of the Edmonton EcoPark and is absent around the existing EfW facility bunker where an excavation was undertaken and subsequently backfilled with lower permeability gravelly clay and clayey sand and gravel.

The geology of the Application Site has informed the layout of uses to reduce the potential impacts on groundwater resources in designated aquifers (water bearing rocks or soils).



Groundwater in the deeper aquifers (Thanet Sands and Chalk) is used nearby for potable water supply. Groundwater quality in the Kempton Park Gravels is the most likely to have been affected by contamination from the existing site operations and from neighbouring sites due to its proximity to surface activities.

Potential contaminant sources that should be considered in design development include:

- leachable concentrations from Made Ground that could contain potentially polluting substances and high vulnerability to pollution;
- water from the Kempton Park Gravel aquifer that has been identified to have lower quality than that of the underlying aquifers and high vulnerability to pollution; and
- waste stored in underground bunkers.

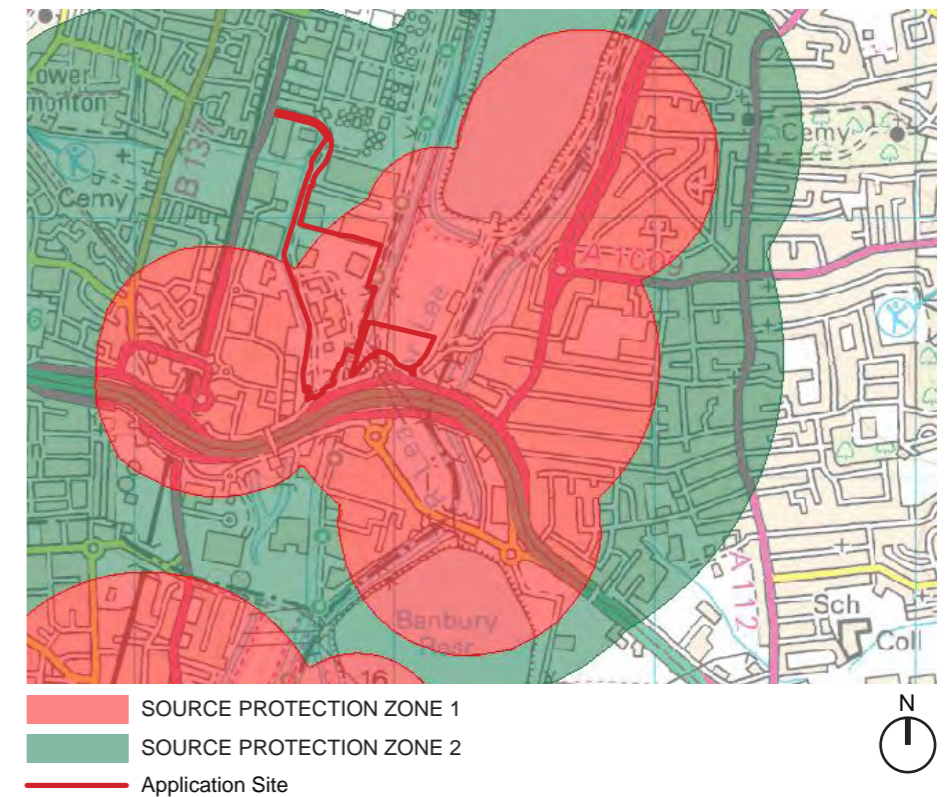


Figure 4.16: Site section showing topographical strata

Figure 4.15: Plan showing thickness of London Clay at Edmonton EcoPark

Figure 4.14: Extract from Environment Agency Source Protection Zones EcoPark

4.7 WATERCOURSES AND DRAINAGE

The flood plain is an important consideration in terms of potential need for compensation areas and the layout of different uses on the Application Site.

The Application Site is partly located within Flood Zone 2 which has medium risk of flooding. In the east of the Edmonton EcoPark at the wharf adjacent to the River Lee Navigation is an area of land in Flood Zone 3, which is at high risk of flooding, see Figure 4.17.

The Application Site is within the maximum flood extent associated with the failure of reservoirs provided by the EA. The reservoirs are subject to a stringent maintenance and inspection regime. Within the LVRP and approximately 300m north-east of the Application Site boundary, is the William Girling Reservoir, and beyond this the King George's Reservoir, are known collectively as the Chingford Reservoirs which are each designated as a Site of Special Scientific Interest (SSSI). The Chingford Reservoirs also encompass the Banbury Reservoir which is located approximately 600m south-east of the Application Site boundary.

There are three watercourses that are in or adjacent to the Application Site as shown in Figure 4.18; Salmon's Brook and Enfield Ditch which bound the Edmonton EcoPark, and the River Lee Navigation. These watercourses and their associated connections, quality and ecology inform the design in terms of layout, landscaping and ecology and lighting design. The River Lee Navigation and Enfield Ditch form part of the Lee Valley Site of Metropolitan Importance for Nature Conservation (SMINC). A manmade ornamental pond is also present within the Edmonton EcoPark, towards the north-east corner, in an area of amenity grassland with adjacent plantation woodland. It is isolated from the Lee Valley SMINC by the River Lee Navigation.

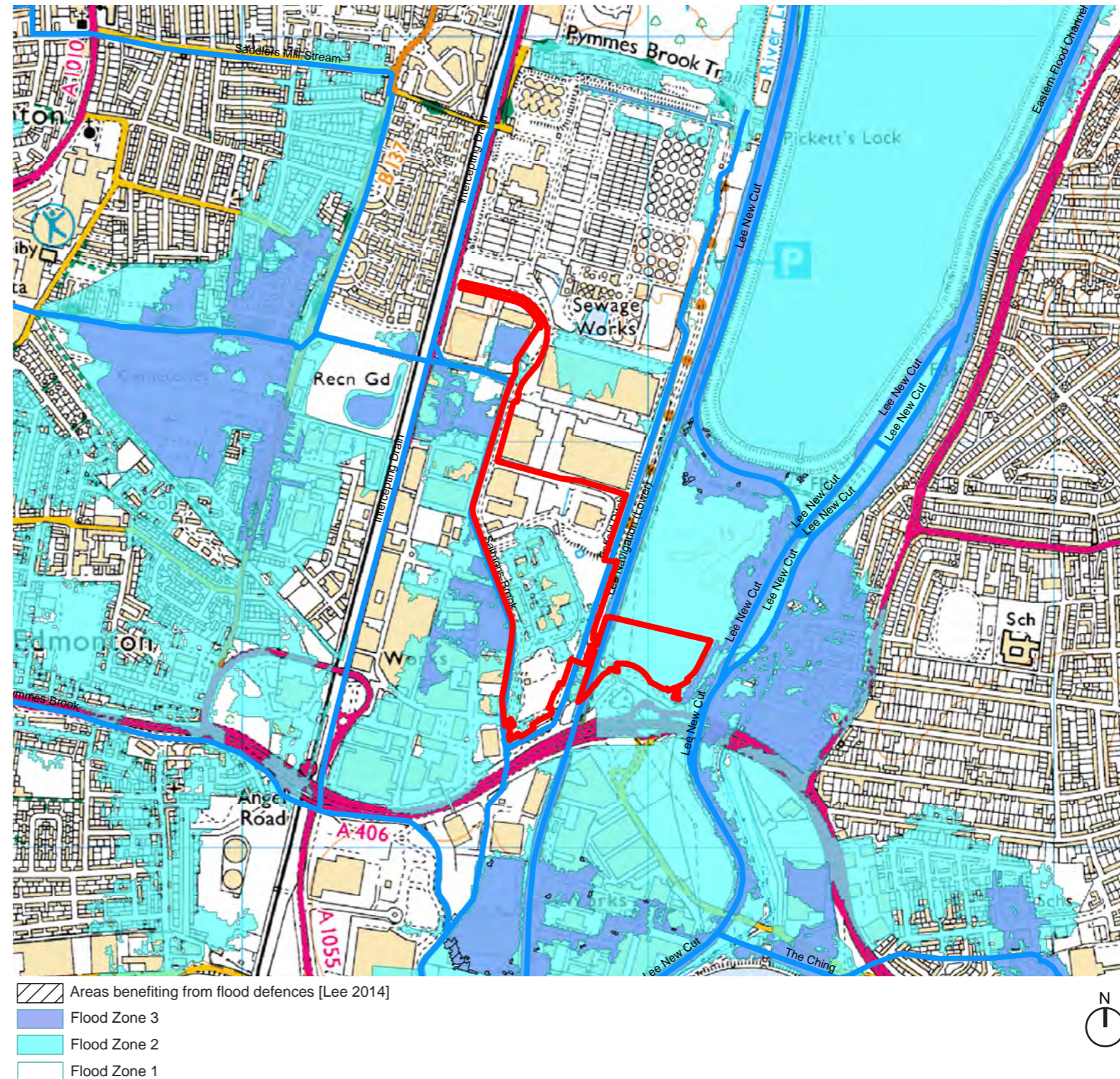


Figure 4.17: Extract from EA Flood Zones map

Salmon's Brook (Figure 4.19) runs southwards along the western boundary of the Edmonton EcoPark. It is part of the River Lee (Lea) catchment which is a tributary of the Thames. Salmon's Brook has steep banks and is identified as a heavily modified water body with limited ecological value. The running water has been found to contain limited notable species. It also has poor biological quality.

Enfield Ditch (Figure 4.20) is adjacent to the River Lee Navigation and runs along the east and south edge of the Edmonton EcoPark and is bridged at the existing main entrance to the Edmonton EcoPark to the south, before discharging into Salmon's Brook. Enfield Ditch supports standing water in places, but tends to dry out during periods of low rainfall. It has limited ecological value. The watercourse is partly culverted both inside and outside the Application Site. There is a bridge from the existing Edmonton EcoPark over Enfield Ditch to the Edmonton Sea Cadets facility which is the wharf. Enfield Ditch is fenced off preventing access to it from the Edmonton EcoPark along the eastern boundary of the Application Site.

Edmonton EcoPark abstracts water from Deephams Sewage Treatment Works outflow channel (therefore not requiring a licence) upstream of the confluence with Salmon's Brook. There are no surface water abstractions within the Application Site.

Foul drainage from the Application Site (including process effluent from the existing EfW facility and surface water and domestic flows) is discharged to the Chingford Sewer. There are two surface water outfalls in the north of the Application Site, to Enfield Ditch and Salmon's Brook, which formerly formed part of the surface water drainage system, but are now sealed off. There is also an operational outfall from the Application Site that collects rainwater runoff from building roofs, roads and car parks and discharges to Enfield Ditch on the eastern boundary of the Application Site. Rainfall falling onto natural landscaped areas at the Application Site infiltrates to ground. The topography of the area suggests that surface runoff flows to the lowest part of the Application Site in the centre and then east or west towards Enfield Ditch or Salmon's Brook.



Figure 4.18: Watercourses within or adjacent to the Application Site



Figure 4.19: Salmon's Brook, along the western edge of the Application Site



Figure 4.20: Enfield Ditch, along the southern edge of the Application Site

4.8 LANDSCAPE FEATURES AND ECOLOGY

The Application Site is situated in an industrial area alongside the LVRP. The LVRP is part of London's Green Infrastructure network and forms a strategic north-south corridor along Lee Valley following the course of the River Lee. Key landscape features include King George's and William Girling reservoirs with their steep grassed banks, the channel of the River Lee and the separate River Lee Navigation channel as well as various other smaller watercourses. Further key features are the pockets of marshland, grassland and other open spaces as well as mature willows and poplars, which line the River Lee Navigation. The LVRP also contains a number of Public Rights of Way (including Lee Park Way) and cycle routes such as NCN Route 1. The area currently occupied by Camden Plant Ltd. is also located in the LVRP to the south of the William Girling reservoir which is used for crushing, screening and stockpiling of concrete, soil and other recyclable materials (Figure 4.21).



Figure 4.21: View over Temporary Laydown Area towards Camden Plant Ltd



Figure 4.22: Green spaces in the Edmonton EcoPark

The LVRP is a major landscape asset although access is restricted in places. It has a close relationship with urban features within and adjacent to the LVRP, such as industrial buildings and structures as well as overhead power lines and masts. The largely green and open LVRP contrasts with the industrial estates situated along the river valley and the residential areas of Edmonton to the west and Chingford to the east.

Along the valley slopes to the east lies the urban edge of Chingford. Chingford primarily consists of large suburban residential areas from the inter-war period between World War I and II. The long and straight planned streets are relatively wide and lined with a number of street trees. There are mainly two storey semi-detached and short terrace houses with large front and back gardens. Higher ground, in particular along the steeper valley slopes such as at Mansfield Park, provides vantage points from which there are long views across the river valley and towards the Application Site.

Beyond the industrial area to the west lies the mostly residential area of Edmonton. This area is situated on flat low lying land. In contrast to the low density character of Chingford the urban grain of Edmonton is more compact. The residential area mostly consists of tightly built long two storey terrace houses with comparably shorter front and rear gardens as well as some high rise buildings. The long, straight and mostly compact streets provide less space for street trees and therefore appear to be harder landscapes. Due to the enclosed nature of the large Montagu Cemetery and allotments within this area, they provide little relief from the dense built up area.

Ecological designations are shown in Figure 4.23. In addition to the Chingford Reservoirs SSSI to the north-east of the Application Site (Figures 4.24 and 4.25), Walthamstow Reservoirs SSSI is located approximately 1.3km to the south of the Application Site boundary and comprises ten relatively small and shallow water storage basins. The reservoirs provide major wintering ground for wildfowl and wetland birds. The reservoirs are contained by high grassed banks, which create key features in the landscape.

Centred around Lockwood and Maynard Reservoirs, approximately 2km downstream of the Application Site, adjacent to the River Lee Navigation lies the Lee Valley Special Protection Area (SPA) and Ramsar site. Ainslie Wood Local Nature Reserve (LNR) is located approximately 1.5km east of the Application Site.

The north eastern part of the existing Edmonton EcoPark and most of the land to the east of the Edmonton EcoPark lie within an area designated as a SMINC (Figure 4.26). Within the Edmonton EcoPark the SMINC is made up of a young broadleaved plantation woodland with Enfield Ditch along its eastern edge. This densely planted area is made up of species such as alder, birch, field maple, poplar, ash and hawthorn. This habitat provides a potential foraging and nesting resource for birds and a foraging resource for bats and small mammals. Since planting is dense and only a limited amount of daylight reaches the ground, the ground flora is generally sparse with limited diversity. Within the land to the east of the Edmonton EcoPark the SMINC mainly comprises an area of scrub and species-poor grassland.

The Edmonton EcoPark is dominated by hardstanding and buildings with limited landscape and ecological value. The existing chimney of the EfW facility is a key landmark feature, which can be seen in long distance views from Chingford, Edmonton and the LVRP. Existing vegetation is mostly concentrated around the edges of the Edmonton EcoPark with two larger landscaped open spaces; the northern open space is situated to the east of the existing EfW facility, while the southern open space is situated to the south of the current vehicle depot and car park. These two spaces comprise areas of amenity grassland with groups of trees and shrubs. There is an ornamental pond and a number of benches, used for staff breaks within the northern open space. The pond contains ornamental fish with little aquatic or marginal vegetation.

The western boundary of the Application Site is formed by the grassed banks along Salmon's Brook. Situated within the closely mown strip of grass are a few tree groups. There is a row of mature willows along the Salmon's Brook adjacent to Deepham's Farm Road.

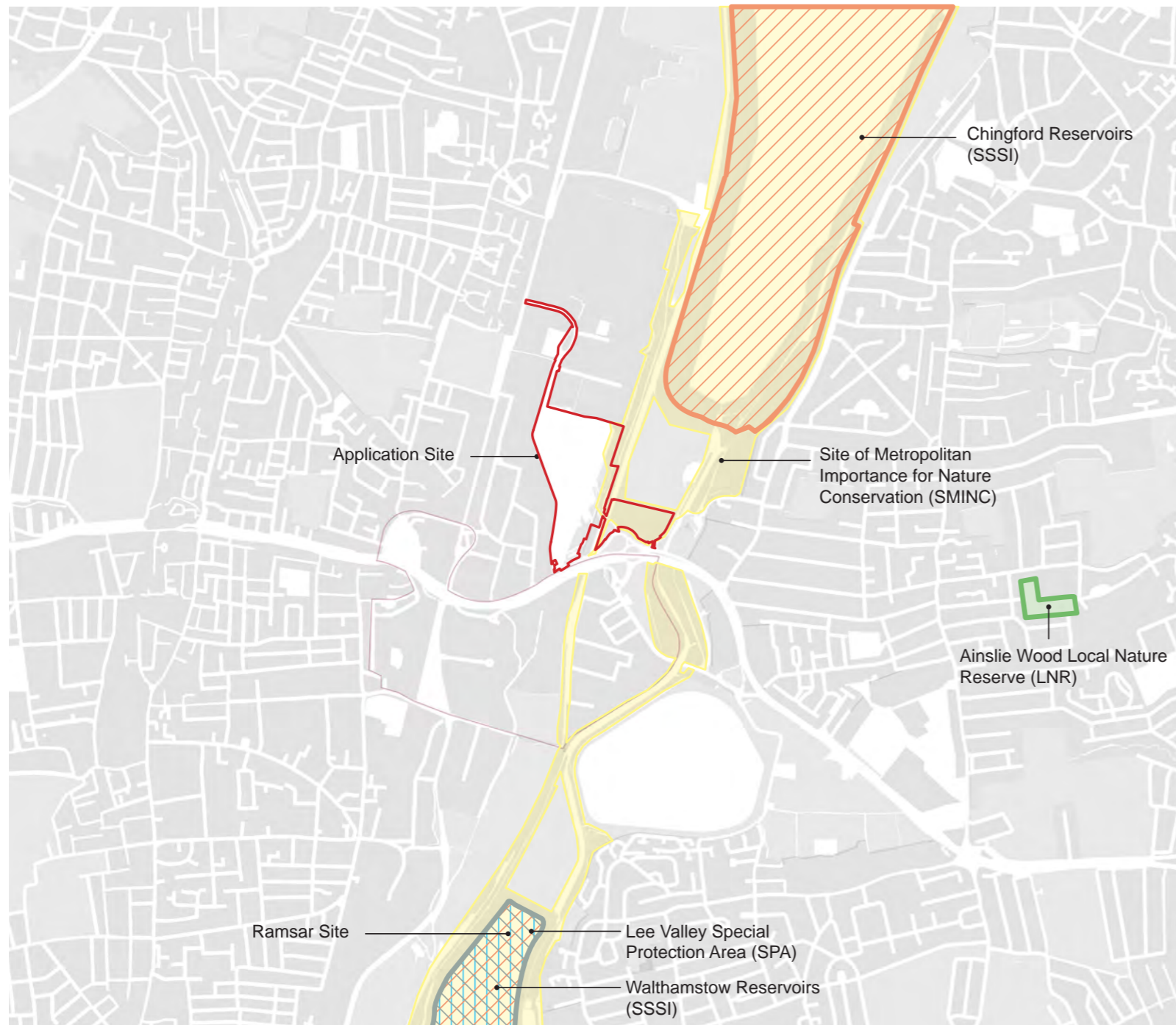


Figure 4.23: Ecological designations



Figure 4.24: Chingford Reservoirs SSSI



Figure 4.25: Chingford Reservoirs grassed banks



Figure 4.26: View of part of the SMINC from Lee Park Way

4.8 LANDSCAPE FEATURES AND ECOLOGY

The southern boundary of the Application Site adjacent to the A406 North Circular Road comprises an area of overgrown scrubs, amenity grass with some groups of trees along Enfield Ditch.

The northern boundary of the Application Site is defined by a thin but dense buffer of deciduous trees and scrub, primarily consisting of hawthorn, blackthorn, elder and bramble.

The eastern edge of the Application Site is most sensitive from a landscape and visual amenity perspective as the Edmonton EcoPark is visible from foot and cycle paths as well as the River Lee Navigation. This makes the eastern edge important regarding the setting and the public facing identity of the Project.

The eastern boundary of Edmonton EcoPark, which is defined by the Enfield Ditch, comprises mature and mostly dense vegetation including the young tree plantation in the north east that forms part of the SMINC, a row of tall hybrid poplar further south as well as scattered scrub and groups of trees such as alder and willow. The trees and shrubs provide a visual separation from foot and cycle paths and the River Lee Navigation. The drier sections of Enfield Ditch contain no aquatic vegetation. In several places Enfield Ditch is heavily shaded and overgrown by bramble and hawthorn scrub. There are also areas of invasive species on the Application Site, such as himalayan balsam, japanese knotweed and giant hogweed.

In contrast to the largely built up areas to the west of the River Lee Navigation, the land to the east of the Edmonton EcoPark is situated within the LVRP and the Green Belt. The areas within the Application Site in this area consist of the Lee Parkway, its adjoining landscaped areas, the bridge over the River Lee Navigation, footpaths and cycleways and the rough grassland with patches of scrub proposed to be used as a Temporary Laydown Area. This rough grassland is not accessible to the public. The character of the proposed Temporary Laydown Area is heavily influenced by the man-made gravel mounds and activities associated with the Camden Plant Ltd, located immediately to the north of this area.



Figure 4.27: Eastern boundary at south of Edmonton EcoPark (1)



Figure 4.28: Southern boundary at Advent Way (2)



Figure 4.29: Open space within the north of the Edmonton EcoPark (3)



Figure 4.30: Enfield Ditch south of the Edmonton EcoPark (4)



Figure 4.31: Salmon's Brook (5)



Figure 4.32: Existing landscape in the Application Site



Figure 4.33: Image of the Edmonton EcoPark from the River Lee Navigation

4.9 TRANSPORT AND ACCESS

The existing transport and access arrangements for the Edmonton EcoPark are important considerations for the design of the Project in terms of layout and access to allow effective continued operation as well as opportunities to connect the wider area for different types of users accessing the Edmonton EcoPark.

Road users

Within the vicinity of the Application Site, the A406 North Circular Road is a key route and provides the main east to west connection across north London. Access to the A406 North Circular Road is provided approximately 350m to the east of the Application Site at the Cooks Ferry Roundabout. Other key road links in the direct vicinity of, or within, the Application Site include the A1055 Meridian Way, Advent Way, Argon Road, Walthamstow Avenue, A1009 Hall Lane, Montagu Road, Eley Road, Nobel Road, Ardra Road, Deephams Farm Road and Lee Park Way.

Daily vehicle movements to and from the existing Edmonton EcoPark vary depending on the time of day, day of the week and time of year. Currently all of the waste and other materials entering and leaving the Edmonton EcoPark are delivered by road. In total about 187,000 vehicles enter the Edmonton EcoPark every year. This is about one percent of the total annual traffic using the A406 North Circular Road.

The existing access for Edmonton EcoPark is via Advent Way at the south of the Edmonton EcoPark. This access is shared by operational vehicles, staff and visitors. There is also an emergency access route via Deephams Farm Road.

Public transport users

The Application Site currently has a Public Transport Accessibility Level of 1b, which is rated as 'very poor'. The closest London Underground station to the Application Site is Tottenham Hale which is approximately 3.7km walking distance to the south of Edmonton EcoPark. National Rail services are available at Angel Road station, located approximately 600m walking distance to the west of the Application Site boundary. Two London Bus routes (routes 34 and 444) operate from bus

stops approximately 500m walking distance from the Application Site boundary, with two additional routes (routes 192 and 341) available from bus stops on Glover Drive, approximately 800m walking distance from the Application Site.

Since existing connectivity by public transport is poor, the majority of staff travel to the Edmonton EcoPark by car. The Edmonton EcoPark currently has 212 car parking spaces.



Figure 4.34: Transport infrastructure around the Application Site

Pedestrians

Footways, shown on Figure 4.35, are provided along Advent Way, Walthamstow Avenue leading to and from the Application Site, connecting Lower Hall Lane to the towpath, alongside the River Lee Navigation from Russell Road to the towpath, along Lee Park Way and the towpath and public transport stops and stations. However, the pedestrian environment 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 River Lee Navigation which is accessed from Advent Way and runs through part of the Application Site. There is no direct access to this pedestrian route or the Lee Park Way from the Edmonton EcoPark.

Cyclists

There are a number of cycle routes in and around the Application Site. The following cycle routes are available:

- Lee Park Way which runs between the Edmonton EcoPark and the River Lee Navigation, connecting with Advent Way via a bridge at its southern end, forming part of NCN Route 1;
- a north to south route along the eastern side of the River Lee Navigation which forms part of NCN Route 1 to the south of the A406 North Circular Road;
- an east to west off-carriageway route along Lower Hall Lane, connecting with NCN Route 1 at Lee Park Way. This route connects to the LVRP to the north; and
- an off-carriageway route in a north to south direction along A1055 Meridian Way both to the north and south of the A406 North Circular Road.

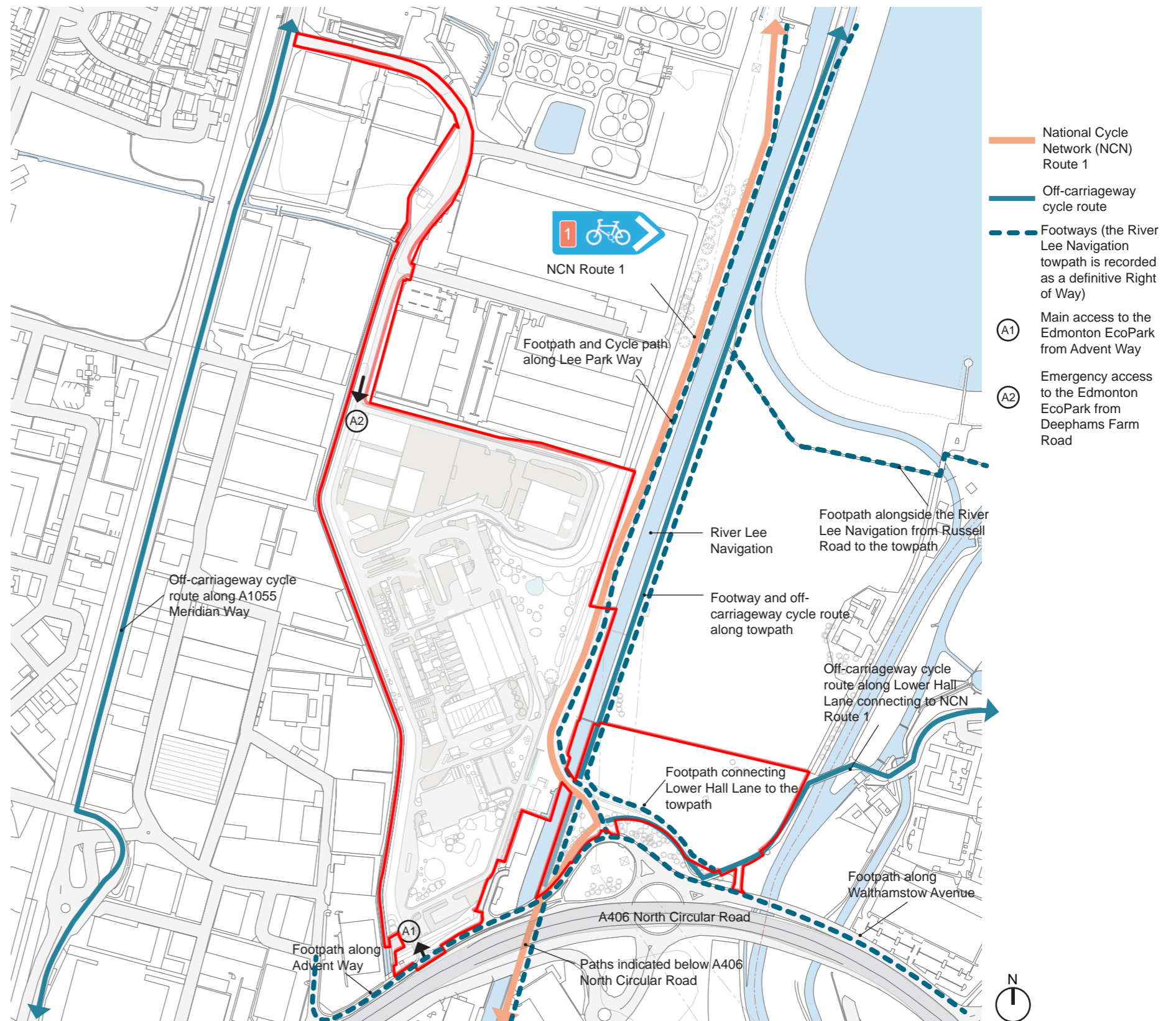


Figure 4.35: Pedestrian and cycle routes around the Application Site

4.10 VISUAL CONTEXT

The design proposals should be informed by the character of the views into the Edmonton EcoPark and effects on the surrounding area.

This section provides an understanding of how the Application Site is perceived by describing the visibility of the existing Edmonton EcoPark and the character of representative views from the surrounding context.

A visual assessment has also been undertaken and is included in the ES (AD06.02). The visual assessment describes the likely significant effects on visual receptors surrounding the Application Site during construction, operation and the decommissioning of the existing EfW facility.

Visibility of the Edmonton EcoPark

The visibility of the Edmonton EcoPark has informed the development proposals. This can be briefly summarised in the following points:

1. low level activities and lower structures within the Edmonton EcoPark are generally well screened by the surrounding vegetation, woodland or built structures. This includes views from short, medium and long distances;
2. the upper section of tall buildings such as the existing EfW facility, which is approximately 31.5m tall, can be partially seen from short and medium distance views, appearing behind the predominant foreground elements, vegetation to the east and industrial buildings to the west;
3. the tallest structure within the Edmonton EcoPark, the stack, is seen against the sky from views at all distances; and
4. the Edmonton EcoPark and its structures are predominantly exposed from views to the south from elevated vantage points. This includes views from the A406 North Circular Road, from those driving along this road and potentially, views from future developments part of the Meridian Water Master Plan.

Visual Character

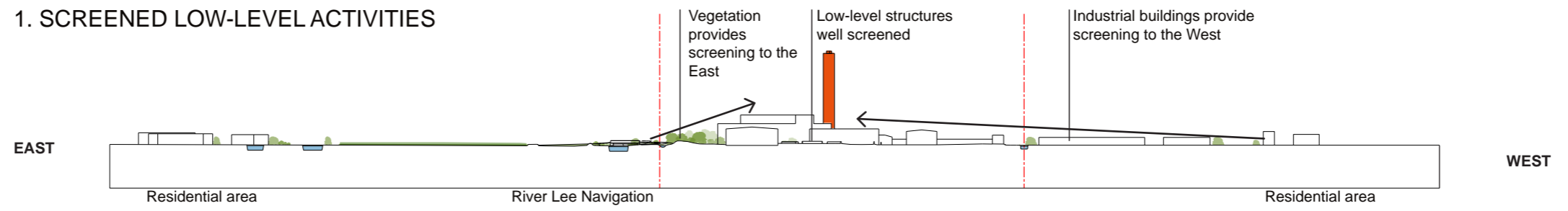
The character of the views is informed by:

- quality or type of observer (transient, dweller or worker);
- predominant use of each area (residential, recreational, industrial or mixed-use); and
- distance to the Edmonton EcoPark (short, medium and long distance).

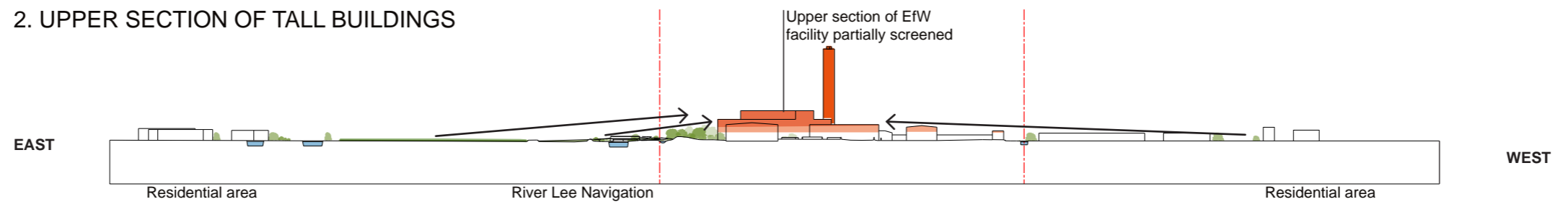
The remainder of this section shows five key existing visual characters that have been identified:

- A. long-distance views from residential areas to the east and west;
- B. medium-distance views to the north and south from industrial areas;
- C. short-distance views from transient observers moving through the A406 North Circular Road;
- D. short-distance views from transient observers moving along River Lee Navigation towpath to the east; and
- E. future views from mixed-use areas to the south (i.e. Meridian Water Master Plan).

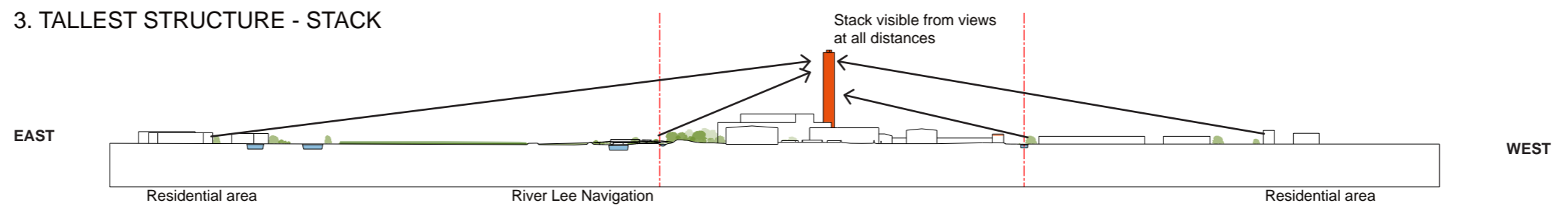
1. SCREENED LOW-LEVEL ACTIVITIES



2. UPPER SECTION OF TALL BUILDINGS



3. TALLEST STRUCTURE - STACK



4. UNOBSTRUCTED VIEWS FROM A406 NORTH CIRCULAR ROAD AND FUTURE RESIDENTIAL BLOCK

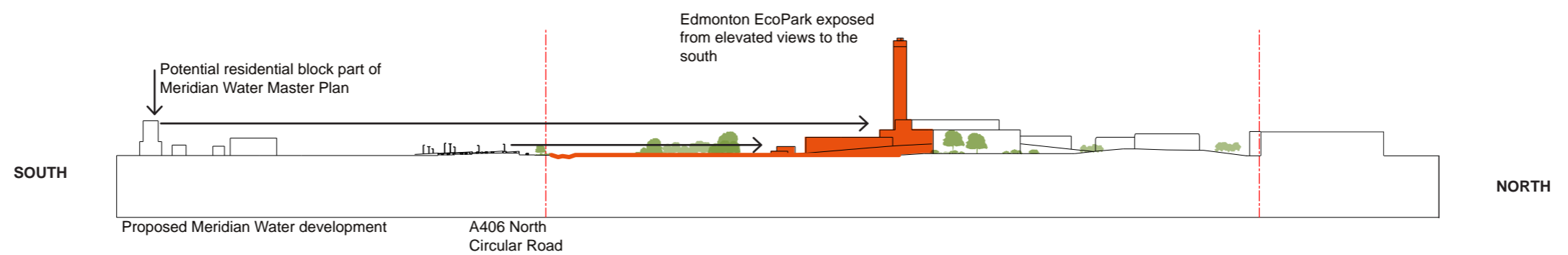


Figure 4.36: Diagrams showing visibility of the Edmonton EcoPark

Elements of the Edmonton EcoPark likely to be visible

4.10 VISUAL CONTEXT

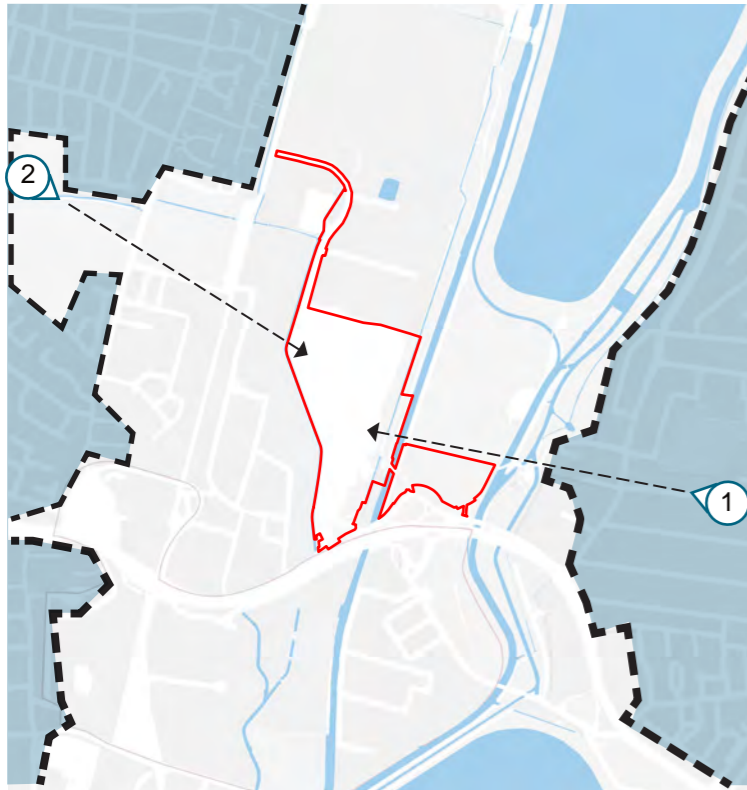


Figure 4.37: A - Long-distance views from residential areas to the east and west

Views of the Edmonton EcoPark are screened by built developments

Existing stack visible against the sky, different character to the foreground



Figure 4.38: 1 - View from Hampton Road

Recreational area in the foreground

Landscape elements screen the Edmonton EcoPark

Existing stack visible against the sky



Figure 4.39: 2 - View from Menon Drive Play Area

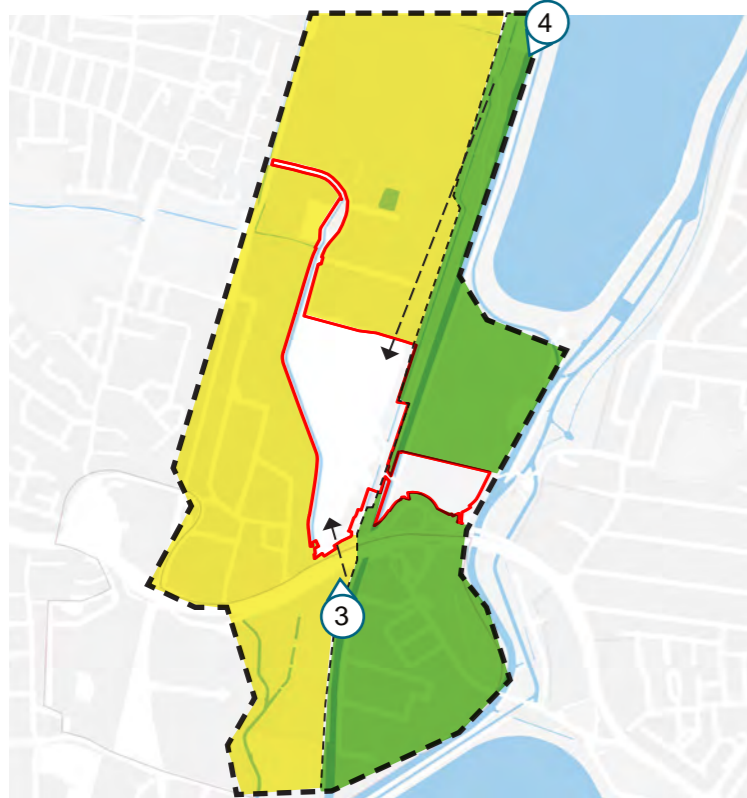


Figure 4.40: B. Medium-distance views to the north and south from industrial areas



Figure 4.41: 3 - View from LCN Route 1

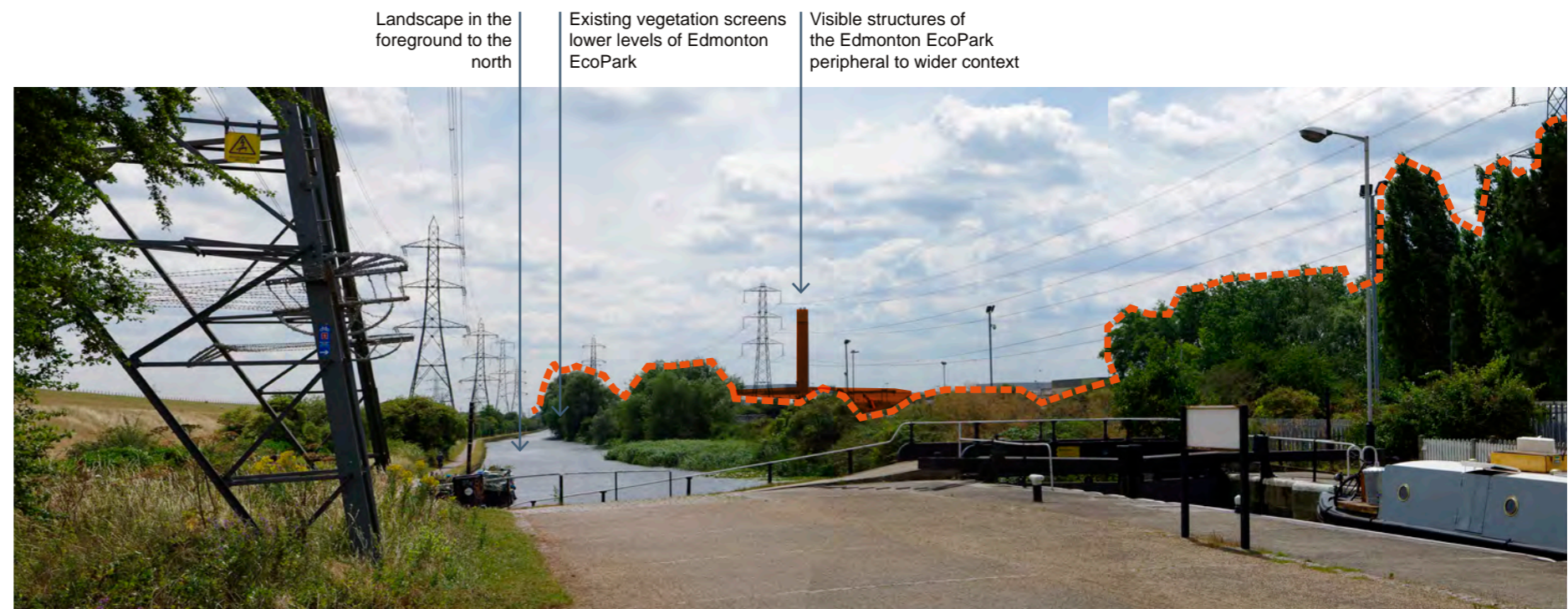


Figure 4.42: 4 - View from Picketts Lock

4.10 VISUAL CONTEXT

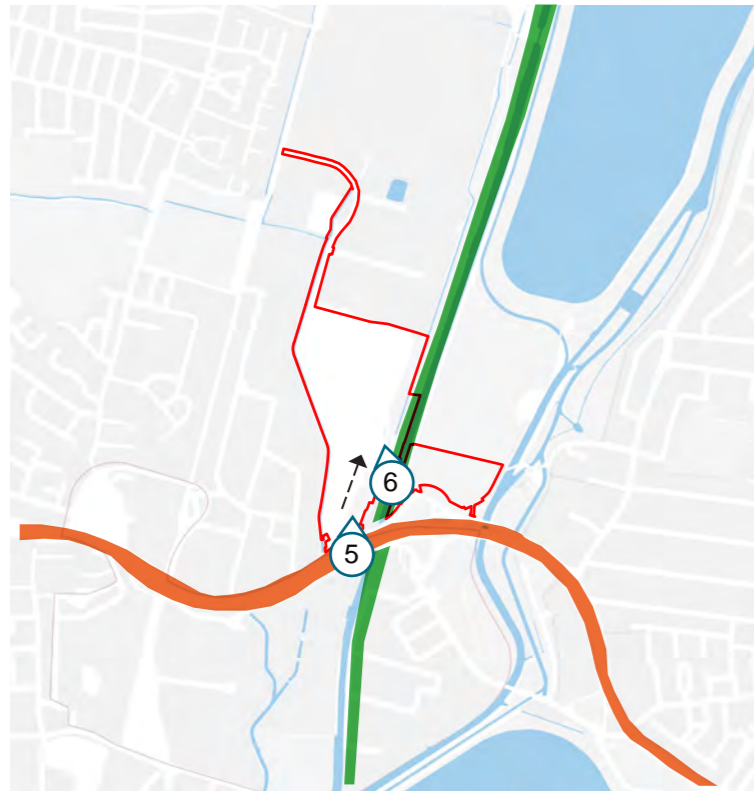


Figure 4.43: C and D. Short-distance views from transient observers moving through the A406 North Circular Road and River Lee Navigation towpath to the east.

Dynamic views of the Edmonton EcoPark from those travelling along the A406 North Circular Road

Elevated vantage position and relatively flat topography offers unobstructed views into the Edmonton EcoPark

Edmonton EcoPark elements seen in relation to landscape and industrial settings east and west of the Application Site

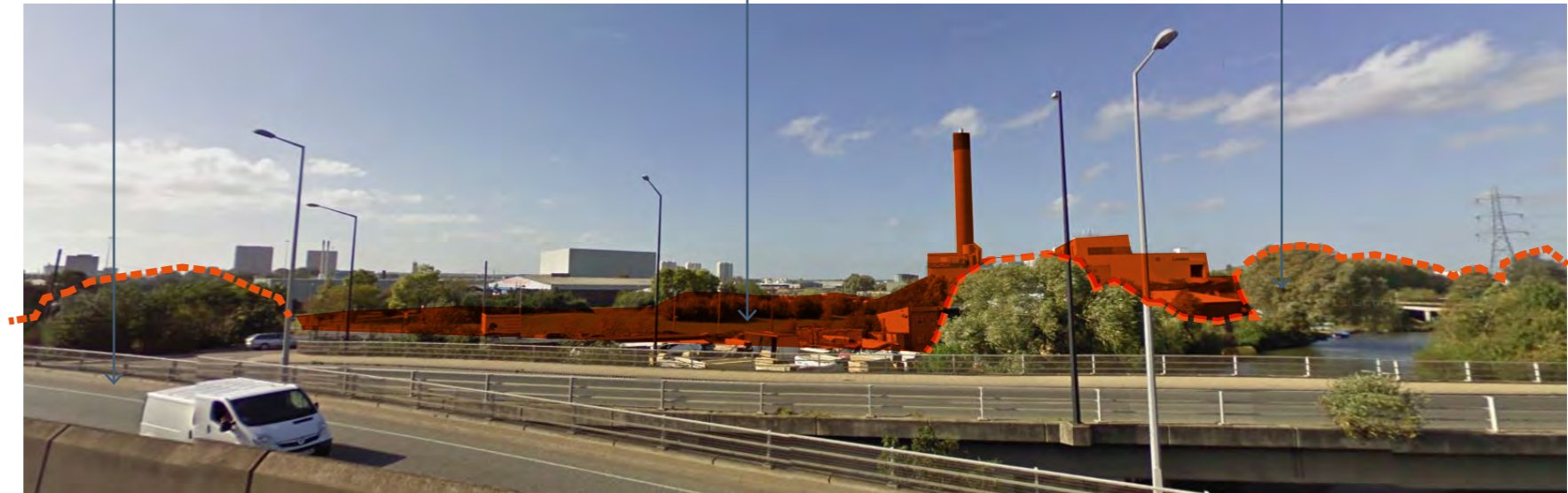


Figure 4.44: 5 - View from A406 North Circular

Taller elements within the Edmonton EcoPark are perceived against the natural setting of the foreground

Vegetation screens lower parts of the Edmonton EcoPark

Views dominated by landscape setting.



Figure 4.45: 6 - View from Lee Valley Public Right of Way

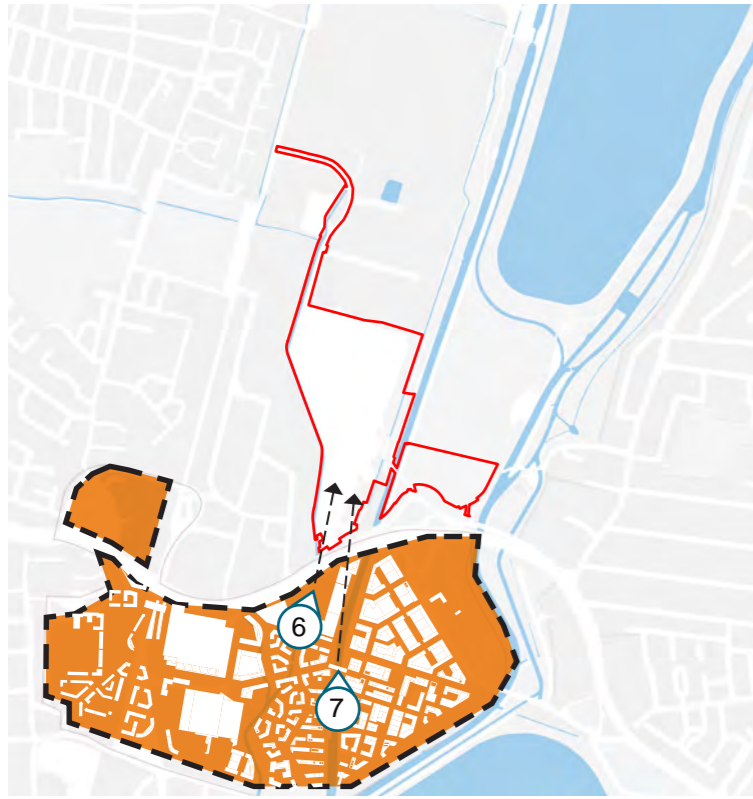


Figure 4.46: E. Future views from mixed-use areas to the south (i.e. Meridian Water Master Plan)

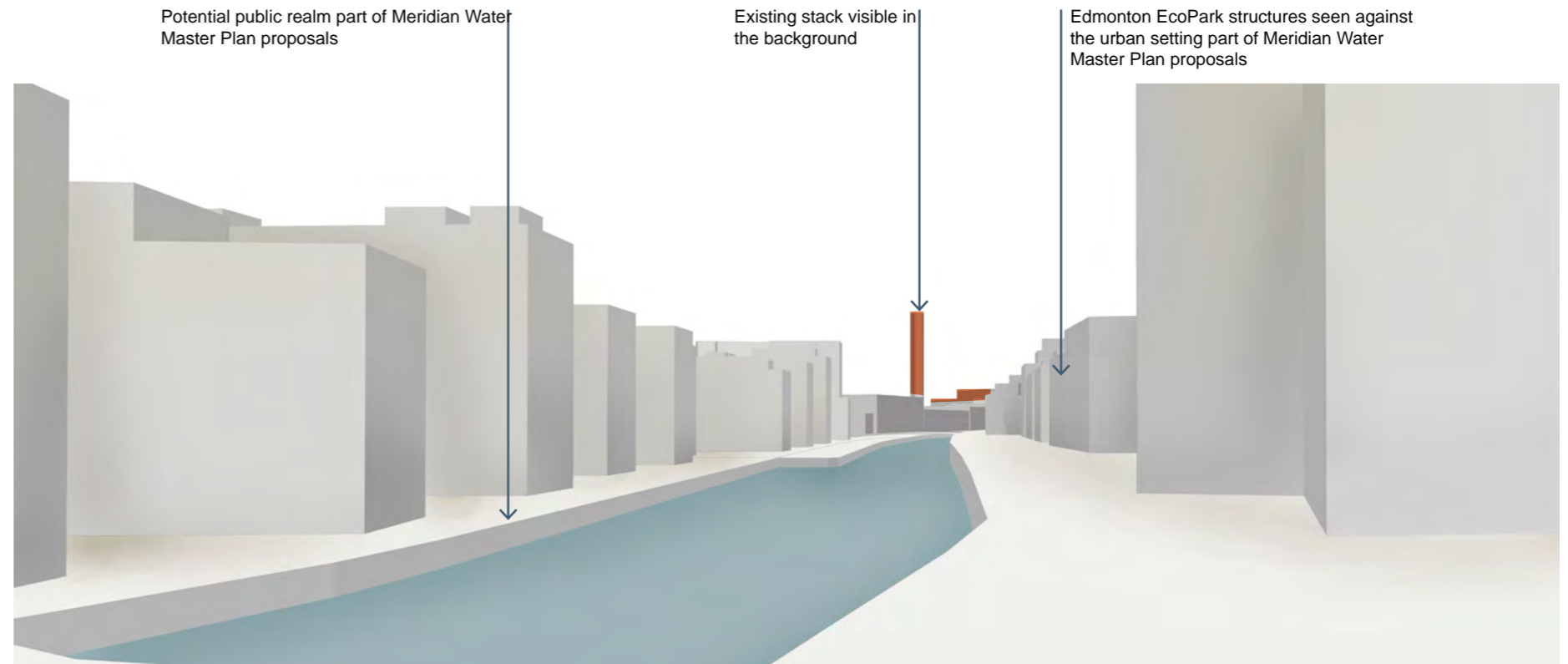


Figure 4.47: 6 - Illustrative view from the south future public space along the River Lee Navigation, with representation of potential future developments

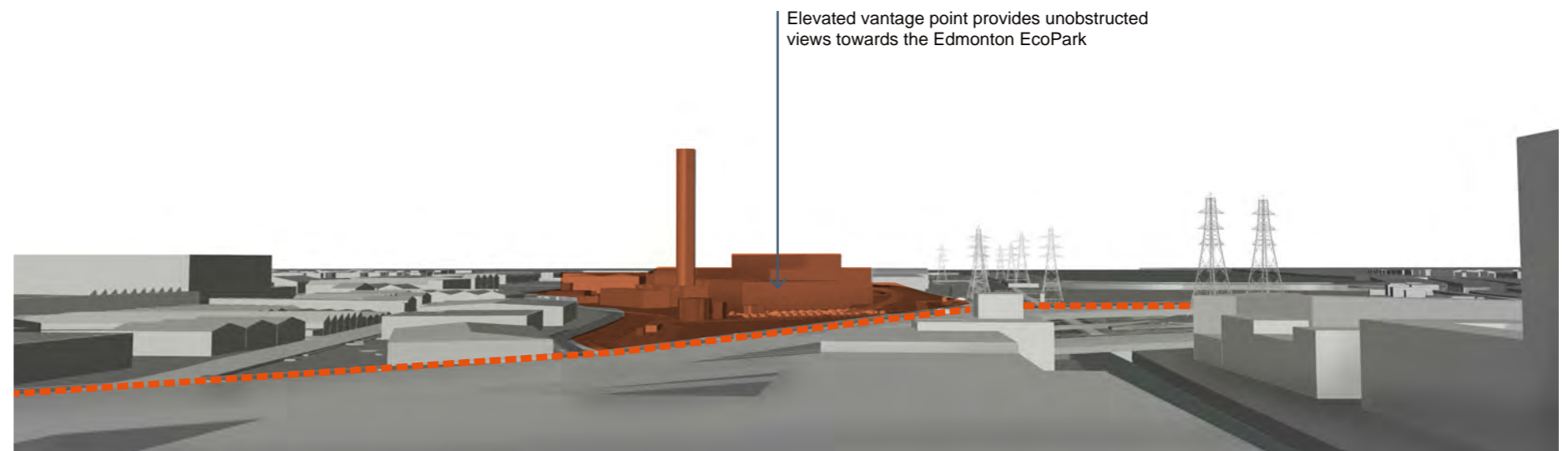


Figure 4.48: 7 - Illustrative view from approximately the eighth storey of a future residential block with representation of potential future developments

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5.1 DESIGN PROCESS

The development of proposals has followed an iterative design process with extensive design development, consultation and engagement with a range of stakeholders. The key stages of design development are shown in Figure 5.1, and included:

- understanding the Application Site and wider context and identifying key environmental considerations that inform the master planning concept;
- analysis of the functional and operational requirements of the Project and the elements to be accommodated to inform the scale, hierarchy and organisation of those elements;
- understanding the implementation strategy including the optimisation of available space to support the construction, operation and decommissioning phases;
- an iterative process of design development, refinement and testing with technical and design advisers and through consultation feedback; and
- developing design principles and strategies for the ERF, RRF, EcoPark House and landscaping and establishing design code principles to inform detailed design.

The Project has sought to achieve a design response which has been informed by the Applicant and its technical and design advisers as well as feedback from consultation. The development of the design has been an iterative process that has also informed and been informed, by assessments prepared in support of the Application.

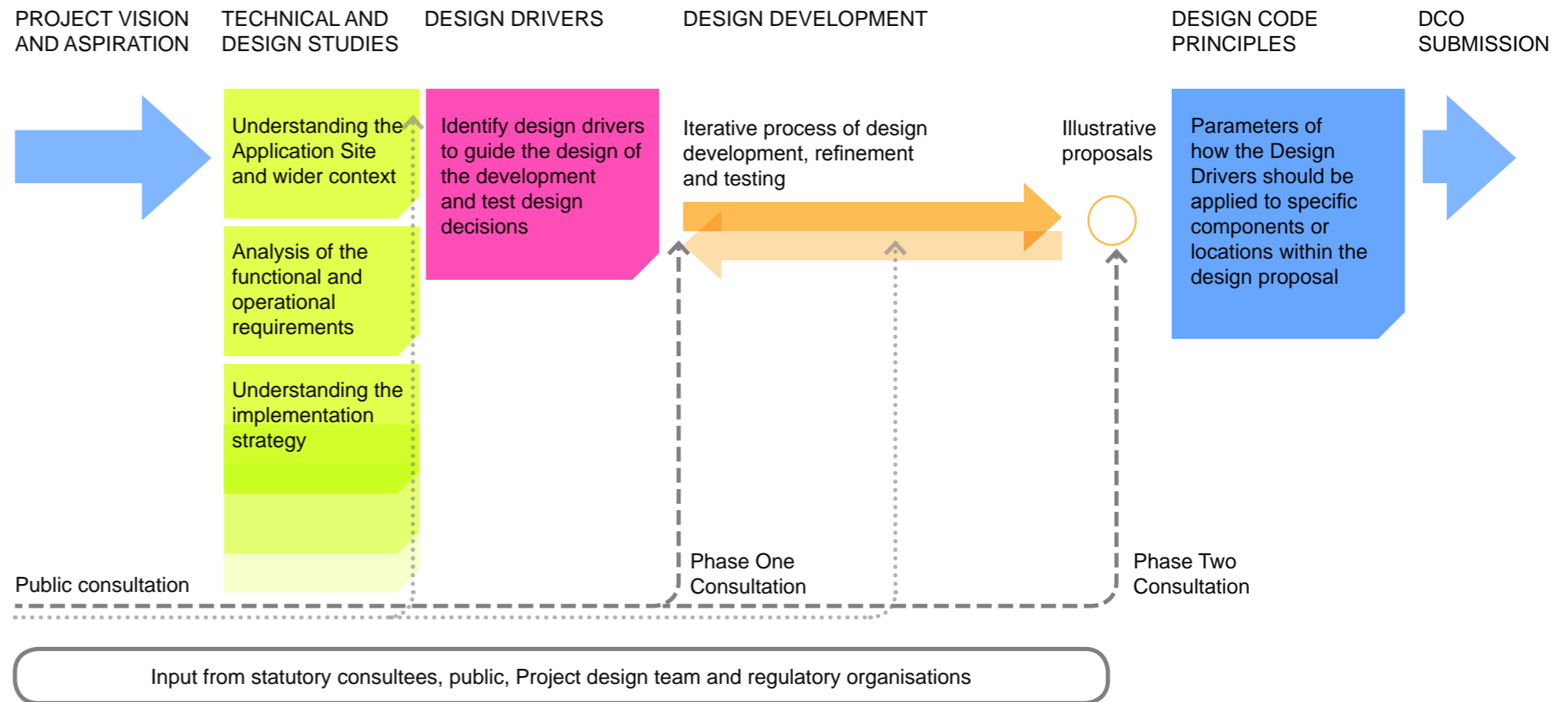


Figure 5.1: Design process

5.2 DESIGN DRIVERS

5.1.3 CONSULTATION

A comprehensive programme of consultation was established at the Project's inception, which has been integral to the design process. Consultation was undertaken in accordance with the requirements of the Planning Act 2008 (as amended), which included the consultation of prescribed consultees, local authorities, the Greater London Authority (GLA), landowners and the local community. The consultation process helped to identify sensitive areas, issues and specific feedback that have informed the design.

The Consultation Report (AD05.01) submitted with the Application includes the feedback received during consultation in relation to design and landscaping and how the Applicant has taken that feedback into account.

The pre-application consultation process comprised the following main stages:

- a. Phase One Consultation, which ran from 28 November 2014 to 27 January 2015, for a period of 61 days;
- b. Phase Two Consultation (including Section 48 consultation), which ran from 18 May 2015 to 30 June 2015, for a period of 44 days; and
- c. other engagement that is non-statutory or 'informal' engagement was also undertaken throughout the preparation of the Application.

Phase One Consultation gave consultees an early opportunity to comment on the initial proposals for the Project. High level information on the emerging proposals was provided including site constraints which have informed the proposal, size and shape of the ERF, initial approach to the design of the ERF building and stack, proposed site layout, proposed approach to landscaping and approach to assessing the potential environmental effects.

Phase Two Consultation sought comments on more detailed proposals for the Project which took into account the results of Phase One Consultation and further technical work and

assessments that were completed. In relation to design, information was provided on the proposals including the design principles and external appearance of the ERF (including the stack and scale of the building), RRF, EcoPark House and landscaping approach. Information was also provided on preliminary environmental impact assessment, transport and access and timescales for construction and demolition.

Other engagement predominantly took the form of meetings with statutory consultees in the pre-application period. This included regular meetings with LB Enfield planning, transport, sustainability and urban design officers, LVRPA, the EA and Transport for London (TfL), amongst others, during design development. Engagement has particularly informed design development in the following areas:

- a. improving wayfinding and pedestrian and cycle access in the vicinity of the Lee Park Way;
- b. improved landscape management in the vicinity of the Lee Park Way entrance;
- c. provision of on-site attenuation of calculated runoff;
- d. provision of flood plain compensation for development of the wharf area, adjacent to the River Lee Navigation;
- e. design of the stack;
- f. the scale of EcoPark House;
- g. the scale of the observation platform on the roof of the proposed ERF; and
- h. further consideration of options for the use of colour as part of the Design Code Principles (AD02.02).

As described in Section 2, the purpose of the Project is to allow the Applicant to continue to deliver its waste management duties and to provide a site that can efficiently create energy - heat and power - that can contribute to meeting the demand for sustainable energy generation.

The analysis of context and functional requirements presented in Sections 3 and 4, led to the identification of a number of constraints and opportunities. These, in turn, informed the design drivers which have guided development of the design. The design drivers have also served to test design options and to measure the appropriateness of the design response.

The development of the design has also responded to planning policy including NPS EN-1 and NPS EN-3 which highlight the importance of functionality, fitness for purpose, sustainability and good aesthetics to develop good design. GLA and LB Enfield development plan policies have also informed the design, particularly those relating to design, access, sustainability. More information on planning policies is provided in Appendix A of this DAS and in the Planning Statement (AD05.02).

This section sets out the functional, environmental and design drivers which the design of the Project responds to.

5.2 DESIGN DRIVERS

FUNCTIONAL DRIVERS

1. FUNCTION

The Project should function effectively and be fit for purpose, responding to technical and operational requirements as follows:

- a. efficient:** the layout of the Edmonton EcoPark should be efficient and give consideration to matters including site access and circulation, utilities, infrastructure and buildings, and site maintenance;
- b. safe:** safety should be the overriding priority in the operation of the Edmonton EcoPark. The Project must adhere to all applicable safety standards and be in accordance with relevant guidance and regulations;
- c. enable continuity of operations:** to reduce disruption to waste management activities during construction, the proposed ERF should be positioned so that the existing EfW facility remains in operation during construction and commissioning of the proposed ERF;
- d. provide for required support infrastructure:** the continuous operation of the existing EfW facility requires the continuous availability of support infrastructure including fuel preparation, bulky waste recycling and vehicle fleet management and maintenance, as well as any temporary support facilities during construction;
- e. ERF capacity:** the proposed ERF should be sized to meet and effectively manage forecast waste needs, accounting for peaks and growth in demand over time. The new facility should therefore accommodate two process lines, each with a capacity of 350,000tpa;
- f. incorporation of Reuse and Recycling Centre:** to promote reuse and recycling to households and small businesses, the Application Site should make allowance for a RRC; and
- g. allow for future development:** Edmonton EcoPark is designated as a strategic site for waste management activities. The design should organise the new facilities so that any future proposals for the site of the existing EfW facility are not unduly constrained.

2. ACCESS AND CIRCULATION

The Project should promote effective access and circulation as follows:

- a. incorporate primary access from Advent Way:** the Edmonton EcoPark's existing primary access should be retained and used for operational traffic;
- b. resilient access strategy:** additional separate access points should be created for light traffic (staff and visitors) to promote efficient management of the Edmonton EcoPark, and increase resilience;
- c. efficient internal circulation:** the layout of the Edmonton EcoPark should enable efficient circulation and separate operational and public traffic; and
- d. appropriate internal connections:** within the Application Site facilities should be adequately connected with vehicular and pedestrian routes.

ENVIRONMENTAL DRIVERS

3. SUSTAINABLE

The Project should be sustainable, that is, to consider the environmental performance and impact of the components of the Project, their longevity and adaptability to climate change, flexibility and efficiency as follows:

- a. sustainable construction:** the design should achieve a high standard of sustainable design and construction.;
- b. apply the energy hierarchy:** the Project should apply the energy hierarchy of lean, clean and green to reduce carbon emissions and prioritise energy efficient design measures;
- c. provide heat and electricity:** the proposed ERF should be designed to provide electricity to the grid and have the potential to deliver heat to a heat network;
- d. apply the waste hierarchy:** the design should encourage re-use and recycling of materials, and reducing construction, demolition and excavation waste. It should prioritise materials that have a low embodied energy, are durable, and can be sustainably sourced; and
- e. appropriate environmental performance:** in developing the components of the Project, environmental performance including longevity, adaptability to climate change, flexibility and efficiency should be considered.

DESIGN DRIVERS

4. SITE-SPECIFIC CONSIDERATIONS

The Project should have a considered response to the environmental and ecological constraints both within and in close proximity to the Application Site as follows:

- a. protect groundwater:** the Application Site is located within an EA designated groundwater SPZ 1 and 2. The design should protect the aquifers;
- b. address flood risk:** the Application Site is partly located within Flood Zone 2, with the remainder in Flood Zone 1. The Project should be designed to mitigate the effects of flooding and include flood compensation areas to allow for any reduction in the floodplain;
- c. protect watercourses:** Salmon's Brook, Enfield Ditch and the River Lee Navigation are in or adjacent to the Application Site. The Project should be sensitive to these watercourses and not interfere with their ecological and water management functions;
- d. respond to the Site of Metropolitan Importance for Nature Conservation:** part of the Application Site is within a SMINC. The design should make provision for this designation;
- e. respond to Green Belt:** the land to the east of the Edmonton EcoPark falls within a Green Belt designation. The NPPF notes that the fundamental objective of the Green Belt is to prevent urban sprawl by keeping land permanently open. The design should respond to this designation through its proposals for this area;

- f. be sensitive to habitats and species:** the Project should be sensitive to bats and other species adjacent to or within the Application Site, controlling light spillage and protecting the dark corridor along the eastern edge;
- g. retain Edmonton Sea Cadets on-site:** in the east of the Edmonton EcoPark adjacent to the River Lee Navigation is a wharf with a single storey building which is currently leased by LWL to the Edmonton Sea Cadets. The design should make provision for the Edmonton Sea Cadets; and
- h. provide areas required for construction:** temporary facilities necessary to construction the Project should be designed to facilitate the subsequent restoration of the area used.

5. CONTEXTUAL RESPONSE

The Project should be based on a thorough understanding of the Application Site's context, including an appreciation of the surrounding land uses, its ecological and historical contexts.

- a. reflect surrounding land uses and character:** the Application Site is located in an industrial corridor and is directly adjacent to the LVRPA. Meridian Water a new mixed use residential development is proposed to the south of the Edmonton EcoPark. The proposals should reflect its location and address the different uses and receptors appropriately. In this regard, the Application should pay particular attention to the design of the southern part of the Application Site; and
- b. be sensitive to views:** the existing EfW facility and stack is visible from a range of viewpoints. The scale of the proposed facilities would also mean the Project would be visible from a range of viewpoints, including from parts of the adjacent Green Belt. The Project should seek to minimise the visual effect of the massing of new facilities.

5.2 DESIGN DRIVERS

6. ENGAGEMENT

The Project should enable the continuation and enhancement of community engagement and education activities including organised tours of the proposed ERF and other waste management facilities on the Edmonton EcoPark, including:

- a. enable public access:** the Project should welcome members of the public onto the Edmonton EcoPark and incorporate a dedicated visitor facility; and
- b. promote engagement:** where applicable, the proposed facilities should engage with their surroundings through the use of active frontages or other methods which communicate and promote the activities within the Edmonton EcoPark.

7. LANDSCAPE AND ECOLOGY

The proposals should respond to the surrounding context, particularly the LVRP, and include a strong landscape and ecological rationale, as follows:

- a. respond to landscape context:** the River Lee Navigation lies immediately east of the Edmonton EcoPark and flows through the LVRP. The LVRP comprises waterways, reservoirs and green space and is designated as Green Belt. The Project should aim to respond to and engage with the landscape features surrounding the Application Site;
- b. enhance ecological and biodiversity value:** create opportunities to enhance the ecological and biodiversity value of the Application Site using species appropriate to the local context;
- c. integrate with surrounding landscape:** integrate the on-site landscape including Salmon's Brook, Enfield Ditch and land to the east of the Edmonton EcoPark with adjacent areas such as the River Lee Navigation and the wider LVRP;
- d. minimise ecological disturbance:** the design should minimise disturbance to existing ecology, for example through considering sensitive lighting design along the River Lee Navigation.

8. DESIGN QUALITY

All buildings, structures and spaces in the Edmonton EcoPark should be of a high design quality which responds to the sensitive wider context as well as its operational function. The Project should also respond to planned improvements in the visual and environmental quality of the industrial estates in the Central Leaside area. The design of the Project should:

- a. communicate Edmonton EcoPark's functional identity:** proposed buildings and structures should be designed to reflect and communicate the waste function of the Edmonton EcoPark;
- b. provide coherent design:** the design should provide visual coherence and complement other buildings and structures within the Edmonton EcoPark;
- c. create a legible design:** the proposed buildings and structures should comprise legible forms which reflect their industrial use, using materials that are appropriate to its function as well as sensitive to its surroundings;
- d. be a dynamic design:** the buildings should be designed in a way which reflects the dynamic nature of the surroundings, considering all stationary and transitory viewpoints into the Application Site; and
- e. be durable:** the materials proposed for buildings and structures should have an appropriate design and performance life and be adequately robust in their specification.