

13 Greenhouse Gases and Climate Change

Introduction

- 13.1 This chapter of the PEIR provides a preliminary assessment of the likely significant effects of the OMSSD project on Climate Change through consideration of the Greenhouse Gases (GHG)⁴²⁰ associated with the OMSSD project during its construction and operational phases.
- 13.2 Potential effects associated with the resilience of the OMSSD project to future changes in climate change and the combined impacts of the OMSSD project and climate change on environmental receptors are considered in each technical chapter within the PEIR.
- 13.3 This chapter has been prepared by Air Quality Consultants Ltd (AQC) and is supported by the following technical appendices:
- Appendix 13.1: GHG Footprint Technical Methodology; and
 - Appendix 13.2: Modelling GHG Emissions from Shipping.

Scope of Assessment

- 13.4 The scope of the preliminary GHG impact assessment is determined through the identification of the:
- study area;
 - types of GHG considered;
 - temporal scope; and
 - GHG emission sources included in the assessment.
- 13.5 Each is considered further below.

Study Area

- 13.6 GHGs contribute to climate change, which is a global environmental effect and as such the study area for the assessment cannot be defined by specific sensitive receptors, but by the geographic extent of the emissions sources over which the applicant may have some ability to control or influence.

⁴²⁰ GHG are atmospheric emissions defined as having an effect on global climate and include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆), and nitrogen trifluoride.

- 13.7 This preliminary GHG assessment will therefore focus on the relevant GHGs likely to be emitted through the construction and operation phases of the OMSSD project and is not constrained by a specific study area.

Types of GHG considered

- 13.8 GHGs are defined in terms of their Global Warming Potential (GWP), which is expressed in units of CO₂ equivalent (CO₂e) over 100 years.
- 13.9 This allows for the emissions of the seven key GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride to be expressed in terms of their equivalent global warming potential, in mass of CO₂e.
- 13.10 This preliminary assessment addresses all seven GHG emissions and represents these as CO₂e.

Temporal Scope

- 13.11 The temporal scope of this preliminary assessment covers the construction and operational phase of the OMSSD project.
- 13.12 The construction phase is predicted to cover the period 2023 to 2024.
- 13.13 The operational phase is represented by the year the facility is fully commissioned (2025), which is also the year at which the OMSSD project is expected to reach capacity.
- 13.14 Examining emissions in the year of maximum capacity ensures that worst case effects of the OMSSD project are assessed.
- 13.15 This preliminary assessment also considers possible GHG emissions in 2050 since this is an important milestone date in terms of the UK Climate Change Act, which commits the UK to net zero GHG emissions by 2050.

GHG emission sources

- 13.16 The GHG emission sources assessed in this chapter of the PEIR cover the construction and operational phases as detailed above.
- 13.17 Sources of GHG emissions (represented as CO₂e as defined in paragraphs 13.8 to 13.10) are grouped by phase and by GHG Protocol scope⁴²¹.
- 13.18 Classifying CO₂e emissions into GHG Protocol scopes is important to delineate the degree of control over the emissions that Oikos exerts and thus the degree of mitigation it can apply.
- 13.19 The GHG Protocol scope definitions are:

⁴²¹ The Greenhouse Gas Protocol (2001)

- **Scope 1:** These include CO₂e emissions from activities owned or controlled by Oikos that release GHG emissions into the atmosphere. They are known as direct emissions and can be controlled by Oikos.
- **Scope 2:** These include CO₂e emissions released into the atmosphere associated with Oikos' consumption of purchased electricity. These are indirect emissions that are a consequence of the facility's activities. Oikos does not directly emit these emissions.
- **Scope 3:** These are CO₂e emissions that are associated with Oikos but arise from sources which are not owned or controlled by Oikos and are not classed as Scope 2 emissions. Oikos can influence these emissions but not control them, as noted in Table 13.1.

13.20 To ensure all potential sources are considered the assessment has followed scoping guidelines proposed by the Publicly Available Standard (PAS) 2080: 2016 – Carbon Management in Infrastructure⁴²².

13.21 Table 13.1 below details the emission sources scoped into the assessment and justifications for any exclusions. These sources cover the lifecycle of the OMSSD project and have regard to the anticipated increase in fuel storage capacity and thus the consequential impact of GHG emissions from product stored at the Oikos Facility.

⁴²² Publicly Available Standard (PAS) 2080 Carbon Management in Infrastructure

Table 13.1: Emission sources scoped into assessment

Phase	Emissions Source	PAS 2080 Ref	GHG protocol scope	Scoped in?	Justification for exclusion
Construction Phase	Materials & products (embodied emissions in construction materials)	A1-3	Scope 3	Yes	N/A
	Transport of construction materials to the Oikos Facility	A4		Yes	N/A
	Plant use during construction activities	A5		No	Emissions from plant use are expected to be minimal compared to other sources of construction emissions. See Table 13.2 for additional justification.
	Transport of waste away from the Oikos Facility	A5		Yes	N/A
	Disposal of waste	A5		No	Emissions from the disposal of waste are expected to be of a low magnitude since waste disposal will be minimal and any waste is expected to be inert. See also Table 13.2 for additional justification.
	Land use change (clearance)	A5		No	Emissions from land use change are expected to be of a low magnitude as only a small area of carbon sequestering land will be affected. See also Table 13.2 for additional justification.
Operational Phase	In use: Shipping vessel emissions whilst berthed at Oikos	B1	Scope 3	Yes	N/A
	In use: Shipping vessel emissions within Port of London Authority (PLA) boundary (two-way) ⁴²³	B1		Yes	N/A

⁴²³ Following consultation with Port of London Authority, it was agreed that two-way shipping emissions within the Port of London would be scoped in. It was agreed that the point at which vessels are judged to enter the Port of London is at the confluence of the River Thames and River Medway.

Phase	Emissions Source	PAS 2080 Ref	GHG protocol scope	Scoped in?	Justification for exclusion
	In use: Shipping vessel emissions from import of fuel products from suppliers (one way ⁴²⁴)	B1		Yes	N/A
	In use: Deliveries, staff and visitor road transport to the Oikos Facility	B1		Yes	N/A
	In use: Export of fuel products by road tanker	B1		Yes	N/A
	Maintenance / Repair/Replacement/Refurbishment	B2,3, 4 and 5		No	The OMSSD project will be maintained and repaired however this is not expected to result in a large quantity of emissions. Major refurbishments or replacements of facilities is not expected in the lifespan of the OMSSD Project.
	Operational electricity consumption	B6	Scope 2	Yes	N/A
	Operational fuel consumption	B6	Scope 1	No	There is no on-site operational fuel consumption.
	Operational water use	B7	Scope 3	Yes	N/A
	Other operational processes	B8	Scope 3	No	Other operational sources include GHG emissions associated with the supply chain for goods and services purchased by Oikos. These are expected to be small. See Table 13.2 for additional justification.
End of life	Decommissioning	C1-4	Scope 3	No	Expected timescales for decommissioning are so far into the future that there is insufficient certainty about the likelihood, type or scale of emissions activity to determine their likely magnitude, even if they take place at all.

⁴²⁴ To be consistent with international convention of reporting and allocating responsibilities for international shipping (as defined by the United Nations Framework Convention on Climate Change), the assessment quantified one-way emissions from international shipping visiting the facility.

Assessment Methodology

- 13.22 The GHG emissions assessment methodology covers the following parts:
1. Establish baseline emissions for 2019;
 2. Establish emissions With and Without the OMSSD project from the construction and operational phases; and
 3. Determine the significance of any change in emissions between the With and Without the OMSSD project scenarios.
- 13.23 Each part is detailed further below.

Baseline methodology and data sources

- 13.24 The baseline GHG emissions associated with the Oikos Facility were calculated using activity data provided by Oikos for the emission sources listed in Table 13.1 above, and government published CO₂e emission factors⁴²⁵.
- 13.25 For each GHG emission source at the Oikos Facility, the following basic equation was used to calculate GHG emissions:
- Activity Data x GHG Emission Factor = GHG Emissions (CO₂e).*
- 13.26 A summary of the activity data and GHG emission factors, including references and publication sources used to calculate the 2019 baseline GHG emissions at the Oikos Facility are set out in Appendix 13.1.

Modelling future emission with and without the OMSSD project

- 13.27 Modelling future emissions for the two scenarios (With the OMSSD project and Without the OMSSD project) has been achieved using broadly similar approaches as the 2019 baseline. As these scenarios are in the future, however, they rely on forecasts of future activity. Similarly, emission factors are projected to improve in the future reflecting government policies to decarbonise the economy.
- 13.28 Forecasting future activity data relies principally on forecast changes in the volume of fuel to be stored on the facility, the annual total volume of throughput of fuel at the Oikos Facility, and the level of fuel that is forecast to be exported by road and river/sea.
- 13.29 Future emissions have been modelled for the With and Without OMSSD project scenarios in 2025. This is the year the OMSSD project will be fully commissioned and when it will reach

⁴²⁵ BEIS (2019) Greenhouse gas reporting: conversion factors 2019:
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

capacity and is the year when the change in emissions due to the project is likely to be of greatest magnitude.

- 13.30 Emissions after 2025 are expected to reduce in line with changes to government published emissions factor forecasts including assumptions relating to achieving the UK's net zero target by 2050.
- 13.31 Appendix 13.1 provides further detail on the assumptions relating to forecasting future emissions With and Without the OMSSD project.

Identifying Likely Significance of Effects

- 13.32 The approach to identifying likely significant effects was carried out over three steps.

Step 1: Magnitude of change

- 13.33 The first step compared the GHG footprint of the With the OMSSD project scenario to the GHG footprint of the Without the OMSSD project scenario in the construction phase, and in the opening year 2025 which is also the year the facility reaches maximum capacity and when emissions are likely to be at their greatest.

Step 2: Impact of GHG emissions on UK and local carbon targets and policies

- 13.34 The second step considered the With and Without OMSSD project scenario GHG footprints in the context of published national and local carbon budgets, targets and policies.

Step 3: Significance of impact

- 13.35 The third and final step applies expert judgment on the significance of those emissions taking into account the changes in emissions, their contribution to carbon budgets and or targets, the level of mitigation proposed and guidance from IEMA⁴²⁶, detailed further below, for determining level of significance.

Determining significance of effect

- 13.36 For GHG emissions there are no recognised magnitude of impact thresholds or significance criteria.
- 13.37 In terms of defining significance, guidance from IEMA⁴²⁷ has been followed. This has identified three underlying principles to inform the assessment of significance, as follows:
- The GHG emissions from all projects will contribute to climate change; the largest interrelated cumulative environmental effect;

⁴²⁶ IEMA (2017) Assessing Greenhouse Gas Emissions and Evaluating their Significance.

⁴²⁷ IEMA (2017) Assessing Greenhouse Gas Emissions and Evaluating their Significance.

- The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive – e.g. population, fauna, soil, etc.; and
- GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, as such any GHG emissions or reductions from a project might be significant.

13.38 Based on these principles, IEMA⁴²⁸ conclude that:

- All projects create GHG emissions that contribute to climate change;
- Climate change has the potential to lead to significant environmental effects; and
- There is a GHG emission budget that defines a level of dangerous climate change whereby any GHG emission within that budget can be considered as significant.

13.39 Therefore, in the absence of any significance criteria or a defined threshold, IEMA recommends that all GHG emissions are significant and that the Environmental Impact Assessment (EIA) should ensure the project addresses their occurrence by taking mitigating action.

13.40 In terms of mitigation, IEMA recommends that mitigation should in the first instance seek to avoid GHG emissions. In considering this guidance, where GHG emissions cannot be avoided, the OMSSD project should aim to reduce these at all stages.

Sensitivity of receptors

13.41 The assessment of GHG does not include identification of sensitive receptors, as GHG emissions do not directly affect specific locations, but lead to indirect effects by contributing to climate change.

13.42 It is therefore not possible to link GHG emissions from the OMSSD project with a specific environmental impact. As a consequence, the sensitivity of receptors is not used to assess significance.

Cumulative Effects

13.43 IEMA guidance⁴²⁹ makes clear that climate change is “*the largest interrelated cumulative environmental effect*” and therefore the assessment of GHG emissions which contribute to climate change is **intrinsically cumulative**.

13.44 The quantification of the GHG emissions associated with individual cumulative developments has not been undertaken, but the assessment considers the effect of the OMSSD project in the context of national and local cumulative totals. Since the national totals assume that other developments will contribute additional GHGs (i.e. includes all cumulative GHG

⁴²⁸ IEMA (2017) Assessing Greenhouse Gas Emissions and Evaluating their Significance.

⁴²⁹ IEMA (2017) Assessing Greenhouse Gas Emissions and Evaluating their Significance.

emissions), the assessment has considered cumulative emissions in determining significance.

Consultation

13.45 Table 13.2 below summarises the response to comments received from the Planning Inspectorate (PINS) and consultation bodies on the OMSSD Scoping Report.

Table 13.2: Summary of consultation with Planning Inspectorate and Consultation Bodies

PINS ID or Consultee name	Scoping Opinion Ref or Consultation body ref.	Inspectorate’s comments or Consultee comments	How comments have been addressed in this Chapter
<p>Planning Inspectorate 4.7.1</p>	<p>12.12 and 12.32 and Table 12.1</p>	<p>The Scoping Report follows IEMA guidance in that any GHG emission sources which contribute less than 5% of the total Proposed Development’s GHG footprint are proposed to be scoped out of the ES. GHG from construction site plant, refrigerant losses and F-gas use, waste disposal and water consumption and treatment is proposed to be scoped out yet there is no evidence demonstrating how the emissions from these features have been quantified and explaining whether they actually contribute <5% of the total GHG footprint of the Proposed Development. The total GHG footprint of the Proposed Development is currently unknown. There is also no evidence to explain if the cumulative contribution of these features has been taken into account at this stage.</p> <p>The Inspectorate is, however, content that if the ES includes evidence to demonstrate that the features identified in the Scoping Report will indeed contribute <5% of total GHG then it can be scoped out.</p>	<p>Table 13.9 provides detail on the 2019 baseline GHG emissions, and Table 13.1 provides detail on the emission sources scoped in and out of the assessment. Table 13.1 shows that F-Gas and water consumption activities have been included.</p> <p>Table 13.9 shows that GHG emissions in 2019 excluding minor emission sources to be 92,496 tonnes. To be >5% the minor excluded sources (in this case waste disposal and construction plant energy use) would need to exceed 4,868 tonnes CO₂e.</p> <p>Using 2019 BEIS emission factors this shows that to generate this much CO₂e from municipal landfill waste disposal would equate to circa 8,300 tonnes of waste (or if it was construction aggregates this would be 3.8 million tonnes) or require the consumption of circa 1.8 million litres of diesel by construction plant. Clearly neither of these situations (or even a combination) is likely for a facility of this nature and therefore these sources are minor (i.e. will contribute <5% of the total emissions) and can be excluded from the assessment. Inclusion of such minor contributions to the GHG footprint would not materially affect this preliminary assessment.</p>

PINS ID or Consultee name	Scoping Opinion Ref or Consultation body ref.	Inspectorate's comments or Consultee comments	How comments have been addressed in this Chapter
Planning Inspectorate 4.7.2	Paragraph 12.33 and Table 12.1	<p>The Scoping Report proposes to scope out land use change on the basis that no land use change is involved as part of the Proposed Development. However, land use change is proposed in that the site is to be levelled, existing areas are to be decommissioned and an ecological mitigation area is to be moved and created. The scale, location and characteristics of these proposals is currently undecided. Land use change of this type has potential to increase or reduce (e.g. though increased sequestration) GHG emissions but the detail is currently lacking.</p> <p>On this basis, the Inspectorate does not agree to scope this matter out and considers that they should be scoped into the assessment in the ES.</p>	<p>The site is brownfield with small areas of grass and low level shrubs offering limited ecological capacity for GHG removal. Any change in GHG from this source in the context of total baseline emissions of 92,496 tonnes (see Table 13.9) is therefore minor and has been excluded.</p> <p>The same applies to green planting, landscaping and ecological habitat enhancement which will add vegetation that acts as a GHG sink, but will provide very minor GHG removal in the context of the total OMSSD project GHG emissions and are therefore excluded.</p>
Planning Inspectorate 4.7.3		<p>The Applicant should consider the need to undertake a GHG lifecycle analysis for the Proposed Development having regard to the anticipated increase in fuel storage capacity and the consequential impact to GHG emissions from fuel stored at the site.</p> <p>The assessment should be considered alongside UK Government commitments to net zero and the efforts to decarbonise the UK economy.</p>	<p>The preliminary assessment has considered GHG emissions in 2025 which is the year the facility is assumed to be at full capacity and also the year in which GHG emissions from the OMSSD project will be at their greatest.</p> <p>The preliminary assessment has therefore taken regard of the anticipated increase in fuel storage capacity and the consequential impact to GHG emissions from fuel stored at the Oikos Facility.</p> <p>The preliminary assessment has also considered the GHG emissions from the OMSSD project in the context of the UK Government commitments to net zero and the efforts to decarbonise the UK economy.</p>
Planning Inspectorate 4.7.4	12.5	<p>The Scoping Report states that the impact of future climate change on the resilience of the OMSSD project will be examined in individual aspect chapters of the ES. The ES should cross-reference to these Chapters where relevant.</p>	<p>Potential effects associated with the resilience of the OMSSD project to future changes in climate (climate change resilience and adaptation) and the combined impacts of the OMSSD project and climate change on environmental receptors are considered in each technical chapter within the PEIR.</p>
Planning Inspectorate	12.11	<p>The construction/operation activities are not yet fully established but are relevant to</p>	<p>Table 13.1 sets out the basis for emission sources scoped in and</p>

PINS ID or Consultee name	Scoping Opinion Ref or Consultation body ref.	Inspectorate's comments or Consultee comments	How comments have been addressed in this Chapter
4.7.5		developing the GHG footprint and the list of emission sources has not been agreed with the relevant consultation bodies. Therefore, the Inspectorate cannot be content that all emissions sources have been identified. The ES should ensure there is robust justification for the emission sources used to determine the GHG footprint of the development.	out of the preliminary assessment following published good practice for establishing lifetime GHG emissions from infrastructure. See also response to PINS ID 4.7.1 above.
Planning Inspectorate 4.7.6	12.14	The Scoping Report proposes to apply emission factors from published sources to calculate the Proposed Development's GHG emissions. The ES should provide a list of the literature/ guidance/ consultation used to determine the appropriate factors applied to calculate the GHG emissions for the Proposed Development	Appendix 13.1 provides full details on the methodology, emission factors and literature and data sources used by this preliminary assessment. To address any uncertainties the assessment has adopted realistic worst-case assumptions as necessary.
Planning Inspectorate 4.7.7	12.25	The Scoping Report does not characterise the baseline for GHG's or provide a methodology for establishing a baseline. The ES should provide a methodology for, and characterisation of the existing GHG environment to enable an assessment of significant effects.	Appendix 13.1 provides full details on the methodology used to establish the baseline. Table 13.9 details the GHG emissions in the 2019 baseline.
Planning Inspectorate 4.7.8	12.10	Although emissions are separated into scope 1, 2 and 3 whose definitions are explained in the Scoping Report, there is not definition of what these gases might be or how they will be defined. The ES should explain how scope 1, 2 and 3 gas emissions will be defined and list the gases included in line with relevant literature, guidance and/or consultation.	The assessment has considered the Global Warming Potential (GWP) of all emissions from the OMSSD project for the seven key GHGs: carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF ₆) and nitrogen trifluoride expressed in units of CO ₂ equivalent (CO ₂ e) over 100 years (see paragraph 13.8) Scope 1, 2 and 3 emissions are expressed as CO ₂ e. Paragraphs 13.18 to 13.19 set out the guidance for defining activities that are associated with scope 1, 2 and 3 emissions and Table 13.1 lists each activity considered by the assessment and which scope (1,2 or 3) it belongs to.
Essex County	Energy and Low Carbon comments	Energy and Low Carbon	The ECC's comments have been noted and the Castle Point Pre-submission Local Plan (December 2019) draft Policy

PINS ID or Consultee name	Scoping Opinion Ref or Consultation body ref.	Inspectorate’s comments or Consultee comments	How comments have been addressed in this Chapter
Council (ECC)		<p>In relation to chapter 12 ‘Greenhouse Gases’ paragraph 12.24 makes reference to relevant sources:</p> <p><i>“Any emerging GHG and climate change strategies for CPBC or South Essex will be examined together with other relevant guidance in consultation with CPBC.”</i></p> <p>We would also highlight that ECC has made a public commitment to formulate a Climate Action Plan to reduce carbon emissions across the county of Essex. In addition, ECC has inaugurated an independent, cross-party Essex Climate Change Commission with the purpose of:</p> <ul style="list-style-type: none"> • Identifying ways in which ECC can mitigate the effects of climate change, improve air quality, reduce waste across Essex and increase the amount of green infrastructure and biodiversity in the county • Reducing the carbon footprint of both ECC and Essex as a whole – the Commission is expected to recommend an ambitious, but realistic target year, to have achieved net zero greenhouse gas emissions. <p>The Castle Point Pre-submission Local Plan (December 2019) draft Policy CC1 should also be considered in this project, with particular reference to the points below:</p> <p><i>“The Council will seek to mitigate and adapt to climate change and move to reducing the carbon footprint of the borough. This will be achieved by:… e. Encouraging high quality sustainable design and construction techniques that contribute to climate change mitigation and adaptation; and f. encouraging opportunities for the provision of renewable energy, low carbon technologies and decentralised energy as part of development proposals as appropriate.”</i></p> <p>We welcome the calculation of a GHG footprint for the development and the inclusion of both the construction and operation phases of the project, as well as inclusion of the sources over which the</p>	<p>CC1 has been considered in the assessment and design of mitigation.</p> <p>The response to PINS ID 4.7.1 above provides justification on emission sources excluded from the assessment.</p> <p>The embedded GHG in construction materials will be considered as part of the construction management plan for the project. Embedded GHG in operational materials is considered to be minor in the context of a baseline with 92,496 tonnes of emissions and will be managed through the site’s environmental management policies.</p> <p>Well to tank emissions of the petroleum product managed through the facility are not considered relevant to the assessment as they are the responsibility of the party purchasing and consuming the petroleum product. This principle has been established through a recent case at the High Court⁴³⁰. This confirms that GHG emissions that would stem from the use of products by consumers and businesses, including petroleum products do not need to be reflected in the environmental statements developers are required to prepare in England.</p> <p>The approach to mitigation is presented in this preliminary assessment in paragraphs 13.92, 13.100, and 13.109.</p>

⁴³⁰ See <https://www.judiciary.uk/wp-content/uploads/2020/12/R-Finch-v-Surrey-County-Council-Judgment.pdf>

PINS ID or Consultee name	Scoping Opinion Ref or Consultation body ref.	Inspectorate’s comments or Consultee comments	How comments have been addressed in this Chapter
		<p>applicant has some ability to control or influence emissions. We welcome the inclusion of all 3 scopes in calculating the GHG footprint and also reference to the lifetime GHG footprint of the project. However we would highlight that the supply chain and suppliers chosen to provide services and materials to the project could also be selected in consideration of their efforts to minimise and mitigate GHG emissions through their processing of materials and practices i.e. some Scope 3 sources.</p> <p>The exclusion of some sources which are <5% of the overall GHG footprint, whilst consistent with common practice and calculation guidelines, does afford further opportunity to mitigate emissions. Individually these emission categories may represent <5% of the GHG footprint but collectively they may still make a material contribution to that footprint. We would highlight the opportunity to further consider the ability to influence the GHG emissions related to these sources and the importance of avoiding as far as possible emissions in order to contribute to the UK’s target to achieve net zero GHG emissions by 2050.</p> <p>We recognise the approach to exclude “well to tank” emissions but recognise that this will lead to a material underrepresentation of the reality of the increased capacity of this project in the use of petroleum based fuels in the UK. This comes into conflict with the necessity for decarbonisation of the UK energy sector required to meet the national net zero targets.</p> <p>There is mention of mitigation measures to reduce GHG emissions from the project and we welcome the listed examples. However, we would welcome further definition of what is deemed “appropriate mitigation”. There is mention of reducing or offsetting emissions (12.38), however we would highlight and stress that the hierarchy should be to ‘avoid’ and ‘reduce’ emissions before offsetting should be considered (Assessing Greenhouse Gas Emissions and Evaluating their Significance, IEMA 2017).</p>	
Port of London	Greenhouse Gases	Although it is welcomed that the PLAs Air Quality Strategy (2018) is included in this	The PLA’s Air Quality Strategy has been considered through the

PINS ID or Consultee name	Scoping Opinion Ref or Consultation body ref.	Inspectorate’s comments or Consultee comments	How comments have been addressed in this Chapter
Authority (PLA)		<p>section in paragraph 12.23 it is disappointing that it has not been referred to in chapter 11 on Air Quality. This must be amended as part of the ES. There is also reference to the PLAs Adapting to Climate Change Report which includes a commitment to reduce carbon emissions from PLA activities. To note this is the PLAs own strategy. The applicant within the ES should identify their own targets to reduce GHG emissions.</p> <p>There is also little mention of net zero within this section or the document as a whole, including on any transition required over the lifetime of the project. This must be addressed in more detail in the ES.</p> <p>Table 12.1 (<i>Summary of Scope of GHG Assessment</i>) states that as part of the construction phase, vessel emissions will only consider emissions from inbound vessel movements only. Further detail must be provided on why this is the case and outbound vessels or vessels at berth are not included. It must also be ensured that this assessment is closely aligned with the air quality scoping report mentioned in section 11.</p> <p>Table 12.1 also states that no land use change will occur as part of the project, however some land use change will be occurring as some existing ecological mitigation areas are proposed to be moved. The table must be amended accordingly and addressed within the GHG assessment.</p> <p>With regard to paragraph 12.39, support the reference to the implementation of policies to encourage low emission sea transport for imported fuels. Further detail on these policies should be provided with the ES and as part of the GHG Assessment.</p> <p>As noted above, the PLA must be included within the consultation part of this chapter.</p>	<p>assessment under paragraphs 13.94 to 13.97.</p> <p>The preliminary assessment has considered the requirements to transition to net zero by 2050, see paragraphs 13.86 to 13.89.</p> <p>The approach and assumptions relating to emissions from vessels at berth is consistent in the GHG and Air Quality assessments.</p> <p>The preliminary GHG assessment has considered GHG emissions from vessels whilst berthed and for in and outbound trips within the Port of London authority area of influence. Consistent with international reporting of vessel emissions only one-way transit emission are reported. The rationale for reporting of vessel emissions is detailed in footnotes to Table 13.1.</p> <p>The basis for assessing land use GHG emissions is detailed under PINS ref 4.7.2 above.</p> <p>The approach to mitigation, including towards sea transportation of fuels is presented in the preliminary assessment in paragraphs 13.92, 13.100, and 13.109.</p> <p>A meeting has been held with the PLA to seek further feedback on the GHG assessment, details of which are provided in Table 13.3 below.</p>

13.46 Table 13.3 below details additional comments raised through meetings with consultees with an interest in GHG effects and how those are addressed in the assessment.

Table 13.3: Summary of stakeholder consultation to date

Consultee	Meeting Date	Summary of Comment	How comments have been addressed in this Chapter
Castle Point Borough Council (CPBC)	29 th October 2020	CPBC agreed in principle to the scope of the GHG assessment set out in the Scoping Report. CPBC confirmed there is currently no new or emerging local policy on GHG or climate change.	The approach to the preliminary assessment set out in this Chapter is consistent with the approach described in the Scoping Report and agreed by CPBC during consultation.
Port of London Authority (PLA)	5 th November 2020	PLA agreed in principle to the scope of the GHG assessment set out in the Scoping Report. PLA agreed that emissions from international shipping (i.e. fuel import) could be quantified as a one-way journey in line with UK GHG reporting, but that emissions from vessels at berth and two-way vessel movements within the Port of London should be quantified. PLA have pledged to achieve net zero carbon by 2040 for their own operational emissions.	The approach to the assessment set out in this Chapter is consistent with the approach described to and agreed by PLA during consultation, including quantification of two-way shipping emissions in the Port of London and vessel emissions while berthed. The PLA commitment to net zero carbon by 2040 or sooner is considered in the context of the future GHG emissions for the OMSSD project.

Implications of Legislation, Policy and Guidance

13.47 This section summarises the legislation, policy and guidance relevant to the assessment of the likely significant effects of the OMSSD project on Climate Change.

Legislation

13.48 Table 13.4 summarises the legislation relevant to the assessment of the OMSSD project.

Table 13.4: Legislation relevant to the OMSSD project

Legislation	Relevance to the development
Climate Change Act (2008) ⁴³¹ and Climate Change Act 2008 (2050 Target Amendment) Order 2019 ⁴³²	The Climate Change Act (CCA) as amended in 2019 commits the UK to reduce its net GHG emissions by 100% by 2050. In meeting this target it requires the Government to establish 5-year Carbon Budgets. Emissions arising from international shipping and international aviation were not included in the Carbon Budgets (and the 2050 target) when the Climate Change Act was originally enacted in 2008 with their inclusion to be considered by government based on advice from the Committee on Climate Change (CCC). The CCC have

⁴³¹ Climate Change Act 2008.

⁴³² The Climate Change Act 2008 (2050 Target Amendment) Order 2019

Legislation	Relevance to the development
	<p>recently advised⁴³³ that international shipping (and aviation) emissions should be included in the UK's 2050 climate change target and carbon budgets.</p> <p>The Target amendment Order 2019 however has not adopted this advice explicitly with UK government deciding that international emissions from shipping (i.e. vessel movements between a UK port and a port in another country) should not formally be included. Emissions from domestic shipping (i.e. vessel movements between two UK ports) continue to be included.</p> <p>However, the CCA requires government to take international shipping emissions into account when setting carbon budgets, and existing carbon budgets have been set at a level that the Committee on Climate Change considers is consistent with meeting the 2050 target when international shipping emissions are included. Nonetheless there are currently no specific targets in place for UK domestic or international shipping emissions. Likewise, the government has not yet formally accepted any planning assumption for international shipping emissions.</p> <p>This preliminary assessment has considered GHG emissions with and without the development in 2025, as well in 2050.</p> <p>Comparison of GHG emissions from the development (excluding international shipping) have been made to published UK carbon budgets⁴³⁴.</p>
<p>The Town and Country Planning (Environmental Impact Assessment) Regulations 2017⁴³⁵</p>	<p>The EIA Regulations 2017 are the transposition of the EIA Directive 2014⁴³⁶ into UK law. Post Brexit, the 2017 EIA Regulations continue to apply, as amended by The Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018. Schedule 4, Regulation 18(3) (Information for Inclusion in Environmental Statements) refers to 'climate' in the following way:</p> <p><i>"A description of the factors specified in regulation 4(2) likely to be significantly affected by the development... climate (for example greenhouse gas emissions, impacts relevant to adaptation)"</i>,</p> <p><i>"A description of the likely significant effects of the development on the environment resulting from, inter alia... the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change"</i>;</p> <p>therefore, signaling that both the impact of climate change on the development (including environmental receptors) and the impact of the development on climate change, are to be considered. The Regulations set out the emissions sources to be considered in a GHG assessment.</p> <p>This preliminary assessment has considered the potential impact of the project through changes in GHG emissions on climate and the project's vulnerability to climate change has been considered within each chapter of the PEIR as appropriate.</p>

13.49 Table 13.5 summarises the international agreements relevant to the OMSSD project.

⁴³³ Committee on Climate Change (2019) Net Zero. The UK's contribution to stopping global warming, 2019. Found at <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/>

⁴³⁴ Department for Business, Energy and Industrial Strategy (2016) Guidance: Carbon Budgets, [online]. Available at: <https://www.gov.uk/guidance/carbon-budgets>

⁴³⁵ The Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended by The Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018

⁴³⁶ European Parliament and the Council of the European Union (2014). Environmental Impact Assessment (EIA) Directive 85/337/EEC

Table 13.1: International agreements relevant to the OMSSD project

International agreement	Relevance to Development
<p>The United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement⁴³⁷</p>	<p>The UNFCCC is the major international body responsible for managing climate change and carbon emissions. In 2015, it adopted the Paris Agreement, the aims of which are stated as:</p> <p><i>“This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by: (a) Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change; and (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production”.</i></p> <p>The agreement sets targets for countries’ GHG emissions, but these are not legally binding or enforceable. The agreement excludes international shipping (but domestic shipping is included).</p> <p>This preliminary assessment has considered GHG emissions from the Development in the context of UK legislation (Climate Change Act) that has been developed in response to the Paris agreement.</p>
<p>International Maritime Organisation (IMO) Strategy on Reduction of GHG Emissions from Ships (2018)⁴³⁸</p>	<p>The IMO is the international agency of the United Nations with responsibility for managing GHG emissions from international shipping. This international strategy commits the maritime sector globally to reducing emissions of GHGs from shipping by at least 50% by 2050 compared to 2008, while pursuing efforts to phase them out. This target and wider IMO strategies have been considered in this preliminary assessment.</p>

Planning Policy Context

National

13.50 Table 13.6 summarises national planning policy relevant to the OMSSD project.

Table 13.6: National Planning Policy relevant to the OMSSD project

Policy	Relevance to development
<p>National Policy Statement (NPS) for Ports (2012)⁴³⁹</p>	<p>This statement is part of the planning system established under the 2008 Act to deal with nationally significant infrastructure proposals. It is a National Policy Statement (NPS) and provides the framework for decisions on proposals for new port development.</p> <p>The NPS identifies that Ports have a vital role in the import and export of energy supplies, including oil, liquefied natural gas and biomass, in the construction and servicing of offshore energy installations and in supporting terminals for oil and gas pipelines.</p> <p>To help meet the requirements of the Government’s policies on sustainable development, the NPS identifies that new port infrastructure should minimise</p>

⁴³⁷ UNFCCC (2015). The Paris Agreement, [online]. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

⁴³⁸ IMO (2018) resolution of GHG emission from shipping see https://unfccc.int/sites/default/files/resource/250_IMO%20submission_Talanoa%20Dialogue_April%202018.pdf

⁴³⁹ National Department for Transport (DfT) (2012) National Policy Statement for Ports

Policy	Relevance to development
	<p>emissions of greenhouse gases from port related development, and be adapted to the impacts of climate change.</p> <p>The NPS requires that the applicant's assessment to be conducted in a way that takes into account all of the Government's objectives for transport, including the need "to create a cleaner and greener transport system through improving the environmental performance of ports and associated developments, including transport, as well as to help changing to support infrastructure needed for green technologies".</p> <p>On Climate change mitigation, the NPS states that:</p> <p>Para 4.12.1 Port developments may have an effect on greenhouse gases, particularly through their impact on sea and road transport.</p> <p>Para 4.12.2 Given the international nature of shipping and the difficulties in estimating and attributing greenhouse gas emissions from ships, measures to address emissions from ships on international journeys are currently being taken forward on an international basis and are not included in the national targets recommended by the Committee on Climate Change.</p> <p>The NPS also includes guidance for the decision-maker:</p> <p>Para 4.12.3 The decision-maker does not need to consider the impact of a new port development on greenhouse gas emissions from ships transiting to and from the port.</p> <p>Para 4.12.4 Emissions from ships in ports are unlikely to be significant contributors to climate change but, where an Environmental Statement is required, it should set out any measures taken to minimise the local effect of emissions and how these are likely to affect greenhouse gases.</p> <p>Para 4.12.5 Inland transport. Where a development will lead to significant increases in inland transport needs, the estimated impact on CO₂, and other greenhouse gases if significant, will need to be covered in the Environmental Statement.</p> <p>Para 4.12.6 The decision-maker should attach limited weight to the estimated likely net carbon emissions performance of port developments. However, it may be appropriate to agree requirements or obligations that will cement cost-effective ways to minimise greenhouse gas emissions in operation. Consent might be withheld if the applicant refused to accept reasonable requirements or obligations related to design, or arising from the transport assessment.</p> <p>This preliminary assessment has explicitly considered the requirements of the Ports NPS and influenced the GHG performance of the OMSSD project.</p>
<p>Overarching National Policy Statement for Energy EN-1 (2011)⁴⁴⁰</p>	<p>This National Policy Statement (NPS) sets out national policy for energy infrastructure and confirms the requirements to support the governments climate change agenda and targets set out in the 2008 Climate Change Act. The NPS includes consideration to petroleum storage and distribution and acknowledges the role such projects have in supporting the nation's energy infrastructure.</p> <p>On the assessment of GHG emissions the NPS notes that CO₂ emissions are a significant adverse impact from some types of energy infrastructure which cannot be totally avoided and that any ES on air emissions should include an assessment of CO₂ emissions.</p> <p>This preliminary assessment has noted the requirements of the energy NPS to the extent that this acknowledges the need for efficient import and distribution of petroleum fuel.</p>

⁴⁴⁰ Department for Energy and Climate Change (DECC) (2011) Overarching National Policy Statement for Energy (EN-1)

Policy	Relevance to development
<p>National Planning Policy Framework (2019)⁴⁴¹</p>	<p>The NPPF acts as guidance for local planning authorities and decision-makers, both in drawing up plans and making decisions about planning applications. The 2019 revision of the NPPF paragraph 148 states:</p> <p><i>“The planning system should support the transition to a low carbon future in a changing climate... shape places in ways that contribute to radical reductions in greenhouse gas emissions... and support renewable and low carbon energy and associated infrastructure”.</i></p> <p>In paragraph 150 it also requires that new development should be planned for in ways that</p> <p><i>“ a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government’s policy for national technical standards.”</i></p> <p>Furthermore, paragraph 153 stated that local planning authorities should expect new development to:</p> <p><i>“a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.”</i></p> <p>This preliminary assessment has explicitly considered the requirements of the NPPF and influenced the energy performance of the Development and the associated GHG’s considered through this assessment.</p>

Local

13.51 Table 13.7 summarises local planning policy relevant to the OMSSD project.

Table 13.7: Local planning policy relevant to the OMSSD project

Policy	Relevance to Development
<p>New Castle Point Local Plan Pre-Submission Plan (2019)⁴⁴²</p>	<p>The Pre-Submission Local Plan confirms that planning is central to securing reductions in greenhouse gas emissions (GHG), minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure.</p> <p>The core policy for managing GHG emissions and resilience to climate change is Strategic Policy CC1: Responding to Climate Change. This states that:</p> <ol style="list-style-type: none"> 1. The Council will seek to mitigate and adapt to climate change and move to reducing the carbon footprint of the borough. This will be achieved by: <ol style="list-style-type: none"> a. Identifying development locations with good access by foot, cycling and public transport to services and public transport provision which reduce the need for travel; b. Providing improvements to the public transport network, and footpaths and cycle paths;

⁴⁴¹ Ministry of Housing, Communities & Local Government (2019) National Planning Policy Framework.

⁴⁴² Castle Point Borough Council (2019) New Castle Point Local Plan Pre-submission Plan 2018-2033

	<ul style="list-style-type: none"> c. Providing opportunities to deliver multi-functional green infrastructure and new habitat creation; d. Promoting the efficient use of natural resources such as water and energy; e. Encouraging high-quality sustainable design and construction techniques that contribute to climate change mitigation and adaptation; and f. Encouraging opportunities for the provision of renewable energy, low carbon technologies and decentralised energy as part of development proposals as appropriate. <p>2. The Council will seek to minimise the impacts of climate change on its communities through flood risk management that reduces the risk to people and property from extreme weather and flooding events.</p> <p>The requirements of the Pre-Submission plan have informed the assessment and design of mitigation.</p>
<p>Draft Essex County Council's Sustainable Modes of Travel Strategy (2020)⁴⁴³</p>	<p>The Draft Essex County Council's Sustainable Modes of Travel Strategy identifies the following objective relevant to GHG emissions:</p> <ul style="list-style-type: none"> • Embed high quality sustainable alternatives, reducing the need to travel by car and reducing CO₂ and other emissions. <p>This objective has been taken into account in this preliminary assessment.</p>

Guidance

13.52 Table 13.8 summarises guidance relevant to the OMSSD project.

Table 13.8: Guidance relevant to the OMSSD project

Guidance	Relevance to Development
<p>Institute of Environmental Management and Assessment (IEMA) guidance on Assessing Greenhouse Gas Emissions and Evaluating their Significance (2017)</p>	<p>Provides guidance on assessment and mitigation of GHG emissions within an EIA context. It includes a focus on proportionate and robust assessment and defines principles for Climate Change Mitigation and EIA.</p> <p>The IEMA guidance has informed the preliminary assessment including the assessment of significance for the OMSSD project.</p>
<p>The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol)</p>	<p>Provides standards and guidance for preparing a GHG emissions inventory including the definition of scope 1, 2 and 3 emissions.</p> <p>The assessment has classified GHG emissions by scope to inform proportionate mitigation.</p>
<p>Publicly Available Standard (PAS) 2080: 2016 – Carbon Management in Infrastructure⁴⁴⁴</p>	<p>Provides an approach to management and reduction of GHG emissions from infrastructure projects, working with stakeholders throughout the project lifecycle.</p> <p>The guidance has informed the assessment approach and scoping of activities that are included in the assessment.</p>

⁴⁴³ Draft for Consultation Essex County Council's Sustainable Modes of Travel Strategy for consultation (2020), updated 29th September 2020, found at https://assets.ctfassets.net/knkzaf64jx5x/5T3h7kDuqTwZg7tzYY21E0/0a2a62aedd34e14b0df188d8a6085045/ECC_Sustainable_Modes_of_Travel_Strategy_2020_Draft.pdf

⁴⁴⁴ Publicly Available Standard (PAS) 2080 Carbon Management in Infrastructure.

Guidance	Relevance to Development
<p>Committee on Climate Change (CCC), Net Zero. The UK's contribution to stopping global warming, 2019⁴⁴⁵, and</p> <p>Committee on Climate Change, Net Zero. Technical Report., 2019⁴⁴⁶</p>	<p>The CCC Net Zero report responds to a request from the Governments of the UK, Scotland and Wales to provide updated advice on the UK's long-term emissions targets, including the possibility of setting a new 'net-zero' target.</p> <p>The report recommends that the UK should legislate as soon as possible to reach net-zero greenhouse gas emissions by 2050. It advises that this target can be legislated as a 100% reduction in greenhouse gases from 1990 and should cover all sectors of the economy, including international aviation and shipping.</p> <p>The report advises that the aim should be to meet the target through UK domestic effort, without relying on international carbon units, though the CCC do not completely rule out international carbon units as a useful contingency.</p> <p>Specifically, on the issue of shipping the CCC has identified a Further Ambition scenario that it considers to be consistent with an overall economy wide net zero 2050 target, where UK shipping reduces emissions to near-zero through more widespread use of alternative fuels (e.g. ammonia), which could be possible if a low-carbon supply and global refuelling network develops. Specifically, the Further Ambition scenario reduces total shipping emissions to less than 1 MtCO_{2e} in 2050, with international emissions of 0.5 MtCO_{2e} and domestic emissions of 0.1 MtCO_{2e}.</p> <p>The report acknowledges that the international shipping sector will need to strengthen the current internationally agreed policies and that it should put in place a policy framework to deliver the agreed IMO target for 2050. It recommends that a more ambitious global target in shipping is needed to deliver the technical potential that exists in the Further Ambition scenario. It also recommends that the Government should ensure their Clean Maritime Plan support innovation, research and deployment to ensure new technologies are brought to market in a timely fashion.</p> <p>The report confirms that shipping has non-CO₂ effects that come from the emission of sulphate aerosols. These have a cooling effect on the climate by directly reflecting sunlight and through their effects on the brightness and longevity of clouds. Sulphate emissions from shipping are expected to decline in the future due to global regulations to reduce the sulphur content of shipping fuels. These are expected to have come into force in 2020.</p> <p>This preliminary assessment has considered the consistency of GHG emissions from the Development with CCC's future scenarios and net zero target.</p>
<p>Royal Institution of Chartered Surveyors (RICS): Methodology to calculate embodied carbon 1st edition⁴⁴⁷</p>	<p>The RICS guidance note represents best practice on how to estimate carbon emissions associated with product and construction process stages. The aim of the guidance is to provide a framework of practical guidance on how to calculate embodied carbon emissions associated with projects.</p> <p>This preliminary assessment has taken the guidance into account in scoping emissions.</p>
<p>Royal Institution of Chartered Surveyors (RICS): Whole life carbon assessment for the built environment, 1st edition⁴⁴⁸</p>	<p>RICS guidance on the calculation of whole life carbon footprints for building and development projects. The guidance provides a framework for estimating carbon emissions from a project from construction (including embodied carbon and construction transport), operation (energy consumption) and decommissioning.</p> <p>This preliminary assessment has taken the guidance into account in scoping emissions and for assessing construction traffic emissions.</p>

⁴⁴⁵ CCC (2019) Net Zero. The UK's contribution to stopping global warming, 2019. Found at <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/>

⁴⁴⁶ CCC (2019) Net Zero, Technical report.

⁴⁴⁷ RICS (2014) Methodology to Calculate Embodied Carbon, 1st Edition.

⁴⁴⁸ RICS (2017) Whole life carbon assessment for the built environment, 1st edition.

Guidance	Relevance to Development
Inventory of Carbon & Energy, Version 3.0, University of Bath 2019 ⁴⁴⁹	The Inventory of Carbon and Energy (ICE) is a database of GHG emissions for common construction materials. It will be used by the assessment to quantify GHG emissions from the construction phase of the OMSSD project.
The Clean Growth Strategy (2017) ⁴⁵⁰	Provides the strategy for the UK’s future clean growth to allow Carbon Budgets to be met and support economic growth. The strategy sets out policies and targets out to 2050 for reducing GHG emissions across a number of sectors. The strategy focuses on accelerating clean growth, improving business and industry inefficiency, improving the energy efficiency of homes, rolling out low carbon heating, accelerating the shift to low carbon transport, delivering clean, smart, flexible power, enhancing the benefit and value of our natural resources and leading in the public sector and government. The strategy has been used as context for this preliminary assessment.
Maritime 2050: Navigating the Future (2019) ⁴⁵¹	<p>Sets out a long-term strategy for UK’s maritime sector. The strategy is founded on a set of core values and 10 strategic ambitions. The ambition relevant to this assessment is to:</p> <ul style="list-style-type: none"> • Lead the way in taking action on clean maritime growth enjoying economic benefits from being an early adopter or fast mover. <p>The ambition underpins the UK’s leading role enabled through its participation in the IMO, in securing agreement to the target of a 50% greenhouse gas (GHG) emission reduction from the sector by 2050. The strategy supports investment in maritime infrastructure, aimed at promoting the uptake of carbon neutral fuels and the generation of renewable energy such as using biomass or rotor sails, and highlight the UK’s commitment to environmental goals and the leading role business can play in achieving these.</p> <p>Specifically, in terms of GHG emissions the GHG vision set by the strategy is <i>“In 2050, zero emission ships are commonplace globally. The UK has taken a proactive role in driving the transition to zero emission shipping in UK waters and is seen globally as a role model in this field, moving faster than other countries and faster than international standards. As a result, the UK has successfully captured a significant share of the economic, environmental and health benefits associated with this transition”</i>.</p> <p>The strategy has been used as context for this preliminary assessment.</p>
Clean Maritime Plan (2019) ⁴⁵²	<p>The UK Clean Maritime Plan responds to the Maritime 2050: Navigating the Future (2019) Strategy. It sets out in more detail how Government sees the UK’s transition to a future of zero emission shipping. It also represents the UK response to the IMO target of reducing international shipping GHG emissions by 50% by 2050.</p> <p>It confirms that while the UK continues to believe that global action is the most effective way to achieve these ambitions, it also recognizes the role that national action can play in leading the transition to zero emission shipping. In this context, the Clean Maritime Plan represents the UK’s National Action Plan on shipping emissions.</p> <p>The Plan has been used as context for this preliminary assessment.</p>

⁴⁴⁹ Inventory of Carbon & Energy (ICE), Version 3.0, University of Bath 2019

⁴⁵⁰ HM Government (2017) The Clean Growth Strategy

⁴⁵¹ Department for Transport (2019) Maritime 2050 Navigating the Future

⁴⁵² Department for Transport (2019) Clean Maritime Plan

Guidance	Relevance to Development
<p>PLA, Air Quality Strategy for the Tidal Thames Update (2020)⁴⁵³</p>	<p>The Air Quality strategy sets out the PLA’s strategy for managing emissions from shipping and covers both air quality emissions as well as GHG emissions.</p> <p>It confirms that the PLA has commenced a Net Zero Programme for both the organisation (Net Zero PLA) and the port (Net Zero Port) to achieve Net Zero by 2050. This requires the PLA to cut carbon emissions as much as possible and offset any carbon emissions that cannot be eliminated. As part of the Net Zero PLA Programme, the PLA has been working on developing strategies for renewable energy, carbon offset, vehicle and vessel upgrade/replacement to reduce and offset carbon emissions.</p> <p>The strategy sets out new targets that reflect targets set by out by the Clean Air Strategy published by Defra in 2019, Clean Maritime Plan published by the DfT outlining the pathway to zero emission shipping by 2050, and the Climate Change Act 2008 (as amended) to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline.</p> <p>The PLA distinguish between their own operational emissions and those from other third-party shipping sources operating in the jurisdiction of the PLA defined as the tidal area of the Thames⁴⁵⁴.</p> <p>For its own operational emissions, this strategy has set a target of net zero by 2051 at the latest. It is presently undertaking a programme of work to more specifically set out how and by when the PLA can achieve this target and has recently confirmed that it now aims to reach net zero for its own operational emissions by 2040⁴⁵⁵.</p> <p>Its published target for shipping⁴⁵⁶ emissions in the tidal Thames area is to reduce those by 30% by 2014 and 60% by 2051, compared to a 2016 baseline. For Inland⁴⁵⁷ vessels the targets are 75% reduction by 2041 and 95% by 2051.</p> <p>The PLA’s targets have been considered in this preliminary assessment.</p>

Preliminary Description of the Existing Environment

- 13.53 The Oikos Facility GHG footprint for 2019 has been calculated using the methodology described under paragraphs 13.27 to 13.31 and further detailed in Appendix 13.1.
- 13.54 Table 13.9 below details the GHG footprint by activity and GHG protocol scope. Table 13.10 provides additional detail on GHG emissions from vessels.

Table 13.9: Oikos Facility 2019 baseline GHG emissions

GHG Protocol Scope	Activity	CO2e (Tonnes)		% of Total
		Total	Scope Total	
Scope 1	F-gas	153.7	153.7	0.2%

⁴⁵³ PLA (2020), Air Quality Strategy for the Tidal Thames Update. Found at <https://server1.pla.co.uk/assets/airquality2020v1.pdf>

⁴⁵⁴ i.e. the Thames, its tributaries and connected waterways, between Teddington and Southend

⁴⁵⁵ See <http://pla.co.uk/Environment/2040-Net-Zero-Target>

⁴⁵⁶ This covers Container Ship, RoRo-cargo/Vehicle, General Dry Cargo, Oil tanker, Chemical/LNG/LPG tankers, Bulk carrier, Cruise ship, Non Merchant, and Reefer operating in the tidal Thames

⁴⁵⁷ This includes Passenger, Tug/Supply, Fishing and other miscellaneous vessels

GHG Protocol Scope	Activity	CO ₂ e (Tonnes)		% of Total
		Total	Scope Total	
Scope 2	Electricity Consumption	350.5	350.5	0.4%
Scope 3	Vessels	88,715.2	91,992.3	99.4%
	Fuel Export by Tanker	3,147.5		
	Deliveries, and Staff and Visitor Travel	124.0		
	Water Consumption	5.7		
Total		92,496.5		100%

Table 13.10: Oikos Facility 2019 baseline breakdown of vessel GHG emissions

Vessel Emissions	CO ₂ e (Tonnes)			% of Total
	Domestic	International	Total	
Vessels in Transit to PLA	0.0	86,642.0	86,642.0	97.6%
Vessels in Transit within PLA	0.0	585.0	585.0	0.7%
Vessels at Berth	0.0	1,488.2	1,488.2	1.7%
Total	0.0	88,715.2	88,715.2	100%

- 13.55 Reference to Table 13.9 shows that scope 3 GHG emissions dominate and represent over 99% of total GHG emissions associated with the Oikos Facility in 2019. Scope 1 and 2 emissions combined represent under 1%.
- 13.56 GHG emission from vessels represents 96% of the total footprint and are the single largest source of emissions. Of these emissions the majority (98%) are from vessels in transit (taken to include the journey between the port from which the product has been sourced and the outer edge of the Port of London Authority area (PLA)).
- 13.57 Emissions from vessels (88,715 tonnes) compare to 14.3 MT CO₂e UK shipping emissions⁴⁵⁸ in 2019 and are therefore less than 1% of UK shipping emissions.

Preliminary Environmental Change without the OMSSD Project

- 13.58 The future baseline without the OMSSD project (i.e. the existing Oikos Facility operations continued) has been modelled and is presented below as Table 13.11 and Table 13.12. Appendix 13.1 provides details on the methodology and assumptions adopted and Appendix 13.2 on the modelling of future shipping emissions.
- 13.59 Only operational emissions are presented as in this scenario no construction activity is anticipated.

⁴⁵⁸ CCC (2020) The Sixth Carbon Budget, Sector Summary Shipping

Table 13.11: GHG emissions in 2025 without the OMSSD project

GHG Protocol Scope	Activity	CO ₂ e (Tonnes)		% of Total
		Total	Scope Total	
Scope 1	F-gas	153.7	153.7	0.2%
Scope 2	Electricity Consumption	277.9	277.9	0.3%
Scope 3	Vessels	83,610.7	86,872.3	99.5%
	Fuel Export by Tanker	3,147.5		
	Deliveries, and Staff and Visitor Travel	108.5		
	Water Consumption	5.7		
Total		87,303.9		100%

Table 13.12: GHG emissions from vessels in 2025 without the OMSSD project

Vessel Emissions	CO ₂ e (Tonnes)			% of Total
	Domestic	International	Total	
Vessels in Transit to PLA	0.0	81,571.7	81,571.7	97.6%
Vessels in Transit within PLA	0.0	550.8	550.8	0.7%
Vessels at Berth	0.0	1,488.2	1,488.2	1.8%
Total	0.0	83,610.7	83,610.7	100%

13.60 Reference to Table 13.11 shows that scope 3 GHG emissions dominate and represent over 99% of total GHG emissions associated with the Oikos Facility in 2025 without the OMSSD project. Scope 1 and 2 emissions combined represent under 1%. Emissions from vessels (83,610.7 tonnes) represents 96% of the total footprint and are the single largest source of emissions.

13.61 Table 13.12 provides a breakdown of vessel emissions by route stage. The three route stages shown are:

- vessels in transit to the PLA - the journey of vessels from their origin port to the Port of London;
- vessels in transit within the PLA – vessels sailing from arrival at the Port of London (15 km east of the Oikos Facility) to the Oikos Facility, and on departure from the Oikos Facility to departure from the Port of London (as requested by PLA during consultation in October 2020, see Table 13.3); and
- vessels at berth – vessels running auxiliary generators while berthed at the Oikos Facility.

13.62 This shows that the majority of emissions (98%) are from vessels in transit. All emissions from vessels are associated with international journeys.

13.63 Operational emissions in 2025 are projected to be approximately 6% lower than those in the 2019 baseline due to expected efficiency improvements across all sectors of the economy.

Preliminary Consideration of Likely Impacts and Effects

- 13.64 The GHG emissions associated with the OMSSD project have been modelled for the construction period and in the operational year 2025.
- 13.65 The GHG assessment estimates total emissions over the construction period, which are not likely to be materially different regardless of whether the construction works are delivered over a single 24-month period, or phased over several years. The assessment of operational impacts and effects assumes the OMSSD project is fully operational in 2025, which provides a realistic worst-case assessment.

Construction Emissions

- 13.66 The GHG emissions from construction traffic have been modelled as 31,694 tonnes CO₂e. Appendix 13.1 provides further details.
- 13.67 At this stage of the OMSSD project design it has not been possible to estimate the embedded GHG emissions due to construction. This is, however, likely to be small compared to the lifetime operational emissions from the project and therefore does not affect the overall assessment of significance presented later in this chapter.
- 13.68 GHG emissions embedded in materials used in the construction of the OMSSD project will be provided in the OMSSD Environmental Statement.

Operational Emissions (2025)

- 13.69 The GHG emissions with the OMSSD project have been modelled and are presented below as Table 13.13 and Table 13.14. Appendix 13.1 provides details on the methodology and assumptions adopted and Appendix 13.2 on the modelling of future shipping emissions.

Table 13.13: GHG emissions in 2025 with the OMSSD project

GHG Protocol Scope	Activity	CO ₂ e (Tonnes)		% of Total
		Total	Scope Total	
Scope 1	F-gas	153.7	153.7	0.1%
Scope 2	Electricity Consumption	361.3	361.3	0.1%
Scope 3	Vessels	274,053.5	301,686.6	99.8%
	Fuel Export by Tanker	27,489.4		
	Staff and Visitor Travel	136.9		
	Water Consumption	6.8		
Total		302,201.6		100%

Table 13.14: GHG emissions from vessels in 2025 with the OMSSD project

Vessel Emissions	CO ₂ e (Tonnes)			% Total
	Domestic	International	Total	
Vessels in Transit to PLA	8,213.3	259,582.7	267,796.0	97.7%
Vessels in Transit within PLA	602.0	1,716.6	2,318.6	0.8%
Vessels at Berth	1,181.4	2,757.6	3,939.0	1.4%
Total	9,996.7	264,056.8	274,053.5	100%

- 13.70 Reference to Table 13.13 shows that scope 3 GHG emissions dominate and represent 99.8% of total GHG emissions associated with the Oikos Facility in 2025 with the OMSSD project. Scope 1 and 2 emissions combined represent 0.2%.
- 13.71 GHG emission from vessels (274,053 tonnes) represents 91% of the total footprint and are the single largest source of emissions.
- 13.72 Table 13.14 provides a breakdown of vessel emissions by route stage. This shows that the majority of emissions (98%) are from vessels in transit.
- 13.73 Emissions from domestic fuel exports by vessels equal 9,996.7 tonnes compared to 264,056.8 tonnes from international vessel journeys. Emissions from domestic vessel journeys are therefore approximately 4% of emissions from international vessel journeys.
- 13.74 Operational emissions in 2025 are projected to be approximately 327% higher than those in the 2019 baseline largely due to the significant increase in emissions from vessel journeys and increased fuel export by tanker with the five additional road loading bays proposed. This is related to the increase in total fuel product throughput associated with the OMSSD project.

Preliminary Assessment of Effects

- 13.75 The assessment of effects follows the three-step approach detailed in paragraphs 13.32 to 13.35.

Step 1: Magnitude of change

- 13.76 Table 13.15 (construction) and Table 13.16 (operations) summarise the GHG emissions With and Without the OMSSD project and the change in emissions due to the OMSSD project. Table 13.17 (operations) provides additional detail on the change in GHG emissions from vessels.

Table 13.15: Construction GHG Emissions Summary

GHG Protocol Scope	Activity	CO ₂ e (Tonnes) in 2025		Change in CO ₂ e (Tonnes) in 2025	
		Without OMSSD Project	With OMSSD Project	by Activity	by Scope
Scope 3	Embedded GHG in construction materials	0.0	To be confirmed in ES	To be confirmed in ES	To be confirmed in ES
	Construction transport	0.0	31,694	31,694	
Total all sources		0.0	To be confirmed in ES	To be confirmed in ES	

Table 13.16: Operational GHG Emissions Summary

GHG Protocol Scope	Activity	CO ₂ e (Tonnes) in 2025		Change in CO ₂ e (Tonnes) in 2025		% Change with OMSSD project
		Without OMSSD Project (Table 13.11)	With OMSSD Project (Table 13.13)	by Activity	by Scope	
Scope 1	F-gas	153.7	153.7	0.0	0.0	0%
Scope 2	Electricity Consumption	277.9	361.3	83.4	83.4	30%
Scope 3	Vessels (domestic)	0.0	9,996.7	9,996.7	214,814.3	n/a
	Vessels (international)	83,610.7	264,056.8	180,446.2		216%
	Fuel Export by Tanker	3,147.5	27,489.4	24,341.9		773%
	Staff and Visitor Travel	108.5	136.9	28.4		26%
	Water Consumption	5.7	6.8	1.1		20%
Total all sources		87,303.9	302,201.6	214,897.7		246%
Total excluding international vessels		3,693.3	38,144.8	34,451.5		933%

Table 13.17: Operational Vessel GHG Emissions Summary

Vessel Emissions	Without development CO2e (Tonnes)			With development CO2e (Tonnes)			Change CO2e (Tonnes)		
	Domestic	International	Total	Domestic	International	Total	Domestic	International	Total
Vessels in Transit to PLA	0.0	81,571.7	81,571.7	8,213.3	259,582.7	267,796.0	8,213.3	178,010.9	186,224.2
Vessels in Transit within PLA	0.0	550.8	550.8	602.0	1,716.6	2,318.6	602.0	1,165.8	1,767.8
Vessels at Berth	0.0	1,488.2	1,488.2	1,181.4	2,757.6	3,939.0	1,181.4	1,269.4	2,450.8
Total	0.0	83,610.7	83,610.7	9,996.7	264,056.8	274,053.5	9,996.7	180,446.2	190,442.9

- 13.77 Reference to Table 13.15 shows that the OMSSD project will result in an increase of transport construction emissions of 31,694 tonnes and an increase due to embedded GHG in construction materials that it has not been possible to estimate at this stage in the design process.
- 13.78 Nonetheless it is possible to conclude that any change in construction emissions will be small compared to the change in operational emissions which stand at circa 214,900 tonnes per annum in 2025. Assuming a 30-year lifetime for the development the equivalent annualised change in construction emissions from transport is 1,055 tonnes and even with the addition of embedded emissions would likely remain at less than 5% of operational emissions over the lifetime of the OMSSD project.
- 13.79 Reference to Table 13.16 shows that for operational emissions that Oikos control (Scope 1 and 2) the OMSSD project would result in an increase of 83.4 tonnes in 2025. Similarly, for emissions that Oikos can only influence (Scope 3) these would increase by 214,814 tonnes in 2025. The total increase in GHG emissions due to the OMSSD project in 2025 is therefore 214,898 tonnes.
- 13.80 The largest single contributor to this increase is due to international vessel movements. The largest contributor to emissions excluding international vessels is the sevenfold increase in GHG emissions due to export of product by road tanker. Excluding emissions from international vessels the increase in GHG due to the OMSSD project is significantly smaller and stands at 34,451 tonnes in 2025. Context to the predicted emissions is provided in Table 13.18 for emissions excluding international shipping and paragraph 13.85 for international vessel emissions.
- 13.81 Reference to Table 13.17 shows that the increase due to vessels equals 190,443 tonnes of which 180,446 tonnes was due to international vessels and 9,997 tonnes from domestic vessels showing that circa 95% of the increase in vessel emissions is from international fuel imports.

Step 2: Impact of GHG emissions on UK and local carbon targets and policies

UK Carbon Budgets

- 13.82 Table 13.18 details the comparison of the Without and With the OMSSD project scenario GHG emissions (excluding international shipping emissions) to the UK's fourth carbon budget (covering the period 2023 to 2027) as adopted under the Climate Change Act⁴⁵⁹.
- 13.83 International shipping emissions as detailed in Table 13.4 are currently excluded from UK carbon budgets and therefore it is consistent to compare GHG emissions from the OMSSD project excluding international shipping emissions.

⁴⁵⁹ <https://www.legislation.gov.uk/ukxi/2011/1603/made>

Table 13.18: GHG Emissions (excluding international shipping) compared to UK Carbon Budgets

Carbon Budget	Carbon Budget in MTCO ₂ e	Average carbon budget per annum in MTCO ₂ e	Without OMSSD project GHG emissions compared to average UK carbon budget		With Development GHG emissions compared to average UK carbon budget	
			CO ₂ e (MT)	% of Budget	CO ₂ e (MT)	% of Budget
Fourth budget (2023 to 2027)	1,950	390	0.0037	0.00095%	0.038	0.010%

13.84 The comparison of GHG emissions to the fourth UK carbon budget shows that the Without the OMSSD project scenario will represent 0.00095 % of the average annual UK carbon budget and 0.010% in the With OMSSD project scenario, an increase of 0.009%.

13.85 In terms of international vessel emissions, the GHG emissions associated with the OMSSD project in 2025 are 264,056 tonnes. This compares to the CCC’s forecast⁴⁶⁰, based on its Balanced Net Zero pathway of 15.3MT CO₂e by 2025, meaning that international vessel emissions from the OMSSD project would represent 1.7% of national vessel emissions by 2025.

UK Climate Change Targets and Effects in 2050

13.86 Under the Climate Change Act the UK has set a target of net zero emissions by 2050. This target presently explicitly excludes emissions from international shipping (and aviation). However, the latest advice by the CCC on the UK’s 6th Carbon budget⁴⁶¹ recommends that the net zero target should formally include emissions from international shipping.

13.87 The CCC also conclude that based on realistic future assumptions on decarbonisation of the shipping sector it is likely that that GHG emissions from UK shipping can approach near zero by 2050⁴⁶², thus ensuring GHG emissions from shipping do not place an additional burden on other sectors to decarbonise to meet the UK’s economy wide net zero target. Appendix 13.2 provides additional detail on the modelling of future shipping emissions.

13.88 The CCC have also examined likely pathways for decarbonising ground transport and the UK power sector and concluded that both these sectors are likely to reach zero emissions by 2050 assuming realistic assumptions on future efficiency gains and use of renewable fuels.

13.89 The likely long term GHG emissions With and Without the OMSSD project by 2050, assuming realistic assumptions proposed by the CCC is therefore likely to be near zero under both scenarios. The cumulative emissions from the opening year until 2050 With the OMSSD project will however be higher than in the scenario Without the OMSSD project.

⁴⁶⁰ CCC (2020) The Sixth Carbon Budget, Sector Summary Shipping

⁴⁶¹ CCC (2020) Policies for the 6th Carbon Budget and Net Zero

⁴⁶² Assessed to be less than 1MtCO₂/year. Of this half are from naval shipping which have not yet been explicitly modelled by the CCC.

Consistency with requirements of National Policy Statement for Ports

- 13.90 The NPS for Ports sets out a number of policy requirements for Developers relating to GHG emissions that are relevant to this preliminary assessment. The NPS provides guidance on the weight that should be attached from port expansion projects, detailed further in the Table 13.6. In summary the Ports NPS advises that:

“Para 4.12.6: The decision-maker should attach limited weight to the estimated likely net carbon emissions performance of port developments. However, it may be appropriate to agree requirements or obligations that will cement cost-effective ways to minimise greenhouse gas emissions in operation. Consent might be withheld if the applicant refused to accept reasonable requirements or obligations related to design, or arising from the transport assessment”.

- 13.91 On mitigation, the Ports NPS advises on a number of strategies to minimise GHG emissions. In summary, these include use of good design to minimise emissions, adoption of fuel efficiency in the operation of buildings and of outdoor plant and machinery, as well maximising use of renewable energy sources, complying with Habitats Regulations where appropriate, and provision of shore-side fixed electrical power to replace the use of ships’ generators in port.
- 13.92 In terms of responding to the NPS recommendations on mitigation the OMSSD project is exploring mitigation measures to reduce GHG emissions. These will be delivered within a carbon roadmap for the OMSSD project which will set targets for GHG emissions reductions and measures that will be explored to achieve these targets, by set dates in the future.

Port of London Authority and Local Targets

- 13.93 The assessment has considered the GHG emissions from the OMSSD project in the context of local targets and inventories.
- 13.94 The Port of London Authority (PLA) have recently published an Air Quality strategy⁴⁶³ update that confirms their long-term targets for air quality pollutants and GHG emissions. The PLA distinguish between their own operational emissions and those from third-party shipping sources operating in the jurisdiction of the PLA defined as the tidal area of the Thames⁴⁶⁴.
- 13.95 For its own operational emissions, the PLA’s Air Quality Strategy has set a target of net zero by 2051, which has been updated in 2020 to target net zero by 2040 at the latest. It is presently undertaking a programme of work to more specifically set out how and by when the PLA can achieve this target.

⁴⁶³ PLA (2020) Air Quality Strategy for the Tidal Thames Update. Found at <https://server1.pla.co.uk/assets/airquality2020v1.pdf>

⁴⁶⁴ i.e. the Thames, its tributaries and connected waterways, between Teddington and Southend

- 13.96 The PLA's published target for shipping⁴⁶⁵ emissions in the tidal Thames area is to reduce those by 30% by 2014 and 60% by 2051, compared to a 2016 baseline. For Inland⁴⁶⁶ vessels the targets are 75% reduction by 2041 and 95% by 2051. Additionally, the PLA have produced an inventory⁴⁶⁷ of GHG emission for all shipping and ship types for their 2016 baseline and forecasts for 2020, 2025 and 2030, summarised as Table 13.19: below.

Table 13.19: PLA GHG emissions for all shipping

Year	2016	2020	2025	2030
PLA GHG emissions (tonnes CO ₂ e)	195,350	227,075	274,553	293,162

- 13.97 Comparison of GHG emissions from vessels in transit within the PLA and berthed at jetties from the OMSSD project shows that these will amount to 2.3% of PLA emissions in 2025. This is very much a worst case as it assumes the OMSSD project will reach full capacity in 2025.
- 13.98 Furthermore, as discussed in paragraphs 13.86 to 13.89, the conclusions of the CCC are that shipping will largely decarbonise by 2050 and therefore the OMSSD project would not impact on the ability of the PLA to meet its long term (2051) targets for shipping emissions.
- 13.99 The existing Castle Point Local Plan is being superseded by the New Pre-Submission Local Plan. The key policy relating to GHG emissions in the New Local Plan is policy CC1 detailed in Table 13.7. In summary, this requires developers to promote efficient use of natural resources, high-quality sustainable design and construction techniques, and use of renewable energy, low carbon technologies and decentralized energy as appropriate.
- 13.100 The OMSSD project will aim to include a number of design features that respond to the requirements of Policy CC1 as part of a carbon roadmap as detailed above in paragraph 13.92. Such measures may include opportunities for new habitat creation, improving resource efficiency (e.g. water and energy consumption), sustainable construction methods, and use of low-carbon energy sources.

Step 3: Assessment of Significance

- 13.101 The assessment of GHG emissions associated with the OMSSD project shows that:
- The project will result in an increase of 31,694 tonnes of GHG emissions due to construction traffic as well as an increase in GHG emissions embedded in construction materials that it has not been possible to estimate at this stage of the design process. Nonetheless the analysis shows that these emissions are small compared to lifetime operational emissions and the lack of data on embedded GHG emissions would thus not affect the overall assessment of significance presented.

⁴⁶⁵ This covers Container Ship, RoRo-cargo/Vehicle, General Dry Cargo, Oil tanker, Chemical/LNG/LPG tankers, Bulk carrier, Cruise ship, Non Merchant, and Reefer operating in the tidal Thames

⁴⁶⁶ This includes Passenger, Tug/Supply, Fishing and other miscellaneous vessels

⁴⁶⁷ See <https://www.pla.co.uk/assets/finalplaportwideinventoryoutputsreportv10.2publication.pdf>

- For operational emissions that Oikos control (Scope 1 and 2) the OMSSD project would result in an increase of 83.4 tonnes CO₂e versus the Without OMSSD project scenario in 2025.
- For all operational emissions (Scopes 1, 2 and 3) the OMSSD project would result in an increase of 214,898 tonnes CO₂e versus a Without OMSSD project scenario in 2025. Excluding emissions from international shipping the increase is 34,451 tonnes.
- Operational emissions from all sources (Scope 1, 2 and 3) are likely to fall to near zero by 2050 as the UK decarbonises to meet its net zero 2050 target with and without the OMSSD project.
- Putting emissions into context, excluding international shipping the With OMSSD project scenario would represent 0.01% of the UK's average annual carbon budget in 2025, an increase of 0.009% versus the Without OMSSD project scenario.
- The OMSSD project would result in shipping emissions due to the facility increasing as a % of GHG shipping emissions forecast by the PLA in 2025 within its zone of influence, however by 2050 due to decarbonisation of the shipping sector the OMSSD project would not affect the ability of the PLA to meet its long-term shipping GHG emission targets.
- As part of the OMSSD project, Oikos is developing a carbon roadmap for emissions that will set targets for GHG emission reductions therefore addressing mitigation requirements of Castle Point local plan policy CC1 and the NPSfP to avoid and reduce GHG emissions to minimise any increase in GHG due to the project by 2025. The effects of mitigation will continue beyond 2025 and be reinforced by national and international actions to ensure the operational emissions from the OMSSD project will have fallen to near zero by 2050.

13.102 IEMA guidance⁴⁶⁸ is that any increase in emissions should be considered significant and therefore the assessment of likely effects is that GHG emissions from the OMSSD project are potentially significant adverse.

13.103 IEMA also advise that consideration is taken of mitigation proposed. In this respect the OMSSD project is identifying mitigation measures to reduce GHGs from the construction and operation of the OMSSD project as detailed in paragraph 13.92 above. Further development of the GHG emissions mitigation will be undertaken prior to submission of the final OMSSD ES.

13.104 More broadly the OMSSD project has had due regard to the UK's target to achieve net zero GHG emissions by 2050.

13.105 Finally, it is important to note that whilst the OMSSD project will result in an increase in lifetime GHG emissions this needs to be considered in the context of guidance set out in the

⁴⁶⁸ IEMA (2017) Assessing Greenhouse Gas Emissions and Evaluating their Significance.

NPSfP that any increase in GHG emissions due to Port projects should be afforded low weight.

Human health

13.106 There are no likely human health effects due to GHG emissions from the OMSSD project.

Climate change

13.107 Future climate change is not likely to affect the assessment presented in this chapter.

Inter-related effects

13.108 There are no inter-related effects due to GHG emissions from the OMSSD project.

Mitigation Measures

13.109 The OMSSD project is committed to adopting best practice mitigation to reduce and offset GHG emissions that it controls and to promoting policies that can reduce emissions it can influence and therefore welcomes all feedback provided to this preliminary assessment.

Limitations

13.110 The limitations and assumptions relating to the GHG preliminary impact assessment that affect the robustness of the assessment of the likely significant effects of the OMSSD project are:

- The assessment of emissions from shipping relies on the forecasts of future shipping movements, which includes future vessel sizes, cargo loads and origins/destinations;
- Emission factors are dependent on modelling and the development and implementation of government policies. The assessment has relied predominantly on government projections;
- Modelling of shipping emissions whilst at berth are reliant on assumptions regarding the size and emissions of on-board auxiliary generators, and the operational load (hotelling factor) of those generators at berth;
- Emissions from fuel tankers exporting fuel product by road are reliant upon estimates and assumptions regarding the number and location of fuel purchasers;
- Staff and visitor transport emissions were calculated from staff and visitor survey data in 2019 and estimated for the OMSSD project based on expected increase in staff; and
- Future energy consumption (electricity) is reliant on assumptions regarding the future demand of the fuel storage facility and the anticipated decarbonisation of energy supply and consumption.

13.111 Appendix 13.1 and Appendix 13.2 provide further details on assumptions adopted.

Preliminary Conclusions on Residual Effects

13.112 Table 13.20 provides a summary of the preliminary assessment and mitigation proposed.

Table 13.20: Summary of Preliminary Effects of the OMSSD project

Effect	Receptor (Sensitivity)	Geographic Scale	Temporal Scale	Magnitude	Mitigation and Monitoring	Residual Effect
Construction						
GHG emissions from construction	Not relevant	Global	Long term, permanent	Low	The OMSSD project is exploring the use of construction materials with low embodied GHGs.	Potential significant adverse (scale not defined)
Operational Development						
GHG emissions from operations	Not relevant	Global	Long term, permanent	Medium	The OMSSD project is exploring mitigation measures to reduce GHG emissions it controls and influences. For emission that it controls these will be delivered within a carbon roadmap for the OMSSD project which will set targets for GHG emissions reductions and measures that will be explored to achieve these targets, by set dates in the future. Further detail will be provided in the OMSSD ES.	Potential significant adverse (scale not defined)
Cumulative Effects: Not applicable						