# Cory Decarbonisation Project

## Design Approach Document

Planning Inspectorate Reference: EN010128

Application Document Number: 5.6

**March 2024**

Revision A - Part 1 of 3

# Contents

# 1.0 Introduction

# 1.1 Cory's Carbon Capture Proposal Overview

**Cory's Proposed Scheme for a Carbon Capture Facility (CCF) is an ambitious project to decarbonise its waste management processes. The carbon dioxide ($CO_2$) emitted at its existing and planned energy from waste (EfW) facilities at Belvedere in the London Borough of Bexley (LBB) will be captured and stored permanently, potentially in depleted North Sea oil and gas fields. The Proposed Scheme will deliver a vital public good capturing the carbon dioxide associated with the EfW facilities, Riverside 1 (R1) and Riverside 2 (R2) (providing c. half of London's energy from waste capacity).**

**The Proposed Scheme will contribute to achieving the National Policy Statement EN1 Section 3.5 and 4.8 ambitions in relation to Carbon Capture, noting at para 3.5.1:**

***'There is an urgent need for new carbon capture and storage (CCS) infrastructure to support the transition to net zero.'***

**Cory is seeking development consent for the construction, operation, maintenance and decommissioning of a carbon capture facility, including new jetty (hereafter referred to as the Proposed Scheme) to capture $CO_2$ from the energy from waste (EfW) facilities Riverside 1 and Riverside 2 (at the time of writing, construction works for Riverside 2 are being undertaken) at the Cory Riverside Campus, located adjacent to the River Thames at Belvedere in the London Borough of Bexley (LBB).**

**The Proposed Scheme balances the delivery of an operationally efficient Carbon Capture Facility, with the expectations of NPS EN-1 in relation to design ambition, environmental improvement, placemaking outcomes and minimising potential development impacts.**

**The Proposed Scheme allows for the comprehensive planning of land identified for industrial development and a relatively small area of additional land designated as Metropolitan Open Land (MOL). This single, large project enables a strategic approach to be taken delivering coherence in design, a masterplan led outcome securing wider benefits beyond incremental mitigation secured via smaller projects and will support the integration with place.**

# 1.2 Integrating Carbon Capture

Cory is one of the UK's leading recycling and waste management companies, helping to ensure that London and the Southeast have a safe, clean, and sustainable way of managing recyclable and non-recyclable waste.

Cory is proud to deliver an important service by providing reliable and efficient waste management that recovers energy from residual waste diverting it from disposal to landfill. Cory also recognises the step change to deliver these services at net zero, reducing its carbon impact and achieving carbon negative.

Cory has invested heavily in London's waste recycling, energy generation and river logistics infrastructure with a long history and deep connection to the city and the River Thames stretching back to the late 1700s. The connection to the river is a key consideration for the location of the Proposed Scheme supporting as it does, Riverside 1 and 2 energy recovery facilities which are fed by waste arriving by river.

In addition to its commercial customers, Cory is a trusted partner for several local authorities in London (serving a combined population of approximately 3 million people). It operates essential infrastructure which London relies heavily upon on a day-to-day basis.

Its core activity, recovering energy from residual waste, is undertaken at the Riverside Campus, located adjacent to the River Thames at Belvedere in the London Borough of Bexley (LBB).

Riverside 1, an energy from waste (EfW) facility generating up to 80.5 megawatt (MW) of electricity, has been operational since 2011. Riverside 2, an EfW facility with a generating capacity of approximately 76MW is currently under construction and anticipated to be operational in 2026. Together, they will provide over 1.5 million tonnes per annum (tpa) of residual waste management capacity, making a substantial contribution to addressing the waste needs of London and Southeast England.


Figure 1.1 Cory's River Thames facilities

# Delivery Programme

Construction is targeted to begin in 2026, with two programmes being considered; either to build both sets of carbon capture plant at the same time (or in a single plant configuration), or to phase them where two are built. The Carbon Capture Facility for Riverside 1 and Riverside 2 are intended to be fully operational by 2030.

The goal of the Proposed Scheme is to enable Cory to reach the company's target of being net zero by 2040, and also contribute to the UK's net zero emissions target by delivering negative carbon emissions.

In addition to the planned carbon capture facilities, the project team has engaged and plan to continue to engage with key stakeholders such as the Friends of Crossness Nature Reserve, Thames Water and Peabody Trust to develop proposals that improve accessibility to open space in the immediate area and provide positive outcomes for nature and the local community.

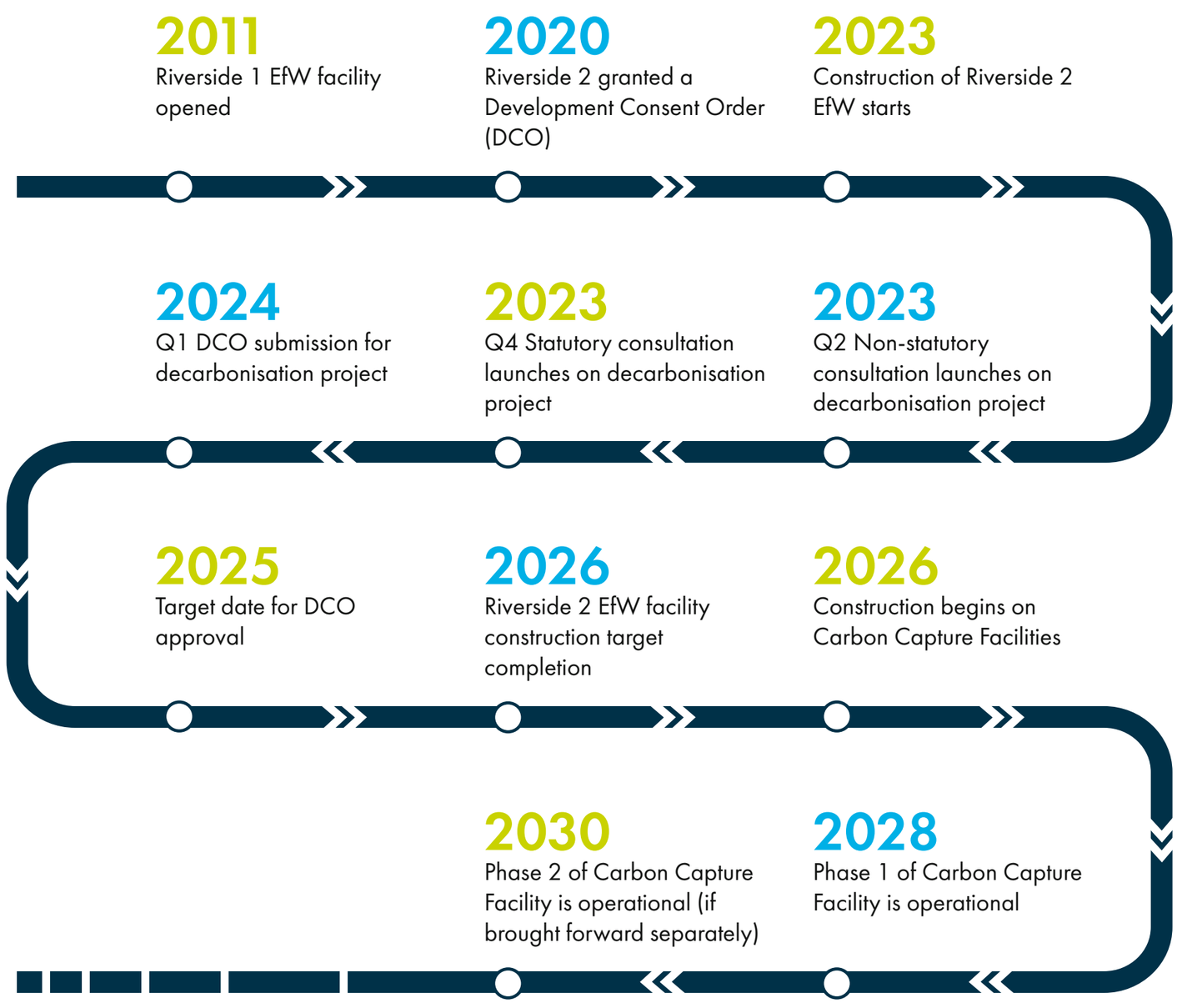



Figure 1.2 Delivery programme

# 1.3 What is a Carbon Capture Facility?

Our Carbon Capture Facility (CCF) is described in detail in subsequent sections of this document but in summary:

- Carbon capture is a process that captures $CO_2$ emissions from energy generation sources and industrial processes, storing it safely so that it will not enter the atmosphere.
- To capture the $CO_2$ emitted by our energy from waste facilities, we need to install carbon capture plant together with associated infrastructure; this will enable us to separate and collect the $CO_2$.
- Once captured, this $CO_2$ will be compressed and liquified on site, and then be transferred via a new jetty by ship to offshore sites under the North Sea for safe storage.
- The technology would allow us to capture up to 95% of the carbon from our two energy from waste facilities, c.1.3 million tonnes.
- It will make our EfW operations 'carbon negative', i.e. removing more $CO_2$ from the atmosphere than is emitted due to the composition of waste, c.50% of which is fossil carbon (derived from plastics) and 50% biogenic (derived from wood, paper, and cardboard)
- The project includes a heat recovery and thermal storage system that will redirect heat produced from the carbon capture plant into the proposed Riverside Heat Network, significantly enhancing its scale and availability.

The Site location for the Proposed Scheme, facility configuration and design are described in this document.

The Proposed Scheme once operational would capture a minimum of 95% of carbon dioxide ($CO_2$) emissions from Riverside 1 and 95% of $CO_2$ emissions from Riverside 2, which is equivalent to approximately 1.3Mt $CO_2$ per year. The Carbon Capture Facility will be one of the largest carbon capture projects in the UK.

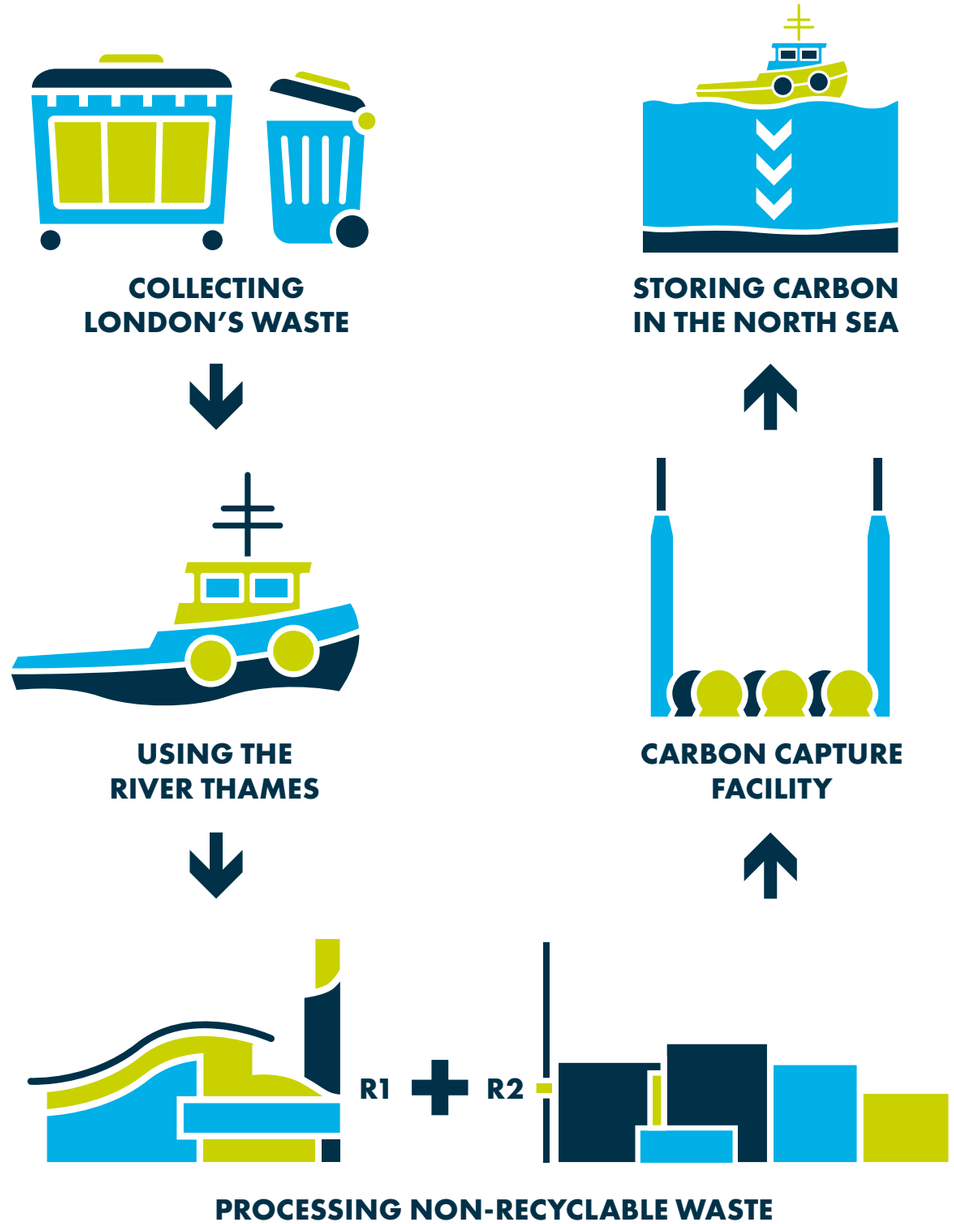



Figure 1.3 Cory's Process

# 1.4 Purpose, Status and Structure of the DAD

## Purpose and Status

This Design Approach Document (DAD) provides a full account of the design process demonstrating good design. The document outlines the main interactions with the natural environment that have informed the design of the Carbon Capture Facility and the nature of mitigation embedded in the design of the Proposed Scheme. The design process has been progressed in accordance with the general approaches set out in Overarching National Policy Statement for Energy NPS EN-1.

This report focuses mainly on the terrestrial elements of the Proposed Scheme and provides some design information, design principles and design code guidance for the marine elements comprising the Proposed Jetty and works to the disused Belvedere Power Station Jetty.

This document has also had the benefit of input from Planning Inspectorate (PINS) during its drafting and has been prepared as part of the PINS Early Adopter Programme which is exploring the establishment of new standards and improvements in design reporting and the interaction with consultation and environmental reporting and context.

This DAD outlines specific design commitments for approval in the form of Design Principles which are structured to align with the National Infrastructure Commission's guidance and a Design Code that will guide the preparation and final detailed design of the project, in line with those Design Principles.

The Design Principles seek to organise the technical engineering process and project design into a coherent scheme design with spatial efficiency and to deliver quality outcomes. The Design Code provides design control for the infrastructure and proposed buildings and landscape to deliver an attractive development visible from public vantage points, supporting place making.

This document outlines the vision for the Proposed Scheme; presents a description of the site, its physical/environmental and planning/policy context; provides an explanation of the project design process and how its operational brief has responded to consultation outcomes, sustainability and context; and describes the framework and the governance of design from concept to delivery, outlining the nature of the submitted design (expressed in the Project Description and Parameters), the role and nature of Project Principles, Optioneering Principles and Design Principles and the role of the Design Code to guide the development of detailed design.

This DAD is not intended to be a certified or secured DCO document. The illustrative material contained in this document is an expression of how the Proposed Scheme could be implemented, when applying the Design Principles and Design Code.

The Design Principles and Design Code have been repeated and submitted in a separate document for approval (Document 5.7 - Design Principles and Design Code) and compliance with them is secured by DCO Requirement.

## Structure

### Introduction

The introduction provides an introduction to Cory, provides an explanation of what a Carbon Capture Facility is, the status of the Design Approach Document and provides an overview of the planning context.

### Design Approach

Providing an explanation of the project vision, design process and approach to stakeholder and public engagement, sustainability, and siting to ensure that the project vision is realised. This section sets out the design governance for the project and how design has been informed by a set of three 'nested' principles comprising: Project Principles, Optioneering Principles and Design Principles, and will be controlled post DCO consent, through the ongoing use of the Design Principles and application of the Design Code.

### Site and Context Appraisal

A summary description of the site in its physical and planning policy context, illustrating project opportunities and constraints for respective disciplines.

### The Scheme Proposal

This section provides a series of illustrations of the Scheme Proposal accompanied by a supporting design narrative. The section provides an explanation of the component parts of the Proposed Scheme and key mitigation comprising environmental and recreation and access proposals. The mitigation strategies will be secured through the Landscape, Biodiversity, Access, and Recreation Delivery Strategy (LaBARDS). An outline version of this document (OLaBARDS) is submitted with the DCO application, and the on-going development of that is secured through DCO requirement.

### Design Development

The Design Development section builds on the Terrestrial Site Alternatives Report (TSAR) (Document Reference 7.5), which sets out the optioneering process leading to the identification of the Preferred Development Zone and the site for the terrestrial aspects of the Proposed Scheme. This section also describes the Optioneering Principles and the exploration of alternative configurations and design refinement of the CCF layout leading up to the preferred design solution for the Proposed Scheme. This section also provides illustrations of strategies for massing, access, green and blue infrastructure, and ecology.

### Design Code

This section details the Design Code for the project and the reasoning for the different parts of it, covering topics on colour, materiality, lighting, form, enclosure, and planting. The Code establishes design control for detailed design, and delivery. The Design Code is also provided in a separate document which is submitted for approval.

### Conclusion

The conclusion outlines the key benefits of the proposal and confirms that good design forms the basis of the Proposed Scheme submission to accord with policy.

# 1.5 Planning Context Overview

As the Proposed Scheme constitutes a Project of National Significance ('PNS') by virtue of its section 35 Direction from the Secretary of State, Cory must make an application under the Planning Act 2008 (as amended) for a Development Consent Order ('DCO') to construct and operate the Proposed Scheme.

## What is a DCO?

DCOs grant approval for the development and implementation of PNSs. The government deems these projects so critical that authorisation to construct and operate them must be validated at the national level by the relevant Secretary of State. With a properly sanctioned DCO, all essential permissions and powers required for the project are conferred, encompassing planning approval, land powers, authorisation for highway and street works, listed building consents, and more. The need to obtain various consents from different entities for the progression of a PNS project is eliminated, as a single DCO encompasses nearly all necessary approvals.

The primary policy consideration against which a DCO is judged is the Overarching National Policy Statement for Energy Infrastructure, the most recent version of which was designated in January 2024. The NPS sets out that carbon capture projects are of a critical national priority.

## What are the stages?

### 1. Pre-application

The applicant, declaring its intention to submit a DCO, develops a fully scoped scheme and engages in extensive consultation with various stakeholders. This pre-application stage is crucial for influencing the DCO scheme.

### 2. Acceptance

After formal submission, the Planning Inspectorate has 28 days to accept or reject the application, considering its adequacy and completeness.

### 3. Pre-Examination

Accepted applications trigger the appointment of an Examining Inspector or panel of Inspectors (known as 'the Examining Authority'). The acceptance of the application is advertised, and interested parties register, allowing them to submit representations and request speaking rights. This stage typically lasts around 3 months.

### 4. Examination

An inquisitorial process begins, lasting up to six months, where the Examining Authority seek additional information through written questions and may convene hearings. Only registered parties can actively participate. During the approach to Examination, the local planning authority – London Borough of Bexley – will publish a Local Impact Report which will express the opinion of the authority on the impacts of the Proposed Scheme. The GLA and neighbouring authorities may also submit such a report.

### 5. Decision

The Examining Authority produces a report with a recommendation within three months of the Examination's close. The Secretary of State then reviews the recommendation and decides within an additional three months.

### 6. Post Decision

A six-week period follows the Secretary of State's decision, during which any challenge can be made in the High Court. The entire DCO decision process is typically concluded within 12–15 months from the application.

## The Proposed Scheme Approach via DCO

The application for a Development Consent Order ('DCO Application') has been submitted to the Secretary of State ('SoS') for Energy Security and Net Zero ('DESNZ') under section 37 of the Planning Act 2008.

The SoS made a Direction, under Section 35(1) of the Planning Act 2008 that the Proposed Scheme should be treated as development for which development consent under the Planning Act 2008 (as amended) is required and is therefore a Project of National Significance (PNS).

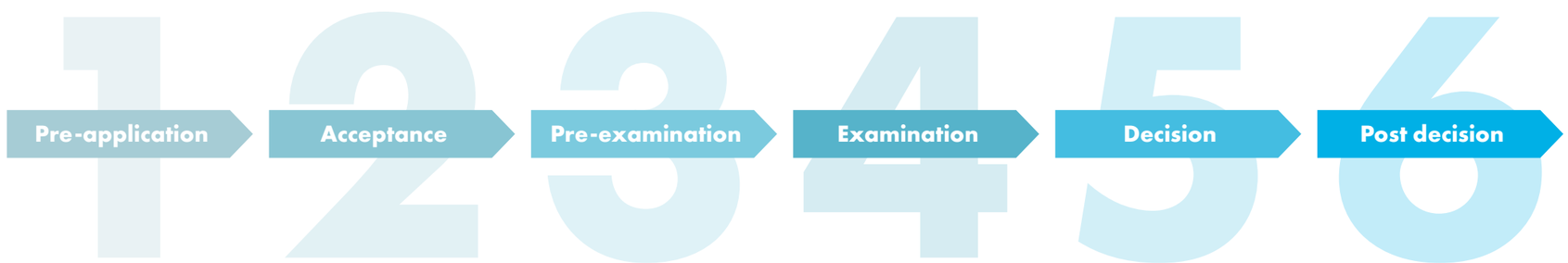



Figure 1.4 6 Stages of the Development Consent Regime

The SoS highlighted that one of the reasons that the Proposed Scheme should be considered as a PNS is that: "The carbon capture element of the Proposed Project would provide and support the decarbonisation of energy from waste derived $CO_2$ emissions in the UK, delivering over a million tonnes of $CO_2$ savings per annum, and supporting the achievement of a fully de-carbonised district heating network that crosses local authority areas".

## National Planning Policy

### EN1 Compliance - Critical National Priority Infrastructure

Large-scale infrastructure developments such as the Proposed Scheme are underpinned by a complex set of UK and local policies. These include policies which directly support renewable technologies and carbon capture technology, and more general policies relating to the potential impacts of development proposals.

National Policy Statements (NPSs) are designated under the Planning Act 2008 to set out national energy policy and form the framework for decision-making on applications for development. The current suite of energy NPSs was designated by the in January 2024. The NPS relevant to this DCO Application is the Overarching National Policy Statement for Energy (EN-1).

### NPS EN-1

EN-1 states that energy is vital to economic prosperity and social well-being and, as such, it is important to ensure that the UK has secure, reliable and affordable energy. Government policy recognises that this requires a significant amount of infrastructure and in order to produce enough energy required for the UK and ensure it can be transported to where it is needed.

Paragraph 3.5.1 of EN-1 states "There is an urgent need for new carbon capture and storage (CCS) infrastructure to support the transition to a net zero economy". Additionally, paragraph 3.5.5 of EN-1 states that the UK has an estimated 78 billion tonnes of $CO_2$ storage capacity under the seabed of the UKCS, one of the largest potential $CO_2$ storage capabilities in Europe. On this basis, NPS EN-1 sets out that carbon capture and storage technologies, pipelines and storage infrastructure are considered to be critical national priority (CNP) infrastructure.

In relation to impacts on Open Space and GI, paragraph 5.11.1 of EN – 1 states: 'An energy infrastructure project will have a direct effect on the existing use of the proposed site and may have indirect effects on the use, or planned use, of land in the vicinity for other types of development. Given the likely locations of energy infrastructure projects there may be particular effects on open space [FN246] including green and blue infrastructure [FN247].'

At paragraph 5.11.25: 'The Secretary of State should also consider whether any adverse effect on green infrastructure and other forms of open space is adequately mitigated or compensated by means of any planning obligations

Further consideration of EN-1 policy is set out in the separately submitted Planning Statement.

### In relation to design

Paragraph 4.5.13 of EN-1 states: 'Applications for development consent should be accompanied by a statement demonstrating how opportunities for delivering wider environmental net gains have been considered, and where appropriate, incorporated into proposals as part of good design (including any relevant operational aspects) of the project.'

The main guidance on design is found at Section 4.7 Criteria for 'Good Design' for Energy Infrastructure' EN- 1 paragraph 4.76.1 – 12:

'The visual appearance of a building, structure, or piece of infrastructure, and how it relates to the landscape it sits within, is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations. The functionality of an object - be it a building or other type of infrastructure - including fitness for purpose and sustainability, is equally important.

Further EN-1 policy detail in relation to Good Design is provided in Appendix B.

## Local Planning Context

The United Kingdom's planning system functions within a hierarchical framework of planning documentation, encompassing the national level (National Policy Statements), the regional level for example, the Marine and Management Organisation's South East Inshore Marine Plan, adopted in 2021) and the local level (the London Borough of Bexley Plan, adopted in 2023 and The London Plan, adopted in 2021).

Local Development Plans which are used to determine planning applications under the Town and Country Planning Act 1990, are not explicitly mentioned in the decision-making framework of the Planning Act 2008. However, in light of the Secretary of State being able to consider 'important and relevant considerations', paragraph 4.1.12 of NPS EN-1 states "Other matters that the Secretary of State may consider both important and relevant to its decision-making may include Development Plan documents or other documents in the Local Development Framework". The relevant Development Plans comprise The London Plan and the Bexley Local Plan.

The policies of relevance to this application include policies on sustainable development, economic growth, community wellbeing, enhancing the environment, water and land transport, and climate change.

### Design Policy

Design policies within the Bexley Local Plan, include: Policy SP5: Placemaking through good design; and Policy DP11: Achieving high-quality design.

### Employment Land Policy

Bexley Riverside which encompasses the Site, is identified in the London Plan as an Employment Opportunity Area (OA) with potential for 19,000 new jobs by 2041. The OA was designated in 2004 and is part of the Thames Estuary Growth Corridor and the Bexley Local Plan Policy SP3 'Employment growth, innovation and enterprise' lies within the OA.

The Bexley Local Plan Policy DP7, 'Appropriate uses within designated industrial areas' includes the Belvedere Industrial Area and a portion of the Site, which is designated as a Strategic Industrial Location.

The majority of the CCF area forming part of the Proposed Scheme comprises an 'Employment Opportunity Area' - London Plan policy [4.12] and at a local level 'Employment growth, innovation and enterprise' LBB Policy SP3 also forming part of the Belvedere Industrial Area - LBB Local Plan Policy DP7.

### Metropolitan Open Land Policy

Areas of the Site and its immediate context are designated as Metropolitan Open Land (MOL) in the London Plan (Policy G3 and para 8.3.1). Metropolitan Open Land (MOL) is afforded the same status and level of protection as Green Belt. LBB Local Plan Policy ref SP8 – 'Green Infrastructure including designated Green Belt'.

Metropolitan Open Land is strategic open land within the urban area. It plays an important role in London's green infrastructure – the network of green spaces, features and places around and within urban areas.

MOL protects and enhances the open environment and improves Londoners' quality of life by providing localities which offer sporting and leisure use, heritage value, biodiversity, food growing, and health benefits through encouraging walking, running and other physical activity.

The Bexley Local Plan (para 5.65) notes that proposals to enhance access to MOL or to improve poorer quality areas in order to provide a wider range of benefits for residents that are appropriate within MOL will be encouraged. Examples include improved public access for all, inclusive design, recreation facilities, habitat creation, landscaping improvement and flood storage.

It is noted that on Site, not all of the land that falls within the MOL designation is open to the public – it is fenced off and only utilised by grazing horses.

The rationale for the Proposed Scheme and CCF location in relation to the MOL is outlined in section 5.0 of this report.

### Green Infrastructure and Open Space Policy

Areas of Open Space are captured in London Plan policy (G4 and para 8.4.3/4) This policy notes that development proposals should:

1) not result in the loss of protected open space.

2) where possible create areas of publicly accessible open space, particularly in areas of deficiency.

The policy also notes that...It is important to secure appropriate management and maintenance of open spaces to ensure that a wide range of benefits can be secured and any conflicts between uses are minimised and that: Proposals to enhance open spaces to provide a wider range of benefits for Londoners will be encouraged. Examples could include improved public access, inclusive design, recreation facilities, habitat creation, landscaping improvement or Sustainable Drainage Systems (SuDS).

LBB Policy SP8 'Green Infrastructure including designated Green Belt' notes the following which underpins the Environmental Proposals and Access and Recreation Proposals that form part of the Proposed Scheme and are outlined later in this DAD:

- that beneficial use of Metropolitan Open Land (MOL) should be encouraged for public access, outdoor recreation, retaining and enhancing landscapes, visual amenity, biodiversity or to improve damaged or derelict land.
- protecting Urban Open Space, only allowing development where the public benefit of development clearly outweighs harm.
- agreeing proposals for creating or improving habitat, implementing priorities for the recovery of nature outlined in local nature recovery strategies etc.

- protecting land that forms part of the Southeast London Green Chain as important environmental, recreational, and educational resource...seeking to improve public access to and through the area and promoting it as a recreational resource and visual amenity.
- supporting the creation of new cycling and walking routes to connect publicly accessible open spaces...
- ensuring all new development deliver a net increase to green infrastructure.
- protecting...existing amenity space that has been provided as part of a development...
- protecting and enhancing the biodiversity, heritage...values of open spaces...

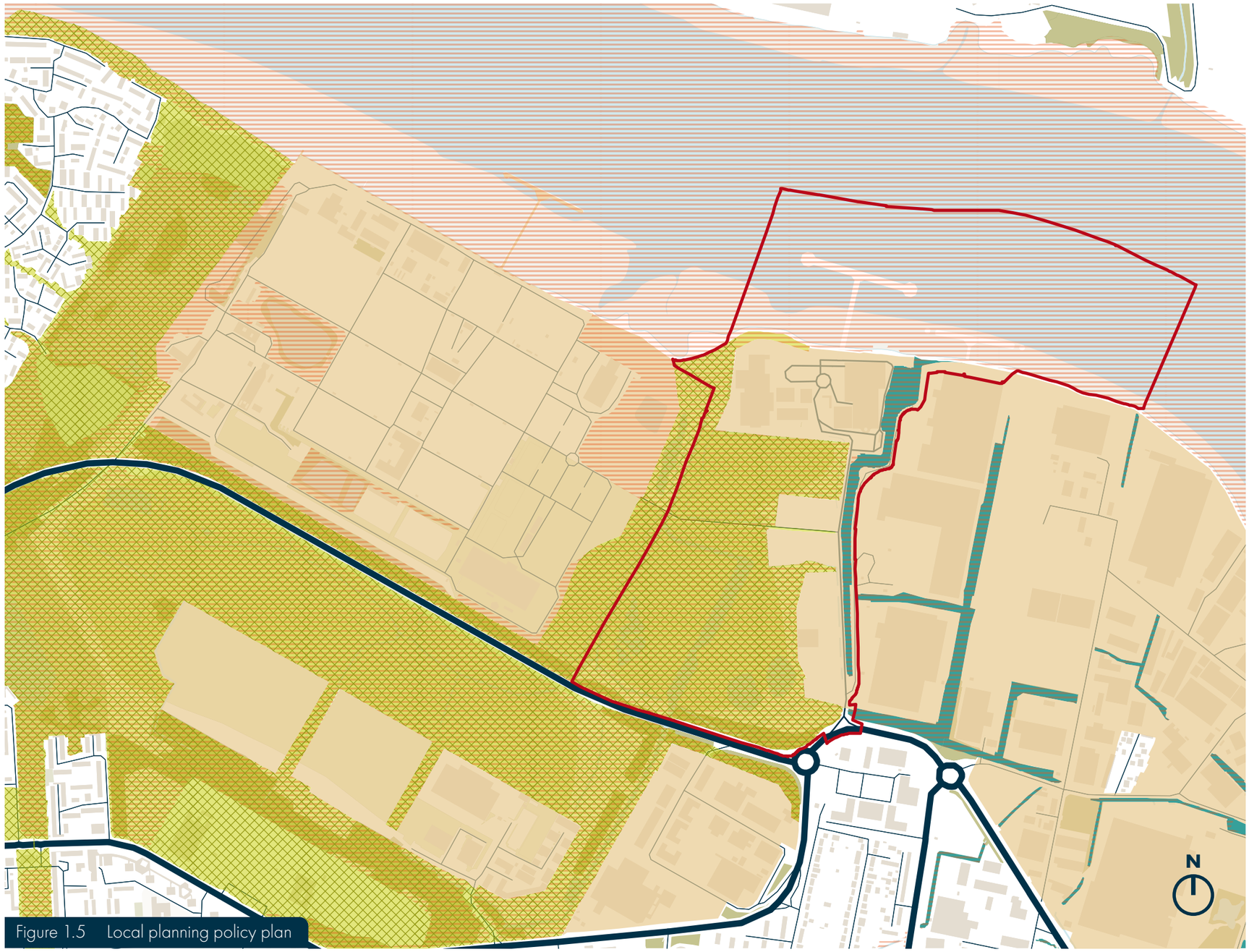



Figure 1.5 Local planning policy plan

It should be noted that Open Space and Southeast London Green Chain identified by LBB in policy SP8, extends across the undeveloped areas of the Site and excludes the land identified for industrial development. However, the Open Space and Southeast London Green Chain illustrated in Figure 1.5 is not all accessible to the public.

For clarity, therefore, Cory has identified land that is considered to be 'Accessible Open Land', to inform the understanding of any mitigation that may be appropriate in the light of policy (i.e. there is land designated as 'open space' that is not in fact accessible to the public which does not need to be the focus of mitigation). Accessible Open Land comprises land that may be accessed by the public and that is not fenced for the purposes of restricting access. The Proposed Scheme does not result in the loss of any Accessible Open Land.

The Bexley Local SP8 - 'Green Infrastructure including designated Green Belt' notes the following of relevance:

Bexley's green infrastructure, including open spaces and waterways will be protected, enhanced, restored, and promoted as valuable resources to provide a healthy integrated network for the benefit of nature, people, and the economy. Future development must support the delivery of a high-quality, well-connected, and sustainable network of open spaces.

The Green Infrastructure Strategy for the Proposed Scheme is set out in section 5.2 of this document.

## Nature Conservation, Planning Policy and Designations

The Site is covered by a number of nature conservation designations illustrated in Figure 1.5 and Figure 3.53.

The status of those designations is highlighted in the following relevant regional and local planning policy documents: Site of Importance for Nature Conservation (Metropolitan) London Plan Policy G6 'Biodiversity and access to nature' and LBB Local Plan Policy SP9 'Protecting and enhancing biodiversity and geological assets and DP20 'Biodiversity and geodiversity in development'. These policies are accompanied by Bexley's SINC Report 2016 (Adopted) and Addendums of 2022.

The Site straddles the Erith Marshes Site of Importance for Nature Conservation (SINC), and the Belvedere Dykes SINC. Crossness Nature Reserve (CLNR) which forms part of the Erith Marsh complex is designated as a Site of Metropolitan Importance for Nature Conservation. These SINCs are connected to the River Thames SINC and reflected in identified strategic green wildlife corridors identified in the SINC Report Addendum 2022 (see Figures 1.6 and 1.7).

The Greater London Authority has been identified as the responsible authority by Secretary of State for Environment, Food and Rural Affairs to lead the preparation of a Local Nature Recovery Strategy (LNRS) in accordance with DEFRA Policy Paper 2023 and required under the Environment Act 2021.

The Plan should set out the priorities for nature recovery and propose actions in locations where it would make a particular contribution to achieving those priorities. However, it is noted that the LNRS that covers this area has not yet been developed, due to be completed by 2025.

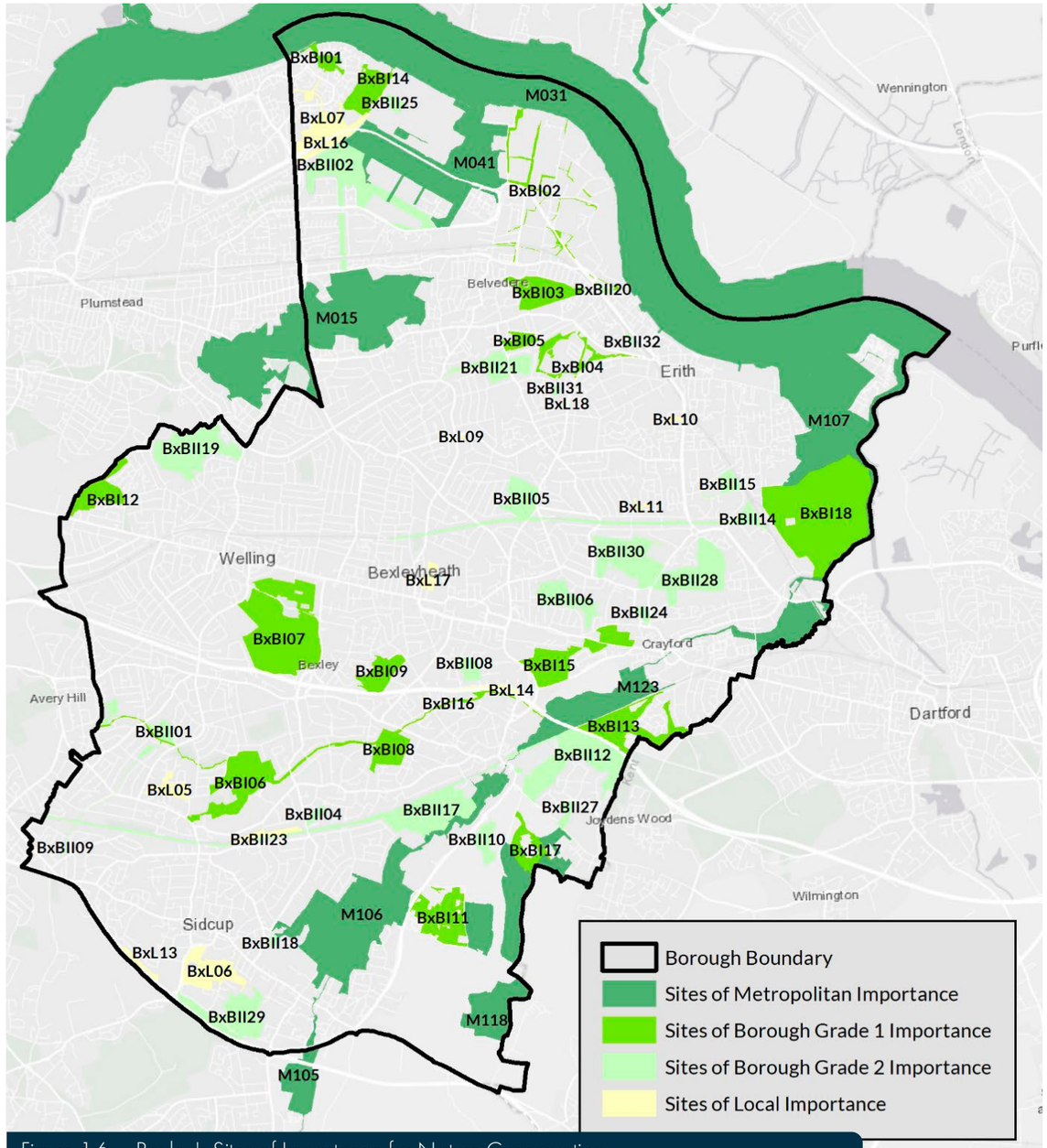



Figure 1.6 Bexley's Sites of Importance for Nature Conservation
(Extract from London Borough of Bexley's Addendum to the SINC Report 2016)

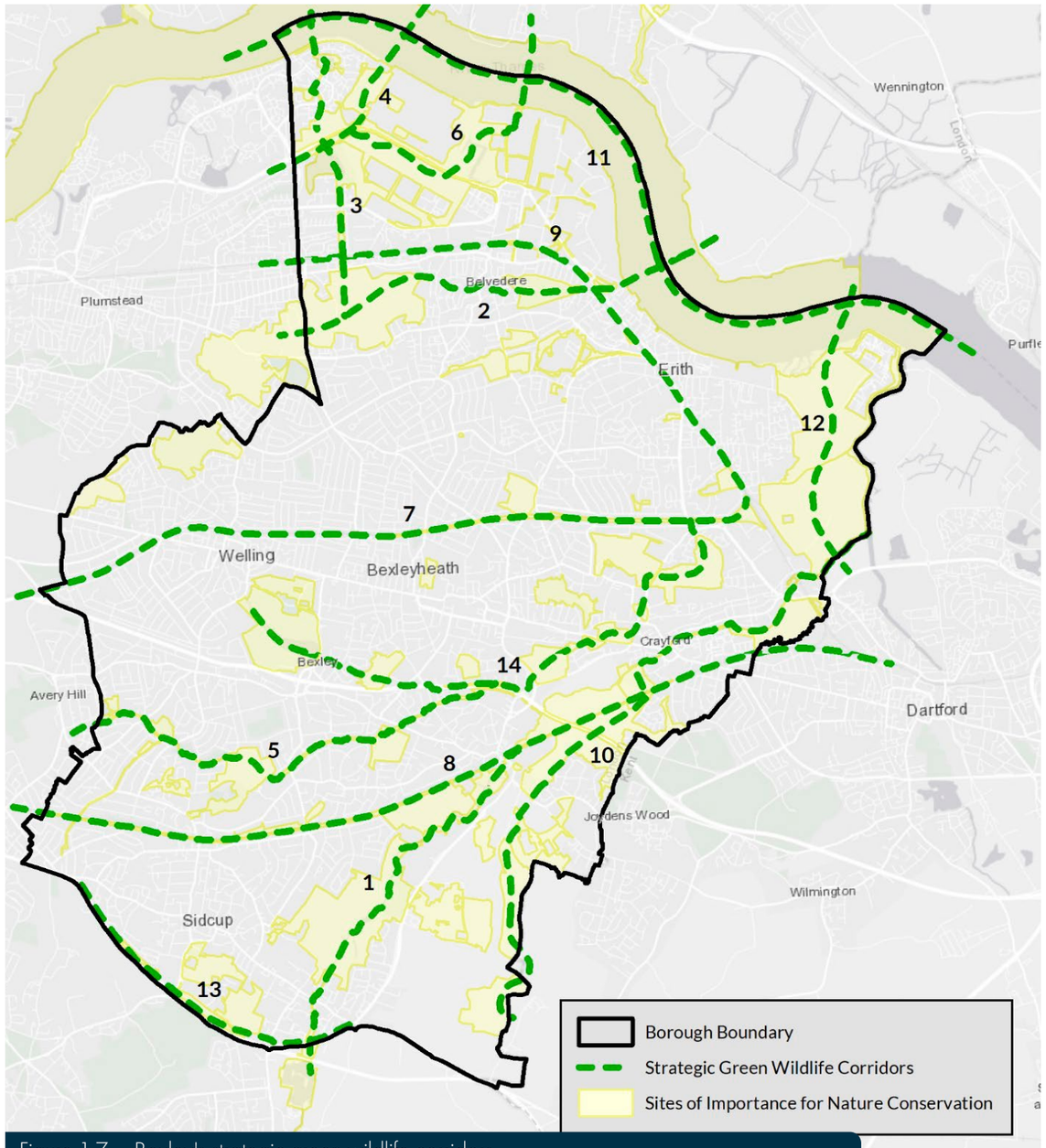



Figure 1.7 Bexley's strategic green wildlife corridors
(Extract from London Borough of Bexley's Addendum to the SINC Report 2016)

# 2.0 Design Approach

# 2.1 The Design Process and Good Design

The design process is illustrated in the summary diagram Figure 2.1 and in full in Figure 2.2. The process reflects a systematic and structured approach to securing good design. The main elements of the design process are signposted below and provide additional detail to the diagrams.

Good design is reflected in both design process as well as design outcome. Our Project Principles, Optioneering Principles, Design Principles and Design Code have been prepared as part of our project process and to drive good design outcomes.

The Project Principles, Design Principles and Design Code frame how the Proposed Scheme will fulfil the criteria of 'good design', set out in Overarching National Policy Statement for Energy (EN-1) (NPS EN-1) (Ref 7.3) and NPS EN-6. The use of Design Principles also aligns with the National Infrastructure Commission's guidance and supports the use of design principles outlined in the Bexley Growth Strategy (2017) Part II Chapter 3.

The Proposed Scheme including its proposed mitigation strategies was established through an iterative process including consideration of:

- Consultation outcomes.
- Technical design development.
- Environmental interactions.

Application of 'nested Principles (Project, Optioneering and Design). During the formal consultation period we consulted on:

- Our proposed Design Principles themes (Climate, Value, Places and People) and provided some examples for consideration.
- Design options for $CO_2$ storage (low or tall vessel storage)
- Environmental and mitigation and enhancement opportunities.
- The potential retention of the Belvedere Jetty Power Station Jetty (disused); and
- Opportunities for improved pedestrian connections.

We have further developed our Design Principles, developed our Proposed Scheme, and prepared our Design Code for submission.

The Proposed Scheme is expressed in the DCO application, as a set of Project Parameters set out in Chapter 2 of the ES (Document Reference 6.1) and as a Schedule to the DCO and the lateral limits of deviation shown on the Works Plans. These elements are then supported by Design Principles and Design Code which are also submitted for approval. The latter forms the design governance for ongoing design in support of future discharge of the detailed design DCO requirement.

The extent of design flexibility sought for the Proposed Scheme is based on the nature of the emerging technology associated with Carbon Capture and in advance of the involvement of the technology provider for the Proposed Scheme. An explanation of the approach to flexibility is provided in Chapter 2 of the ES.

### Design Process Summary and Signposting

The following section provides a brief explanation of each step of the design process and sign posts the section of the DAD where a fuller explanation is provided.

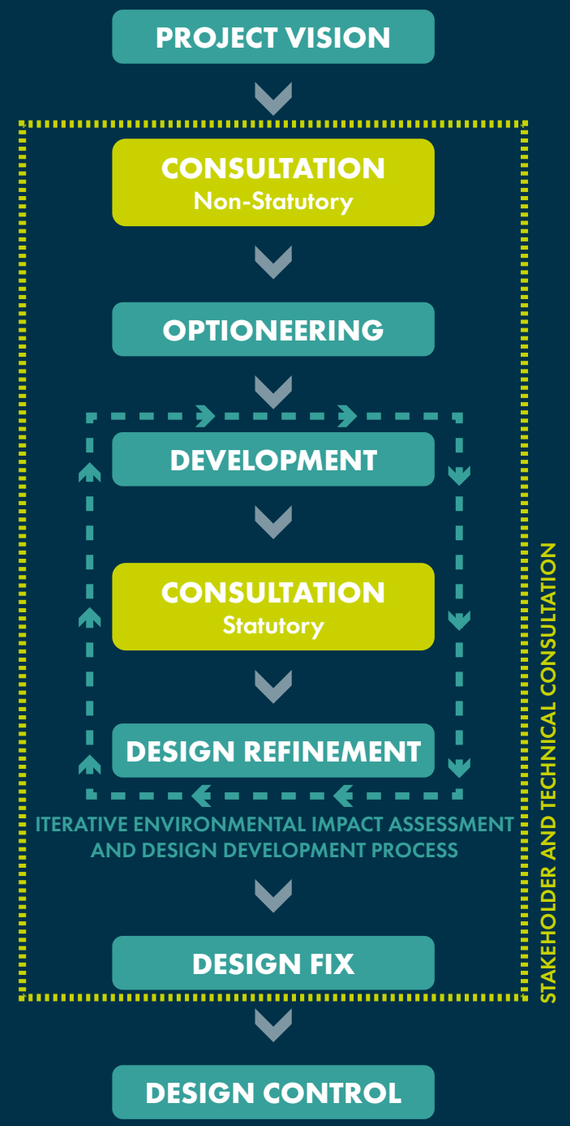



Figure 2.1 Design process diagram

### Vision - Section 2.2

The vision sets the overall tone of the project and informs the approach to design – an intentional process that is not merely seeking to deliver an operationally efficient project that minimises impacts, but which also reflects wider ambitions reflected in the Project Principles.

### Site Context and Appraisal - Section 3.0

The DAD provides a brief overview of some of the key environmental and policy considerations that have informed the design. Further information is provided in the Environmental Statement (Document Reference 6.1).

### Project Principles - Section 2.3

Cory has defined a set of 'nested' principles to inform the design governance of the project, flowing from its Project Objectives.

The principles are project specific and increase in their detail and specificity extending from more general Project Principles at the start of the design process, to Principles to inform optioneering and Design Principles that will inform the detailed design.

### Early Consultation - Section 2.4

The team commenced non-statutory consultation and early stakeholder engagement, involving and informing key neighbouring land-owners and the London Borough of Bexley (LBB).

### Optioneering - Section 5.1

The Optioneering process for the project is described in full in the Terrestrial Site Alternatives Report (TSAR) (Document Reference 7.5) and the Jetty Site Alternatives Report (JSAR) (Document Reference 7.6).

### Optioneering Principles - Section 2.3

The principles are structured to inform the assessment of Development Zone options for the project and establish a consistent basis upon which options were assessed and to support the identification of the Preferred Development Zone.

### Preferred Development Zone - Section 5.1

The Preferred Development Zone, South 1 was identified as the zone within which the Project Scheme should be developed.

### Design Principles - Section 2.3

The Design Principles are structured to accord with the National Infrastructure Commission's guidance under the thematic headings of: Climate, People, Places and Value.

The Design Principles informed the validation of the chosen development zone, identification of the preferred operational layout configuration, the Proposed Scheme design and will guide future detailed design, and delivery.

### Design Development - Section 5.0

The design for the Carbon Capture Facility operational layout was developed as part of an ongoing iterative process including exploration of layout options. The design has been developed to provide sufficient certainty to inform the structure of the design submission, DCO application and the ES that accompanies the DCO submission.

Several CCF operational layout configurations were explored along with wider environmental and access and recreation proposals.

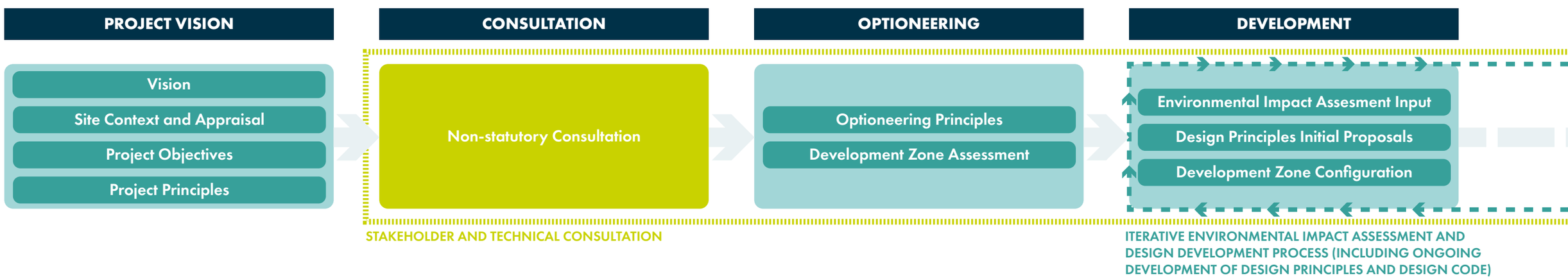



Figure 2.2 Detailed design process diagram

Throughout the iterative process various elements of the project design were refined and adjusted to achieve an optimal layout that delivered the operational brief and project vision, responding to the Project and Design Principles and the site-specific context including site levels, interfaces, access requirements, and drainage. This process also ensured that the emerging environmental impacts identified as part of the EIA process, could be addressed with greater precision including habitat mitigation, Biodiversity Net Gain requirements and site levels in relation to flood risk etc.

### Operational Layout - Sections 4.0 and 5.0

The configuration of the operational layout was explored, and the 'Compact' layout identified as the preferred layout.

The environmental and access and recreation proposals were developed in response to and as part of the layout option design, informed by the Design Principles and developed as a result of extensive interdisciplinary work to deliver a coordinated design that embeds relevant mitigation and good design that would inform the Design Code, Parameters and the Outline LaBARDS.

### Statutory Consultation - Section 2.4

The consultation programme and feedback of relevance to the design captured as part of the formal consultation process is recorded in the DAD. The feedback from the consultation from stakeholders and statutory consultees, was fed into the preferred operational layout and Proposed Scheme prior to fixing the design.

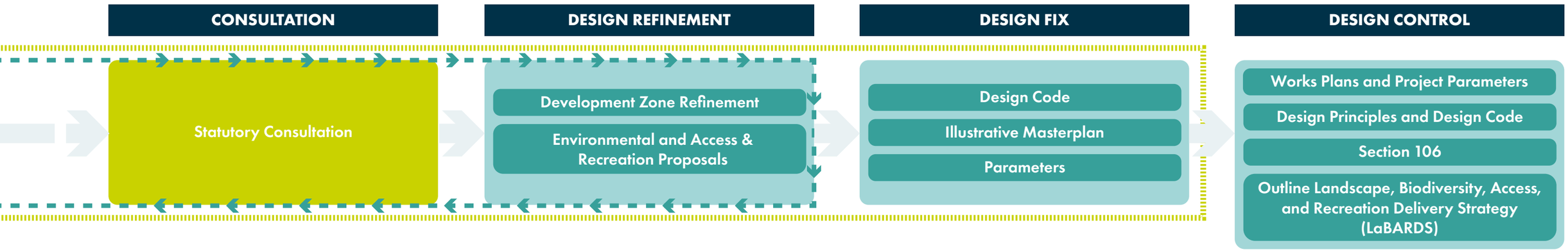
The full account of how the DCO application has had regard to consultation feedback is provided in the Consultation Report (Document Reference 5.1) submitted with the application and, in relation to design matters, is summarised in section 2.4 of this DAD.

### Design Fix - Section 4.0

The design was fixed following final consultation feedback and technical design development and is set out in the Project Description in the Environmental Statement and secured through the Project Parameters and the Works Plans. The material that is illustrative within this DAD, and submitted with the application, demonstrate one way of how the proposed Project Parameters and development within the Works Plans limits of deviation could be delivered.

### Design Code - Section 6.0

The Design Code is submitted for approval and will be used by London Borough of Bexley to assess post DCO submissions to discharge the detailed design through DCO Requirement.



# 2.2 Project Vision and Objectives

## Vision

The Cory Decarbonisation Project will be a good neighbour to the nearby communities and be defined by clear, agreed project and design principles.

The project will be planned to enhance the local natural environment and improve access to the natural assets in the area for the community and local interest groups, through a comprehensive strategy of habitat enhancement and access, setting the Cory EfW plants and carbon capture proposal in a coherent and attractive setting.

The design of the project will be controlled by a clear process and guidance from pre planning to delivery and deliver good coherent design that is visually appealing and that responds to its context and surrounding cultural heritage.

The proposal will demonstrate collaborative interdisciplinary working, ensuring the design process integrates operational requirements, consultation outcomes, environmental responsibility and delivers good design outcomes that we will commit to delivering.

## Objectives

To deliver this vision and inform scheme development, Cory identified the following Project Objectives for considering development zones:

- located in the vicinity of the Riverside Campus and the River Thames, for efficient connection to EfW facilities and the Proposed Jetty;
- of sufficient size to accommodate the Carbon Capture Facility, including its Supporting Plant and Associated Infrastructure in order to capture and process the carbon created by both Riverside 1 and Riverside 2; and
- deliverable in a timely manner.

Figure 2.3 Illustrative sketch of an aerial view of the Proposed Scheme

# 2.3 Principles - Project Principles

The Project Principles have been developed to inform the project design evolution from its earliest stages, building on the Project Objectives.

The Project Principles comprise the following:

## Realise the Riverside Campus

- Creation of a new inspiring place of renewable industry, contributing to local, national, and global goals. Providing local jobs in a Campus environment, providing tangible benefits for the local community and wellbeing opportunities for staff and visitors alike.

## Delivery of an efficient and safe operational layout

- Provide sufficient design flexibility, to allow for future technology provider input in later stages working to agreed design principles and parameters to deliver an efficient and safe operational layout.

## Support understanding of carbon capture and storage

- Communicate with stakeholders and the local community to support an understanding of the proposed carbon capture project and how it interacts with the local environment.

## Organised and coherent design

- Deliver a proposal for the operational layout and wider Riverside campus, that is characterised by an organised and coherent design that can be developed in accordance with an approved design code.

## Enhance biodiversity

- Maximise the opportunity for ecological enhancement.

## Minimise effects on Metropolitan Open Land (MOL) and improve access to open space and connectivity

- Provide improved access to open space and strengthened pedestrian connectivity for the community. Minimise effects on the MOL through good site planning and design.

## Minimise project impacts

- Minimise project impacts and optimise project benefits.

- The ES (Document Reference 6.1) reports on the potential likely significant effects for the construction and operation (including maintenance) phases of the Proposed Scheme. The assessment of the Likely Significant Effects (LSE) for the Proposed Scheme has been undertaken both before and after additional mitigation measures have been applied. A summary of the design embedded mitigation is included in Chapter 2: Site and Proposed Scheme Description (Volume 1) of the ES (Document Reference 6.1) The additional mitigation for each topic is also recorded in Chapter 22: Summary (Volume 1) of the ES (Document Reference 6.1). In addition, the Mitigation Schedule (Document Reference 7.8) documents the additional mitigation and monitoring proposed and indicates in which certified documents the commitments will be implemented and secured.

# Optioneering Principles

Building on these Project Principles (as shown in Figure 2.4), the following Optioneering Principles have been developed, as outlined in the Terrestrial Site Alternatives Report (TSAR) (Document Reference 7.5). These range across appropriate engineering, environment/planning, land use and cost considerations:

## Principle 1

Seek to avoid or minimise adverse impact to locally important biodiversity sites.

## Principle 2

Seek to avoid or minimise adverse impact to protected species.

## Principle 3

Seek to avoid or minimise the level of adverse impact on existing businesses/third party landowners.

## Principle 4

Seek to avoid or minimise land take within the MOL Accessible Open Land and impacts on PRoW.

## Principle 5

Ease of required connections with the Riverside Campus and the Proposed Jetty.

## Principle 6

Seek to minimise engineering complexity and consequent cost.

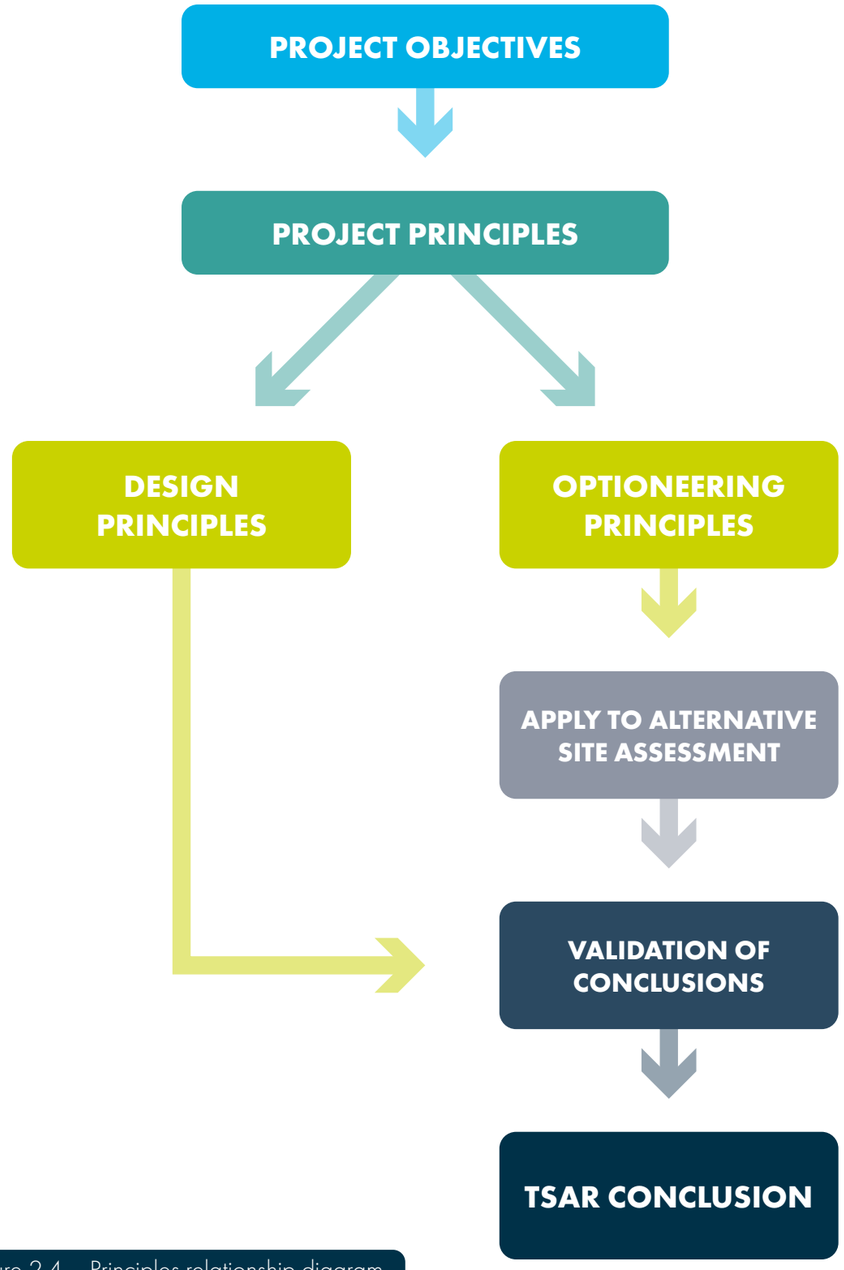



Figure 2.4 Principles relationship diagram

# Design Principles

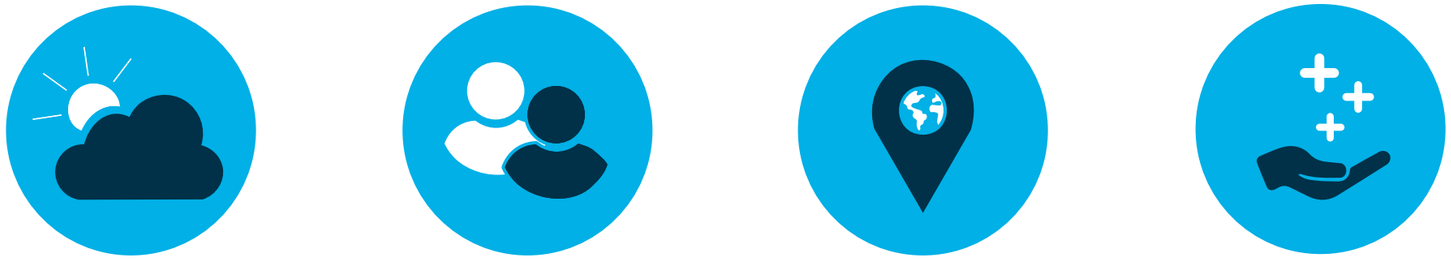
Our Design Principles were prepared to help guide our ongoing design process and to validate the optioneering process, as shown in Figure 2.4. The principles have been structured to align with guidance prepared by the National Infrastructure Commission under the following four thematic headings:

**Climate**

**People**

**Places**

**Value**




Our proposed Design Principles have been presented to London Borough of Bexley who will use these to support their consideration of subsequent detailed design submissions pursuant to DCO requirement.

**DP_XX 1.1 The design principles are shown in blue boxes with each thematic heading having a different prefix.**

## Climate

Deliver resilient habitat mitigation and compensation that is capable of being sustained and ensure that building and infrastructure fabric retains integrity.

**DP_CL 1.1 Direct site drainage from the main CCF operational hard standing areas to support local ground water levels and to enhance grazing marsh and existing and proposed wetland habitat. Attenuate and treat surface run-off from the main operational areas on site before releasing into the local ditch network to support wetland water quality site wide.**

**SITE DRAINAGE**

**DP_CL 1.2 Provide for possible flood events ensuring that key operational infrastructure will operate in the event of flood through site levels design.**

**FLOOD MITIGATION**

**DP_CL 1.3 Provide increased species diversity within defined grazing marsh areas and adjacent habitats to provide further resilience in the face of changing climate.**

**SPECIES DIVERSITY**

**DP_CL 1.4 Deliver a Biodiversity Net Gain through habitat enhancement, creation, and resilience on site in the Mitigation and Enhancement Area, and off site including at the potential Biodiversity Net Gain Opportunity Area.**

**BIODIVERSITY NET GAIN**

## People

Deliver benefits to people and communities reflecting what the community wants.

**DP_PE 1.1 Improve the local public footpath connections to deliver a recreation and commuting route linking Thamesmead to the Crossness Local Nature Reserve and promotion of local circular route via Thames Path including local enhancements for wayfinding and information.**

**CONNECTIONS & EXPERIENCE**

**DP_PE 1.2 Make provision for new interventions in addition to the retention and enhancement of existing features to improve public awareness of local nature and points of cultural and educational interest.**

**AWARENESS & EDUCATION**

**DP_PE 1.3 Deliver long term/ sustained improvements in the local environment for the benefit of the community and to secure social value outcomes.**

**COMMUNITY BENEFIT**

**DP_PE 1.4 Work with stakeholders to further their objectives and balance conflicts of interest including the FoCLNR (Friends of Crossness Local Nature Reserve) and existing graziers where practicable.**

**STAKEHOLDER ENGAGEMENT**

**DP_PE 1.5 Provide a visually attractive environment that secures a sense of belonging and personal security that is of consistent quality in terms of open space, natural habitat access, landscape design and architecture.**

**ATTRACTIVE ENVIRONMENT**

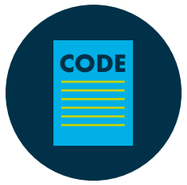
**DP_PE 1.6 Create a new campus workplace and an enhanced visitor experience that is fully inclusive and accessible to the community.**

**INCLUSIVE & ACCESSIBLE**

## Places

Deliver a project that promotes a sense of identity, improves the quality of and access to the natural environment and mitigates changes in the character and visual environment through good design.

**DP_PL 1.1 Deliver a coherent design that is distinct with clear control of quality underpinned by the relevant Design Code. Organise built form and material selection to deliver a visually coherent design and to reduce impact.**




**DESIGN CODE**

**DP_PL 1.2 Provide well organised and well designed and managed boundaries to the operational areas. Control the visual appearance of the operational area in views from adjoining areas to deliver a coherent appearance. Provide planted boundaries appropriate to local character around the CCF site to support the natural character of the CLNR and an organised interface with Norman Road.**

**WELL-DESIGNED BOUNDARIES**

**DP_PL 1.3 Extend the extent of the CLNR and improve existing habitats to compensate for the loss resulting from the development.**


**EXTEND THE LNR**

**DP_PL 1.4 Building massing and structure height should step down from high in the north to low in the south, reflecting the transition from the industrial river corridor to local community. Lower-level development to the south should allow for some intervisibility between buildings responding to the interface with the community.**

**STEPPED BUILDING FORM**

## Places (cont.)

Deliver a project that improves a sense of identity, the quality of the natural environment and mitigates changes in the character and visual environment through good design.

**DP_PL 1.5 Recognise the Site and surrounding area's historic, cultural, and natural assets through conservation, retention, and enhancement where practicable.**

**CELEBRATE SITE'S ASSETS**

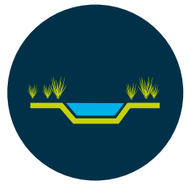
**DP_PL 1.6 Optimise the performance of retained Metropolitan Open Land purposes and secure enhancement through good design and management, improved interpretation, and access.**

**MOL ENHANCEMENT**

**DP_PL 1.7 Deliver good design along Norman Road addressing the key public access route to the River Thames and to support the reduction of antisocial behaviour and promote increased user safety.**

**IMPROVE NORMAN ROAD**

**DP_PL 1.8 Works to and in proximity of existing watercourses will be sensitively executed avoiding risk of damage and contamination to new and retained features and harm to wildlife. In line with policy and the BNG metric, all removed/adjusted watercourses will be compensated for with newly created equivalent habitat.**



**SENSITIVITY TO WATERCOURSES**

## Value

Deliver a project that is efficient and secures benefits beyond the immediate CCF site boundary.

**DP_VA 1.1 Enable the provision of district heating to nearby communities resulting from the operational process.**

**DISTRICT HEATING**

**DP_VA 1.2 Minimise the loss of open land and natural habitat including through a transparent optioneering process focused on efficiency in the final layout and detailed design delivery.**

**MINIMISE OPEN LAND USAGE**

**DP_VA 1.3 Provide benefits to the local community through direct proportionate mitigation and compensation for loss of open land, public access, and access to natural areas.**

**COMMUNITY BENEFIT**

**DP_VA 1.4 Support the delivery of a more attractive and useable CLNR through any alteration of area or configuration, support to improved management and provision of improved access, interpretation, and activation recognising the sensitivity of existing habitats.**

**ATTRACTIVE NATURE RESERVE**

**DP_VA 1.5 Appropriate security and safety measures must be applied across the CCF. Such measures will include: perimeter security fencing and controlled access points; lighting and camera surveillance infrastructure; contiguous operational area uninterrupted by non-Cory land ownership; shut down facilities to support safe storage of $CO_2$; and provision of adequate offsets from members of the public from the facility and associated infrastructure.**

**SECURITY & SURVEILLANCE**

# 2.4 Consultation

## Background

As part of the application for the Proposed Scheme, a Consultation Report (Document Reference 5.1) has been prepared pursuant to section 37(3)(c) and section 37(7) of the Planning Act 2008 (as amended), which requires a Development Consent Order ('DCO') application to be accompanied by a Consultation Report.

As explained in the Consultation Report (Document Reference 5.1) and Planning Statement (Document Reference 5.2), the principle of delivering the proposed Carbon Capture has been established in response to national planning policy in relation to the provision of critical infrastructure and the requirements to decarbonise energy generation, demonstrate good design and environmental outcomes, and in response to Cory's operational commitment to decarbonise its business and reach its net zero target by 2040.

The objectives of the pre-application consultation were:

- Provide consultees with sufficiently detailed information to understand the Proposed Scheme and its potential impacts.
- Provide consultees with an opportunity to influence elements of the Proposed Scheme that are under development and to understand which elements of the Proposed Scheme are fixed, and the reasons why those elements are fixed.
- Secure feedback on the location of the Proposed Scheme within the Site, design control via design principles and our environmental response.
- Secure feedback on the preliminary assessment of likely environmental effects.
- Clearly signpost the different ways in which consultees can comment on the proposals.
- Continue a meaningful dialogue with the local community that is maintained through the submission and examination phases of the consenting process.

In addition, we consulted and have continued to engage with technical stakeholders on matters that influence design and environmental responses.

The consultation programme is illustrated in Figure 2.5.

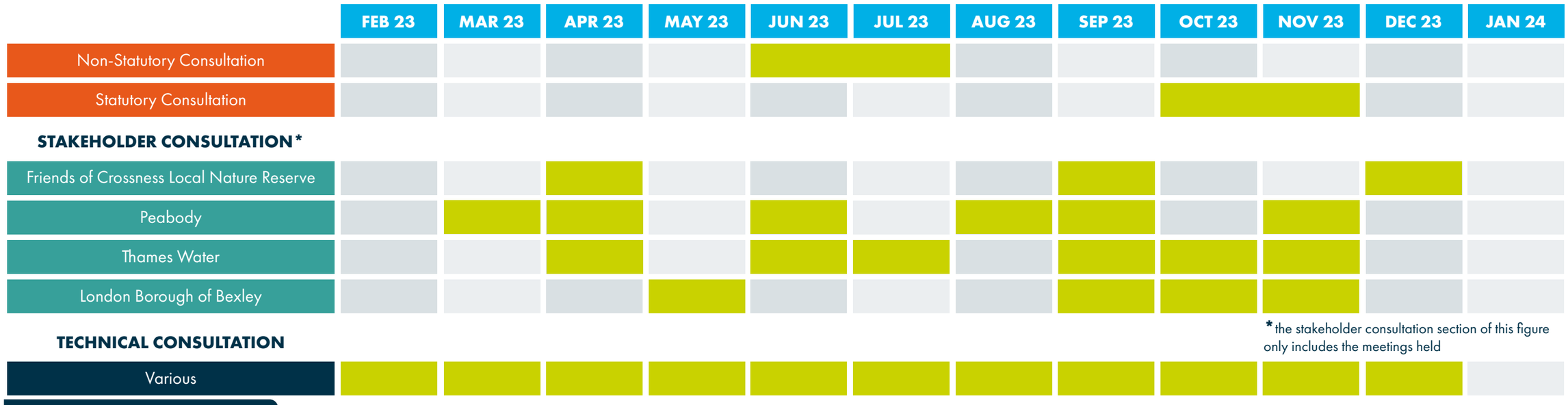



Figure 2.5 Consultation programme

## Stages of Consultation

Cory consulted and engaged widely on the Proposed Scheme through the following phases of consultation across 2023:

- Informal Consultation (Non-Statutory) ran from 05 June and 14 July 2023. This early engagement prior to statutory consultation informed the community and stakeholders about our development aspirations and gave us an early understanding of local issues and priorities.
- Statutory Consultation (Section 42 and Section 47 consultation) ran between 18 October and 29 November 2023. This sought views on the Proposed Scheme, Preliminary Environmental Information Report (PEIR) and our environmental and access and recreation proposals.
- Informal engagement with key affected parties including LBB (as LPA), Thames Water (as landowners and managers of Crossness LNR), Friends of Crossness Local Nature Reserve and Peabody Trust/Tilfen (as landowners of the non-Thames Water land in the Mitigation and Enhancement Area).
- Technical Engagement with statutory bodies. This provided technical input into the emerging design as part of the iterative design and environmental impact assessment process.
- Targeted Consultation between 05 January and 05 February 2024, which explained that Cory had now included the western part of Crossness LNR within the Order limits for the Proposed Scheme.
- Additional Consultation with specific parties to ensure they were able to take place in the consultation process.

The comments at each stage of the consultation were recorded, analysed, and used to inform the evolution of the proposals. Full details can be found in the Consultation Report (Document Reference 5.1) submitted as part of this application. This Design Approach Document summarises the design response to the issues raised.

## Structure of Consultation

The contents of the consultation, insofar as they related to the project design, are summarised below.

### Stage One: Non-statutory Consultation

A non-statutory consultation was held between 05 June and 14 July 2023. The content published during the non-statutory consultation covered the following key project areas:

- Capturing carbon.
- Helping the UK to reach net zero.
- Maximising our use of the river.

This was delivered as a mix of online and in-person events, and promoted to the local community via:

- Media releases.
- Printed posters displayed at venues in the local area.
- Print, digital and social media advertising with the Bexley and Bromley News Shopper.
- Launch of a project specific website, where people could find out more about the plans and leave their feedback.
- Direct emails to local stakeholders/those who had previously registered an interest.

### Consultation Events

Two 'pop-up' events enabled people to find out more about the proposals, speak to members of the project team and ask questions. Pop-up events differ from public exhibitions in that they are held in high-footfall locations, enabling the project team to bring information into community spaces.

A banner, highlighting key consultation information, was displayed for the duration of each pop-up event. A webinar was also recorded and uploaded to the project website so that it could be viewed online for those not able to, or preferring not to, engage with the consultation in person.

A stakeholder briefing that included a short presentation on the project, followed by Q&A, was held at the Belvedere Community Centre between 18.00 and 19.30 on Thursday 15 June 2023. An email inviting 24 local councillors to attend was issued on 08 June 2023. In attendance was the Chair of the Belvedere Community Forum, Dave Johnson and Councillor Sally Hinkley, Belvedere Ward.


Figure 2.6 Banner from non-statutory consultation

## Stage Two: Statutory Consultation

A second, statutory, round of consultation took place between 18 October and 29 November 2023.

Cory consulted the local community, statutory bodies, and other relevant stakeholders on its proposals in accordance with the requirements of the Planning Act 2008.

A Statement of Community Consultation (SoCC) (Document Reference 0.1.3) was published on Wednesday 04 October 2023 setting out the approach to pre-application consultation, as agreed with the London Borough of Bexley.

A variety of consultation methods were used to communicate Cory's proposals. This included:

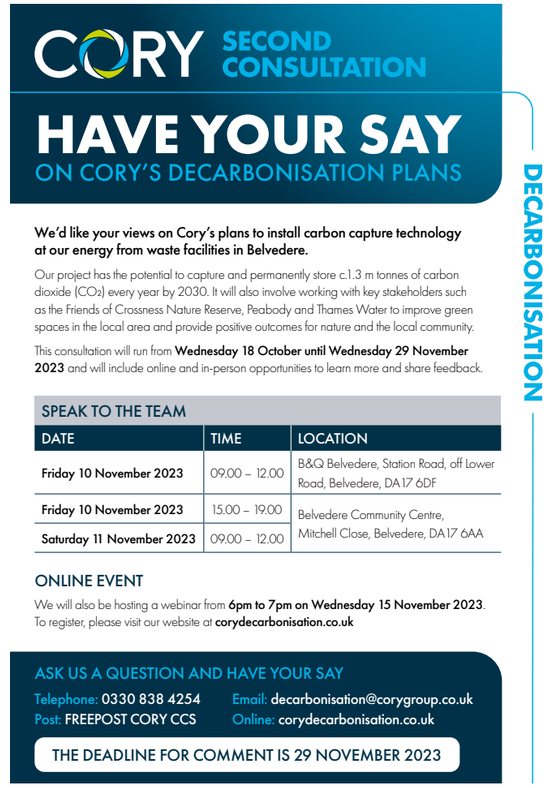
- formal (S48) and informal newspaper notices in the Bexley and Bromley News Shopper (including digital and social media (Facebook) advertising)
- posters advertising the statutory consultation were put up by Cory at community venues within the consultation zone and on site.
- the set-up and management of updates to the Project website (corydecarbonisation.co.uk)
- press release issued to trade and local media and uploaded to the Cory website (www.corygroup.co.uk)
- emails and letters issued to statutory consultees and stakeholders advising that the statutory consultation had launched and providing details of the statutory consultation events.
- emails issued to hard to reach groups advising that the statutory consultation had launched and providing details of the statutory consultation events.
- a postcard publicising consultation launch, as well as providing background information on the project and details of the statutory consultation events, was delivered to approximately 18,354 addresses within the consultation zone between 15-17 October 2023; and public exhibitions, held in community spaces in close proximity to the Proposed Scheme, to share information on the proposals.

An example of the consultation material presented at the consultation of relevance to design is illustrated in Figure 2.8. This period of consultation sought views on all elements of the following:

- Our emerging Proposed Scheme design proposals.
- Our Design Principles.
- Our Environmental Mitigation and Enhancement Opportunities proposals and Improved Connections proposals.
- The findings of the preliminary environmental impact assessment of the emerging Proposed Scheme documented in the Preliminary Environmental Information Report (PEIR).

This second consultation was delivered as a mix of online and in-person events, and promoted to the local community via:

- Media releases.
- Digital, print and display advertising with the Bexley and Bromley News Shopper.
- Printed posters displayed in venues in the local area.
- Section 47 notices to indicate where the SoCC was being published in the Bexley and Bromley News Shopper.
- Section 48 notices detailing launch of statutory consultation placed in the Bexley and Bromley News Shopper, Lloyd's List, Fishing News, London Gazette and The Guardian.
- Copies of the Statement of Community Consultation (SoCC), feedback form and consultation brochure held in three venues close to the impacted community and development site: Belvedere Community Centre, Upper Belvedere Library and Bexley Civic Offices.
- Draft and publication of the Preliminary Environmental Impact Report (PEIR) – on which the second stage consultation is based.
- Direct emails to local stakeholders / those who have previously registered an interest.


CORY SECOND CONSULTATION

HAVE YOUR SAY
ON CORY'S DECARBONISATION PLANS

**We'd like your views on Cory's plans to install carbon capture technology at our energy from waste facilities in Belvedere.**

Our project has the potential to capture and permanently store c.1.3 m tonnes of carbon dioxide ($CO_2$) every year by 2030. It will also involve working with key stakeholders such as the Friends of Crossness Nature Reserve, Peabody and Thames Water to improve green spaces in the local area and provide positive outcomes for nature and the local community.

This consultation will run from **Wednesday 18 October until Wednesday 29 November 2023** and will include online and in-person opportunities to learn more and share feedback.

SPEAK TO THE TEAM

| DATE | TIME | LOCATION |
|---|---|---|
| Friday 10 November 2023 | 09.00 – 12.00 | B&Q Belvedere, Station Road, off Lower Road, Belvedere, DA17 6DF |
| Friday 10 November 2023 | 15.00 – 19.00 | Belvedere Community Centre, Mitchell Close, Belvedere, DA17 6AA |
| Saturday 11 November 2023 | 09.00 – 12.00 | |

ONLINE EVENT

We will also be hosting a webinar from **6pm to 7pm on Wednesday 15 November 2023**. To register, please visit our website at **corydecarbonisation.co.uk**

ASK US A QUESTION AND HAVE YOUR SAY

Telephone: **0330 838 4254** Email: **decarbonisation@corygroup.co.uk**
Post: **FREEPOST CORY CCS** Online: **corydecarbonisation.co.uk**

THE DEADLINE FOR COMMENT IS 29 NOVEMBER 2023

DECARBONISATION

Figure 2.7 Advert from statutory consultation

## Consultation Events

Consultation included three in-person events and one webinar. Key issues and questions raised in relation to design comprised:

- Impact on Crossness Local Nature Reserve.
- How carbon capture works.
- How Cory's plans fit with what already exists on site.
- The potential for using alternative sites for the carbon capture plant.
- Land ownership of Peabody and Thames Water areas.
- Mitigation for the loss of parts of the Crossness Nature Reserve.
- Cory's role on Thamesmead Golf Course.
- The possibility of using captured $CO_2$, as opposed to storing it.
- Parking and dog walking at Crossness Local Nature Reserve.
- Consideration of alternative sites in the PEIR.
- Connections to the Ridgeway.
- The potential for using alternative brownfield sites.
- $CO_2$ emitted during and by construction.
- Capacity of storage.
- Questions on why the plant needs to be close to existing infrastructure.

During the webinar the following issues were raised:

- Benefits to local community from electricity and heat produced.
- Useful biproducts from carbon capture.
- Consideration of alternative sites.
- Retention of jetty as public space.
- Impact on biodiversity.
- Management of areas owned by third parties.
- Impact of current works on wildlife in the area.
- Visual impact, use of amine solvents, storage solutions.
- Mitigation for loss of Crossness Nature Reserve.

The top themes raised during consultation relating to design comprised:

- Impact on Crossness Local Nature Reserve.
- Site selection.
- How CCS works.
- Is CCS safe – and is storage safe over the long term?


Figure 2.8 Exhibition panels from statutory consultation

The consultation included a number of questions of relevance to design and environmental effects. Responses received from consultees comprised the following:

**Are you supportive of Cory's plans to reach net zero through the use of carbon capture at Riverside?**

| | |
|---|---|
| **Yes** | 8 (5%) |
| **No** | 136 (87%) |
| **No stance given** | 13 (8%) |

Figure 2.9 Table 1: Support for Cory's plans to reach net zero

**What percentage of total respondents oppose the project because of its impact on Crossness Nature Reserve?**

| | |
|---|---|
| **Oppose because of Nature Reserve** | 124 (80%) |
| **Oppose CCS technology** | 10 (6%) |
| **Support** | 7 (4%) |
| **Neutral/no comment** | 16 (10%) |

Figure 2.10 Table 2: Opposition to project due to impact on Crossness Nature Reserve

**Which type of storage tanks were preferred by respondents to the consultation?**

| | |
|---|---|
| **Spherical** | 3 (2%) |
| **Vertical** | 1 (1%) |
| **No preference expressed** | 153 (97%) |

Figure 2.11 Table 3: Storage tank preference

**Cory believes there is an opportunity to preserve the Belvedere Power Station Jetty so that it could be used to protect and enhance local ornithology and heritage.**

**If the project determines that this is possible, do you have any comments on how you would like to see this achieved?**

**What percentage of answers support the retention of Belvedere Power Station Jetty?**

| | |
|---|---|
| **Yes** | 14 (9%) |
| **No** | 10 (6%) |
| **No preference expressed** | 133 (85%) |

Figure 2.12 Table 4: Support for retention of Belvedere Power Station Jetty

**Do you have any comments on our plans to improve connectivity in the local area, specifically through enhancing and expanding public rights of way?**

**What percentage of answers support plans to enhance and expand public rights of way?**

| | |
|---|---|
| **Yes** | 11 (7%) |
| **No** | 7 (5%) |
| **No preference expressed** | 139 (88%) |

Figure 2.13 Table 5: Support for enhancement and expansion of public rights of way

## Informal and Technical Engagement

Statutory Consultation feedback and on-going engagement with stakeholders has raised the following key issues that have influenced the Proposed Scheme design, environment proposals (including habitat mitigation) and access and recreation proposals:

- Approach to mitigation and compensation for loss of grazing marsh.
- Structure of management of CLNR in light of the proposed reconfiguration and expansion.
- Approach to addressing existing s.106 commitments by Thames Water with proposed CLNR and how land control of Norman Road Field (Peabody) could be structured.
- Evidence of approach to alternatives to justify identified loss of grazing marsh.
- Importance of relocation of stabling for graziers.
- Opportunities for and nature of improved connection.
- Approach to addressing risks associated with uncontrolled access CLNR.
- Opportunities for diversification of habitats.
- Nature and proximity of BNG provision.
- Exploration of potential for Cory's requirements for offsite BNG resulting from Proposed Scheme to benefit delivery of Peabody landscape strategy at Thamesmead.
- Strategy for consideration of massing and extent of development footprint.
- Replacement of parking for users of CLNR.
- Understanding approach to rewetting of soils to support grazing marsh improvement.
- Impacts to Public Rights of Way.
- Minimising impacts to MOL and open space.
- Dealing with Flood risk.
- Dealing with impacts to ground conditions.
- Managing transport impacts.

# 3.0 Site and Context Appraisal

# 3.1 Wider Context

The Site lies to the south of the River Thames, 15 km east of the City of London and 15 km northwest of Gravesend, in the London Borough of Bexley. To the north of the river, industrial development at Dagenham extends south of the A13 up to the river edge.

The Site forms part of a break in near continuous built development comprising residential and industrial/commercial uses along the south side of the River Thames, extending east of the City of London and east of London's major water treatment works at Crossness. The river is characterised by an active industrial frontage to the north.

The Site forms part of the Crayford and Erith Marshes landscape character area (Bexley Local Character Study 2021). The Erith Marshes are described as 'remnant marshland' with flat low-lying topography. The juxtaposition of built form and general land use within the area is noted as having 'a high negative impact. Many elements within the landscape such as roads and structures are recent and have become characteristic of the area, but are not locally distinct.' It is noted that there is no designated parking for the marshes and that Erith Marshes access is 'restricted'.

The challenges for the landscape character of the area include:

- Marshes fragmented by views of industrial development creating discordant fragments of the character area.
- Original drainage patterns have become 'degraded through lack of appropriate management of some watercourses'.
- Riverside industrial estate roads are narrow and not heavily used outside business hours, are poorly lit and not overlooked.

Key

- Site boundary
- Borough boundaries
- Buildings
- Foreshore
- Water courses and bodies
- Coastal and floodplain grazing marsh
- Greenspace
- Woodland
- Local Nature Reserve
- Railway
- Railway station

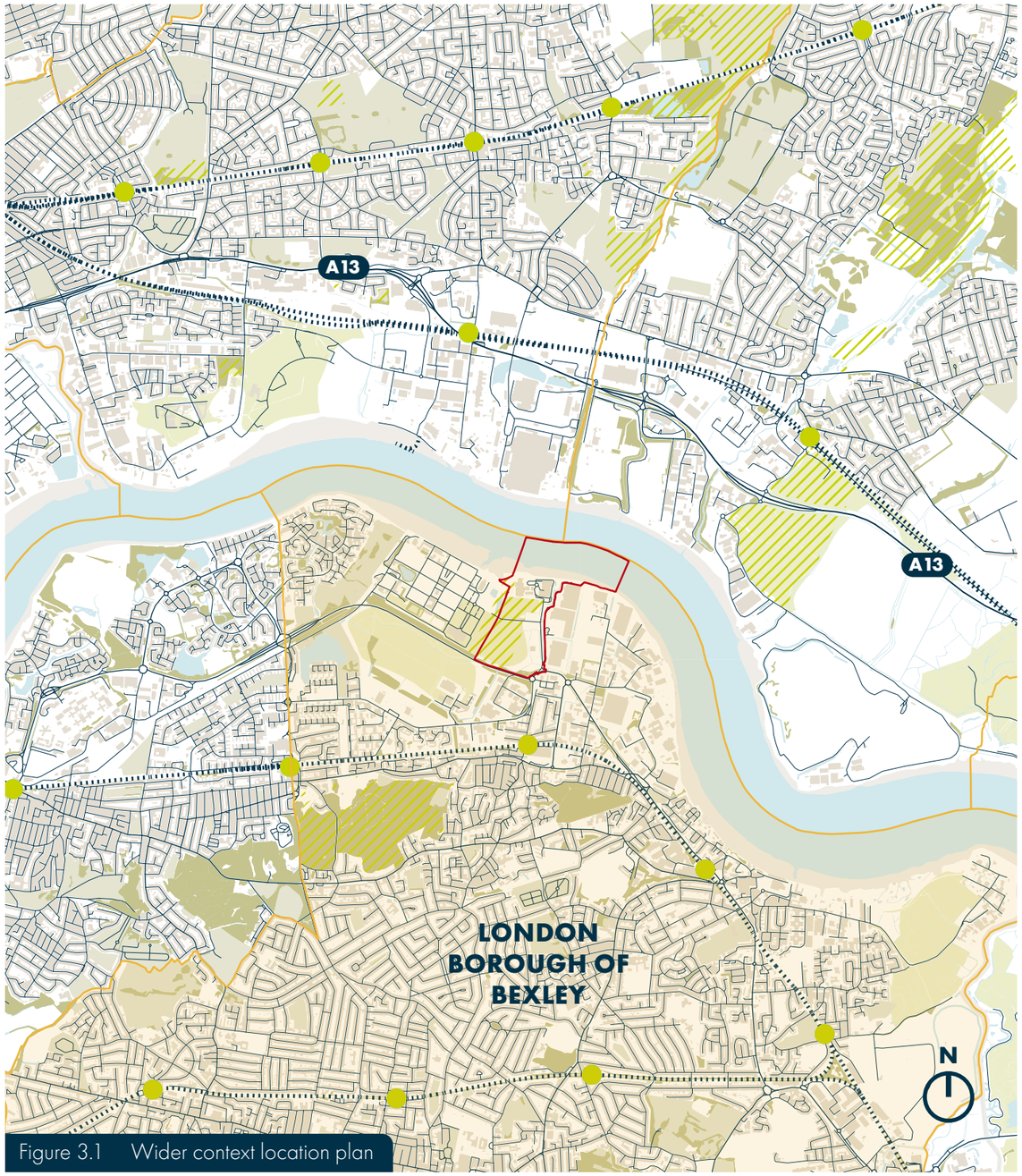



Figure 3.1 Wider context location plan

# 3.2 Site Location and Immediate Context

The Site is located in the Belvedere Industrial Area, within the London Borough of Bexley north of Belvedere and adjoining the Riverside 1 and 2 energy from waste facilities on the south bank of the Thames Estuary. The extents of the Site (Order Limits) is shown in Figure 3.2 and extends to approximately 77 hectares.

The Site is accessed via Norman Road, a public highway which connects with the A2016 Bronze Age Way to the east, Eastern Way to the west and Yarnton Way to the south.

Fishers Way Industrial Estate lies to the east, characterised by retail distribution centres and warehouses. Hailey Road Industrial Estate lies to the south of the Site and Eastern Way.

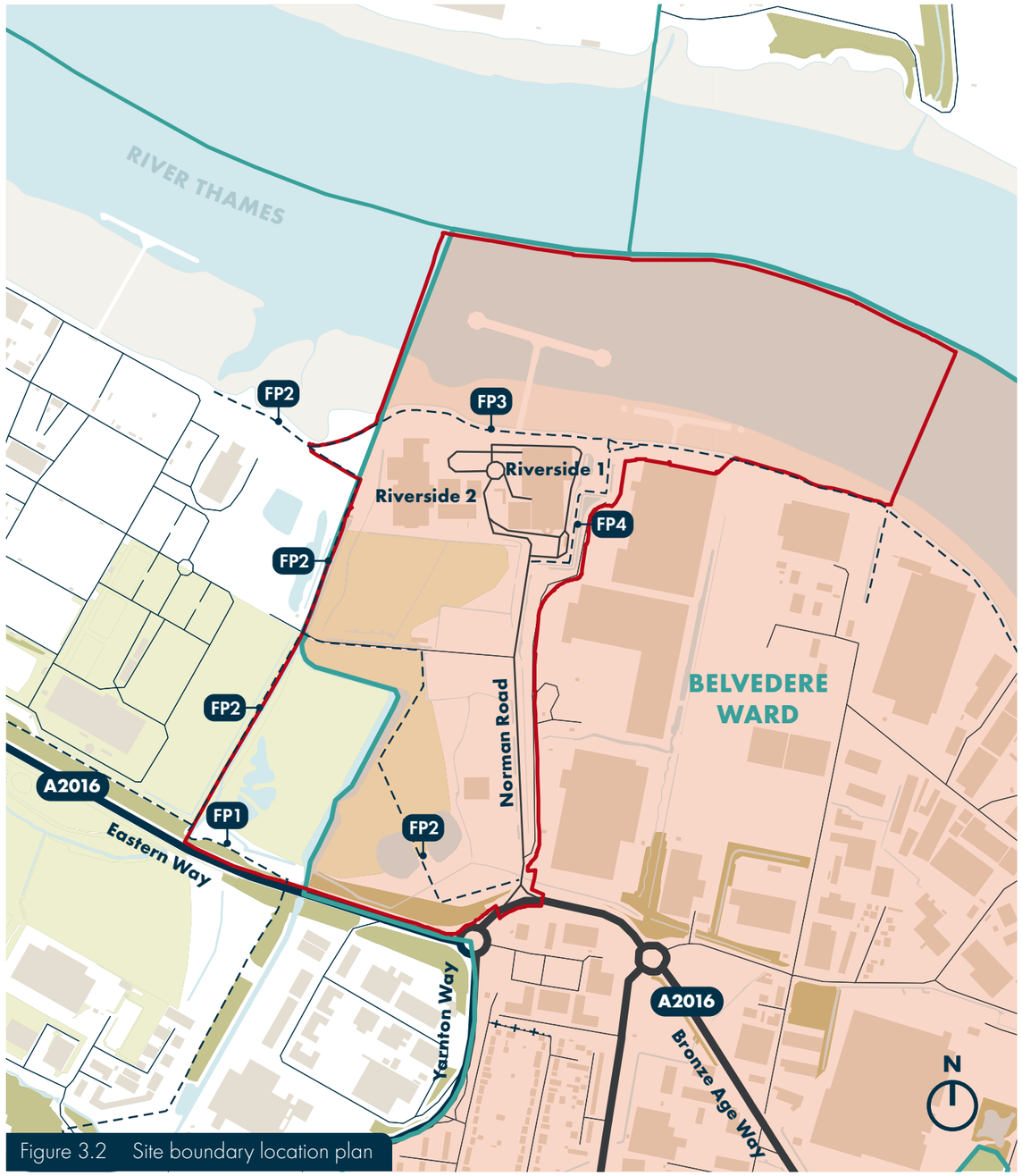



Figure 3.2 Site boundary location plan

Key

- Site boundary
- Ward boundaries
- Belvedere ward
- Buildings
- Foreshore
- Water courses and bodies
- Coastal and floodplain grazing marsh
- Greenspace
- Woodland
- Local Nature Reserve
- PRoW - Footpath

Figure 3.3 Thames Path view

Figure 3.4 Crossness Local Nature Reserve view

Figure 3.5 Norman Road view

Nearby residential areas include Belvedere to the south and Thamesmead to the west. Crossness Sewage Treatment Works lies immediately to the west and adjacent to the Crossness Local Nature Reserve (CLNR).

The CLNR and existing grazing marsh (Norman Road Field) forms the main Site area and forms part of the Erith Marshes SINC and lies to the west of Norman Road.

Part of the Site is designated as Metropolitan Open Land (MOL) and as Open Space by LBB and also forms part of the Southeast London Green Chain. As discussed above parts of this are Accessible Open Land (i.e. they are not fenced off and are accessible to the public), and others are Non-Accessible Open Land (they are fenced off and not accessible to the public). These are delineated on Figure 3.6.

The following section provides a summary and analysis of key characteristics of the Site. Further detail on the individual topics can be found in the Environmental Statement (Document Reference 6.1).


Figure 3.6 Accessible and non-accessible open land plan

Key

- Site boundary
- Accessible Open Land
- Non-Accessible Open Land


Figure 3.7 Context photographs reference plan


Figure 3.8 Looking southwest towards the Eastern Way/Yarnton Road/A2016 Junction


Figure 3.9 Looking north up Norman Road to Riverside 1


Figure 3.10 The disused Belvedere Power Station Jetty


Figure 3.11 North of Riverside 1 on the Thames Path looking east


Figure 3.12 North of Riverside 1 on the Thames Path looking west


Figure 3.13 Public Right of Way through Crossness Local Nature Reserve


Figure 3.14 Public Right of Way and Thames Water access road


Figure 3.15 Looking southeast towards the operational Site from the Thames Water access road


Figure 3.16 Looking south towards the woodland along Eastern Way

# Social and Community Context

This section provides a brief overview of social and community context of the Proposed Scheme.

The Residential community of Belvedere lies at its nearest, 200m south of the Site, and with a population of approximately 18,000 (2021 census). The age distribution comprises 24% 0-17; 63% 18-64 and 12% 65+. The predominant ethnic groups of the town are approximately 60% White, 20% Black and 12% Asian. Thamesmead lies to the west and Erith to the southeast.

The nearest residential area at Clydesdale Way comprises a mid-rise development above the local centre. The outer edges of the town lie to the south of the local centre extending down Norman Road and North Road to connect with Station Road with footbridge access over the railway line providing access to a local retail centre aligning Lower Road.

The town is served by Belvedere Railway Station, is 0.65 km south of the Site, which is served by the Southeastern – London Cannon Street to Dartford and the Elizabeth Line at Abbey Wood 1.9 km from the Site. The TfL bus service serves the town with immediate connections to Thamesmead, Erith, Bexleyheath and Woolwich. The nearest bus stops are 65m from the Site west and comprise the 180/401/601 services on Eastern Way/ Norman Road on the A2016 (west bound) and Picardy Manorway Eastern Way (east bound).

The local route network provides access to the main routes in the area via Eastern Way, the A2016. The River Thames extends through the Site and forms a busy shipping channel which Cory use for transportation of residual waste to Riverside 1 (and Riverside 2) and export of bottom ash to Tilbury.

Local facilities are located in a mid-rise development southeast of the Eastern Way/ A2016/Yarnton Way junction and include Lidl, Starbucks, Travelodge, and The Morgan public house/restaurant. These facilities are accessible from the site via controlled pedestrian crossings.

Open space in the town principally comprises: Frank's Park and Lesnes Abbey Woods and Crossness Nature Reserve and the area is crossed by a network of public footpaths including the Green Chain and Green Chain Walk illustrated in Figure 3.17.

The employment profile of the town is 81.9% in employment, 14% self-employed, 3% unemployed with the nearest employment area lying to the east of the Site at The Belvedere Industrial Area which is dominated by expansive low-level industrial and commercial sites including distribution centres for Amazon UK, Asda, Lidl, and storage facilities including Iron Mountain. Light industrial uses also lie to the southwest off Yarnton Way. Cory's energy from waste facilities lie within the Site. As a local employer, Cory currently provides approximately 160 FTE roles at the Riverside Campus (across both R1 and R2) for all roles, functions, and skills, including managerial staff.

A higher proportion of people are in employment in London Borough of Bexley (LBB) compared to London and Great Britain, however the attainment of degree-level qualifications in LBB is lower than the regional average, suggesting a less skilled workforce compared to Greater London overall.

The area is subject to change with the London Plan's Bexley Riverside Opportunity Area identified in the London Plan since 2004 with the potential provision for 6,000 new homes and 19,000 new jobs by 2041 and the Thamesmead and Abbey Wood Opportunity Area.

Both the Eastern Paddock and Stable Paddock located within the Site are grazed by horses under licence. There are three other paddocks within the Crossness Local Nature Reserve (CLNR) and additional grazing land within Norman Road Field which are grazed by different graziers.

A survey of Public Right of Way (PRoW) use has been undertaken to understand the local pattern of movement and use. Sitewide routes were predominantly used by pedestrians rather than cyclists. The exception to this was the England Coast Path (FP3/NCN1) which saw more than double the number of cyclists than pedestrians. This route also had a significantly higher number of total users compared to the rest of the site and elevated numbers of AM and PM peak users indicates that this route is used by commuters.

The frequency of usage of the other surveyed routes including FP2 (running centrally through the Mitigation and Enhancement Area) is deemed to be generally low. These PRoW appear to be used mainly for recreational purposes, but for which alternative routes could be taken.

There are four PRoW located within the Site and the PRoW along the River Thames comprises a section of the England Coast Path, which is classed as a National Trail. The footpaths are predominantly used by pedestrians and dog walkers and the England Coast Path is also used by cyclists. Pedestrians can deviate off this path (within the Accessible Open Land) to make use of the MOL for recreational purposes. The Eastern Paddock and Stable Paddock (forming part of the CLNR) are gated and not publicly accessible. Membership as a 'Friend' of Crossness Nature Reserve provides access to the western part of the CLNR with the Site Boundary (shown as part of the 'Non-Accessible Open Land' on Figure 3.6), and the area to the west of the Site Boundary, within Thames Water land. The CLNR is crossed by a series of PRoW illustrated on Figures 3.2 and 3.17.

Key

- Site boundary
- Ward boundaries
- Belvedere ward
- Buildings
- Foreshore
- Water courses and bodies
- Coastal and floodplain grazing marsh
- Greenspace
- Woodland
- Local Nature Reserve
- Railway
- Railway station
- National Cycle Network
- Public Right of Way
- Green Chain Walk
- Southeast London Green Chain
- 1 Crossness Local Nature Reserve
- 2 Lesnes Abbey Woods
- 3 Frank's Park, Belvedere
- 4 Clydesdale Way development
- 5 Belvedere Railway Station

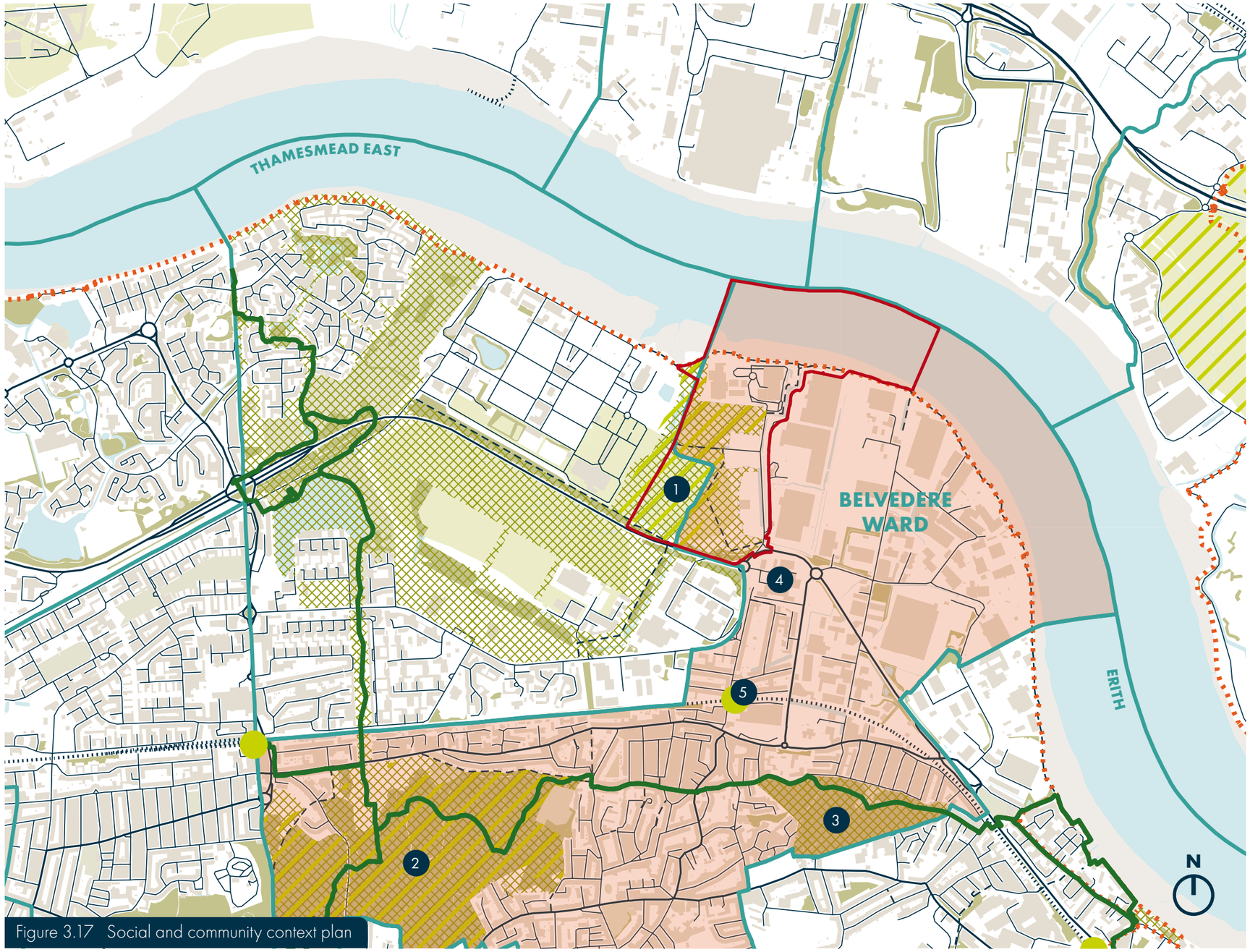



Figure 3.17 Social and community context plan

# Topography and Geology

The Site lies on low lying ground adjacent the Thames at approximately 0.5-2.5m AOD north of the elevated ground in the south of Belvedere which rises up to over 50.0m AOD.

The Site comprises relatively flat ground ranging in height from 2.5m AOD in the north to 0.5m AOD to the south, forming low lying grazing marsh that lies behind the River Thames flood defences. The flood defence wall lies at approximately 6.0m AOD.

The Riverside 1 (R1) site lies at 1.75m AOD and Riverside 2 (R2) site (under construction) lies at 1.5m AOD. Norman Road that provides access to Riverside 1 and 2 and the Site, lies at 1.0 and 2.0m AOD above the adjacent grazing marshes, extending from 2.25m AOD in the north to 0.25m AOD to the south.

The geology of the area largely consists of made ground overlying alluvium, London Clay Formation and Lambeth Group.

Key

- Site boundary
- +1.75 Approximate level
- Buildings
- Foreshore
- Water courses and bodies
- Coastal and floodplain grazing marsh
- Greenspace
- Woodland

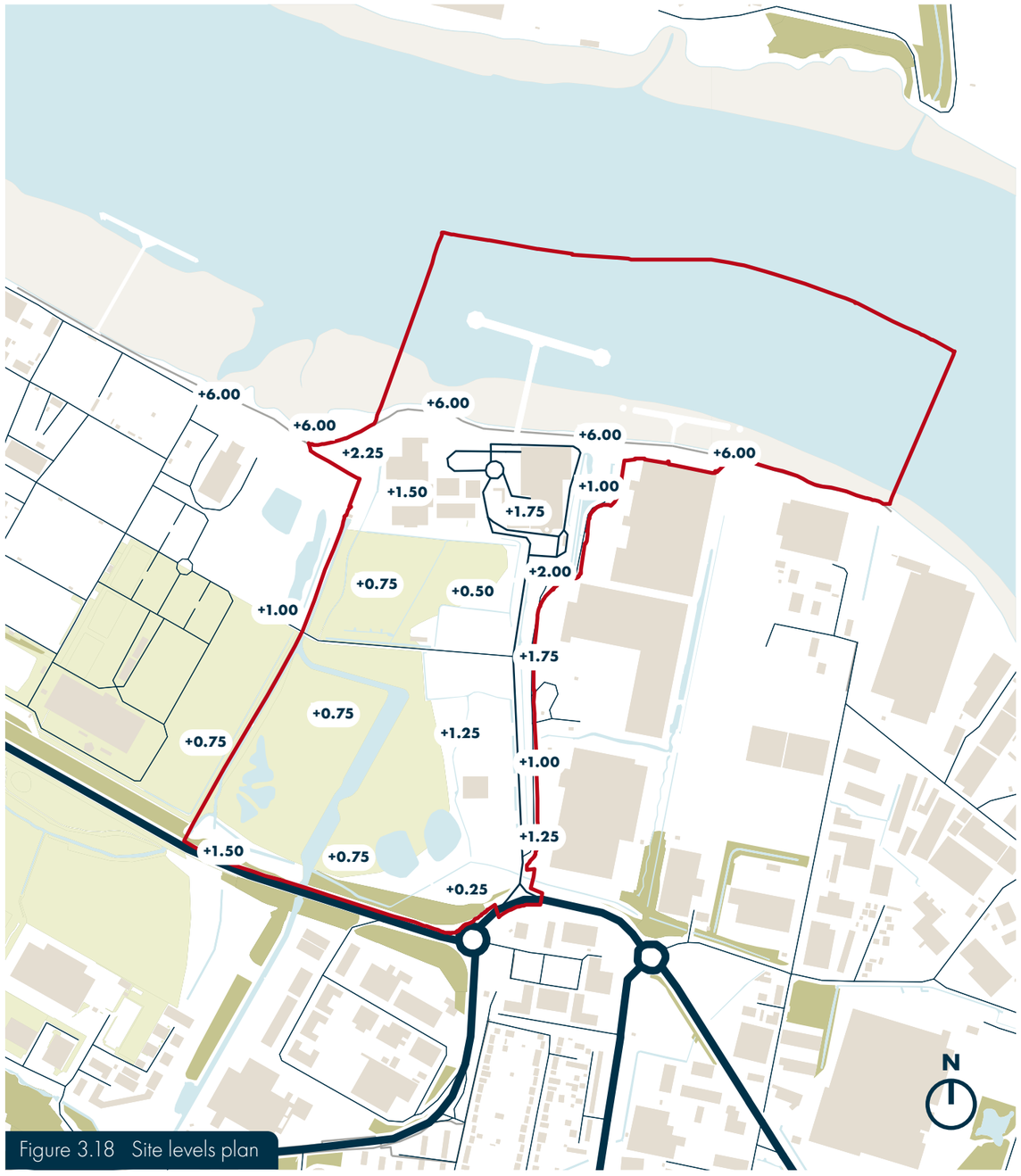



Figure 3.18 Site levels plan

Key

- Site boundary
- Water courses and bodies

Elevation (m AOD)

- < 0
- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- >70

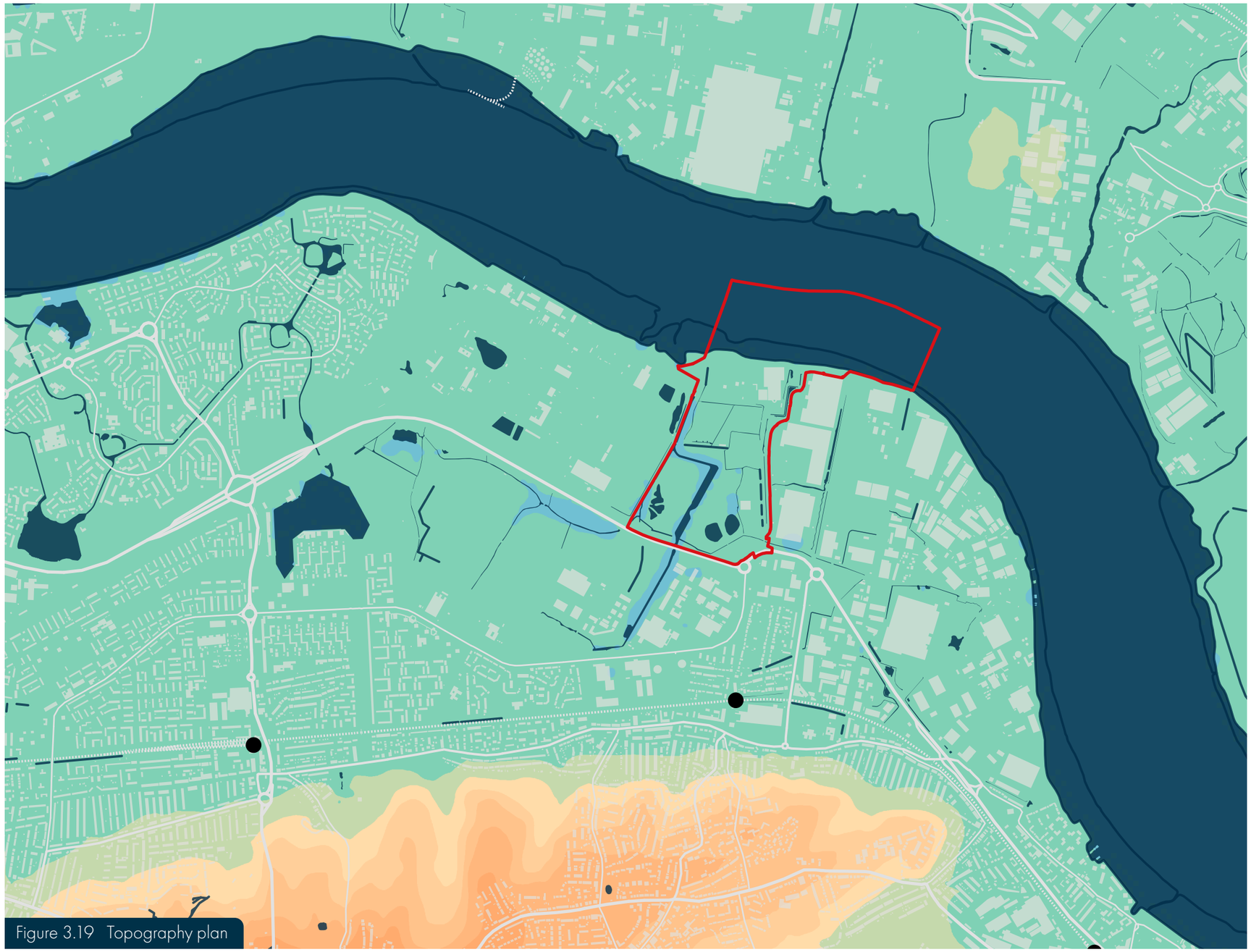


Figure 3.19 Topography plan

# Transport and Access

The Site is accessed off the Eastern Way/ Yarnton Road/A2016 Junction from Norman Road. Norman Road is an adopted highway that terminates at the existing Riverside 1 facility and will also service the Riverside 2 facility when it becomes operational. A PRoW (FP4) connects to the active travel infrastructure alongside Norman Road and extends east of the highway and Riverside 1 to connect with the Thames Path. A parallel private road to Norman Road provides access to the commercial businesses in ISIS Reach.

The access and movement layout for Riverside 1 and 2 is provided in Figure 3.20. Previously visitors to the open land parked informally along the length of Norman Road, since commencement of construction of R2, permissive parking is provided within the Gannon Land parcel used predominantly by visitors to CLNR.

Temporary and permanent access junctions lie to the west side of Norman Road and provide access to the Thames Water facility and CLNR, and others access to temporary construction laydown and parking facilities associated with Riverside 2.

The highway boundary is defined by a weldmesh fence to the east of the existing roadside pavement and to the west extends to include a narrow soft verge before the existing ditch which aligns a portion of the highway that lies within the land control of Cory. The ditch is classified as a main river.

A PRoW (FP2) extends west across the CLNR with access on the western side of the highway.

The arrangement of the road crossings in the vicinity of the Eastern Way/Yarnton Road/ A2016 Junction is illustrated in Figure 3.21 and PRoW in the immediate vicinity in Figure 3.20.

The highway is lit from the east side with 7-8m high column full cut off LED lighting.

National Cycle Network Route 1 and FP3 run parallel to the Thames foreshore on top the Thames embankment, known as the England Coast Path (and locally as the Thames Path). This important long-distance route is connected to Norman Road via FP3 to the east of Riverside 1, and to the Open Land at the northern end of FP2, west of the Riverside 2 site.

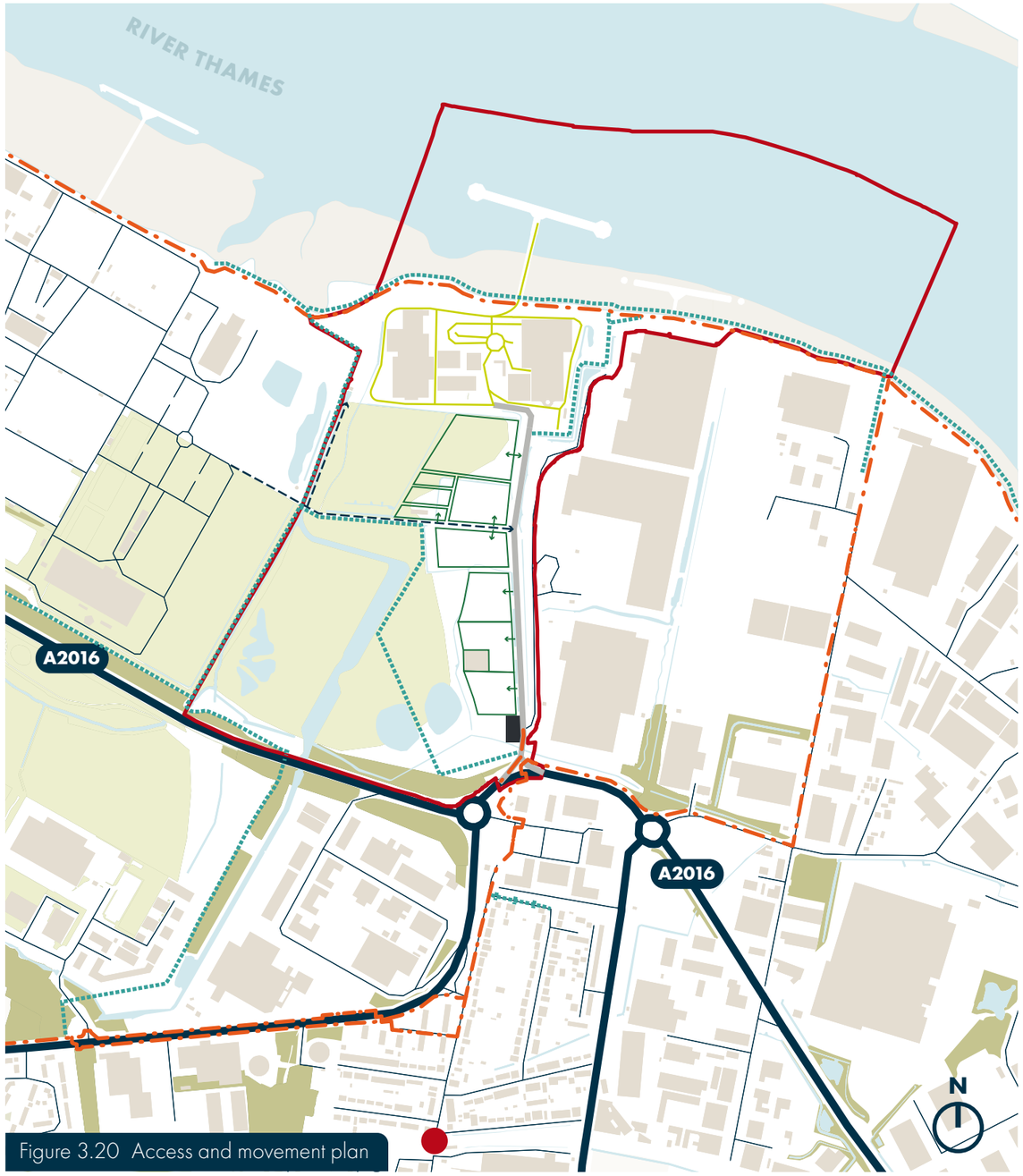



Figure 3.20 Access and movement plan

Key

- Site boundary
- Public Right of Way (PRoW)
- Footpath/cycleway
- Crossness Local Nature Reserve Entrance
- Pedestrian crossing
- Bus stop

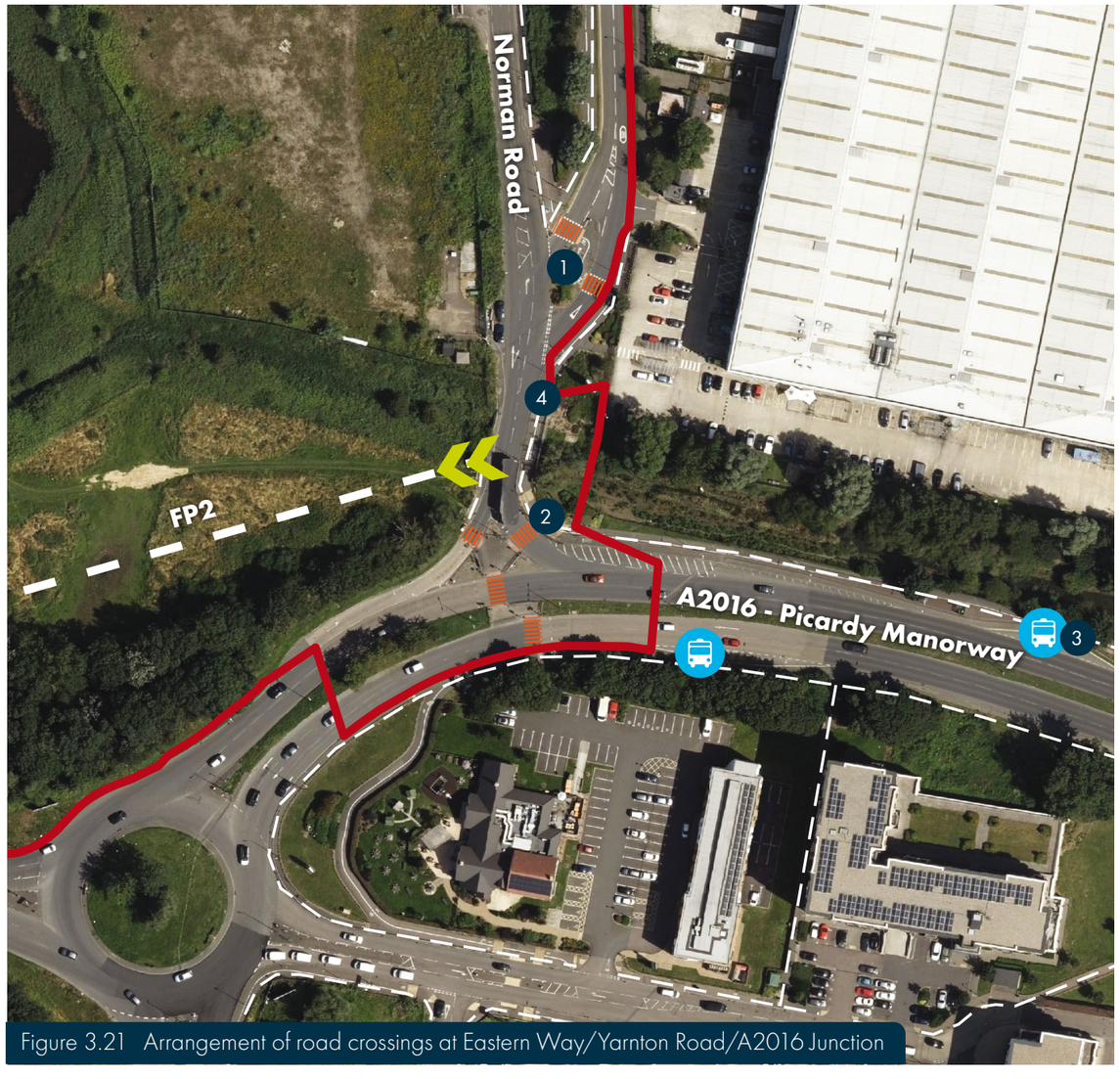



Figure 3.21 Arrangement of road crossings at Eastern Way/Yarnton Road/A2016 Junction


Figure 3.22 Cycle and pedestrian crossing


Figure 3.23 3-way pedestrian crossing


Figure 3.24 Picardy Manorway Eastern Way bus stop


Figure 3.25 Existing Crossness LNR entrance

# Watercourses and Flood Zones

The site lies within the London and Thames Estuary flood plain and sits within Flood Zone 3, indicating high levels of risk of flooding. The Site benefits from the River Thames flood defences which lie in the north of the terrestrial area of the site. The flood plain zone for 1 in 100 and 1 in 1000 year events are illustrated in Figure 3.26. Surface Water Flooding for 1 in 30, 1 in 100, and 1 in 1000 year events is illustrated in Figure 3.27.


Figure 3.26 Marsh dykes breach and flood zone plan

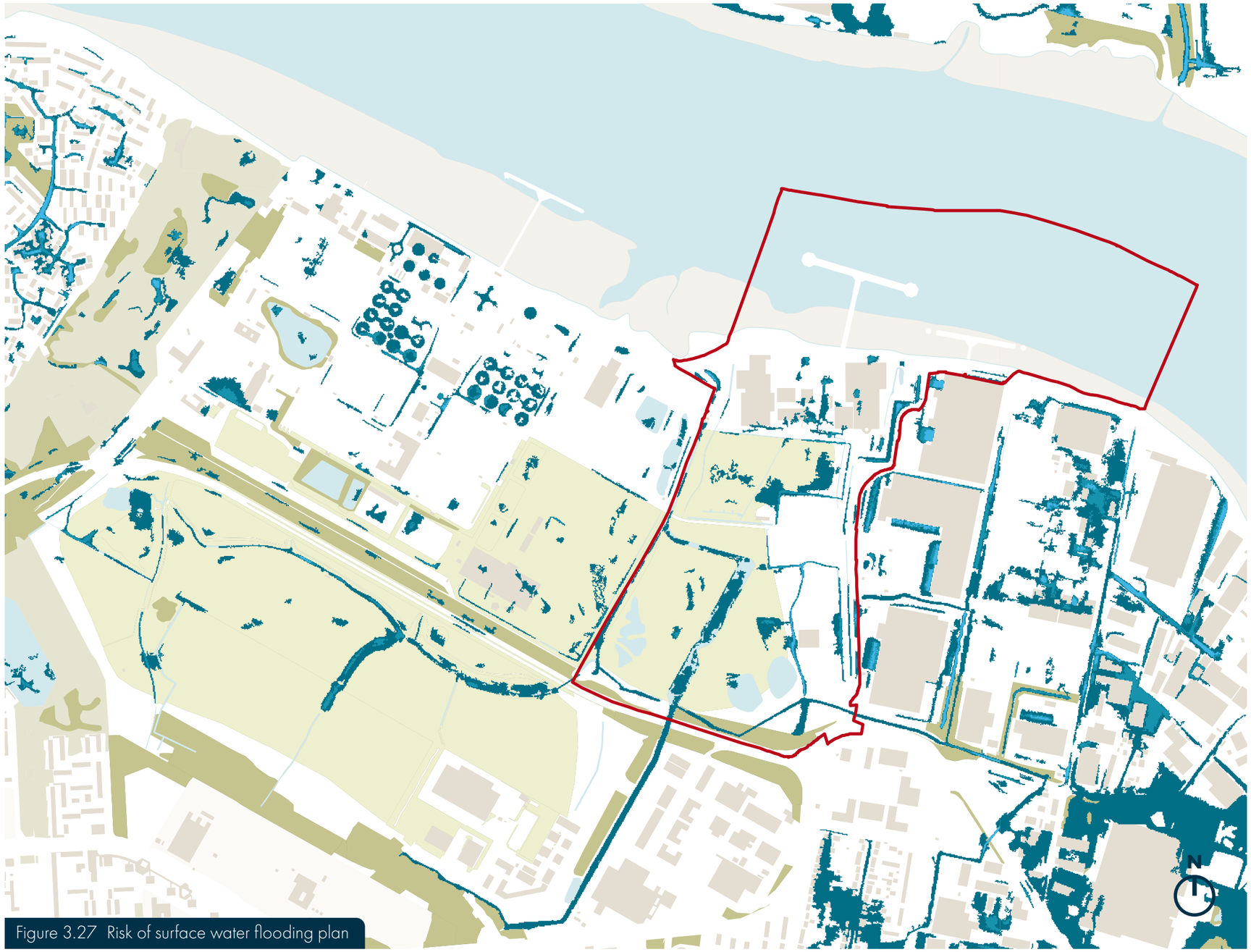



Figure 3.27 Risk of surface water flooding plan

The site is protected by the flood defence wall that provides for predicted flood protection up to 2040. The long term provision for sea level rise as a result of climate change, for the tidal range stretch of the River Thames, requires the future provision of additional height of the river wall. Modelling for the project confirms there is no risk of overtopping the river wall.

The environment of the Thames Path and the river defences is relatively poor, with disused and dilapidated structures and river access points extending through the Site extents.

A network of rivers and ditches extends across the Site supporting the flood plain grazing marshes and forming part of a larger network in the area including West Paddock Ditch and Great Breach Lagoon.

An issue highlighted in the Crossness Local Nature Reserve Management Plan, and initial CCF project ecology surveys, was inconsistent water levels within the grazing marsh especially during drier periods, leading to less than optimum conditions for supporting the habitats and priority species typical of these areas. Part of the Mitigation and Enhancement area (West Paddock) has been supplemented with a windmill powered pump to re-wet that field.

Watercourses adjacent the proposed scheme and Riverside 2 have been identified as being in poor condition due to lack of water, silting, encroachment of vegetation, and pollution.

Figure 3.28 River Thames flood wall and embankment

Figure 3.29 Disused concrete structure on the Thames Path

Figure 3.30 Ditch and scrub habitat

Figure 3.31 Ditch habitat

Figure 3.32 Hide within Crossness LNR

Key

**MR1** Norman Road River
**MR2** Great Breach Lagoon
**MR3** Mulberry Way River
**MR4** Norman Road Stream
**MR5** Belvedere Stream
**MR6** Gliray Plant
**MR7** Crabtree Stream
**MR8** Anderson Way Stream
**MR9** Ocardo Stream
**MR10** Bronze Age Stream
**MR11** Great Breach Dyke West
**MR12** Great Breach Dyke North Culvert
**OW1** Hide Dyke
**OW2** Reedbed Dyke
**OW3** West Paddock Ditch
**OW4** North Dyke
**OW5** Horse Head Ditch
**OW6** Stable Paddock Ditch
**OW7** Iron Mountain Ditch
**OW8** Reedbed Ditch 1
**OW9** Reedbed Ditch 2
**OW10** Great Breach Ditch
**OW11** Cory Field South Ditch
**OW12** Iron Mountain Ditch
**OW13** Eastern Way Ditch
**OW14** Lidl Ditch

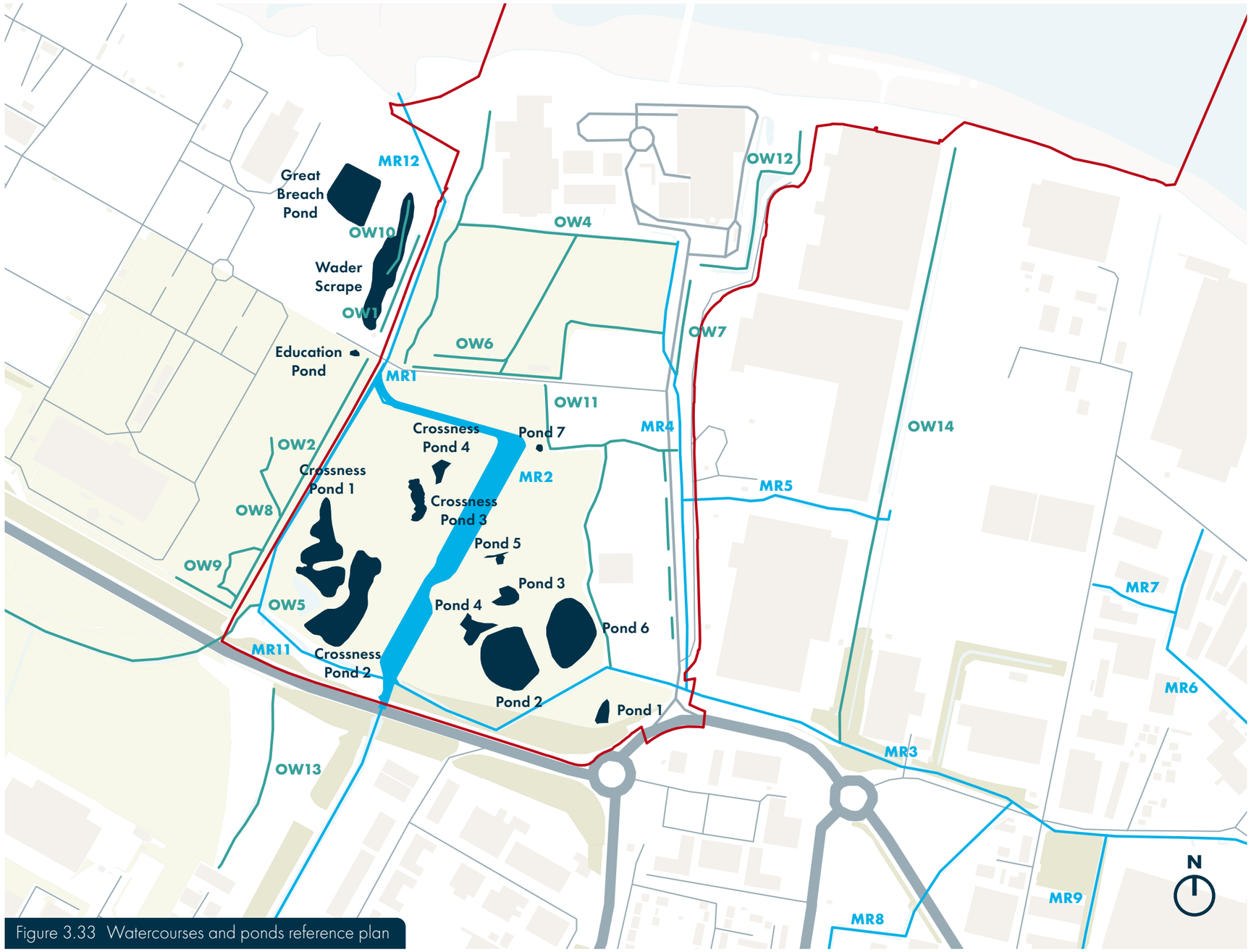



Figure 3.33 Watercourses and ponds reference plan

# Townscape and Visual Context

## Character

The Site lies in the Greater Thames Estuary landscape character area which parallels the River Thames, with the North Kent Plain and Inner London landscape character areas extending to the south.

The Greater Thames Estuary National Character Area forms the eastern edge of the London Basin and encompasses the coastlines of South Essex and North Kent, along with a narrow strip of land following the path of the Thames into East London. It is a predominantly flat, low-lying, narrow, deeply indented strip of soft coastline with remote and tranquil landscape of shallow creeks, drowned estuaries, low-lying islands, mudflats and broad tracts of tidal salt marsh and reclaimed grazing marsh that lies between the North Sea and the rising ground inland. Sea defences protect large areas of reclaimed grazing marsh and its associated ancient fleet and ditch systems, and productive arable farmland.

The coastal habitats within this area are internationally important for their biodiversity interest and support large numbers of overwintering and breeding wetland birds, rare plant and invertebrate species, and diverse marine wildlife. The vast majority of the coastline and estuaries are designated as Ramsar sites and Special Protection Areas, while the Essex Estuaries are a Special Area of Conservation. The coastline is also of major geomorphological interest for the study of estuarine and coastal processes, and for its nationally and internationally important deposits of London Clay fossils and Pleistocene sediments.

The Greater Thames Estuary encompasses the highly urbanised areas alongside the River Thames in East London where there are various major developments including ports, waste disposal, marine dredging, housing regeneration, mineral extraction, and prominent power stations plus numerous other industry-related activities. Despite its close proximity to London, the Greater Thames Estuary also contains some of the least settled areas of the English coast, with few major settlements and medieval patterns of small villages and hamlets on higher ground and the marsh edges.

The Site is representative of this landscape character area with the following particular features:

- Predominantly flat, low-lying landform.
- Reed-fringed drainage ditches.
- Open grazing marsh.

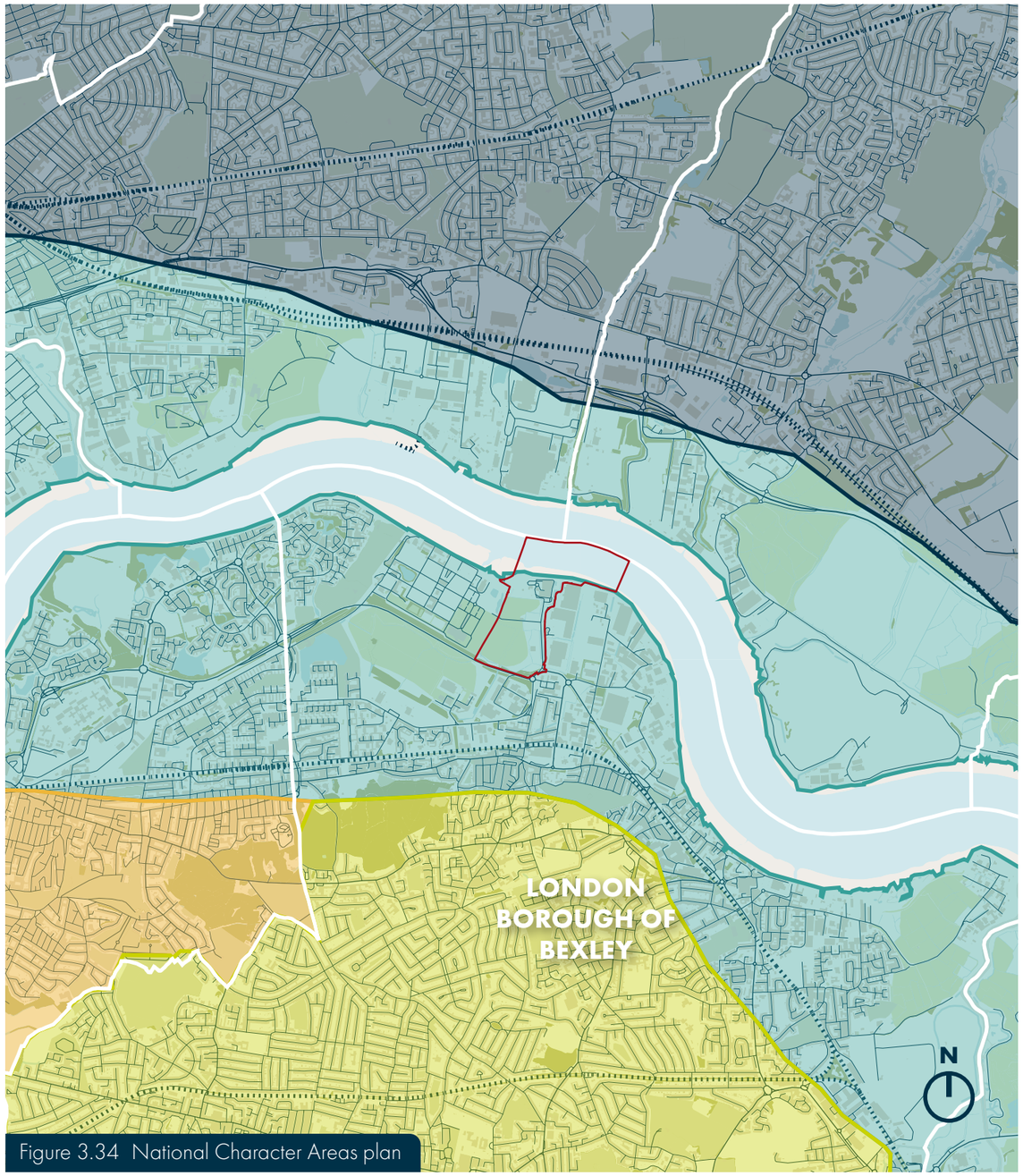



Figure 3.34 National Character Areas plan

## Visual Environment

The site is appreciated in diverse visual contexts but principally from:

- Distanced elevated locations from Open Spaces or PRoW.
- Local views approaching the Site from the east, west and south.
- Views from the edge of and within the Site from PRoW and locations within accessible open land.

The Zone of Theoretical Visibility (ZTV) shown in Figure 3.35 illustrates the location of views identified to support the Townscape and Visual Assessment and the extent of predicated visibility for the elements of the Proposed Scheme.

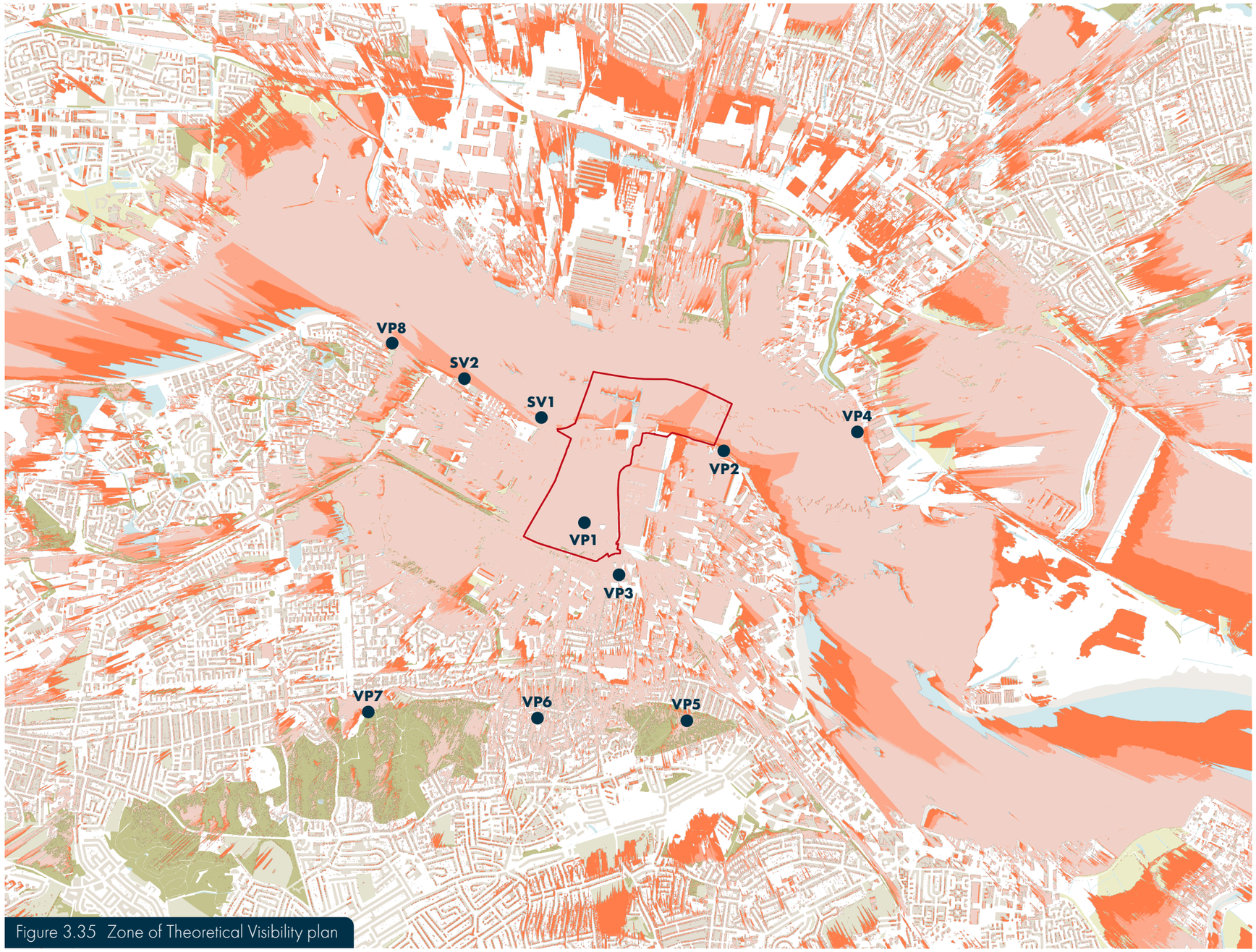



Figure 3.35 Zone of Theoretical Visibility plan

## Distant elevated views

Distant elevated views of the site place it in an urban setting characterised by residential areas and large industrial and commercial buildings and localised tall structures extending along the river corridor. Tall structures in the immediate area include single wind turbines, Riverside 1 and its associated stack, and the now disused Thames Water Sewage Sludge Incinerator which all break the distant horizon.

Elevated ground rises to the south provides extensive views across the River Thames flood plain revealing the extensive urban context of the Site with the nature of views ranging from open and expansive to glimpsed views towards the existing Riverside 1 facility that marks the Site. Views from Frank's Park Green Chain Walk, the Thames Valley Panorama and Lesnes Abbey have been identified to inform the townscape and visual assessment of the proposals and inform an appreciation of the appearance and nature taller elements of the Proposed Scheme and its general location within the industrialised river corridor.

Figure 3.36 Viewpoint location plan


Figure 3.37 View 4 (VP4) - Winter


Figure 3.38 View 5 (VP5) - Winter


Figure 3.39 View 6 (VP6) - Winter


Figure 3.40 View 7 (VP7) - Winter


Figure 3.41 View 8 (VP8) - Winter

## Local views

Local views approaching the Site primarily comprise, sequential views along the Thames Path predominately from the west. These views commence at the north edge of the former Thamesmead Golf Course at Lytham Close, due to the alignment of the river and location and nature of development and extend east towards the Site. Views towards the Site are possible from the south from the local centre and residential area Clydesdale Way partially screened by intervening tree cover.

The sequential views along the river from the west, reveal a series of tall structures often seen in echelon and industrial facilities of varied character, in close range views contrasting with the open panorama across the river to the north.

Views along the Thames Path from three locations and one from the local centre at Clydesdale Way have been identified to inform the townscape and visual assessment of the proposals and inform the design approach.

Figure 3.42 Sequential View 1 (SV1) - Winter

Figure 3.43 Sequential View 2 (SV2) - Winter

## Views within and close to the Site

Views from within and immediately adjoining the Site are characterised by the Crossness Nature Reserve, open grazing land in varied condition with tree cover to the south and commercial, industrial and infrastructure to the north, east and west. Development provides some local containment with more expansive views to the west and toward rising ground and the northwest due to the low-lying Thames Water Sewage treatment plant and undeveloped areas adjoining the River Thames which will be narrowed on completion of Riverside 2.

Sequential views appreciated from the PRoW network across Norman Road Field and the CLNR (FP2) and accessible open land are characteristic with constrained views from FP4, east of Riverside 1 and west of the Iron Mountain storage facility, extending towards the Thames Path.

Views from FP2 have been identified to inform the townscape and visual assessment of the proposals and inform the design approach for both the Carbon Capture Facility (CCF) itself and the wider environmental and amenity and recreation proposals extending across Norman Road Field and CLNR.

Figure 3.44 View 1 (VP1) - Winter

Figure 3.45 View 2 (VP2) - Winter


Figure 3.46 View 3 (VP3) - Winter

# Green Infrastructure

National Planning Practice Guidance defines Green Infrastructure as:

"A network of multifunctional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities. Green infrastructure is not simply an alternative description for conventional open space. As a network it includes parks, open spaces, playing fields, woodlands, but also street trees, allotments and private gardens. It can also include streams, canals and other water bodies and features such as green roofs and walls."

The inclusion of green infrastructure as part of new development has been identified by the Intergovernmental Panel on Climate Change (IPPC) as having a wide range of climate benefits relating to both mitigating and adapting to climate change.

The London Environment Strategy provides additional detail on the benefits of Green Infrastructure: 'London's green infrastructure is the network of parks, green spaces, gardens, woodlands, rivers and wetlands (as well as features such as street trees and green roofs) that is planned, designed and managed to: Promote healthier living; Lessen the impacts of climate change; Improve air quality and water quality; Encourage walking and cycling; Store carbon; and Improve biodiversity and ecological resilience.

The Bexley Local Plan notes that Green Infrastructure is a 'valuable asset delivering a number of environmental, societal and health benefits'. And... 'that Bexley's green infrastructure comprises a series of spaces and corridors, forming a network that stretches throughout and beyond the borough. Blue infrastructure includes tidal/inland waterways and water features.'

Planning policy seeks to protect both open space and green infrastructure and makes clear an expectation that mitigation will be required in response to development which affects provision of these assets. Policy also seeks to protect sites of nature conservation (including SINC and LNR) for their biodiversity value, but they are also recognised as important spaces for people, and policy encourages access to them.

Bexley's ambitions with its local green and blue infrastructure include improving access to open space and nature; supporting maintenance and enhancement of blue infrastructure; ensuring existing and new green infrastructure is maintained and enhanced to a high standard and protecting and enhancing biodiversity and strategic green corridors.

"Opportunities should be sought to link proposed and existing wildlife corridors, including the Ridgeway Link, Thames Marshes corridor, Thamesmead Link and the River Thames itself, and integrating these networks with pedestrian and cycle paths where appropriate." (From the Bexley Local Plan 2023)

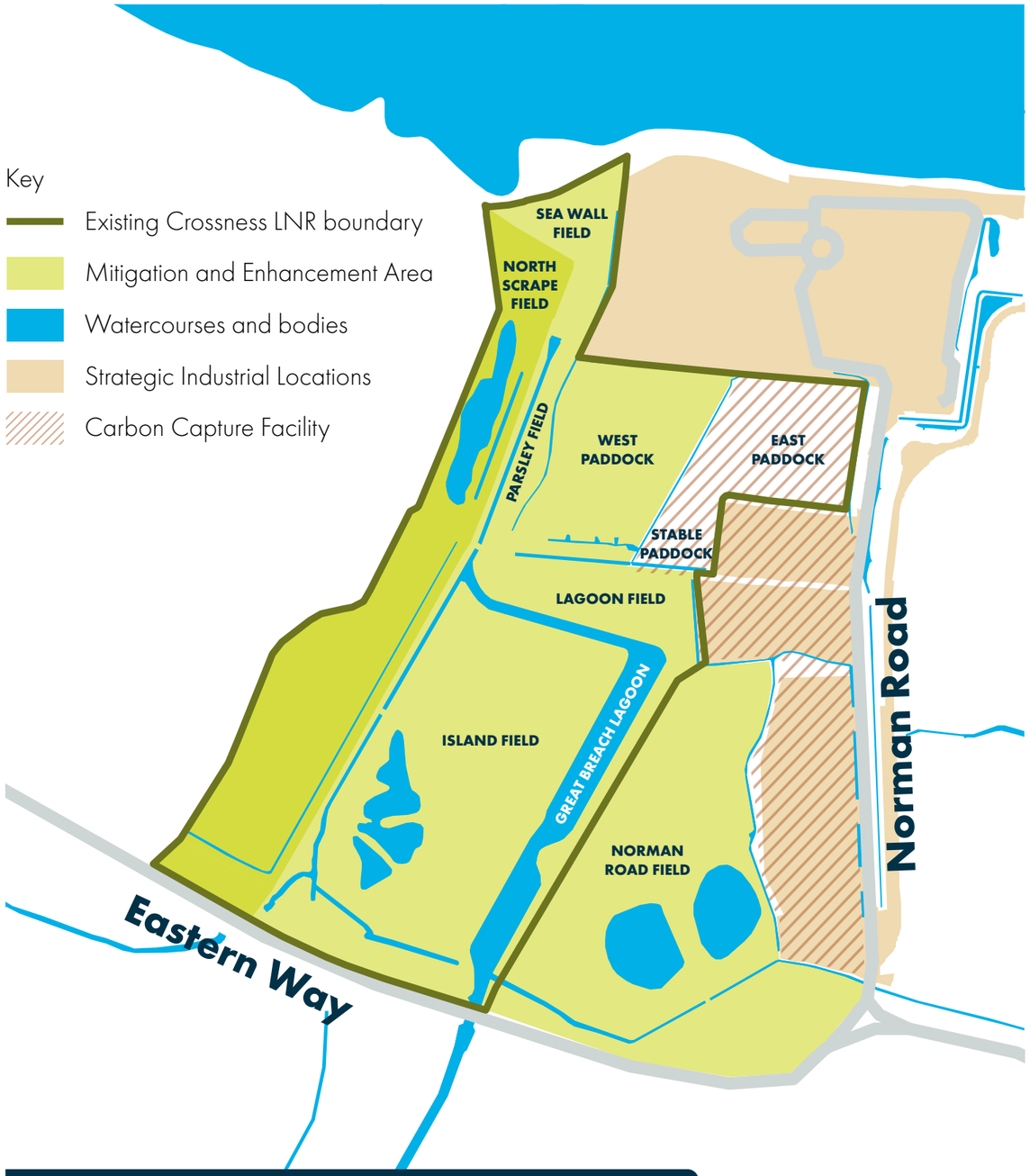



Figure 3.47 Existing Crossness Local Nature Reserve areas and boundaries

Figure 3.48 Path through the Lagoon Field in the Crossness Local Nature Reserve

## Bexley Green Infrastructure Study 2022

The Bexley Green Infrastructure Study 2022 aimed to develop a comprehensive understanding of existing green infrastructure assets, future demands, surpluses and deficiencies, and opportunities.

Figures 3.49 - 3.52 illustrate the local GI assets in relation to the Site.

### Network and Connectivity

In relation to the Bexley Green Blue Infrastructure Network, green infrastructure is identified as a 'multifunctional network that will secure benefits including, but not limited to, biodiversity; natural and historic landscapes; culture; building a sense of place; the economy; sport; recreation; local food production; mitigating and adapting to climate change; and the social benefits that promote individual and community health and well-being.

The Site forms part of the Southeast London Green Chain which was established by four London Boroughs and the GLA, forming a linked system of approximately 300 open spaces including a series of circular walks that link major open spaces extending from the River Thames to Crystal Palace Park.

The following highlights from the Green Infrastructure Study are relevant to the project.

### Quantity of natural and semi natural space and access

The review of open space in the borough (regardless of accessibility), confirmed that the greatest quantity of open space in the borough is natural and semi-natural urban green space covering an area of 715 ha. The audit of the publicly accessible open spaces in Bexley identified the greatest quantity of publicly accessible open space falls within the natural and semi-natural urban green space typology covering an area of 626.4 ha.

In relation to footpaths, improvement is most notably identified in natural and semi-natural urban green spaces in the borough.

### Biodiversity

In relation to biodiversity there are four Local Nature Reserves (LNR) distributed throughout the borough, covering 130.02ha. Access to LNRs is more limited in the northeast of the borough which is assumed to include the Site.

The study outlines a range of existing and emerging strategies as well as consideration of the drivers for GI. The study culminates in a GI Opportunities Map that sets out potential opportunities to strengthen and optimise the GI network. The Site is identified as 'Thames Path and Northern Boundary'.

Opportunities identified comprise:

'enhance opportunities for recreation through improved links towards the Thames Path...and strengthen the Thames Path link to the east... enhance interpretation of the area's history and cultural assets. Mitigate against detracting features through landscape enhancements and appropriate planting.'

The Bexley Biodiversity Action Plan was published in 2011 and extended from 2010 – 2015 and is out of date. The Greater London Authority has been identified as the responsible authority by Secretary of State for Environment, Food and Rural Affairs to lead the preparation of a Local Nature Recovery Strategy (LNRS) required under the Environment Act 2021. Currently no draft of any LNRS that would affect the Site is available.

### Metropolitan Open Land (MOL)

In relation to MOL the study identified the undeveloped areas of the Site and those lying outside land identified for development in the Local Plan (MOL1c Land to north and south of Eastern Way including Southmere Park and Crossway Park), as having 'strong openness'.

### Open Space

The study identified the Site as being of 'Higher quality/higher value' open space. Such sites are 'considered to be best open spaces within the borough offering the greatest value and quality for the surrounding communities. Future management should seek to maintain the standard for these spaces and ensure they continue to meet the requirements of the communities they serve.'

### Security

Natural and seminatural urban green space was considered to feel less open and secure. It is noted that it is considered important to have a frequent flow of people within open spaces to offer self-surveillance.

In response to guidance drawn from the Green Infrastructure study, proposals should look to further the quality and connectedness of green and blue spaces, with accessibility and multifunctionality built-in, providing wellbeing and amenity benefits as well as ecological gains.

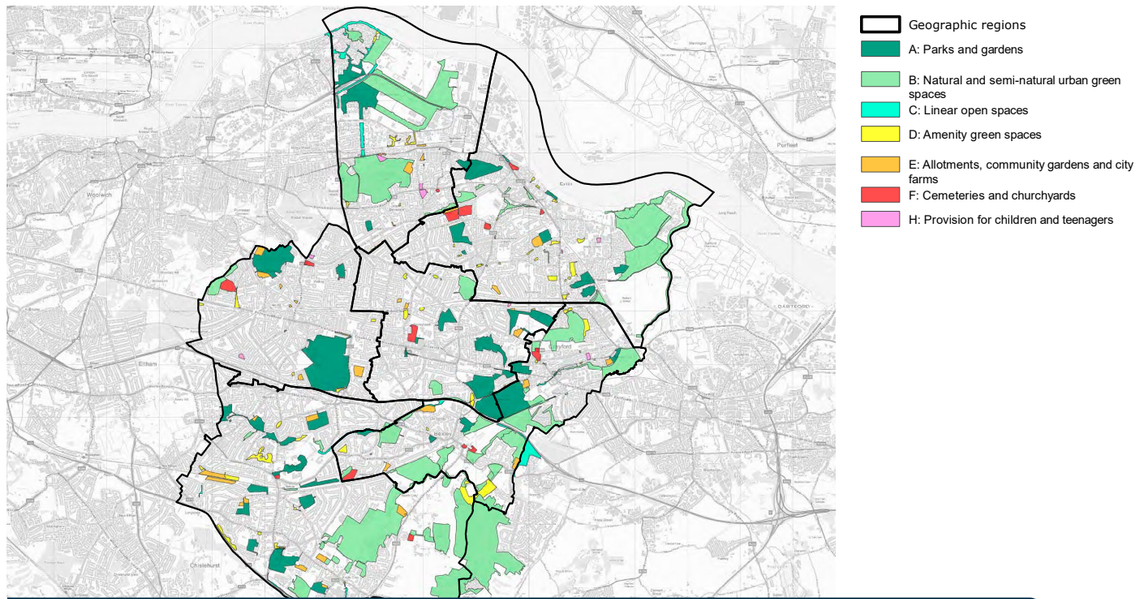



Figure 3.49 Open space primary typology (Extract from Bexley Green Infrastructure Study April 2020)

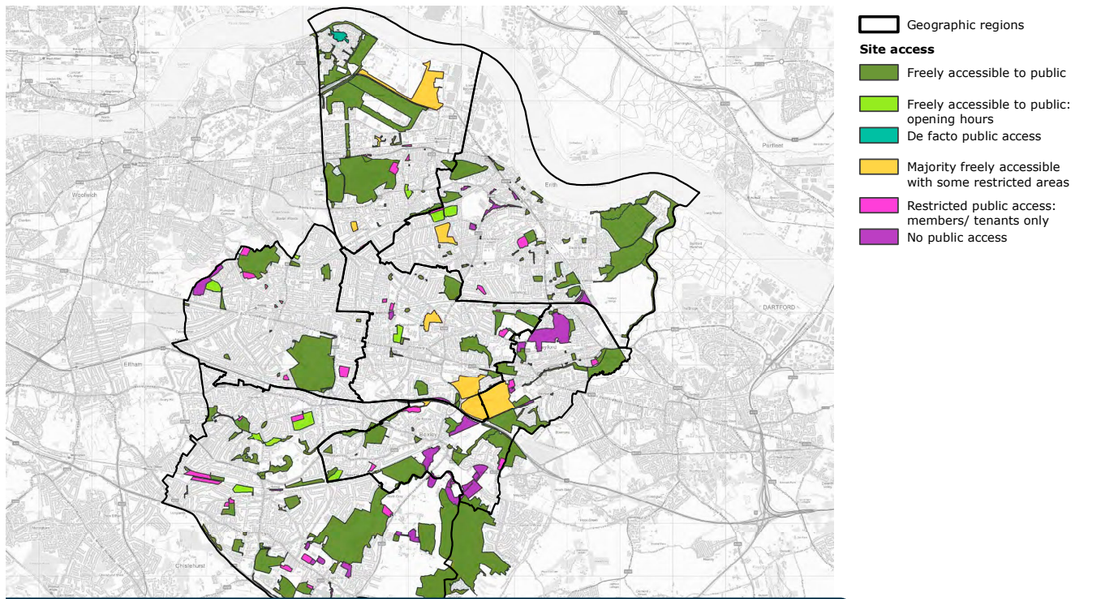



Figure 3.50 Site access (Extract from Bexley Green Infrastructure Study April 2020)

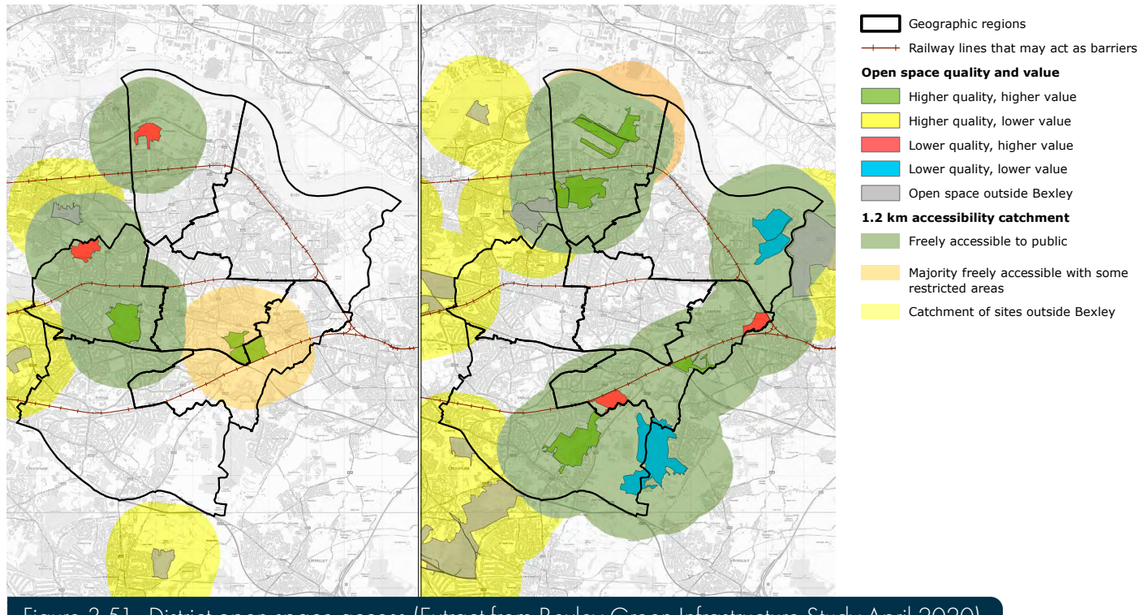



Figure 3.51 District open space access (Extract from Bexley Green Infrastructure Study April 2020)

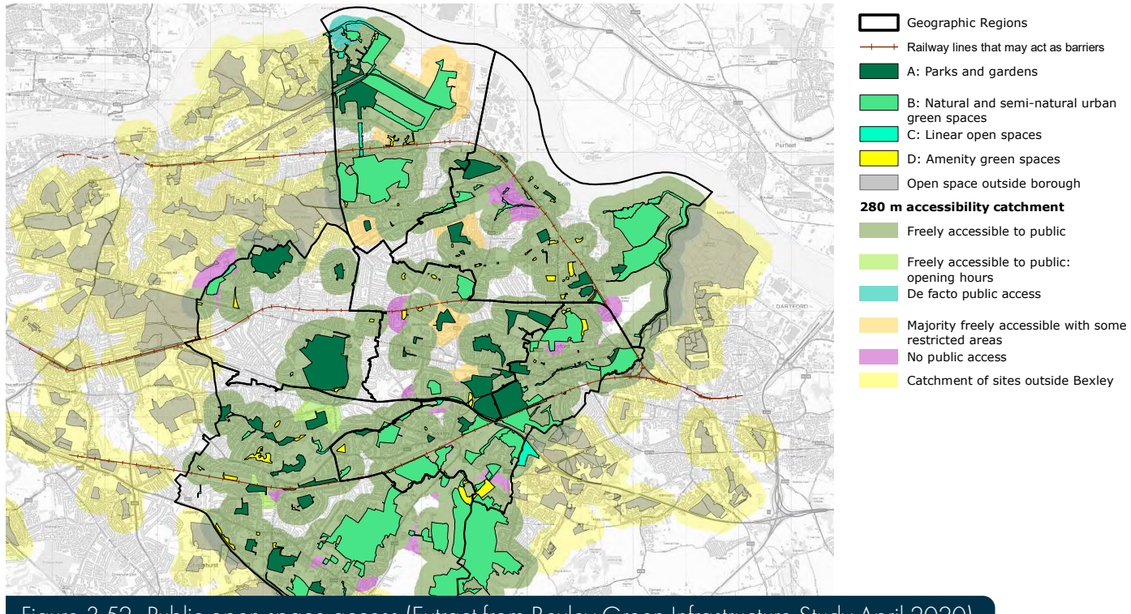



Figure 3.52 Public open space access (Extract from Bexley Green Infrastructure Study April 2020)

# Ecology

The site and immediate area hold significant value to nature conservation and the appreciation of/contact with nature for local communities including Belvedere. Refer to Figure 7-4 of the Environmental Statement for illustration of the SINCs and Crossness LNR extents. This site acts as an important link to the Thames Path, foreshore, and gateway to Erith Marshes for species traversing the Thames estuary linking to wider green corridors, including the Southeast London Green Chain.

The northern part of the terrestrial site area is located within the River Thames and Tidal Tributaries Site of Importance for Nature Conservation (SINC). Marine habitats located within the Site and adjoining include intertidal and subtidal habitats consisting of shingle, reedbeds, mudflats, seagrass, and saltmarsh. Intertidal and subtidal benthic communities (referring to ecological features present at low levels in a body of water) have also been recorded in the Site. These consist of marine plants, fish, and mammals including marine worms, snails, sea slug, and a low number of crustaceans.

A portion of Crossness Local Nature Reserve (CLNR), a designated ecological site, extends across a portion of the terrestrial Site area. This consists of a network of ditches, paddocks, open water, scrub, and rough grassland providing a water vole stronghold and over 200 difference species of bird. The Erith Marshes Site of Importance for Nature Conservation, which includes grazing marshes, and Belvedere Dykes Site of Importance for Nature Conservation are made up of reedbed, wet woodland, and grassland habitat are also partially located within the Site.

Ecological surveys conducted between November 2022 and October 2023 reported records of at least six bat species, 54 bird species, two instances of common lizard, and a presence of water voles on the Site.

Key

- Site boundary
- Buildings
- Foreshore
- Water courses and bodies
- Coastal and floodplain grazing marsh
- Greenspace
- Woodland
- Local Nature Reserve
- Site of Importance for Nature Conservation (SINC)

1. Crossness Local Nature Reserve
2. Erith Marshes
3. Belvedere Dykes
4. Thamesmead Golf Course
5. River Thames and Tidal Tributaries
6. Rainham Marshes LNR
7. Lesnes Abbey Woods LNR

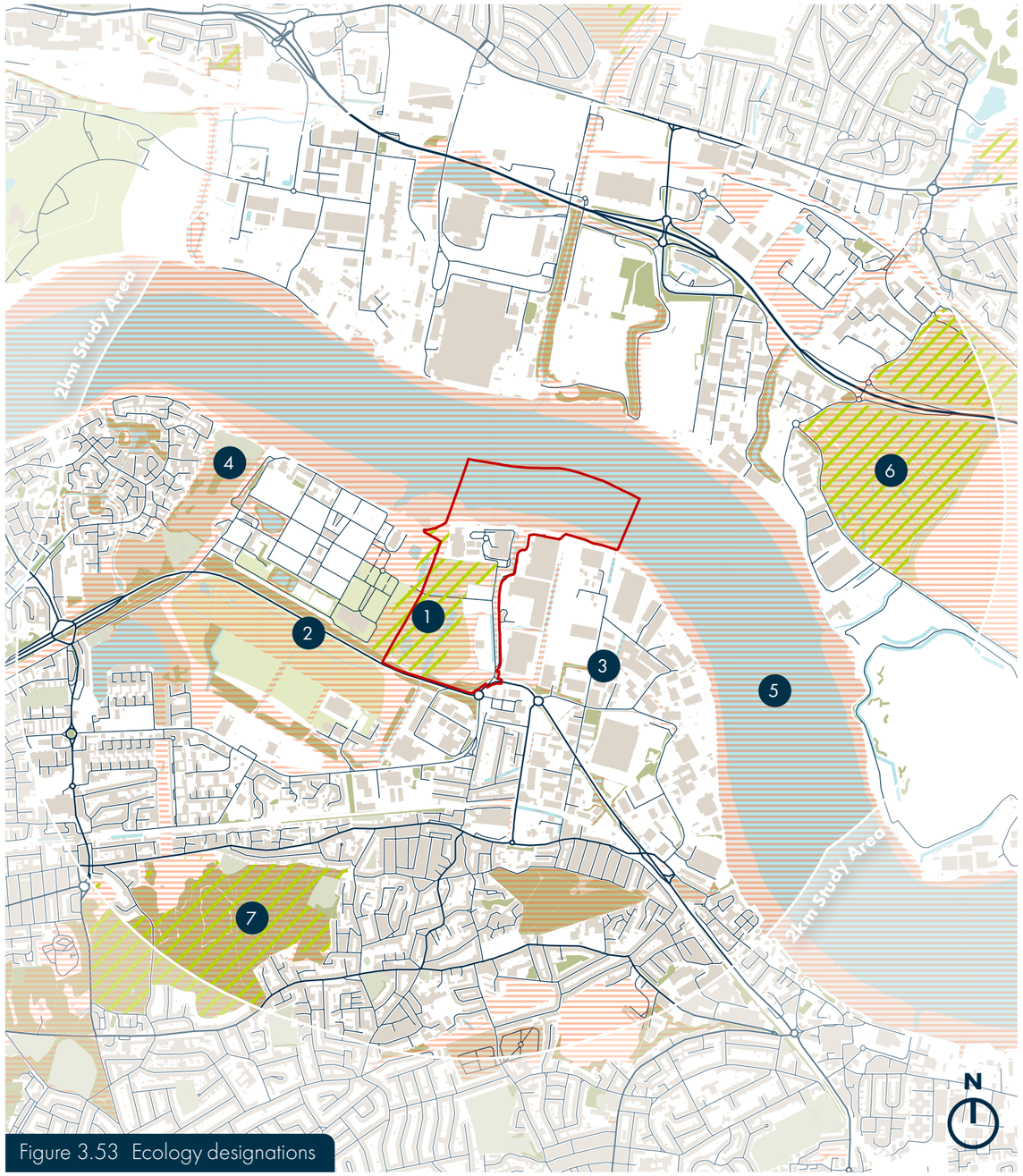



Figure 3.53 Ecology designations

Habitats, including Habitats of Principal Importance (HPI), some of which lie within the statutory designated sites identified above, may be lost or subject to fragmentation as a result of the Proposed Scheme. These comprise:

- Coastal and floodplain grazing marsh HPI
- Intertidal mudflats HPI
- Open mosaic habitat
- Other neutral grassland
- Modified grassland
- Mixed scrub
- Reedbed
- Standing water (the Site drainage ditch network)

Ecological survey results established that the Coastal and Floodplain Grazing Marsh was largely found to be in 'poor' condition due to low water table levels and pressure from grazing.

Habitat within CLNR will be lost to the footprint of the Proposed Scheme, affecting 11.7% of the nature reserve's area. Habitats lost primarily comprise Coastal and Floodplain Grazing Marsh and Reedbed, with modified grassland and scrub also removed. On site and off-site habitat creation and enhancement will be required to balance these losses.

The above listed habitats support the following protected/notable species, all of which are likely to be impacted by as a result of the Proposed Scheme.

- Bats
- Wintering and Breeding birds
- Notable plants and invasive species
- Reptiles
- Terrestrial invertebrates
- Water vole
- Freshwater fish
- Aquatic macroinvertebrates
- Macrophytes

Measures to protect wildlife will be incorporated into the construction practices and operation of the Proposed Scheme, including pollution prevention and control measures, provision of replacement habitats, control of lighting to maintain dark corridors around the Proposed Scheme, removal of reptiles from the works areas prior to clearance and measures to reduce emissions. Details of environmental proposals and strategies including compensation for loss are described in sections 4.3 and 5.2 of this document, the outline Code of Construction Practice, and within the Outline Landscape, Biodiversity, Access, and Recreation Delivery Strategy – OLaBARDS submitted as part of the DCO application.

Figure 3.54 River Thames habitat

Figure 3.55 Crossness Local Nature Reserve grazing marsh habitat

Figure 3.56 Crossness Local Nature Reserve ditch habitat