**Cambridge Waste Water Treatment Plant Relocation Project**
Anglian Water Services Limited

# Design Code

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## Document Control

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## Version History

| Version | Date | Author | Description of change |
|---|---|---|---|
| 01 | 22.01.24 | - | New document creation for D4 |
| 02 | 19.02.24 | - | The following updates made at D5:<br>• Para 2.1.2 updated to refer to Proposed Development;<br>• s added to the end of Table 2-1;<br>• DP8, Table 2-1 last sentence deleted;<br>• Para 2.2.7 & 2.2.8 changed to bullets;<br>• Para 2.5.1 updated;<br>• Subheading 3.5 title changed to Gateway Building Design;<br>• Doc Ref added to CAR.02;<br>• CAR.10 wording added;<br>• Typo correction in LTG.01;<br>• Typo correction in OTF.02;<br>• OTF.06 reworded;<br>• Typo correction PLI.01;<br>• Document control & Version History page removed;<br>• Subheading 1.1 removed;<br>• Table of Tables removed;<br>• 'The purpose' section added to box and paras turned to bullets;<br>• Para 1.1.3 changed to subheading;<br>• Fig 2.1 moved to end of section;<br>• Table 2-2 – duplicate heading removed;<br>• Whole doc – page numbering changed to reflect new template;<br>• Subheadings now sentence case;<br>• CAR.01 wording added;<br>• Bullets added to CAR.10;<br>• Section 3.10 & 3.11 changed to paragraphs;<br>• Heading 3.14 – changed to word 'and'. |
| 03 | 02.04.24 | | • Document Control & Version History page readded, Version 02 history updated to ensure it captures all changes between 01 & 02.<br>• Table of Tables readded.<br>• Table 2-2 numbering updated under section 7.<br>• CAR.10 updated to carry across changes made in the 02 tracked but not in clean version.<br>• Correction of formatting throughout.<br>• Extra 'and' removed from OFT.06<br>• Duplicate figure removed from LAY.03<br>• All 'should' changed to will with the exception of 2.1.2<br>• Carbon and Landscaping codes updated<br>• Gas Flare changed to Flare.<br>• Carbon Codes updated.<br>• Landscape Codes updated.<br>• Performance Codes updated.<br>• Ventilation Stack Codes updated.<br>• New figures added to carbon, ventilation stack and landscape.<br>• New GBD.11 plus 2 new figures. |

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## Summary

The Design Codes in effect provide a manual for aspects of the design and comprises written instructions as appropriate. Before designers (and others involved) start work on the detailed design, they will be expected to first familiarise themselves with the general content of the Design and Access Statement (DAS) and this document to help formulate a design response that underpins the application.

The Design Codes are specific design outcomes that have been identified through the application of the Design Principles and Design Objectives set out in the DAS. They focus on two and three-dimensional elements of design, principally (but not exclusively) those elements which are above ground and will be visible, and reflect important decisions made during the design process.

The Design Codes contain different levels of instruction and prescription when compared to the Design Principles and Design Objectives set out in the DAS. They are a series of rules to be applied to the on-going design of the Project, and thereby help to steer some aspects of the design detail at the next stages of the development and implementation of the Project. They help provide the next level of detail beyond those set out in the works plans and project parameters, which reflect Environmental Impact Assessment (EIA) decisions.

The Design Codes are intended to be used by local planning authorities and stakeholders following-on from the Development Consent Order (DCO) application in, for example Development Control roles, and by design teams as a basis for ongoing design work.

Whereas the Design Principles and Design Objectives provide some flexibility to enable joined up thinking to achieve improved project outcomes, the Design Codes are intended to be less inherently flexible than the Design Principles and Design Objectives as they have been written to apply only to design elements that are more critical and where they are instrumental in achieving a particular design of environmental mitigation outcomes that underpins the DCO.

**The purpose of these Design Codes, therefore, is to:**

- provide further design guidance to ensure that the Proposed Development is implemented consistently and in accordance with the design codes established in this document and as considered in the Application. It establishes the parameters that must be met in the final detailed design of particular structures and spaces associated with the Proposed Development. In all cases care has been taken to ensure that the EIA (findings of which are reported in the Environmental Statement (App Doc Ref 7.4)) addresses the range of flexibility sought; and
- provide clarity as to what constitutes appropriate design quality for the Proposed Development thereby providing a level of certainty to all parties as to the scope of the detailed design. It provides design parameters that set the framework for detailed design and would be used as the guiding framework for discharge of appropriate requirements; and
- within these parameters, there is a range in the level of recommendations and options which would apply to different parts of the Order Limits. The Design Code applies only to the following components of the Proposed Development and not to temporary buildings and spaces during construction (except where specifically referenced):

- Site layout
- Use of colour
- Materials
- Building performance
- Gateway Building design
- Workshop Building design
- Carbon
- Landscape and ecology
- Lighting
- Outfall
- Pipeline infrastructure (above surface)
- Ventilation stack (at the interception shaft) and
- Odour control
- Flare stack and shield

# 1 Introduction

1.1.1 Anglian Water Services Limited (the 'Applicant') is the largest regulated water and water recycling company in England and Wales by geographic area, supplying water and water recycling services to almost seven million people in the East of England and Hartlepool.

1.1.2 An application for a Development Consent Order (DCO) pursuant to the Planning Act 2008 (as amended) has been made for the Cambridge Waste Water Treatment Plant Relocation Project (WWTPRP). If approved, DCO Requirement 7 states that the approval of the suite of detailed design documents for each phase of the development must include an explanation of how they accord with the design principles and objectives set out in section 11 of the design and access statement or an explanation of why this is not reasonably practicable and, so far as is addressed in this document, will be in accordance with a "Design Code". The purpose of this document, therefore, is to provide this "Design Code".

**The Proposed Development**

1.1.4 The term Proposed Development refers to the Cambridge Waste Water Treatment Plant Relocation Project Relocation Project (WWTPRP) in its entirety and all works associated with the development.

1.1.5 A detailed description of the Proposed Development can be found in Chapter 2 of the Environmental Statement (App Doc Ref 5.2.2).

1.1.6 The purpose of the proposed WWTP will be to treat all waste water and wet sludge from the Cambridge catchment just as the existing Cambridge WWTP currently does, plus that from the growth indicated and being planned within the catchment in the Local Plan to 2041, with ability to expand beyond to deal with further growth.

1.1.7 In summary the Proposed Development will comprise of:

- an integrated waste water and sludge treatment plant.
- a shaft to intercept waste water at the existing Cambridge WWTP on Cowley Road and a tunnel/ pipeline to transfer it to the proposed WWTP and terminal pumping station. Temporary intermediate shafts to launch and recover the micro-tunnel boring machine.
- a gravity pipeline transferring treated waste water from the proposed WWTP to a discharge point on the River Cam and a pipeline for storm water overflows.
- a twin pipeline transferring waste water from Waterbeach to the existing Cambridge WWTP, with the option of a connection direct into the proposed WWTP when the existing works is decommissioned.
- ancillary on-site buildings, including a Gateway Building with incorporated Discovery Centre, substation building, workshop, vehicle parking including electrical vehicle charging points, fencing and lighting.
- environmental mitigation and enhancements including substantial biodiversity net gain, improved habitats for wildlife, extensive landscaping, a landscaped earth bank enclosing the proposed WWTP, climate resilient drainage system and improved recreational access and connectivity.
- Renewable energy generation via anaerobic digestion which is part of the sludge treatment process that produces biogas designed to be able to feed directly into the local gas network to heat homes, or as an alternative potential future option burnt in combined heat and power engines.
- renewable energy generation via solar photovoltaic and associated battery energy storage system.
- other ancillary development such as internal site access, utilities, including gas, electricity and communications and connection to the site drainage system.
- a new vehicle access from Horningsea Road including for Heavy Goods Vehicles (HGV's) bringing sludge onto the site for treatment and other site traffic.

# 2 Application of the Design Code

## 2.1 The design process followed to date

2.1.1 This DCO Application is seeking consent for a series of Works within limits of deviation which define the location, size and shape of the proposed buildings, structures, plant and equipment. These Works are described in the DCO and comprise the full extent of the Proposed Development.

2.1.2 The DAS (App Doc Ref 7.6) explains the design concepts, the steps taken to appraise the context, design development response to context and planning policy, as well as the approach to access. While the design is well advanced, some flexibility in the implementation of the Proposed Development is needed as no large-scale and complex development is capable of being absolutely fixed at the planning stage. There is always a need to retain some flexibility and the ability to reserve some details to be provided at a later stage. This project is no exception. In addition, there are some influences on the detailed design of the Project which are controlled by organisations other than the Applicant. Some uncertainties are likely to remain up to the point of commissioning the construction of individual components of the Proposed Development should the DCO be granted. This is common with all developments. Such uncertainties include any changes to regulatory requirements such as permitting and Building Regulations.

2.1.3 The DAS includes illustrative design material which has been submitted to demonstrate how the parameters have been tested and set, and to also provide a context and understanding of the Project. The DAS is the appropriate place for the narrative describing the design approach and process, and it includes sections that set out the findings from the design, consultation process, and design outcomes that relate to the Project. To avoid complexity and repetition, this document does not repeat the detailed description of the approach to design found in the DAS.

2.1.4 Principles of Good Design have been used to inform the development of the project, which has been guided by the National Infrastructure Commission's Design Principles, advice from the Design Council and review by the Cambridgeshire Quality Panel, as described in the DAS. The DAS describes the Design Principles and Design Objectives that have been applied to the development of the proposals and which are proposed to be reserved by the DCO requirements, such as the design and external appearance of plant and buildings, materials and landscape planting. The DAS and the Consultation Report (App Doc Ref 6.1) also describe the engagement process which has been undertaken and how the Proposed Development has responded to that feedback.

2.1.5 The Design Objectives secure the Design Principles with the table within Section 11 of the DAS setting out each Design Objective against the theme of the relevant Design Principle it secures. Together, the Design Principles and the Design Objectives are a set of design instructions applicable to design process and design outcomes, that transcend both the Project development stages up to the DCO application and help shape the process and outcomes of the detailed design work that will follow-on.

2.1.6 The Design Principles and Design Objectives set out in the DAS are repeated below for completeness.

2.1.7 The Design Principles and Design Objectives take account of the fact that there are different ways in which design quality can be achieved and that operational requirements may advance between the Application and implementation of detailed design.

2.1.8 Design is as much about process as it is about the eventual design product. Imaginative thinking about design will be embedded at every step of planning and delivery. Adhering to agreed Design Principles and Design Objectives will ensure a good process leads to good design outcomes. The purposes of the design process are, therefore, to bring together engineering, environmental and creative expertise to shape and deliver a development project and provide good value that works well for climate, people, and places, as set out in the National Infrastructure Commission (NIC) 'Design Principles for National Infrastructure' guidance.

**Project Design Principles**
(Set out in 2.4 of the DAS)

The overarching project design principles that have been developed by Anglian Water Services Limited and its advisors at the outset of the project to inform the entire design process.

**Design Objectives**
(Set out in chapter 11 of the DAS)

A set of principles that were developed during and applied throughout the design process to ensure that the WWTPRP fulfils the criteria of 'good design' set out in section 3.5 of the NPS.

To be used to guide the design details that are proposed to be reserved by the DCO requirements.

**Design Codes**
(New document)

A set of specific Design Codes to state the key features of the design to guide the future delivery of the project.

**Design and Access Statement**

- Describes the project objectives and design principles that have informed the site selection and design development.
- Demonstrates that the WWTPRP will be delivered consistently, through explaining and justifying design proposals.
- Describes how national policy requirements for good design and access provision are met and how guidance on design quality have been considered.
- Sets out how the design has been developed by an understanding of relevant planning policies and guidance and local site context, and how it has been informed by stakeholder and public engagement throughout the design development process.

**Figure 2.1 The Design Principles and Design Objectives**

## 2.2 Purpose of the Design Codes

2.2.1 The Design Codes in effect provide a manual for aspects of the design and comprises written instructions as appropriate. Before designers (and others involved) start work on the detailed design, they will be expected to first familiarise themselves with the general content of the DAS and this document to help formulate a design response that underpins the application.

2.2.2 The Design Codes are specific design outcomes that have been identified through the application of the Design Principles and Design Objectives set out in the DAS. They focus on two-and three-dimensional elements of design, principally (but not exclusively) those elements which are above ground and will be visible, and reflect important decisions made during the design process.

2.2.3 The Design Codes contain different levels of instruction and prescription when compared to the Design Principles and Design Objectives set out in the DAS. They are a series of rules to be applied to the on-going design of the Project, and thereby help to steer some aspects of the design detail at the next stages of the development and implementation of the Project. They help provide the next level of detail beyond those set out in the works plans and project parameters, which reflect EIA decisions.

2.2.4 The Design Codes are intended to be used by local planning authorities and stakeholders following-on from the DCO application in, for example Development Control roles, and by design teams as a basis for ongoing design work.

2.2.5 Whereas the Design Principles and Design Objectives provide some flexibility to enable joined up thinking to achieve improved project outcomes, the Design Codes are intended to be less inherently flexible than the Design Principles and Design Objectives as they have been written to apply only to design elements that are more critical and where they are instrumental in achieving a particular design of environmental mitigation outcomes that underpins the DCO.

**Table 2-1 Project design principles**

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|---|---|
| **Design Principle 1** | The waste water treatment plant and its associated structures will accord with good design principles and provide value for money. |
| **Design Principle 2** | The design will deliver the functional needs of Anglian Water Services Limited and the requirements of the contract with Homes England. It will meet all relevant environmental, regulatory and governance standards. |
| **Design Principle 3** | The design will respect the site's location and landscape setting. The design will demonstrate sensitivity to the local communities and take a practicable and considered approach to odour sources and their effects. As acknowledged by the National Policy Statement, the aesthetic design is likely to be constrained to some extent by the functional elements of the project. |
| **Design Principle 4** | The development of the design will take into account consultation responses from communities and stakeholders. |
| **Design Principle 5** | The design will be flexible, consider future needs and be resilient to climate change. It will help to meet the AWS target of being carbon neutral by 2030. |
| **Design Principle 6** | The principles of sustainability will be integral to the design, incorporating good environmental practice and mitigation and where possible, enhancement. |
| **Design Principle 7** | The design will align with Anglian Water Services Limited's Health, Safety and Well-being initiatives, protecting the workforce at all times and providing a safe site for operational staff and site visitors. |
| **Design Principle 8** | The design process will utilise trusted and experienced partners and encourage a shared understanding between different professional disciplines and skills, facilitated by the use of a design panel and a design review process. It will employ early engagement and enterprise principles and drive behaviours of collaboration and engagement. |

**Table 2-2 Design objectives**

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|---|---|
| **1.0** | **Value** |
| 1.1 | The design will deliver the functional needs of Anglian Water Services Limited and the requirements of the contract with Homes England to treat the waste water and sludge of the Cambridge catchment currently served by the existing Cambridge WWTP and the existing Waterbeach WRC. |
| 1.2 | The design will be developed to comply with all safety, environmental, regulatory and governance standards relevant at the time of design, as well as the DCO requirements and the associated diverse range of Project Objectives. |
| 1.3 | The design will respect the site's location and landscape setting. The design will demonstrate sensitivity to the local communities and take a practicable and considered approach to odour sources and their effects. As acknowledged by the National Policy Statement, for waste water the aesthetic design is likely to be constrained to some extent by the functional elements of the project. |
| 1.4 | Pursue a sustainable approach to value, acknowledging social and environmental factors in addition to purely economic value e.g. energy performance, carbon reduction, BNG and creating recreation opportunities. |
| **2.0** | **Visual impact** |
| 2.1 | Mitigate the adverse visual impact of the development on the surroundings, including local villages and residents, through appropriate new planting and landforms. |
| 2.2 | Retain and enhance existing landscape features that contribute to screening to mitigate the landscape and visual impact. |
| 2.3 | Establish new planting and landforms at the earliest practicable opportunity. |
| 2.4 | Locate the tallest structures within the proposed WWTP to minimise visual impact from key receptors. |
| 2.5 | Design associated infrastructure, including lighting and fencing, to minimise negative visual impact on the surroundings. |
| 2.6 | Minimise visual effects at night from lighting and light spill without compromising safety or security. |
| 2.7 | Consider potential effects of the development on designated and non-designated heritage assets. |
| **3.0** | **Community** |
| 3.1 | Consider and respond to consultation feedback from local communities and stakeholders. |
| 3.2 | Minimise impact of odour, through layout of the plant and specification of equipment. |
| 3.3 | Consider holistic impact of the proposed WWTP on the key local receptors, namely the local villages of Horningsea and Fen Ditton. |
| 3.4 | Ensure that facilities for public use and enjoyment take into account the balance of other considerations including landscape character, the historic environment and ecology. |
| 3.5 | Minimise impact of noise and vibration on workers and surrounding environment. |
| **4.0** | **Connectivity** |
| 4.1 | Maintain and enhance public safety in relation to existing networks (vehicular, pedestrian, equestrian and cycle). |
| 4.2 | Create enhanced recreational amenity (pedestrian, equestrian, cycle) by providing new connection routes integrated with existing networks. |
| 4.3 | Ensure the potential for future improvements to access and recreational amenity is not unnecessarily restricted. |
| 4.4 | Consider the impact of additional traffic and transport on existing networks. |

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| **5.0** | |
| 5.1 | Create a strong identity for the site as a coherent, multi-functional landscape: an earthwork landform, a natural screen to mitigate views, and a recreational resource for the local community. |
| 5.2 | Minimise negative visual impact on the surrounding community and landscape. |
| 5.3 | Form a permanent screen to the majority of the plant infrastructure, utilising a rotunda earthwork bank as a solid screen that provides nearly equal visual mitigation 'in the round'. |
| 5.4 | Soften the uppermost elements of the plant through the use of a natural planted screen on the earthwork bank top, sides and base, using native trees and shrubs that will be allowed to merge into a thicket. |
| 5.5 | Utilise new woodland as the key secondary screening element, by planting woodland belts and blocks on the boundaries of the site, in patterns and at a scale that assimilates the development into the local landscape character. |
| 5.6 | Increase biodiversity of the site through the introduction of a species rich grassland mixes within an existing largely arable landscape. |
| 5.7 | Create a mosaic of habitats for both woodland and grassland types, taking advantage of aspect and slope, moisture and shading to allow a wide transitional gradient of habitats. |
| 5.8 | Construction ecological features across the site to create additional habitats: hibernacula, deadwood, bare scrapes and four seasonal ponds. |
| 5.9 | Create a user-friendly landscape surrounding the plant, with bench seating, and paths cutting through an undulating 'ridge-and-furrow' landform. |
| 5.10 | Improve access to the countryside with linked public routes through the woodland and extending outside the main development site to complete existing links to the wider landscape. |
| 5.11 | Provide a functional and welcoming entry to the Gateway Building, including drop off areas, limited areas of visitor parking, planted swales, cycle parking and outdoor seating, all set within tree clusters. |
| **6.0** | **Character** |
| 6.1 | Select materials (colour, texture and finishes) to be sympathetic to local character. |
| 6.2 | Where possible, treat the structures within the plant with an external colour palette that is responsive to the natural landscape within which they sit. |
| 6.3 | Consider potential effects on archaeology and historic landscape character. |
| 6.4 | Establish a sense of place and community for the workforce. |
| 6.5 | Consider the needs of workers and visitors, including access, daylight and thermal comfort. |
| **7.0** | **Climate** |
| 7.1 | Deliver the target of net zero operational carbon by 2030. |
| 7.2 | Consider the operational and embodied carbon when selecting key treatment processes. |
| 7.3 | Minimise potable water demand on site. |
| 7.4 | Select an overall water recycling process that is robust and resilient that can meet the Environment Agency discharge consent, with provision for future additional growth over time. |
| 7.5 | Design the tunnel sizing and storm management systems to be resilient to account for climate change uncertainties. |
| 7.6 | Design the drainage and flood risk infrastructure to be resilient to account for climate change uncertainties. |
| 7.7 | Select finishes to buildings and infrastructure which are durable, low maintenance and suitable for the environment. |
| 7.8 | Use materials efficiently, limiting unnecessary materials and reducing waste. |

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| 7.9 | Pursue recognised and appropriate certification schemes, such as BREEAM for new buildings. |
| 7.10 | Encourage travel to the site by sustainable means, such as cycling and public transport. |
| 7.11 | Provide infrastructure to support low-emission vehicles, including electric vehicle charging stations. |
| **8.0** | **Safety and security** |
| 8.1 | Ensure the works are to be constructed, operated and maintained safely in accordance with all applicable regulations and consents. |
| 8.2 | Consider how designs could impact the safety of operational workers. |
| 8.3 | Clearly distinguish visitor routes for people who will be unfamiliar with the operations of the works. |
| 8.4 | Ensure appropriate security measures are in place throughout construction and operation to protect both workers and the infrastructure. |

2.2.6 The purpose of these Design Codes, therefore, is to:

- provide further design guidance to ensure that the Proposed Development is implemented consistently and in accordance with the design codes established in this document and as considered in the Application. It establishes the parameters that must be met in the final detailed design of particular structures and spaces associated with the Proposed Development. In all cases care has been taken to ensure that the Environmental Impact Assessment (findings of which are reported in the Environmental Statement (App Doc Ref 7.4)) addresses the range of flexibility sought; and
- provide clarity as to what constitutes appropriate design quality for the Proposed Development thereby providing a level of certainty to all parties as to the scope of the detailed design. It provides design parameters that set the framework for detailed design and would be used as the guiding framework for discharge of appropriate requirements; and
- within these parameters, there is a range in the level of recommendations and options which would apply to different parts of the Order Limits. The Design Code applies only to the following components of the Proposed Development and not to temporary buildings and spaces during construction (except where specifically referenced):
  - Site layout
  - Use of colour
  - Materials
  - Building performance
  - Gateway Building design
  - Workshop Building design
  - Carbon
  - Landscape and ecology
  - Lighting
  - Outfall
  - Pipeline infrastructure (above surface)
  - Ventilation stack (at the interception shaft) and odour control
  - Flare stack and shield

## 2.3 Securing of Design Codes

2.3.1 Adherence to the Design Codes is secured through DCO Requirement 7. DCO Requirement 7(1) requires that no phase of the authorised development is to commence until details of the following matters relating to the works proposed in that phase have been submitted to and approved in writing by the relevant planning authority —

a) the layout, scale, design and external appearance of any plant and buildings;

b) the materials and finishes to be used to construct any buildings;

c) landscape planting;

d) highway design;

e) operational lighting;

f) a construction method statement; and

g) details of electric vehicle parking provision.

2.3.2 DCO Requirement 7(2) also requires the submission of details of the odour control unit locations for the Inlet Works and Preliminary Treatment and for the Sludge Treatment Centre (supported by an updated odour assessment).

2.3.3 All design details submitted to discharge Requirement 7(1) must accord with the Design Codes set out in this document (as secured by DCO Requirement 7(3)). Design details not specifically addressed by these Design Codes will be in accordance with the Design Principles and Design Objectives defined in the DAS (and listed above) unless an explanation of why this is not reasonably practicable is provided.

2.3.4 DCO Requirement 7(5) requires that each phase of the authorised development must be carried out in accordance with the approved details for that phase.

## 2.4 Application of Design Codes

2.4.1 It is envisaged that the details of the Proposed Development requiring discharge as set out in the DCO will be worked up and submitted for approval in stages corresponding to the different phases of construction. As set out in the Design Codes, this approach will necessarily involve some monitoring and reporting of design performance (e.g. carbon) as part of the information submitted with each discharge application.

2.4.2 Compliance with the Design Principles and Design Objectives in the DAS and, so far as relevant, the Design Codes will ensure the high-quality design outcome is achieved as envisaged. These documents will form the basis of design assessment for the development of the Project as it comes forwards, ensuring that good design is achieved throughout the design process.

2.4.3 Part 2 of Schedule 2 'Requirements' of the DCO sets out the procedure for discharge approvals for such matters as detailed design (Requirement 7). This procedure is akin to the conventional planning application procedure for approval of reserved matters and discharge of planning conditions, in that the details for which discharge consent are requested (together with any supporting information that is needed) is submitted to the relevant discharging authority for decision. This supporting information must include an explanation of how the details accord with the Design Principles and Design Objectives set out in section 11 of the DAS and, where they relate to matters covered by the Design Codes, how they accord with each relevant Design Code. The discharging authority can request such further information, as is necessary, to enable it to consider each discharge application with the ultimate sanction that, if it is not satisfied with the submitted detail, it may refuse consent. A right of appeal is provided to the applicant (undertaker) in the event that there is disagreement between the parties on the refusal, deemed refusal or request for further information.

## 2.5 Design review

2.5.1 The role of the Project's Design Champion will be maintained until the delivery of the project is complete. The Project's Design Champion (as utilised in the previous design review process) will scrutinise and oversee all details prepared for submission to discharge the Requirements.

2.5.2 The Applicant has already extensively engaged in design review in the pre-application period. The need for further Design Review will be determined between the Applicant and the discharge authority prior to the submission of discharge applications (consistent with the normal process of pre-application engagement). At this stage it is envisaged that Design Review may be appropriate when developing the detail of the Gateway Building and the Workshop Building but is unlikely to be necessary in respect of other elements covered by the Design Codes given the normal pre-application consultation/engagement process.

# 3 Design Codes

## 3.1 Site layout

### LAY.01

Structures within the area encircled by the earth bank will be positioned to optimise functional performance, while considering other factors such as visual impact, odour profiling and carbon reduction.

- Water recycling and sludge treatment processes will be zoned into separate areas.
- Buildings will be in close proximity to one-another.
- The tallest structures will be located to minimise visual impact from key receptors.

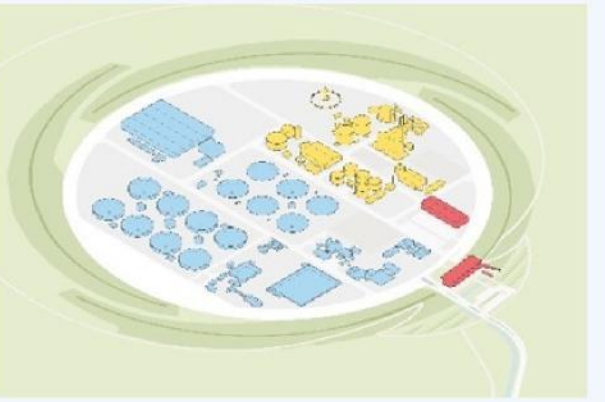


**Figure 3.1 Layout zoned into primary uses of the Water Recycling Centre, Sludge Treatment Centre and Buildings.**

### LAY.02

The layout and internal road network within the earth bank will provide safe and suitable access for operational vehicles and minimise travel distances as far as reasonably practicable.

- Design and construction of roads will be graded depending on anticipated use, such as 2-way, 1-way and light traffic only.
- Main parking areas will be located close to the main site entrance.
- Layby areas will be provided adjacent to plant requiring regular deliveries or collections.

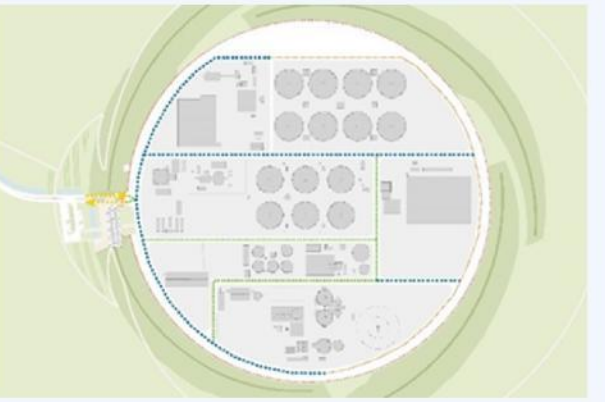


**Figure 3.2 Roads laid out to minimise travel distances.**

### LAY.03

The buildings and associated car and cycle parking on site will be located with the convenience of workers and visitors in mind.

- Car and cycle parking will be adjacent to buildings.
- Safe walking routes will be provided between buildings.

**LAY.04**

The landscape in front of the Gateway Building will provide a safe and accessible location for drop off, blue badge parking, cycle storage and parking, and a safely segregated entry to HGVs entering the plant.

- Visitor car and cycle parking to the Gateway Building will be located outside of the secure boundary.

**LAY.05**

The heights and footprints of structures and buildings will accord with the parameter plans.

**Figure 3.3 Heights of structures relative to natural screening strategy.**

## 3.2 Use of colour

**COL.01**

All engineering and ancillary structures within the area encircled by the earth bank will accord with the colour strategy set out in the Design and Access Statement, as far as is reasonably practicable and within the limitations of the materials required to satisfy the engineering constraints.

- Low-level structures will be treated to blend in with the green and brown hues and colours of the surrounding field patterns. Taller structures will be coloured to blend in with the sky
- Low-level structures are defined as those that are less than 12m high, which is a datum set to as the anticipated height of the planted screen. Taller structures are those higher than 12m, which will stand above this datum line.
- The Gateway Building is exempt from the colour strategy applicable to engineering structures and will have a separate materials strategy.

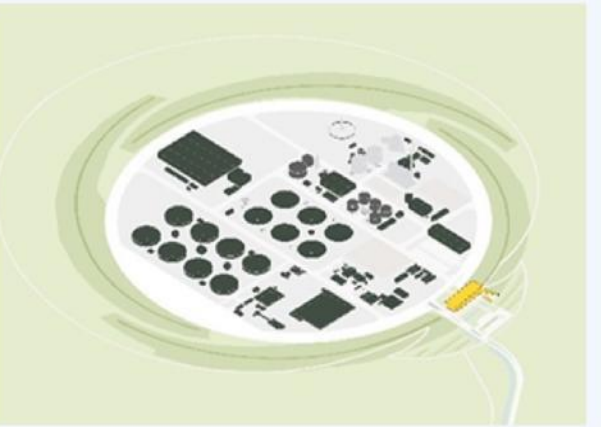


**Figure 3.4 Colour strategy across all structures based on heights above FFL.**

**COL.02**

A 'winter' colour-palette will be applied to the colour of the structures, given that during winter months the natural screening is likely to be sparser and therefore the structures will be more visible in the surrounding landscape.

- Muted and darker green or brown tones will be used to the low-level structures.
- Grey rather than blue tones will be used to the taller structures.

**COL.03**

Accent colours will be used around the site on structures and buildings to aid wayfinding, permitting they do not create a negative visual impact from the public domain.

- Accent colours will visually contrast to the colour of structures. The colours will be tested to assess the appropriateness of the proposed colours.
- A site-wide strategy for accent colours will be developed.
- Colour will distinguish visitor routes for people who will be unfamiliar with the operations of the works.

## 3.3 Materials

**MAT.01**

All materials used on buildings, structures and landscape will be high quality, durable, low maintenance and suitable for the environment in which they are installed.

- Materials will be used consistently across the site to deliver a coherent site aesthetic.
- Materials will be self-finished to reduce maintenance requirements, as far as reasonably practicable.

**MAT.02**

Materials used on the structures within the area encircled by the earth bank will be selected to adhere to the site-wide colour strategy.

**MAT.03**

The materials used on the Gateway Building will be selected in line with the pursuit of a 'natural materials' aesthetic. The tone of materials will take cues from the local landscape, and materials will be sourced locally as far as is reasonably practicable.

- The 'heavyweight' base will be masonry, such as gabion, stone or brick.
- The 'lightweight' elements will be timber or metal finished in a colour to suit the hues of the surrounding landscape.

**Figure 3.5 Examples of 'natural materials' — Gabion walling, timber and corten steel**

**MAT.04**

The materials used on the Workshop Building will adhere to the site-wide colour strategy and use a variety of texture and rhythm to achieve visual interest over a large surface area.

**Figure 3.6 Examples of metallic finishes — flat metal, sinusoidal metal and polycarbonate**

**MAT.05**

Glazed elements on buildings will be positioned to bring natural light into working areas and allow views in and out of operational facilities for passive surveillance.

- Glazed elements will be sized and positioned according to the space they serve.

## 3.4 Building performance

**PER.01**

The Gateway Building and the Workshop Building will achieve a BREEAM Excellent rating, in line with the local planning requirements.

**PER.02**

The Gateway Building and the Workshop Building will be operationally net zero.

**PER.03**

The Greater Cambridge Sustainable Design & Construction SPD 2020 requires all non-residential buildings to achieve all 5 water credits under WAT.01. The Gateway Building will achieve the same level of credits and align with the Greater Cambridge Sustainable Design & Construction SPD 2020.

## 3.5 Gateway building design

**GBD.01**

The Gateway Building will be orientated off-axis to the road infrastructure to dislocate the geometry of the building from the access road.

- The Gateway Building and visitor's car park will be a minimum of 7 degrees off-axis to the access road

**GBD.02**

The Gateway Building will be integrated into the earth bank at ground floor, with direct pedestrian access to the discovery path on top of the earth bank.

- The Gateway Building will be physically connected to the earth bank.
- The height of the masonry plinth will be the height of the earth bank, plus the height to provide falls protection to any walkways if required.

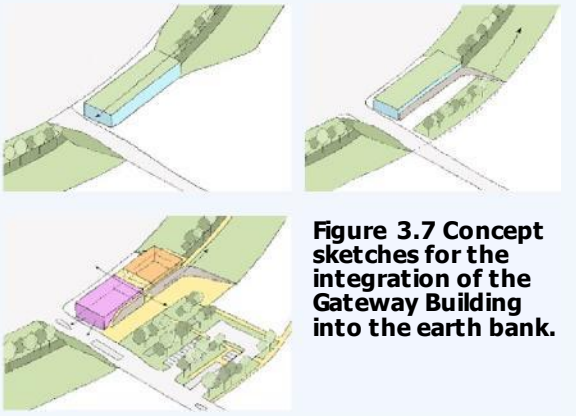


**Figure 3.7 Concept sketches for the integration of the Gateway Building into the earth bank.**

**GBD.03**

The Gateway Building will be composed of two contrasting façade systems — an apparently heavyweight masonry-clad plinth physically connected to the earth work, and an apparent lightweight cladding.

**GBD.04**

The lightweight façades will have a repeating rhythm of closely spaced vertical elements that contrast with the horizontal form of the plinth.

**GBD.05**

Passive solar shading elements will be integrated into the façade construction, including vertical projecting fins and horizontal overhangs.

**GBD.06**

The Gateway Building will have a flat, green or brown roof and be designed to allow the introduction of photovoltaic (PV) panels.

**Figure 3.8 Axonometric of the gateway building facade**

**GBD.07**

The internal layout of the Gateway Building will take into account the different needs of the different user groups, including office-based staff, operational staff and visitors to the Discovery Centre.

- Circulation will be designed to minimise crossover of staff and visitors.
- The Discovery Centre will benefit from views across the works and the surrounding landscape.

**GBD.08**

Plant equipment will not be visible from outside the earth bank. It will be contained within the building envelope as far as reasonably practicable.

- Any external plant will be located inside the secure boundary.
- Ventilation louvres will be avoided on the front (west) façade.
- Any roof level plant will be located where visual impact is lowest, size will be minimised and it will be suitably screened.

**GBD.09**

An external landscaped recreation area will be provided in front of the building for staff and visitors.

- The recreation area will be easily accessible from the Gateway Building and located away from the visitor's car park.

**GBD.10**

Cycle facilities will be provided to encourage travel to site via sustainable means.

- Cycle parking will be covered and secure.
- Showers and changing facilities will be provided for staff.

**Figure 3.9 The Gateway Building across the recreation area**

**GBD.11**

**The Gross External Area over both floors of the Gateway building will not exceed 1473m $^2$.**

**The Gross Internal Area of the Gateway Building over both floors will not exceed 1225m$^2$.**


**Figure 3.10 Indicative Floor Layout as shown in App Doc Ref 4.10.1 showing gross internal area of 1225m2**


**Figure 3.11 Indicative floor layout showing office space footprint and external dimensions in line with App Doc Ref 4.10.1.**

## 3.6 Workshop building design

**WBD.01**

The Workshop Building will have a simple form to reflect its functional and flexible use.

**WBD.02**

The Workshop Building will have a pitched roof and be designed to allow the introduction of photovoltaic (PV) panels.

**Figure 3.12 Workshop Building elevation**

**WBD.03**

The composition of the façade will be horizontally banded to create a 3-tier façade, the heights of which are to be set by key datum heights of the architectural components. Each tier will have a different grain and texture to create visual interest over a large surface area.

- Tier 1 will be windows and doors at human scale.
- Tier 2 will be industrial scale elements such as roller shutter doors.
- Tier 3 will allow for high-level clerestory elements such as glazing or polycarbonate ribbons to introduce natural daylight into workspaces where suitable to the function of the space.

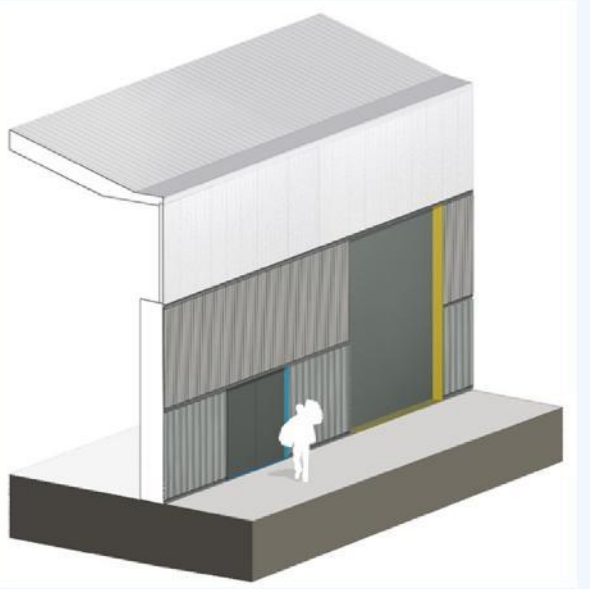


**Figure 3.13 Axonometric of the Workshop Building 3-tier façade**

**WBD.04**

Plant equipment will be contained within the building envelope as far as reasonably practicable.

- External plant will be suitably screened in visibly sensitive areas.

## 3.7 Carbon

### CAR.01

The Capital Carbon footprint of the DM0 alternate design has been assessed as 96,750tCO2e. The ES Chapter 10 (App Doc Ref 5.2.10) presents a 45% Capital Carbon reduction against the DM0 alternate design (i.e. to 53,210 tCO2e) which has already been achieved through design decisions secured within the Proposed Development.

The design mitigations secured within the Proposed Development to date include:

- Reduction in tunnel diameters and lengths
- Choice of sand filter provider to reduce the capital carbon intensity of this treatment process
- Material specification for outfall pipelines
- Optimisation of civil structure volumes
- Optimisation of site road layouts and design specification.

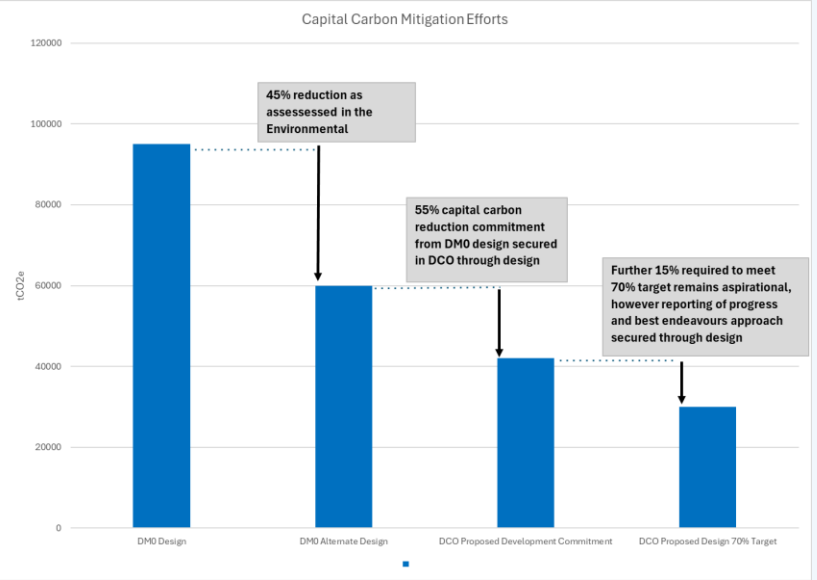



**Figure 3.14 Carbon Reduction commitments and aspirations**

### CAR.02

Further to the 45% carbon reduction as assessed in Chapter 10 of the Environmental Statement the Proposed Development will deliver a 55% carbon emission reduction against the DM0 alternative design through the detailed design process, and therefore should not exceed 43,530tCO2e.

The Applicant also has an aspirational target of 70% reduction against the DM0 alternative design. Progress against this aspirational target will also be reported during development of the Proposed Project.

The design mitigations secured within the Proposed Development to date include:

- Reduction in tunnel diameters and lengths
- Choice of sand filter provider to reduce the capital carbon intensity of this treatment process
- Material specification for outfall pipelines
- Optimisation of civil structure volumes
- Optimisation of site road layouts and design specification.

**CAR.03**

Future decisions on continued design mitigations, including review of innovative technologies, materials and construction approaches, will take a balanced view of whole life carbon impact, specifically considering trade offs between capital and operational carbon and any wider environmental impacts.

**CAR.04**

Material specifications will be optimized to mitigate whole life carbon impacts as much as reasonably practicable, taking into account performance requirements for each materials use case. Decision-making justifications on material specification for key assets will be presented as part of the carbon model updates, as per CAR.10.

**CAR.05**

Carbon impact of supply of key materials will be optimized through procurement and specific transport carbon emissions impact for key materials will be presented in the carbon model updates, as per CAR.10.

**CAR.06**

Sustainable and low carbon fuels for construction and transport will be prioritized where possible throughout the construction process, the estimated impact of fuel choices and their justifications will be presented in the carbon model updates, as per CAR.10.

**CAR.07**

The onsite reuse of surplus materials/waste will be prioritized where possible, e.g. through use within the landscaping and bund, to mitigate carbon impact of waste disposal of transport and associated traffic impacts.

**CAR.08**

Enabling and temporary works throughout the construction will adopt sustainable practices, including use of sustainable compound buildings, renewable power sources and reducing water consumption, where possible. These will be aligned to the Code of Construction Practice.

**CAR.09**

The Design Principles CAR.03 to CAR.08 will be used alongside other opportunities to further mitigation the capital carbon impact of the Proposed Development to strive to achieve a 70% reduction against the DM0 baseline. Progress against this target will be reported as per CAR.10.

**CAR.10**

The progress against the 70% capital carbon reduction target will be reported transparently to the relevant planning authority to demonstrate and ensure accountability of the endeavours being undertaken to continue to mitigate capital carbon emissions following the DCO decision. Progress will be reported through an updated Carbon Model and associated decision-making justifications at:

- 6 weeks prior to enabling works commencing
- Before commencement of main construction works
- Finalisation of the Detailed Design
- At any stage where decisions are made which impact Capital Carbon emissions of the Proposed Development by more than 5%.

## 3.8 Landscape and ecology

Refer also to the Landscape, Ecological and Recreation Management Plan (LERMP) in Volume 5.4.8.18 of the application.

**LAN.01**

Existing vegetation and green infrastructure will be retained as far as reasonably practicable, including existing hedgerows, tree clusters and field trees.

- In order to link with existing green infrastructure beyond the site boundary and retain and enhance ecological and character connectivity across the wider context; as set out in the design principles and as outlined in the LERMP.
- Hedgerows and scrub belts are to be retained and enhanced with reinforcement planting (which may include translocations of hedgerows from locations unable to be retained), unless the unavoidable re-grading of the site or the access design cannot be practicably altered to incorporate them. The design will value and incorporate individual standard trees of quality wherever practicably possible.
- Linked, continuous existing hedgerows that cross the site are key green infrastructure elements, and therefore landscape proposals will buffer, protect and reinforce existing vegetation, linking to vegetation beyond the site boundary wherever possible.

**LAN.02**

The earth bank will be a minimum of 5m above existing ground levels to provide natural screening. The earth bank profile will integrate with the surrounding landscape, with an outer slope between 1:2.5 and 1:5 where the landforms are at their widest and a steeper 1:2.5 (maximum) interior slope.

- In order to meet principles and objectives of sustainability, visual mitigation, and maintenance, as set out in the DAS.
- The earth bank top will be approximately level, with a slight slope or 'divot' toward the planting bed to direct surface runoff as additional irrigation and will include a 2.5m flat path clear of vegetation for maintenance.
- To assure the minimum height of 5m above existing ground level, a preliminary survey of the existing ground levels along the proposed centre line of the earth bank will be completed and included within the details submitted for approval under requirement 7 for the phase which included construction of the earth bank.
- The top of the earth bank will have a minimum of a 6m wide flat area for a vegetation screen and maintenance as shown in the LERMP Figure 3.4.
- The details submitted will also include the proposed height of the finished level of the earth bank which shall include an allowance for a limit of deviation of +-0.2m.

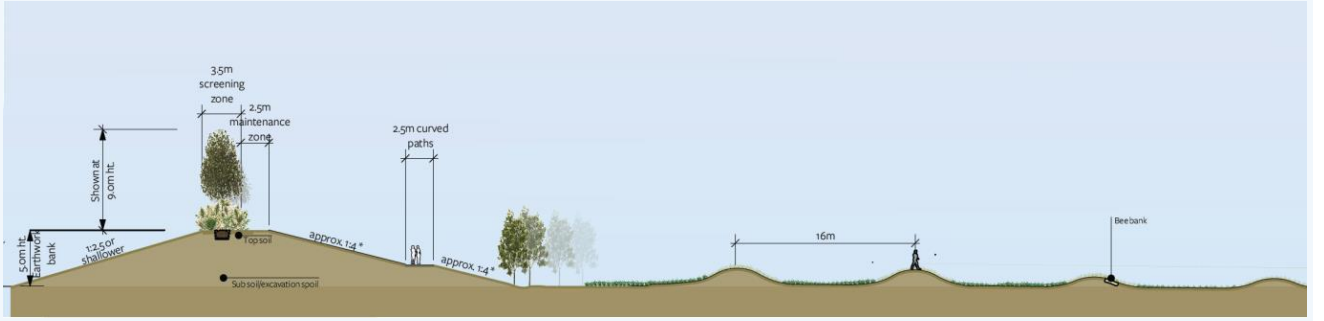



**Figure 3.15 Extract of Figure 3.4 from the LERMP**

**LAN.03**

Ridge and furrow-style earthwork shaping will be utilised to create a landscape and ecological feature creating multiple surfaces of elevated and depressed habitats of varying moisture and aspect. Swales at the base of the earth bank will be created to collect water and passively irrigate planting.

- Ridge tops will be placed at regular intervals of 16m, utilising the expanded radii of the earth bank structure. Gradients will not exceed 1:4.
- Swales adjacent to access roads are designed according to engineer's details and specifications.
- A scallop depression at the base of the earth bank will be shaped to capture rainwater and irrigate moisture-tolerant trees within the depression.

**LAN.04**

## All plant species proposed will be UK natives, that reflect the landscape character in this part of Cambridgeshire and are suitable for the site conditions. A wide range of species will be included to ensure resilience to climate change and plant disease.

- Proposed tree and shrub species and proposed grassland plant communities will be reviewed by a suitably qualified ecologist. 'Target species' that support local at-risk invertebrates, birds or mammals will be included, as set out in Section 3.4 of the LERMP. Refer also to the sample plant species schedule in Appendix A of the LERMP.
- Plants and plant groups will be designed to suit the varying conditions across the site, taking into account aspect, soil types, and relative availability of moisture, sunlight and nutrients. For example, those at the base of the earthwork in soil depressions will tolerate some inundation or temporary standing water.
- All plant species selections will be able to tolerate some degree of drought once established.

**LAN.05**

## Woodland is designed in long linear wedges or blocks, to complement patterns of tree shelter belts in local landscape character and blocks such as those at Anglesey Abbey and Little Wilbraham.

- Tree and woodland blocks will include slices of a minimum width of 20 metres at intervals to allow long views from the A14 through to the open grassland to provide a perception of openness.
- In order to create a mosaic of habitats, woodland planting will vary in density with interior open glades and areas of dense woodland, broken by woodland 'rides' of 7 to 16 metre width or greater. Those blocks adjacent to the open grassland will have scrub of diminishing density (towards the grassland).
- Refer to a sample specification set out in Appendix A of the LERMP. Final specification and species list will be developed in consultation with stakeholders.
- Trees and shrubs as initial planting along the A14 will comprise 1+1 transplants, 60-80cm height, with scattered trees of extra heavy standard (14-16cm girth) and semi-mature (20-25cm girth) included to provide structure. Along the edge of Fen Drove Way and Horningsea Road, and the entrance road to the site, tree specification will comprise trees of extra heavy standard (14-18cm girth) specification in the majority. Hedgerow planting along Low Fen Drove Way will be supplied as 1+1 transplants, 60-80cm height, planted as a double staggered row.
- Trees and shrubs in woodland blocks will be supplied in the majority at a specification of 1+1, 60-80cm height, plus a minimum of 4 percent trees specified as 'feathered' stock 100-150cm height. To bolster screening, scattered larger stock of standard trees in the northern blocks should be specified at extra heavy standard (14 -18cm girth). Spacing will vary widely to reflect zones of varying openness as described above.
- Trees and hedgerow planting on the top of the earthwork will include a wide mix of supplied sizes, with trees species planted at relatively close spacing to achieve a thicket of planting as soon as possible. Sizes will range from 1+1 transplants, 80-120cm, to scattered heavy standard and semi-mature trees, with the majority of the trees at a specification of 10-12cm girth planted on 2 metre centres. Hedgerows plants are to be planted at a specification of 1+1, 80-120cm height, planted in a triple staggered row.

**LAN.06**

Seed mixes will comprise native grass and wildflower species sourced from UK provenance, as local as possible. Seed mix 'zones' will be designed and specified to suit the purpose and micro-climate of the layout, e.g. bank slopes, woodland floor, wet scrapes and drainage swales, etc.

- Seed mixes will be approved by a suitably qualified ecologist, as described in Section 3.5 of the LERMP. Refer to a sample specification set out in Appendix A of the LERMP. Final specification and species list will be developed in consultation with stakeholders.
- Mixes will have a biodiverse number of species and will be allowed to adapt over time to minor variations, such as the varying aspects offered by the ridge and furrow heights, slopes and variations in moisture.
- Limited areas of a slow growing, drought tolerant 'amenity' seed mix will be specified for areas to be mown regularly such as near the Discovery Centre/Gateway Building and where visibility splays are required.

**LAN.07**

A variety of ecological features will be created across the site for the benefit of invertebrates, birds and small mammals, to include small wetland scrapes (seasonal ponds), deadwood and brash piles, hibernacula and bee banks.

- Refer also to Section 3.4.17-18 of the LERMP.
- Ecological features such as hibernacula and wetland scrapes (seasonal ponds) will be sited in 'quiet zones' away from visitor routes.

**LAN.08**

Path surfacing across the site will reflect their intended use, hierarchy and accessibility for designated users, as set out in Section 3.5 of the LERMP. Paths will not exceed a 1:20 gradient, except on the earth bank where paths will not exceed 1:12. The sub-base (and surfacing, if possible) will comprise recycled materials.

- Visitor paths across the open site and up the earthwork slopes will be surfaced in a compacted fine gravel with no edging, suitable for pedestrians, and wheelchair users at a minimum of 2.5 metres width.
- The staff cycle path will be surfaced in a compacted fine gravel with no edging, minimum of 3.5 metres width, which would also allow a comfortable width for pedestrians.
- The publicly accessible permissive semi-circular path on the edge of the site will be surfaced in a crushed aggregate with no edging, suitable for pedestrians, leisure cyclists and wheelchair users, at a minimum of 3.5 metres width.
- Paths and paving around the Gateway Building will be permeable hard surfacing such as concrete block paving incorporating recycled content, to complement the Gateway Building materials.
- Maintenance paths on the earth bank will comprise crushed recycled hardcore, appropriate for maintenance staff and a 2.5 metres width maintenance machinery.

**LAN.09**

Hard and soft landscaping, boundary treatment, security fencing and signage will accord with the design principles and objectives as set out within the DAS.

## 3.9 Lighting

**LTG.01**

Lighting will be in line with the Lighting Design Strategy (App Doc Ref 5.4.2.5) and best practice measures used to monitor its impacts on light sensitive wildlife using the local area and residents.

**LTG.02 Construction and Permanent Lighting**

Both construction and permanent lighting will be installed/placed to reduce as much impact to the County Wildlife Site and neighbours as practicable.

**LTG.03 Design**

Lighting design for tall structures will be agreed with Cambridge Airport on behalf of the CAA before the construction of those structures.

- Positions, orientation and height of temporary lighting will follow best practice for impacts to ecology and residents

## 3.10 Associated infrastructure

In addition to the construction of a new Waste Water Treatment Plant (WWTP) there is significant associated development of waste water and treated effluent transfer infrastructure, comprising a Waste Water Transfer Tunnel from the existing Cambridge WWTP to the proposed WWTP, Final Effluent (FE) pipeline and Storm Pipeline jointly referred to as the FE and Storm Pipeline with an outfall to the River Cam, and two new pipelines (rising mains) (hereafter the Waterbeach Pipeline) from the Waterbeach New Town development area to the proposed WWTP.

Other associated development includes a new permanent access road connecting the proposed WWTP to the local road network at Horningsea Road.

**INF.01 - General Works**

All works will be constructed in accordance with the Code of Construction Practice (CoCP) Part A (App Doc Ref 5.4.2.1) and Part B (App Doc Ref 5.4.2.2).

**INF.02 - Earthworks**

In addition to the CoCP, any earthworks will be undertaken in accordance with the outline soil management plan (SMP) AS-060 5.4.6.3 ES Volume 4 Chapter 6 Appendix 6.3.

- The Outline SMP provides a framework for the sustainable handling of soil resources and describes the minimum standards and measures, based upon current legislation and best practice, which will be adopted by the Applicant and its Principal Contractor(s) to use as a basis for the development of a detailed SMP as required by the Code of Construction Practice. The detailed SMP will be approved by the EA and the relevant Planning Authority and used by the Principal Contractor(s) to manage and monitor soils disturbed during the construction phase of the Proposed Development.

## 3.11 Outfall

The outfall is an important structure that needs to be delivered in a considered way that is considerate to both the setting and the ecology of its proposed location as well as maintaining the vital recreational activities in the River Cam.

**Figure 3.16 Visualisation of the new outfall**

**OFT.01**

Navigation of the River Cam will be maintained at all times with only temporary narrowing required.

**OFT.02**

Outfall compound signage and hoardings will be complementary to the setting and be agreed with local stakeholders where practicable and in line with the CoCP.

**OFT.03**

Due regard will be taken to maintain access to Public Rights of Way (PRoW) and have diversions in place before the PRoW is temporarily closed. PRoW's will align with the PRoW plan.

**OFT.04**

Design of the outfall structure will be in line with the 5.4.8.24 ES Volume 4 Chapter 8 Appendix 8.24 Outline Outfall Management and Monitoring Plan (OMMP) and 4.13 Design Plans — Outfall.

**OFT.05**

The OMMP will also need to set out how required permits from the Environment Agency and LLFA for works within the byelaw margin of main river and ordinary watercourses will be obtained.

- The outline OMMP submitted with this DCO application provides a framework for preparing a OMMP and achieving the design objectives and mitigation measures outlined in the Environmental Statement Mitigation Register (App Doc Ref 5.4.2.6).
- The outline OMMP submitted with this DCO application provides a framework for preparing a OMMP and achieving the design objectives and mitigation measures outlined in the Environmental Statement Mitigation Register (App Doc Ref 5.4.2.6).

The construction OMMP will include:

- details of ditch habitat creation, monitoring and maintenance measures;
- details of any proposed restrictions on navigation on the River Cam during construction works;
- details of proposed communication of restrictions to river users and the Cam Conservancy; and
- details of public footpath diversions during construction and proposed reinstatement methods.
- Environmental compliance during the operational phase will be monitored under the Environmental Permit alongside specific licence conditions associated with the Natural England species licences for water vole.

**OFT.06**

During the detailed design, further CFD modelling will be produced to inform the design of the outfall structure and flows that will flow from it. The design will ensure the structure and flows do not create a significant effect to either the riverbed or riverbank and that the riverbed and riverbank protection measures are also not creating an effect that is significant.

## 3.12 Pipeline Infrastructure

**PLI.01**

Pipeline infrastructure where the connected infrastructure meets the surface at places such as air relief and control valve and wash out points, the design will be at ground level and not impede any farm activities they are designed in. Access to these assets will be where practicable by field boundaries or headings.

- Below ground infrastructure is to take the most direct route and to avoid impact to residents where practicable and is to be designed in the lowest carbon and operationally efficient way that minimizes impact.

## 3.13 Ventilation stack (at the interception shaft) and odour control

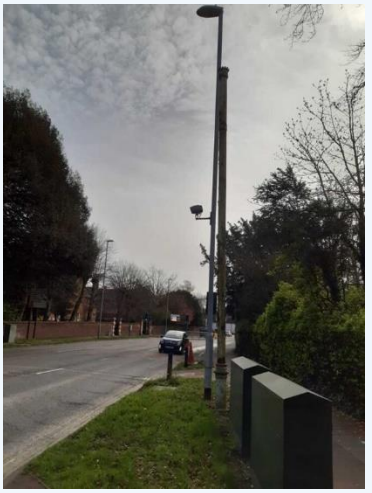
**VST.01**

The ventilation stack and associated odour control unit at the interception shaft is to be designed with the follow-on development in mind. Coordination with the follow-on master developer regarding positioning and proximity to proposed development in their master plan must be completed. The stack must be at least 15m from an inhabited dwelling/building/office.

**VST.02**

The interception shaft is a design feature that requires ventilation facilities. The purpose of the ventilation facility is to passively manage air pressure in the tunnel system, a process referred to as natural aspiration. Air would be drawn in under typical/normal operations and exit less frequently under extreme operating conditions. Potential odour could be released via the vent stack when air exits the tunnel system under extreme operating conditions. However, the vent stack included in the proposed WWTP would allow exiting air to be directed via a carbon air treatment filter. The carbon filtration is sufficient to control adverse odour during "extreme operating conditions". As the process is passive, and dependent upon air pressure within the sewer, it is not possible to accurately predict frequency or duration of air released from the ventilation facility, only to acknowledge that it would be intermittent, infrequent, and short-lived.

There are a few vent stacks on the existing Riverside catchment. They are tall slim structures resembling lamp posts and do not have the visual intrusion. The below sketch is the existing Riverside "vent stacks" to provide an idea of what a typical "vent stack" would look like. The proposed WWTP vent stacks would differ slightly in that it would incorporate the carbon filter connections, to allow the airflow to move through the carbon filter.



**Figures 3.17 & 3.18 Examples of current vents in public rights of way and connected to dwellings/offices.**

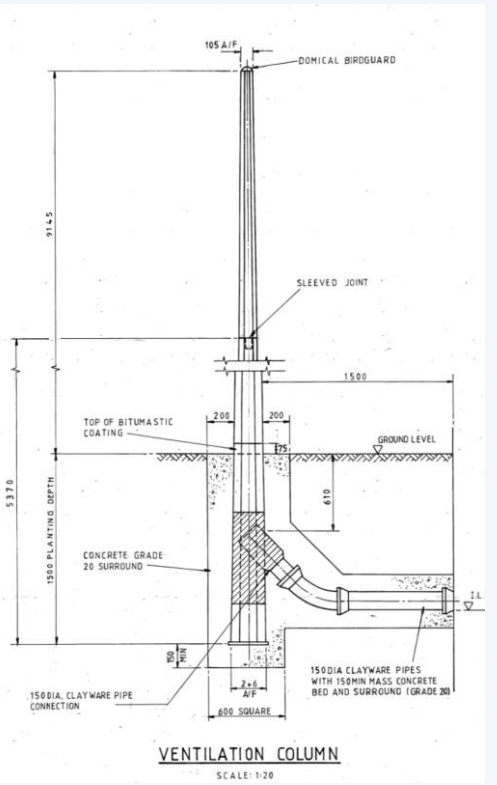



**Figure 3.19 Example: Technical drawing of a vent stack**

### 3.14 Flare stack and shield

**FSS.01**

Flare to be shielded to align with IED requirements and reduce visual impact by concealing the flare.

# Get in touch

**You can contact us by:**

Emailing at **info@cwwtpr.com**

Calling our Freephone information line on **0808 196 1661**



Writing to us at **Freepost: CWWTPR**

You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

**https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/**