Hampshire Water Transfer and Water Recycling Project

Outline Carbon Management Plan

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Executive Summary

1. This Outline Carbon Management Plan (oCMP) has been prepared to support the Development Consent Order (DCO) application for the Hampshire Water Transfer and Water Recycling Project (the Project). The oCMP defines the Project's carbon strategic objective and sets out the framework by which greenhouse gas (GHG) emissions arising from construction, operation, and asset replacement will be reduced to as low as reasonably practicable (ALARP). In doing so, supports the UK's commitment to achieving net-zero greenhouse gas emissions by 2050 and aligns with the National Policy Statement for Water Resources Infrastructure (NPSWRI).

2. In recognition of the Direct Procurement for Customers (DPC) delivery model, this oCMP establishes robust, evidence led assessment criteria to secure all reasonably practicable carbon reduction opportunities rather than fixed numerical reduction targets at DCO stage. This approach preserves appropriate flexibility for the Contractor procured through DPC to optimise carbon reduction through the cycle of tender design, detailed design, construction and operation, while ensuring that carbon performance remains a material, contractually controlled consideration throughout the project lifecycle. The oCMP is secured through the DCO and will be updated at key milestones outlined in the oCMP, to demonstrate continued progress against the carbon strategic objective.

3. A whole life carbon (WLC) appraisal has been undertaken in accordance with PAS 2080 and forms the reference point against which progress will be measured. The appraisal identifies construction carbon primarily associated with materials, pipelines, tunnelling and major plant, and operational carbon dominated by energy and chemical use over the operational life of the asset. The appraisal adopts conservative assumptions, including limited future decarbonisation of chemical supply chains, to present a reasonable worst-case basis for assessment.

4. The oCMP sets out a structured and transparent carbon mitigation framework aligned to the PAS 2080 hierarchy, distinguishing between primary measures embedded in the design at DCO stage, secondary measures to be developed and confirmed through procurement and detailed design, and tertiary good practice measures. Clear criteria are established to assess the feasibility and value of mitigation measures, including technical feasibility, programme alignment, market readiness and value for money. These criteria will be applied consistently by the Applicant and the Contractor, supported by ongoing supply chain engagement and innovation.

5. Operational carbon mitigation will focus on reducing energy demand, lowering the carbon intensity of energy supply, improving transport efficiency, and optimising chemical use. Renewable energy opportunities have been assessed within the DCO Order Limits and, on-site generation has been shown to be constrained or inefficient. Alternative procurement routes such as renewable power purchase agreements (PPA) and purchase of Renewable Energy

Guarantees of Origin (REGO) backed power will be explored in the energy strategy and detailed in iteration two of the CMP. The approach to offsetting recognises the current uncertainty in future offset markets and therefore defers detailed offsetting strategies until closer to 2050, while committing the Applicant to setting out a decision-making framework to be embedded within the procurement process, enabling the Contractor to evaluate appropriate offsetting options for residual emissions beyond 2050, should they be required.

6. Monitoring, reporting and accountability are integral to the oCMP. The Contractor will be required to monitor and report construction and operational carbon emissions through defined metrics and established industry tools on an annual basis. Roles and responsibilities for carbon management throughout delivery, operation and hand over are clearly defined. Collectively, these measures ensure that the Project's carbon impacts are transparently assessed, actively managed, and demonstrably reduced to as low as reasonably practicable throughout its lifecycle.

1 Introduction and context

1.1 Project description

1.1.1 The Project comprises the construction, operation and maintenance of the following components:

- Water Recycling Plant and associated pumping stations.
- Pipelines between Budds Farm Wastewater Treatment Works and the Water Recycling Plant site.
- Pipelines between the Water Recycling Plant site and Bedhampton Springs, connecting to pipelines being delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir.
- Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works.
- Above Ground Plant comprising Intermediate Pumping Stations and Break Pressure Tanks located along the Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works.

1.1.2 The Project would also comprise the use of the following infrastructure:

- Havant Thicket Reservoir (which has been consented separately by Portsmouth Water and is currently under construction) for the storage of recycled water.
- The existing Eastney Long Sea Outfall, Eastney Pumping Station, and associated Eastney Transfer Tunnel for the release of reject water from the WRP site.
- Pipelines and other related works (which have been consented separately by Portsmouth Water) for the transfer of recycled water and source water between Bedhampton Springs and Havant Thicket Reservoir.

1.1.3 The construction and operation of the Project would be supported by other temporary and permanent works.

1.1.4 The Project will require the demolition, disassembly and/or temporary relocation of a number of small structures.

1.1.5 A detailed description of the Project can be found in ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6). The Application Glossary (Document reference 1.7, DCO Volume 1) sets out the abbreviations and definitions used in the DCO application for the Project.

1.2 Background and context

1.2.1 The Project procurement route is set out by the Applicant's regulator. The Direct Procurement for Customers (DPC) procurement route means that whilst the Applicant will take the Project through the Development Consent Order (DCO) consenting process, the Project will be financed, built and operated for a period by

the Contractor procured through DPC, who will ultimately hold contractual accountability for delivering the Project's carbon[1] strategic objective.

1.2.2 One of the intended benefits of the DPC procurement approach is that it is expected to bring further innovation from the supply chain, enabling more efficient delivery of the Project. To achieve this, there needs to be flexibility in the Project's design development so that, through procurement and detailed design and construction, the Contractor can take advantage of supply chain innovations for carbon mitigation. Therefore, the oCMP is designed to provide this ongoing flexibility while establishing a robust process for monitoring progress against the Project's carbon strategic objective.

1.3 Purpose of this plan

1.3.1 This outline Carbon Management Plan (oCMP) defines the Project's carbon strategic objective and sets out the carbon management processes and types of carbon mitigation measures that the Contractor will appraise to achieve this objective. The oCMP will be updated into a detailed CMP at specified intervals (see Table 1.1) to provide updates on progress towards this objective.

1.3.2 The Project's carbon strategic objective is to deliver solutions in relation to design, construction and operation of the Project that are optimal in terms of WLC emissions and reduce GHG emissions to as low as reasonably practicable, having regard to the UK's climate change commitment of achieving net zero emissions by 2050.

1.3.3 The oCMP has the following two key aims:

- Highlighting the priority areas where the Contractor should focus its mitigation efforts and setting a process with criteria for the Contractor to ensure that GHG emissions are as low as reasonably practicable, focusing on the critical carbon hotspots identified from the WLC appraisal of the Project.
- Establishing a mechanism through future Carbon Management Plan (CMP) updates, or other updates, where the Contractor will report on its progress in reducing carbon emissions. These updates will provide an overview of the mitigation measures investigated, justification on whether they have been implemented or excluded following the evaluation criteria, and their carbon reduction contribution towards the Project's carbon strategic objective.

1.3.4 By establishing a robust process for carbon mitigation measure evaluation and implementation and establishing adequate monitoring and reporting through key stages in the Project's lifecycle, the Applicant will ensure the Project´s carbon strategic objective is met (further details provided in Section 5).

1.3.5 This oCMP document is the first iteration of the Project's CMP. Future iterations of the CMP will be produced at relevant milestones to demonstrate how the Project´s carbon strategic objective is being met. These are described in detail in section 1.3 of this document and highlights the key iteration that will require SoS approval.

[1] In the context of this document, the word carbon refers to "carbon dioxide equivalent (CO_2e)". Therefore, in this document the words "carbon" and "carbon emissions" have the meaning of "greenhouse gas (GHG) emissions expressed as CO_2e". See glossary for full definitions of CO_2e and GHG emissions.

1.3.6 The requirement for the Contractor to implement the minimum requirements of the carbon management process detailed in Section 5 and to provide ongoing iterations of the CMP is secured through Requirement 10 of the draft DCO.

1.4 Carbon Management Plan updates

1.4.1 The table below presents the proposed updates to the CMP that will be issued after grant of the Project's DCO to demonstrate progress towards meeting the Project's carbon strategic objective.

Table 1-1: Planned future carbon management plan

Iteration	Timeline	Contents	Approval
First – oCMP for DCO Submission	Secured document pursuant to Requirement 10 of the draft DCO provided at the time of submission.	Defines the Project´s carbon strategic objective and the carbon management approach to achieve it. Provides the WLC appraisal results for the Project at DCO submission stage. Defines the approach to assess and implement carbon reduction measures for construction and operational carbon during outline design, procurement, construction and operation phases. Sets out criteria to evaluate mitigation measures. Sets out the approach to monitor progress towards the carbon strategic objective through updates of the CMP.	Secured control plan under Requirement 10 of the draft Development Consent Order.
Second – CMP at completion of DPC/ Contractor tender process	At completion of DPC tender process when the contract with the Contractor is signed.	Defines the carbon management requirements and carbon reduction incentives set by the Applicant in the procurement process. Provides the mitigation measures incorporated by the Contractor into the tender design and how these impact the expected carbon emissions for the Project and contribute towards carbon strategic objective. Describes the specific carbon commitments and KPIs incorporated in the contract with the Contractor. Defines a clear process for the Contractor to meet carbon management requirements. Describes the monitoring and reporting requirements agreed with the Contractor for them to	The Second iteration CMP will be prepared pursuant to the DCO Requirement. Submitted to the Secretary of State for approval to demonstrate how the Contractor is committed through the DPC contract to achieve the Project's carbon strategic objective.

Iteration	Timeline	Contents	Approval
		report progress during detailed design, construction and operation.	
Third – CMP ahead of operational phase of the project	At completion of the construction works for the relevant part of the authorised development.	Based on the final detailed design and construction information (using as built materials quantities and data) it will report on the carbon emissions results for the construction phase. Additionally, provides an update to the forecast operational carbon emissions and the operation phase mitigation measures to be implemented by the Contractor during the operation phase.	Must be substantially in accordance with the first and second iteration of the CMP, under Requirement 10. Submitted to the Secretary of State for approval by the end of the construction, commissioning stage of any part of the authorised development.
Annual updates of the CMP during operation phase	Will be produced and published annually by the Contractor and included in the Applicants annual carbon reporting to the regulator	Relates to the operation and maintenance phase of the Project. Will be produced in line with Applicant's operational GHG reporting requirements, currently through the UKWIR Carbon Accounting Workbook (CAW).	Published online annually and submitted to the Applicant as part of its regulatory reporting requirements

2 National policy and guidance

2.1 National and sector level guidance

Climate Change Act 2008 and 2019 update

2.1.1 The UK Climate Change Act 2008 is the foundational legislation for the UK national climate policy. It sets a legally binding framework for reducing GHG through long-term targets and five-year carbon budgets. The Act established the Committee on Climate Change (CCC) to advise government and monitor progress.

2.1.2 In 2019, the Act was amended to increase the UK's ambition from an 80% reduction to achieving net zero greenhouse gas emissions by 2050.

2.1.3 Together, the 2008 Act and 2019 amendment provide the statutory basis for UK decarbonisation efforts. They guide national and sectoral strategies, ensure accountability through carbon budgets, and position the UK as a global leader in climate governance.

NPSWRI 2025

2.1.4 The primary policy applicable to the application for a DCO for the Project is the National Policy Statement for Water Resources Infrastructure (NPSWRI) 2025. This sets out policies to guide how DCO applications for water resources infrastructure should be decided and how the effects of such infrastructure are considered.

2.1.5 Section 4.4 of the NPSWRI sets out guidance for nationally significant infrastructure projects applications for water resources concerning the government policy on climate change mitigation.

2.1.6 This oCMP addresses climate change mitigation. The requirements for the applicants regarding the mitigation of GHG emissions are detailed in paragraphs 4.4.11, 4.4.13, 4.4.15 and 4.4.16 of the NPSWRI.

Table 2-1 NPSWRI requirements and where addressed in this oCMP.

NPSWRI paragraph	NPSWRI requirement	Where addressed in this oCMP
4.4.11	Paragraph 4.4.11 states "While it is unlikely that any emissions increase from an individual development of water resources infrastructure will materially affect the government's ability to meet its emissions targets, the applicant should provide evidence of the climate impact of the development and an appraisal of emissions associated with construction and operation against the water company's ability to deliver its contribution to the government's targets and commitments".	The requirement to provide evidence of the climate impact of the Project and an appraisal of the emissions is complied with through the provision of the WLC appraisal prepared as part of the EIA for the Project, which results are reported in section 4 of this oCMP.
4.4.12	Paragraph 4.4.14 states that "the applicant should undertake an appraisal of the project as part of the Environmental Statement, to include an appraisal of any likely significant climate effects on the project itself. Where	The appraisal of any likely significant climate effects on the project itself, including residual emissions and evidence of climate impact are provided in Environmental Statement

NPSWRI paragraph	NPSWRI requirement	Where addressed in this oCMP
	there are residual emissions, the applicant should also provide evidence of the climate impact of the project (including embodied carbon), both from construction and operation, such that it can be assessed against the government's climate obligations".	– ES Chapter 10 Carbon and climate change
4.4.13	Paragraph 4.4.13 states that "Evidence of appropriate mitigation measures (where appropriate, incorporating engineering plans on configuration and layout, and use of materials) in design, construction and operation should be presented. The applicant should demonstrate that it has investigated feasible options in terms of using: • energy efficient technology or processes • energy recovery technologies or processes • renewable energy sources, produced either on site or linked to any local renewable energy initiatives • greenhouse gas offsetting measures	Mitigation measures to reduce GHG emissions from the Project, as well as the approach to carbon mitigation, are provided in section 5 of this oCMP.
4.4.14	Paragraph 4.4.14 provides examples of the mitigation that could be considered for the project development, including: • maximising the use of on-site materials • incorporating the use of energy efficient materials, building techniques and energy efficient pumping and water treatment equipment • gravity fed transfers • use of, or generation of, renewable energy to help offset additional operational carbon emissions • offsetting through woodland creation on or adjacent to the site and registered with the Woodland Carbon Code	Secondary mitigation measures are discussed in section 5 of this oCMP, together with the approach to carbon mitigation that will ensure mitigation measures are evaluated and incorporated where feasible at all stages, including detailed design, construction and operation.
4.4.15 and 4.4.16	With respect to government's decision making, paragraph 4.4.15 states that "Any increase in greenhouse gas emissions from the project alone is not a reason to refuse development consent for infrastructure to secure water supplies, unless the increase in greenhouse gas emissions resulting from the project is so significant that it would have a material impact on the ability of the government to meet its greenhouse gas reduction obligations and commitments including but not limited to, net zero, the Nationally Determined Contribution and carbon budgets". Subsequently, paragraph 4.4.16 states that "The Secretary of State will consider the effectiveness of the mitigation measures to ensure that the greenhouse gas emissions are as low as reasonably practicable. The	Secondary mitigation measures are listed in section 5 of this oCMP, including discussion of proposed approach to offsetting, together with rationale about their effectiveness and approach to implement these. Primary and tertiary measures are not discussed in this oCMP. Primary mitigation measures are embedded in design and accounted for within the Project whole life carbon appraisal and are listed in ES chapter 10 Carbon and Climate change. Tertiary measures are industry good practice actions to reduce impacts and are also listed in ES chapter 10 Carbon and Climate change

NPSWRI paragraph	NPSWRI requirement	Where addressed in this oCMP
	Secretary of State's view of the adequacy of the mitigation measures will be a material factor in the decision-making process, particularly the applicant's proposed offsetting measures, for any significant emissions expected from the project.	

The NPSWRI also provides a reference to the water industry sector commitment to reducing its greenhouse gas emissions to net zero by 2030, which is ahead of the UK's target, and indicates that the government welcomes and supports the sector's approach. This sector commitment is set out in the Water UK's Net Zero 2030 Routemap (Water UK, 2020), which is reviewed below.

Water UK Net Zero 2030 Routemap

2.1.7 The Water UK's Net Zero 2030 Routemap aims for the water industry to achieve Net Zero operational emissions by 2030, excluding chemical use. It covers the English water companies' commitment to reduce the sector's operational emissions (excluding chemicals), covering Scope 1 and 2 emissions, as well as any Scope 3 emissions associated with outsourcing any operational activities related to delivering its services.

2.1.8 The commitment allows for the use of carbon offsets to achieve net zero operational emissions. A detailed description of the coverage of the commitment is provided in Section 2 of the Water UK's Net Zero 2030 Routemap (Water UK, 2020).

2.1.9 Water companies are to implement company-wide measures across their operation activities to work towards achieving this sector level commitment, however the commitment does not require each project to achieve operational net zero emissions but targets the most efficient reductions across the whole sector asset base. In the case of the Project, this sector level commitment would not cover emissions arising from chemicals, which are a major source of the Project's emissions. The Project's carbon strategic objective therefore is to reduce all operational emissions to as low as reasonably practicable, providing a more comprehensive scope of ambition than the sector level commitment in terms of chemical emissions.

PAS 2080:2023

2.1.10 PAS 2080:2023 Carbon Management in Infrastructure (British Standards Institute, 2023) is a global standard for the management of carbon in infrastructure. It covers the whole life cycle of carbon used in projects and consists of six key steps:

- Target setting: Set appropriate carbon reduction targets.
- Baselines: Determine baselines against which carbon reduction performance is assessed.
- Monitoring: Establish metrics, e.g. key performance indicators, for monitoring carbon performance.

- Quantification: Quantify emissions including selecting the method, defining boundaries and applying cut-off rules.
- Reporting: Report carbon performance at appropriate infrastructure work stages.
- Continual improvement: Continually improve carbon management and performance.

2.1.11 PAS 2080:2023 is widely recognised as the reference standard for infrastructure carbon management. The standard helps organisations reduce WLC emissions on projects by providing a common framework for the infrastructure sector and supply chain. The Project has aligned to this standard through the development of the design to date, and the approach to carbon management set out in this oCMP ensures that PAS 2080 principles will be followed through the Project implementation.

2.2 Local and regional policy

2.2.1 The local planning policies of East Hampshire District Council, Eastleigh Borough Council, Fareham Borough Council, Hampshire County Council, Havant Borough Council, Portsmouth City Council and Winchester City Council all contain climate change policies and requirements. These are summarised Environmental Statement - Chapter 10 Carbon and climate change. In the event that there is any conflict between local policies and the NPSWRI, the NPSWRI would prevail for the purposes of decision making given the national significance of the Project

3 Approach to carbon management

3.1 The Project's carbon strategic objective

3.1.1 The Project's carbon strategic objective is to deliver solutions in relation to design, construction and operation of the Project that are optimal in terms of WLC emissions and reduce GHG emissions to as low as reasonably practicable, having regard to the UK's climate change commitment of achieving net zero emissions by 2050.

3.2 The Project's approach to carbon management

3.2.1 The Project has defined a carbon management approach to achieve its carbon strategic objective. The approach is aligned with PAS 2080 Carbon Management in Infrastructure principles, and consists of the following steps:

3.2.2 **Define strategic objectives**. The Applicant has set a carbon strategic objective for the Project, which is described in Section 3.3.1 above. The objective applies to the scope of the Project covering construction and operational carbon emissions.

3.2.3 **Establish a reference point to monitor progress.** The Applicant has estimated the Project GHG emissions by completing a WLC appraisal, which is the basis to identify the Project´s carbon hotspots. The WLC appraisal results are summarised in Section 4, with full details on the appraisal methodology and scope provided in HWTWRP – Carbon Appraisal Methodology. The Project WLC appraisal provides the reference point from which progress towards the carbon strategic objective can be measured against.

3.2.4 **Develop mitigation measures**. Section 5 of this oCMP sets out the approach to carbon mitigation for the Project and outlines the types of mitigation measures considered to date and to be reviewed going forward to further reduce the Project's construction and operational GHG emissions. The Applicant set an evidence-based approach that follows PAS 2080:2023 hierarchy for carbon reductions.

3.2.5 **Engage with supply chain.** The Applicant will engage with the supply chain through a market engagement process. This engagement will support efforts to meet the Project's carbon strategic objective by seeking to identify and validate the deliverability of carbon mitigation options based on expected market conditions and the Project's delivery programme. The engagement will also be used to inform development of the procurement process to set the conditions to enable and incentivise delivery of innovation and efficient carbon reductions.

3.2.6 **Set carbon reduction requirements.** The Applicant will set carbon reduction requirements during the procurement process to ensure that the Contractor, who will design and construct the Project, will undertake best endeavours to implement sufficient carbon reduction measures and achieve the Project's carbon strategic objective measured against the reference point of the WLC appraisal presented in the ES and Section 4. The Applicant has defined criteria to evaluate mitigation opportunities (see section 5.1), the Contractor will be required to use these criteria to assess mitigation opportunities and implement them where feasible.

3.2.7 **Reward carbon reduction and innovation.** Through the procurement process, the Applicant will incentivise the Contractor to provide solutions and innovations to ensure that the Project's carbon emissions will be as low as reasonably practicable.

3.2.8 **Monitoring and continuous improvement.** The Applicant has defined a monitoring plan that defines how carbon emissions will be monitored during detailed design, construction and operation of the Project. This plan, which is outlined in Section 6 of this oCMP, will be updated in subsequent updates to the CMP.

4 Project's whole life carbon appraisal

4.1 Whole life carbon appraisal

4.1.1 The Applicant has calculated the Project's carbon impact in line with PAS 2080:2023.

Appraisal methodology and boundary

4.1.2 The study boundary considered for the WLC appraisal[2] is the activities required to construct and operate the assets being delivered within Order Limits of the Project as per the Environmental Impact Appraisal (EIA) Scoping.

4.1.3 The WLC appraisal covers construction and operational carbon emissions from the following project development phases:

- Pre-construction phase: This is assumed to be a 4-year period prior to construction (2025 - 2028), during which carbon emissions are assumed to be negligible.
- Construction and commissioning phase: This is assumed to be a 5-year period from 2029 to 2033, during which the construction carbon emissions occur.
- Operation and asset replacement phase: This is assumed to be a 100-year period (2034 –2133) during which replacement carbon emissions and annual operational carbon emissions occur.

4.1.4 It should be noted that end-of-life emissions for the Project have been excluded from the boundary of significance of the EIA. This is due to:

1. The expectation that the Project will continue to be maintained, and components replaced to continue to enable the Project to remain operational even after its first expected operational life period. Therefore, an end-of-life appraisal would not be reflective of a likely scenario to occur in the future.
2. The long-life nature of the Project makes it difficult to identify potential end of life activities and their carbon intensity with any accuracy.

4.1.5 Although end-of-life emissions have been excluded from the appraisal boundary, a high-level estimate of the decommissioning carbon emissions was undertaken to demonstrate that these are minimal relative to the overall carbon appraisal of the Project.

4.1.6 Further details on the methodology followed to complete the WLC appraisal are provided in HWTWRP – Carbon Assessment Methodology.

Whole life carbon emissions

4.1.7 The results of the WLC appraisal (using the durations described in Section 4.1.3) are summarised below. The results presented include an uncertainty uplift for capital carbon emissions, which is explained in further detail in section 4.4 below.

[2] In this document, the term "WLC appraisal" refers to the calculation (or estimation) of GHG emissions across the entire lifecycle of a building or infrastructure asset. See glossary for full definition

Table 4.1-2 Whole life carbon emissions results

Carbon	Origin	Carbon emissions (tCO2e)	Description
Capital carbon	Construction	149,330	Carbon emissions during construction stage (embodied carbon of materials, materials transport to site and emissions from construction process) Includes 24.7% uncertainty uplift
	Replacement	103,340	Carbon emissions from replacement of assets during operation stage. Includes 24.7% uncertainty uplift
Operational carbon	Power	16,850	Carbon emissions associated with power consumption during operation
	Chemicals	707,230	Carbon emissions associated with chemicals used during operation
	Transport	24,150	Carbon emissions associated with transport of chemicals to site
	Operational maintenance	4,440	Carbon emissions associated with maintenance activities
End of life carbon	Decommissioning	110	High level estimate of decommissioning emissions
Whole life carbon	**All above**	**1,005,450**	

4.2 Carbon hotspots

4.2.1 The results of the WLC appraisal can be analysed to identify carbon hotpots. Carbon hotspots are the assets or activities in the Project that generate a higher proportion of carbon emissions and in alignment with PAS 2080:2023 guidance are therefore priority areas to identify and implement carbon reduction measures.

4.2.2 Table 4-2 presents the split of construction carbon emissions by activity stage. The highest contribution to construction carbon emissions is embodied carbon from materials used, followed by construction activities, and transport.

Table 4-2: Construction carbon emissions[3] split by activity

Construction carbon	Construction carbon (tCO2e)	% of construction carbon
Embodied carbon	80,700	67.4%
Construction activities	32,260	26.9%
Transport	5,380	4.5%
Waste	1,440	1.2%

[3] Note: carbon emission results rounded up to the nearest ten

Total construction carbon	**119,770**	**100%**
Risk allowance (24.7% uplift)	29,560	25%
Total construction carbon + risk allowance	**149,330**	

4.2.3 The top three construction carbon hotspots split by asset type are associated with the pipelines (46%), tunnels (29%) and the Water Recycling Plant (19%) as shown in the table below, which account for more than 94% of the total construction carbon emissions with the remainder accounted for by Pumping Stations.

Table 4-3: Construction carbon emissions split by asset type

Asset type	Construction carbon (tCO2e)	% of construction carbon
Pipeline	54,590	46%
Tunnels	34,540	29%
Water Recycling Plant	23,170	19%
Pumping Stations	7,470	6%

4.2.4 Operational carbon emissions from the use of chemicals are calculated based on estimated quantities of chemicals consumption and industry average emission factors. There is high uncertainty in the decarbonisation paths for chemical production processes, therefore the calculation assumes no decarbonisation of chemical manufacturing takes place as a conservative scenario. This conservative assumption explains the high proportion of carbon emissions associated with chemicals over the operational life of the Project. This was deemed the most appropriate approach given the lack of decarbonisation trajectory that could be referenced, unlike the DESNZ grid carbon intensity projections utilised for electricity supply decarbonisation [1] [2].

4.2.5 It should be noted that whilst the decarbonisation of the manufacture of these chemicals is not under the control of the Applicant or the Contractor, the Applicant is committed to use its influence to engage the supply chain to identify opportunities to reduce the carbon intensity of its chemical consumption over time in alignment with national 2050 climate commitments.

4.2.6 For operational carbon, the largest contribution is from the use of chemicals (94.0%). Powdered lime and carbon dioxide are the biggest hotspots, contributing over 80% of the total emissions from chemicals. The second largest contributor is the transport of chemicals (3.2%). The third largest contributor is power consumption (2.2%), which is calculated using DESNZ emission factors [3] which assume the grid decarbonises over time. Operational maintenance is the smallest contributor of emissions (0.6%).

Table 4-4: Operational carbon emissions[4] split by activity

Operational carbon (100-year operation period)	Operational carbon year 1 of operation (tCO2e)	Operational carbon across 100-year whole life appraisal (tCO2e)	% of total whole life operational carbon
Operational carbon (power)	510	16,850	2.2%
Operational carbon (transport)	90	24,150[5]	3.2%
Operational carbon (Maintenance)	40	4,440	0.6%
Operational carbon (chemicals)	2,520	707,230[6]	94.0%
Total operational carbon	**3160**	**752,670**	**100%**

4.3 Operational carbon residual emissions

4.3.1 The operational carbon residual emissions presented here are based on the current outline level of design development for DCO submission and represent an estimate at this stage of the Project of the residual emissions post 2050. However, these are subject to change as the Project develops and further mitigation measures are embedded into the design, construction and operation stages.

4.3.2 Table 4-5 summarises the scale of residual emissions within the boundary of the Project's between 2050 and 2133 based on reasonable worst-case scenario. The reasonable worst-case scenario represents the projected residual operational emissions if no secondary mitigation measures were implemented and there was no sector level decarbonisation by 2050 of chemicals or transport sectors, meaning that the quantity of operational carbon emissions from chemicals and transport would remain as per current WLC appraisal. The reasonable worst case for power represents the expected level of emissions if no mitigation measures were implemented (e.g. using 100% grid power, no purchase or production of renewable power) but considering the UK Government projection for decarbonisation of the grid, which is included in the current WLC appraisal.

4.3.3 If no secondary mitigation measures were implemented, these are the scale of emissions that would have to be offset from year 2050 onwards to align with the national commitment of net zero emissions by 2050, when applied to an individual project level.

[4] Note: carbon emission results rounded up to the nearest ten.

[5] The emissions per year from the transport of chemicals varies as the chemicals change due to T2ST

[6] The emissions per year from chemical usage varies due to T2ST.

Table 4-5: Operational carbon residual emissions (reasonable worst-case scenario)

Operational carbon residual emissions	Operational carbon residual emissions in year 2050 (tCO2e)	Operational carbon residual emissions between 2050 and 2133 (tCO2e)
Operational carbon (power)	110	9,340
Operational carbon (transport)	260	21,460
Operational carbon (Maintenance)	40	3,730
Operational carbon (chemicals)	7,480	628,470
Total operational carbon residual emissions	**7,890**	**663,000**

4.4 Risk and uncertainty

4.4.1 The approach followed to estimate the WLC appraisal uncertainty is based on the RICS standard guidance on managing uncertainties in Whole Life Carbon Appraisal for the Built Environment (RICS, 2024) and is described in detail in HWTWRP – Carbon Assessment Methodology.

4.4.2 The uncertainty estimate resulted in a total uncertainty factor of 24.7% for capital carbon emissions, which was added as an uplift to present the final appraisal results. This is an estimate of the uncertainty, based on the best available information, within capital carbon appraisals at different stages of major infrastructure projects. However, there remains an inherent uncertainty in the carbon appraisal approach at an industry wide level and further developments in the maturity of this approach over time may result in guidance that may impact the emissions estimate of the Project. For example, if carbon emission factors used in this appraisal were to be significantly updated due to changes occurring at industry or sector level. To enable consistency and clarity in the development of its procurement route and engagement with its supply chain to deliver the carbon emissions reductions, the Applicant and Contractor will continue to monitor and report emissions based on the data, policy and guidance at the point the final version of the CMP is submitted.

5 Carbon mitigation

5.1 Approach to carbon mitigation

5.1.1 The Project has established a well-defined process to identify carbon mitigation opportunities. This approach aligns with the PAS 2080:2023 carbon reduction hierarchy.

Evidence-based approach to securing mitigations

5.1.2 The Applicant has established an evidence-based approach, whereby carbon mitigation measures for the Project have been evaluated at each stage of project delivery, based on the available information at each stage. This approach ensures that carbon mitigation measures are identified as early in the delivery process as possible to enable removal of potential barriers to implementation, and that a robust evaluation process reliant on evidence is deployed to confirm their viability for implementation.

5.1.3 From early design stages, the Applicant has developed a process to identify, evaluate and where feasible implement (or continue to develop) carbon mitigation measures. The process involves the following key steps:

- Evaluation of project information, based on scope and design information available,
- Appraisal of WLC emissions and identification of carbon hotspots,
- Organisation of carbon mitigation opportunities workshops, involving design teams and carbon specialists, to identify carbon mitigation opportunities,
- Design reviews by designers to evaluate feasibility of proposed mitigation measures and implement where possible (embed in design), or capture in opportunities register for future evaluation, and
- Supply chain engagement to understand innovative solutions and market readiness, to feed back into the feasibility analysis and implementation process.

The above process will be required to be continued by the Contractor through to the completion of construction of the Project.

5.1.4 The types of mitigation measures are defined as:

- Primary mitigation measures. These are mitigation measures that, based on the information available, are confirmed to have high feasibility and viability with limited risks and hence have been embedded within the design at DCO submission stage.
- Secondary mitigation measures. These are mitigation measures that are identified and evaluated but that require further information to be confirmed as practicable without incurring significant risks to the project delivery or not delivering customer value for money, so these are kept for further review and appraisal (at subsequent delivery stages) until enough information is available to confirm their implementation. These will be secured through the regular

updates of the CMP as set out in Table 1.1. Secondary measures are not relied upon to determine the significance of impact assessment within the Environmental Statement - Chapter 10 Carbon and climate change.

- Tertiary mitigation measures. These are standard industry good practice measures or actions to reduce impacts, regardless of the design process and EIA assessment

5.1.5 The primary and tertiary mitigation measures included at DCO submission are described in Environmental Statement - Chapter 10 Carbon and climate change.

5.1.6 The secondary mitigation measures identified at DCO submission are outlined in sections 5.2 and 5.3 below. The controls set out within this oCMP will require that the tender process sufficiently incorporates carbon requirements for the Contractor to implement mitigation measures within its tender design and ensure GHG emissions are as low as reasonably practicable. The indicative mitigation measures below, as a minimum, cover the suggested areas of mitigation in sections 4.4.13 and 4.4.14 in the National Policy Statement for water resources infrastructure.

Criteria to evaluate and define mitigation measure feasibility

5.1.7 To ensure that the Applicant and the Contractor meet the carbon strategic objective, the Applicant has defined a set of minimum criteria that will be followed to determine the feasibility of mitigation measures identified. A further update to these following inputs from the Contractor will be provided in the second iteration of the CMP. All mitigation measures that pass the criteria defined will be considered to be implemented as practicable and feasible mitigation measures:

- Technical feasibility: the mitigation measure is adequate for the Project and does not affect the Project's expected performance. The mitigation measure can technically be implemented.
- Programme alignment: the mitigation measure will not substantially affect or delay the Project delivery programme and will not add significant risk to it by interfering with other required activities.
- Market availability: the mitigation measure should be at technical readiness level (TRL) that confirms it will be available to procure in the market at the time required.
- Commercial viability and value to customers: the mitigation measure should be affordable and represent value to customers

Monitoring mitigation opportunities implementation and progress towards objective

5.1.8 The evidence-based approach and evaluation mechanism described above will continue to be deployed at subsequent project stages, including procurement, detailed design, construction and operation. A mitigation opportunities tracker will be a requirement of the Contractor to continue to capture all the information, including identification, criteria evaluation, review and decision processes.

5.1.9 The second and third iterations of the CMP will report on progress against the opportunities listed in this document, as well as reporting on any new opportunities identified at later project stages. The second CMP iteration will also contain the targets, metrics and incentive mechanisms established during procurement to secure their implementation.

Supply chain engagement

5.1.10 In line with the evidence-based approach to mitigation and the criteria mechanism, the Applicant recognises the importance of engaging with the supply chain to understand the current market and any future developments that can support decarbonisation of the Project.

5.1.11 The Applicant will continue the market engagement process after DCO submission which will help further evaluate some of the mitigation measures proposed in this document, particularly those related to the use of alternative low carbon materials, low carbon chemicals and low carbon fuels in line with the key carbon emissions hotspots identified in the appraisal.

5.1.12 The Applicant will develop a structured approach to maintain supply chain engagement throughout the delivery and implementation of the Project; this will be described in detail in the second iteration of this CMP.

Setting requirements through procurement

5.1.13 The Project is a large infrastructure project which will be procured through the DPC model, which involves a competitive tender process to appoint a Contractor [4].The Applicant will enter into an agreement with the Contractor to deliver the Project. The scope of delivery will include design, build, finance, operation and maintenance of the Project for a period of time to be agreed after which the Project will be handed back to the Applicant.

5.1.14 At tender stage, competitive tenderers will be required to identify carbon mitigation measures, to embed these into their proposed tender designs and to quantify carbon savings. The Applicant will evaluate these as part of the tender process.

5.1.15 The Applicant will set carbon management requirements for the Contractor during the DPC tender process to ensure that the Contractor responsible for the Project detailed design and delivery is contractually required to implement measures to achieve the Project's carbon strategic objective. The second iteration of the CMP will provide an update on the carbon requirements set for the Contractor following the tender process.

5.1.16 The Applicant will establish mechanisms to incentivise solutions and innovations that would lead to carbon reductions through the DPC tender process that are greater than the established minimum carbon requirements for the Project.

5.1.17 The second iteration of the CMP will be triggered following the tender process that will identify further commitments the Contractor has contractually committed to and will provide the results of the WLC appraisal of the updated design at that stage to demonstrate progress against carbon reduction commitments against the reference point of the Project WLC appraisal.

5.1.18 The nature of the procurement route outlined above requires sufficient flexibility to be maintained to allow the Contractor to bring in further innovation and enable it to deliver carbon reductions as efficiently as practicable. Therefore, whilst the Applicant has to date identified a number of mitigation measures it has not embedded all of these into the design. This leaves flexibility for the Contractor to deliver these and further mitigations in an efficient way, considering market conditions and technology development advancements during design and construction of the Project, as well as value for money for customers.

5.1.19 The Applicant is exploring options in line with best practice procurement approaches to incentivise the Contractor through the DPC procurement process, which include:

- Tender scoring mechanisms to identify the right experience and commitments within a Contractor
- Potential financial incentive mechanisms to deliver efficient carbon reductions against key carbon hotspot areas
- Utilising industry frameworks, such as the Construction Leadership Council 5 Client Carbon Commitments to benchmark levels of carbon emissions commitments against other major infrastructure projects including those consented under the Planning Act 2008 regime.

5.1.20 The procurement process is being developed, and further market engagement is being undertaken which will also help inform the Applicant on how to create the right conditions in the procurement process to incentivise the delivery of carbon reductions to enable the Project to be delivered such that "GHG emissions are as low as reasonably practicable.".

5.2 Carbon mitigation in design and construction

Construction carbon reduction

5.2.1 The Applicant and the Contractor will apply solutions that are optimal in terms of capital carbon in the design and construction of the Project to ensure that construction emissions are reduced to as low as reasonably practicable.

5.2.2 The Project is working to understand what carbon reduction measures will be available at the point of construction that will meet the criteria outlined above at paragraph 5.1.7 and will be appropriate for the Project. This work will continue as the detailed design of the Project is more fully development, including with input from the Contractor in future. Further details will be set out in the CMP, which will be subject to approval and is secured pursuant to Requirement 10 of the draft DCO.

Construction carbon reduction measures

5.2.3 The Applicant has evaluated the mitigation measures identified at this stage.

5.2.4 As indicated above, the mitigation measures will require further development post DCO submission to confirm their viability and the exact level of mitigation that can be delivered. In particular, the Contractor will be responsible for final confirmation

of construction carbon mitigation measures (at tender design, detailed design and construction stages) and their implementation. Therefore, at this stage there is a level of uncertainty on the exact combination of measures that will be implemented to mitigate construction carbon emissions.

5.2.5 The types of mitigation measures considered likely to contribute to construction carbon emissions reductions are outlined in Table 5-1 below. The measures presented are not an exhaustive list. There are opportunities under each category and further opportunities will continue to be explored by the Contractor post procurement in accordance with the criteria set out above.

Table 5-1: Summary of types of construction carbon mitigation measures to be explored

Opportunity	PAS 2080 Carbon reduction hierarchy category	Version of CMP update to be provided in
Value engineering of scope to reduce number or sizing of assets e.g. reduce size or number of intermediate pumping stations/break pressure tanks required	Avoid	Update to CMP and WLC appraisal following finalisation of detailed design and of construction– updates to these to be provided at iterations 2 and 3 of CMP
Optimise material specification e.g. Procuring pipelines manufactured through low carbon manufacturing processes such as electric arc furnace iron.	Switch	
Optimise reuse as dug materials in pipeline installation or optimise tunnel design to reduce amount of grout and disposal required	Improve	

5.3 Carbon mitigation in operation including renewables

Operational carbon reduction

5.3.1 The Applicant will deliver solutions to ensure the Project meets its strategic objective to reduce operational GHG emissions to as low as reasonably practicable.

Operational carbon reduction strategy

5.3.2 The Applicant's strategy to achieve the operational carbon commitments for the Project are split into four areas: mitigation measures embedded in design, development of a renewable energy strategy, low carbon transport and resource

efficiency measures (e.g. reduce chemical use) and low carbon chemicals. These areas align with the major operational carbon hotspots from the appraisal.

Measures considered as part of the design process

5.3.3 The Applicant has as part of its design development to date investigated measures to reduce operational carbon emissions to as low as reasonably practicable. Measures contemplated include process selection and design optimisation that aim to identify lower energy and chemical carbon intensity options where practicable and reduce the amount of energy through for example reducing the amount of pumping required. The final process selection and detailed design will be undertaken by the Contractor. However, the Applicant will define in the procurement process minimum requirements and incentives to ensure the Contractor will, where feasible, include measures that optimise operational emissions, so they are "as low as reasonably practicable".

Overview of operational carbon reduction measures

Table 5-2: Summary of types of operational carbon mitigation measures to be explored

Opportunity	PAS 2080 CRH category	Monitoring update plan
Reduce energy demand	Avoid	Update to CMP and carbon appraisal following finalisation of detailed design – updates to these to be provided at iterations 2, 3 and 4 of CMP
Reduce carbon intensity of power supply to the Project	Switch	
Utilise low carbon fuels and transport for maintenance activities	Switch/Improve	
Utilise low carbon fuels for transport chemicals and waste	Switch/Improve	
Optimise of chemicals and use low carbon chemicals where feasible	Switch/Improve	

Renewable energy strategy

5.3.4 The renewable energy strategy has the objective to reduce the Project's operational emissions from power consumption by selecting appropriate energy supply sources and energy procurement methods. This will form part of the wider Energy Strategy being developed for the Project and will be embedded into the procurement process.

5.3.5 As part of the design development to date the Applicant has already evaluated whether self-generation would be feasible for the Project. The self-generation options were evaluated in detail through a renewable energy evaluation and screening process which explored options to develop renewable generation within the boundary of the Project (DCO Order Limits). The evaluation and screening consisted of two phases, a technology review to assess the high-level viability of different renewable technologies in the location(s) of interest, and an opportunity

review to demonstrate if there are viable renewable energy opportunities. The screening concluded that there are insufficient viable generation opportunities available within the DCO limits to provide meaningful and efficient renewable energy contribution to the Project power demand. The evaluation also concluded that these options would represent poor value for customers.

5.3.6 Following these findings, the Applicant set out a process to evaluate which energy procurement routes are more efficient to achieve optimal decarbonisation of power demand. These options include the procurement of power through renewable Power Purchase Agreements (PPAs) and the purchase of Renewable Energy Guarantees of Origin (REGO) backed power. The Applicant will provide an updated energy strategy for the Project in iteration 2 of the CMP that will confirm the specific strategy to supply power to the site and the impact on operational phase carbon emissions. These proposals will provide evidence of how the Project will use renewable energy sources.

Low carbon transport and maintenance

5.3.7 Transport and maintenance emissions are the other remaining operational carbon hotspot for the Project. Both these areas are predominantly driven by fuel emissions associated with Heavy Goods Vehicles (HGVs) for transport of chemicals, as well as Light Goods Vehicles (LGVs) for regular operational maintenance activities. To manage these emissions areas The Applicant will embed into its procurement process incentivisation for the Contractor to:

- Work with the supply chain to reduce the transport distances and intensity of transport modes for key consumables such as chemicals,
- Utilise low carbon fuels onsite,
- Utilise low carbon fuels for transport of products to site (e.g. chemicals) or waste leaving the site, and
- Utilise low carbon maintenance vehicles.

Resource efficiency measures

5.3.8 The Applicant acknowledges the important impact of chemicals on the carbon emissions of the Project. Whilst the Applicant cannot control the decarbonisation trajectory of the complex global supply chain for chemicals it will engage to influence this with key suppliers and incentivise the Contractor to optimise its chemical usage and use lower carbon intensity options where available.

5.3.9 Additionally, it is committed to encourage the efficient use of all resources across the construction and operational phases of the project and will work with the Contractor and its supply chain to encourage resource efficiency.

5.4 Offsetting measures

5.4.1 The Project carbon strategic objective aims to reduce GHG emissions to as low as reasonably practicable having regard to the UK's climate change commitment of achieving net zero emissions by 2050.

5.4.2 The Applicant will deploy the approach to carbon mitigation outlined in Section 5 to reduce carbon emissions to as low as reasonably practicable. The annual operational emissions reporting, in line with the Applicants regulatory reporting obligations, during the operation phase of the Project will show the progress in reducing carbon emissions and any likely residual emissions post 2050.

5.4.3 Having regard to the UK's net zero by 2050 climate change commitment, and as part of the UK Government and water sector's developing approach to net zero, the Applicant will consider future mitigation including the viability and possibility of carbon offsetting for residual GHG emissions from the Project after 2050.

Uncertainty surrounding offsets

5.4.4 The Applicant recognises the challenge of securing credible, verified, long-term offsets. At the moment, there is significant research and policy development that are likely to impact the medium and long-term offset market. This translates into high uncertainty in the of types of offsets and quality and quantity of offsets that will be available in the market by 2050 when the Project might need to offset any operational residual emissions. Therefore, any offsetting strategy will need to be developed at a time closer to 2050 to reflect the offsetting approaches and mechanisms available at that time.

5.4.5 With this in mind, the Applicant will set out a decision-making framework to embed into the procurement process, which will guide the Contractor to evaluate, if required, suitable offsetting measures for residual emissions post 2050.

6 Updates, monitoring and reporting

6.1 Monitoring and reporting

Construction emissions monitoring

6.1.1 The Applicant will set a requirement for the Contractor to monitor construction emissions and publish progress on a periodic basis, as a minimum annually.

6.1.2 The monitoring process purpose is to track construction carbon emissions during the construction process and monitor construction carbon reduction measures. Through this process, the Contractor will be required to report information against set metrics, and to track carbon emissions. Through the Contractor procurement process, the Applicant will set quantitative metrics (Key Performance Indicators - KPIs), for example: total construction carbon emissions in tonnes CO_2e, number of mitigation measures realised or number of supply chain engagements.

Operational emissions monitoring

6.1.3 The Applicant will set a requirement for the Contractor to monitor operation emissions and report on a periodic basis, as a minimum once a year. The Contractor will be required to submit the completed Carbon Accounting Workbook (CAW) [5], in line with the Applicants regulatory reporting process, covering the Project's scope, and to track carbon emissions. This mechanism will be used to validate the level of operational carbon emissions.

6.2 Roles and Responsibilities

6.2.1 Due to the nature of the procurement route and handing over of project responsibilities through the delivery of the Project this section aims to clarify clear points of accountability and responsibility in the CMP.

6.2.2 The Applicant is responsible for establishing the Project´s carbon appraisal and setting out the Project's carbon strategic objective. The Applicant is also responsible for setting out and implementing the carbon management processes defined in this oCMP (see section 3.2).

6.2.3 Following the Contractor procurement process, the Contractor will be responsible for implementing the carbon mitigation measures required to achieve the carbon strategic objective and ensure the Project emissions are as low as reasonably practicable. To do so, the Contractor will have to comply with the requirements set out by the Applicant and will be responsible for updating the carbon appraisal and monitoring and reporting emissions, as set out in sections 1.4 and 6.1 of this oCMP. The Contractor will also be responsible for establishing an offsetting strategy aligned with the offsetting principles and industry good practice. This will be established as a contractual requirement for the Contractor through the procurement process.

6.2.4 When the Project is handed back to the Applicant, it will be the Applicant's responsibility to continue to monitor and report GHG emissions during operation

and to effectively manage operations to continue to ensure GHG emissions as low as reasonably practicable.

Glossary[7]

Term	Definition
Anthropogenic	Caused by humans or their activities.
Applicant	Southern Water Services Limited.
As Low As Reasonably Practicable (ALARP)	Involves weighing a risk against the trouble, time and money needed to control it. Thus, ALARP describes the level to which we expect to see risks controlled.
Baseline	The current environmental and social conditions within the Order Limits or within a study area. This provides a benchmark against which changes arising from the Project are assessed for each relevant assessment.
Capital carbon	GHG emissions and removals associated with the creation and end-of-life treatment of an asset, network or system, and with its refurbishment and or replacement (of parts of the asset) during the asset life.
Carbon dioxide equivalent (CO_2e)	Carbon dioxide equivalent (CO_2e) is a term for describing different greenhouse gases in a common unit. The unit takes the different global warming potentials of greenhouse gases into account. CO_2e signifies the amount of CO_2 which would have the equivalent global warming impact.
Carbon offset	Discrete reduction in greenhouse gas emissions not arising from the defined subject, made available in the form of a carbon credit meeting a defined set of requirements and used to counteract emissions from the defined subject. Offsets can be generated via a variety of activities, including those that avoid or reduce emissions and those that remove carbon from the atmosphere. Additional information on offset categories is available in the Oxford principles for net zero aligned carbon offsetting (2020)
Construction carbon[8]	GHG emissions and removals associated with the creation of an asset. These emissions occur prior to the operational phase of the asset. Include carbon emissions from materials used in the creation of the asset (embodied carbon), carbon emissions from their transport to construction site and emissions from construction activities.
Emission	The release of a substance into the environment. For example, air emissions may be discharged from a stack, vent, vehicle exhaust or from diffuse sources.
Global warming potential (GWP)	GWP of a greenhouse gas is a measure of how much heat is trapped by a certain amount of gas in the atmosphere relative to carbon dioxide.
Greenhouse gas (GHG)	A GHG is a gaseous constituent of the atmosphere (from both natural and anthropogenic sources) that absorbs and re-emits infrared radiation causing the greenhouse effect, i.e. causing the warming of the Earth's atmosphere.
Greenhouse gas (GHG) emission	Total mass of GHG released to the atmosphere over a specified period of time
Monitoring	Measures to ensure the systematic and ongoing collection, analysis and evaluation of data related to the implementation and performance of a development. Monitoring can be undertaken to monitor conditions in the future to verify any environmental effects identified by the Environmental Impact Assessment, the effectiveness of mitigation or enhancement measures or ensure remedial action are taken should adverse effects above

[7] Tems and definitions taken from PAS 2080:2023: Carbon Management in Infrastructure, with further context added where relevant.

[8] This definition is not taken from PAS 2080:2023. Definition provided in the context of this document to explain the scope of construction emissions, which are part of capital carbon emissions.

Term	Definition
	a set threshold occur. All monitoring measures adopted by the Project are reflected in Environmental Statement Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6).
Operational Carbon	GHG emissions and removals associated with the operation of an asset, network and/or system required to enable it to operate and deliver its service.
The Contractor	The Applicant or a person appointed by the Applicant or by anyone else having the benefit of part or all of the Development Consent Order to carry out any construction element of the Project or to operate the Project.
Whole Life Carbon (WLC) appraisal	Process of calculating the total amount of GHG emissions and removals due to the delivery, use, operation, maintenance, demolition and/or reuse of assets and/or networks.

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