4 Need and Alternatives

Introduction

4.1 This chapter of the PEIR provides a preliminary consideration of both the need for the Oikos Marine & South Side Development (OMSSD) project and the reasonable alternatives which have been studied to date and the reasons for choosing the proposed form of development being applied for.

Background to the need for the OMSSD project

4.2 In order to understand the need for the OMSSD project and its significance, it is necessary to understand some background context, which is set out in the following paragraphs.

The significance of the Oikos Facility

4.3 The Oikos Facility on Canvey Island is an existing liquid bulk harbour facility of national significance. It has been successfully operating in one form or another for over 80 years. The facility, together with other neighbouring and nearby facilities, highlights the significance of Canvey Island and the wider Thames Estuary as a key source of fuel supply for the UK.

4.4 The Oikos Facility enjoys a number of existing significant assets and operational benefits, which can be summarised as follows and which are collectively considered to be unique.

(i) A strategic River Thames north side location within the South-East of England – which is currently considered to be the largest fuel market in North-West Europe.

(ii) Good strategic deep-water marine accessibility due to the proximity of the site to the deep-water navigable channel that runs along the Thames estuary, which in turn is in a location close to key shipping lanes that serve the UK.

(iii) Good site-specific marine access provided by two operational jetties, one of which provides access for deep-draft vessels (up to 14 to 14.5m draft), making it one of the deepest draft liquid bulk facilities on the River Thames.

(iv) Good land accessibility provided by a combination of local roads and the A13, A127 and A130 which collectively provide access to the M25 and the wider strategic motorway network and the potential future Lower Thames crossing.

(v) Existing operational connections to both the Exolum Pipeline System and the United Kingdom Oil Pipeline (UKOP) national fuel distribution pipelines – individually both nationally significant assets in their own right – which enable products to be distributed inland from the facility in a sustainable manner to other nationally significant facilities such as Heathrow, Gatwick and Stansted airports and inland strategic fuel storage terminals such as Buncefield, Northampton and Kingsbury.

(vi) Existing bulk liquid storage infrastructure and processes that are compliant with the most up to date safety and environmental standards developed by the Process Safety Leadership Group following the Buncefield incident in December 2005 – to the extent that the facility is recognised within the industry as being one of the most modern in Europe.

(vii) Areas of previously developed but currently vacant land – formerly occupied by storage tanks and infrastructure and used for the storage of bulk liquid products – located within the existing operational boundary of the facility.

(viii) Experienced in handling a wide range of fuel and related bulk liquid products, with appropriate safety, environmental and operating systems and procedures in place, including low carbon fuels, which are recognised as being a key element of the UK's transition to a net zero economy.

(ix) Independent ownership, meaning that the facility is not dependent on the operations or requirements of a particular fuel or product provider. This has cost advantages as the users of the facility are able to import product from a range of producers and traders in the open market.

(x) The basic, modern marine infrastructure in place that has the physical and structural ability to accommodate further equipment for the handling of additional volumes of product and to enable the break bulk of large cargoes and transhipment activities to occur.

(xi) As explained further in Chapter 5 of this PEIR, a type of facility which Government policy – as contained within the National Policy Statement for Ports (NPSfP) – identifies as playing a vital role in the import and export of energy supplies.

(xii) As also explained further in Chapter 5 of this PEIR, a type of facility which Government policy – as contained within the Overarching National Policy Statement for Energy (EN-1) and recently confirmed by the Energy White Paper – identifies as being needed in order to achieve energy security.

(xiii) A facility which, as also explained further in Chapter 5 of this PEIR, at the local level is also recognised as being of national significance.

The significance of the cargo handled at the Oikos Facility and the changing nature of that trade

The current significance of the cargo handled at the Oikos Facility

4.5 The cargoes handled by the Oikos Facility consist largely of liquid transport fuels and their components. Such products are a key critical part of the UK's current energy needs. In 2019

oil met nearly half of consumer energy demand and 96 per cent of energy used in the transport sector.[12]

4.6 Over the two decades prior to 2019 the demand for petroleum products declined by 13 per cent. During this same period UK refinery production of petroleum fuel products also declined steadily (37 per cent between 1998 and 2019), meaning that since 2013 the UK has been a net importer of petroleum products (DUKES, Chart 3.2). Refining capacity has decreased over recent years because of rationalisation in the sector and refinery closures – a factor of particular significance to the Thames Estuary where two major refineries have closed in recent years. Amounting to 13 million tonnes in 2019, fuel product imports are critically important to meeting the UK's domestic demands (DUKES, Paragraph 3.14).

4.7 In common with many other countries, domestic supply and demand of fuels is not matched on a product-by-product basis. To balance demand the UK trades widely across the world and is one of the largest importers of jet fuel and road diesel within the Organisation for Economic Co-Operation and Development (OECD) (DUKES, Paragraph 3.15).

4.8 The Oikos Facility is located within the wider South-East region of England (consisting of London, the South-East and the East of England), the largest demand region in the UK in respect of liquid fuel products. In this context, it is relevant to note that a number of the UK's major airports are located within this South-East region, and indeed approximately two-thirds of the UK's jet fuel demand is driven by this region. In addition, the South-East region is also the leading UK region in terms of gasoline and diesel demand.

4.9 Despite being the largest regional demand area in the UK, the South-East region is, however, materially deficient in terms of fuel production with the vast majority of demand being met via imports through terminals and facilities such as the Oikos Facility. The majority of the import terminals and facilities that serve the South-East region are located along the Thames Estuary and the River Thames.

Changes in the way in which cargoes are being handled

4.10 Historically, the bulk of fuel products imported into the UK came via the Netherlands, which acted as a major trading hub, distributing fuel which may well have originated from elsewhere in Europe or beyond. However, the diversity of locations supplying fuel imported into the UK is increasing. The general picture is of a split between European countries (which mainly supply transport diesel fuel) and imports from Asia (where the bulk of aviation jet fuel – and a growing volume of diesel - is sourced from generally more modern and larger refinery operations than seen in Europe).

4.11 Various analyses of the refining market indicate that European refineries are likely to continue to experience a period of rationalisation with further closures of some facilities. Asian – largely Chinese – Indian and Middle Eastern facilities are, however, predicted to grow. This trend is likely to be further supported as the global fuel market sees an

[12] Department for Business, Energy & Industrial Strategy, Digest of UK Energy Statistics (DUKES) Chapter 3 (July 2020) (web based, accessed March 2021)

increasing production of bio and synthetic liquid fuels – as discussed in the following sub-section.

4.12 As with port commodities generally, where products and goods are required to travel increased distances there are significant economies of scale benefits in employing larger vessels to move the products and goods i.e., a reduction in tonne miles. The significance of fuel imports and the increasing distance to the source of the product is generating a move towards the use of bigger, deeper draft vessels. It is, therefore, critical that the UK has marine import terminals in the right location that are able to accommodate the large deep draft tanker vessels increasingly being used. There are, however, a limited number of such facilities.

4.13 In addition, the increasing use of bigger, deeper draft vessels not only requires marine infrastructure of a sufficient size and scale, but also requires landside storage infrastructure of sufficient size and scale to accommodate quickly and efficiently the size of cargoes which are handled by such vessels. For example, a 120,000 Dead Weight Tonne (DWT) vessel can carry in the region of 130,000 to 140,000m^3 of product.

4.14 The increasing use of deeper draft vessels operating on deep-sea routes and the limited number of port facilities able to handle the size of such vessels and their cargoes is also leading towards the development of facilities which perform a 'hub' function. This is a concept which is well recognised within the ports industry. A hub facility is one which, as well as being a destination in its own right able to handle deep draft vessels, is also a facility that can be used as a 'staging post' from where a large load of product can be broken into smaller loads for onward transhipment to other marine import facilities.

4.15 In addition to this hub function, facilities which are able to accommodate a fully loaded large vessel play an increasingly significant role in being able to 'lighten' the vessel – through the removal of part of its cargo – thereby enabling that vessel to travel elsewhere to a facility with shallower berth capability.

4.16 The global crude oil and refined product tanker fleet uses a classification system known as the Average Freight Rate Assessment (AFRA) system. AFRA uses a scale that classifies tanker vessels according to deadweight tonnes (DWT).

4.17 The Oikos Facility currently has two operational berths. Jetty 1 has the ability to accommodate bulk liquid tankers that are in the order of 55,000 DWT. It is, therefore, currently able to accommodate tankers that are in the 'General Purpose' tanker category (10 – 25,000 DWT), in the 'Medium Range' tanker category (25 – 45,000 DWT) and at the lower end of the 'Long Range 1 (LR1)' tanker category (45 – 80,000 DWT).

4.18 Jetty 2 has the ability to accommodate all of these categories of tanker but can also accommodate vessels within the lower to mid-range of the 'Long Range 2 (LR2)' category of tankers (80 – 160,000 DWT). Jetty 2 is currently able physically to accommodate a vessel of 120,000 DWT with a length overall (LOA) of 277m, a beam of 44.7m and a laden draft of 14m - the draft able to be accommodated being a combination of available water depth alongside (c14.5m to 16m below chart datum) alongside and tidal range (mean sea level being c3.2m above chart datum).

4.19 Other 120,000 DWT vessels with dimensions and laden draft beyond these dimensions, however, cannot currently be accommodated. Furthermore, due to a combination of insufficient alongside depth, insufficient unloading capability and insufficient landside storage capacity the facility, is not, in any event, in practical operational terms, currently able to handle a full load of product from such 120,000 DWT vessels in an economic and efficient way.

Future demand and likely changes

4.20 In the Government's most recent UK Port Freight Traffic forecasts (DfT, January 2019)[13], overall liquid bulk traffic – consisting of crude oil, oil products, liquified gases and other liquid bulk products – is forecast to experience an 18% reduction in tonnage by 2050. This decrease is, however, indicated as being 'almost entirely due to a fall in crude oil traffic' (Paragraph 4.9).

4.21 In respect of oil products specifically, the 2019 forecasts predict that the trend will be one of small decreases (0.1% per year on average) in the period to 2035 beyond which the forecast is flat lined at 76 million tonnes (page 26). The NPSfP, however, highlights that the purpose of these forecasts is to set the context and that it is for each port to take its own commercial view and as a consequence, its own risks on its particular forecasts (NPSfP, paragraph 3.4.7).

4.22 In June 2019 the UK Government approved legislation designed to bring all UK greenhouse gas emissions to net zero by 2050. This is to be achieved by taking steps to reduce greenhouse gas emissions and then balance any remaining emissions by schemes to offset an equivalent amount of greenhouse gases from the environment.

4.23 It is recognised that achieving net zero will require all sectors of the UK economy to deliver substantial further emission reductions. The transport sector – as recognised in the DfT's 'Decarbonising Transport – Setting the Challenge' (March 2020)[14] - is now the largest contributor to UK domestic greenhouse gas emissions, contributing 28% of UK domestic emissions in 2018.

4.24 The analysis provided within this DfT document, however, demonstrates that certain transport modes, such as cars and vans, are likely to be able to be decarbonised much more easily than other modes, such as Heavy Goods Vehicles (HGVs), air transport and maritime transport.

4.25 Considerable steps have, however, already been made in decarbonising transport fuels. This has been achieved through displacing fossil fuels with sustainable fuels. There are, in general terms, two types of sustainable liquid fuel. The first type, which is currently the most common, is biofuel generated from vegetable oils, cooking oils or animal fats. These fuels are currently generally blended with fossil fuels. The second type comprises synthetic fuels

[13] Department for Transport (2019) UK Port Freight Traffic 2019 Forecasts

[14] Department for Transport (2020) Decarbonising Transport – Setting the Challenge

or efuels which, using renewable energy, involves combining hydrogen from water and carbon from air to produce a fuel which mimics the structure of oil derived fuels.

4.26 In 2018, the total Green House Gas (GHG) emission savings achieved through the use of sustainable fuels was estimated to be 3.7MtCO_2e, the equivalent of taking 1.7 million cars off the road.[15]

4.27 To encourage the use of sustainable fuels, the Government, in September 2017, amended the Renewable Transport Fuel Obligation (RTFO) for the next 15 years, to align with the commitments in the Clean Growth Strategy. The RTFO – first introduced in 2008 – requires suppliers of road and non-road mobile machinery fuel to ensure that a percentage of their fuels are renewable. The 2017 amendments requires the doubling of targets to 9.75% between 2018 and 2020 and to at least 12.4% by 2032. It is expected that these amendments will save between 6MtCO_2e and 7MtCO_2e by 2032.[16]

4.28 The Oikos Facility already handles such renewable and sustainable fuels. Most commonly this results from the blending of Fatty Acid Methyl Esters (FAME) – which are made from various feedstocks such as used cooking oil and animal fat and are considered to be a first generation biofuel – into mineral diesel (with up to a renewables content of 6.9%) which is then distributed by pipeline and road, from the facility.

4.29 In addition, the existing infrastructure at the Oikos facility has the ability to receive Hydrogenated Vegetable Oil (HVO) – which is a new, second generation biofuel for blending into mineral diesel – by ship. The current infrastructure at the Oikos Facility has the ability to blend up to 30% biodiesel levels for onward dispatch as demand increases into the future.

4.30 In terms of future work within this area, the Government has introduced a new 'development fuels' sub target within the RTFO to incentivise the development of waste-based fuels made using new technologies and for use in difficult to decarbonise sectors, such as aviation and HGVs. The Government is also undertaking further work and making funding available, to support the further development and uptake of low carbon fuels in the aviation and maritime sector, as well as higher blends in freight transport fuel.

4.31 In terms of aviation specifically, it is currently the case that there is no alternative means by which commercial aircraft can be powered other than by liquid jet fuel – the most common product handled by the Oikos Facility.

4.32 In July 2020 the Jet Zero Council – a joint Government and Aviation Industry partnership – was set up to focus on developing the UK's capabilities of delivering net zero commercial aviation by 2050. To achieve this the Council, amongst other things, is looking at how commercially sustainable aviation fuels can be provided.

4.33 Within documentation produced by the Council there is an indication that in the future electrically powered aircraft may be suitable for shorter flights and payloads, that hydrogen

[15] Department for Transport (2020) Decarbonising Transport – Setting the Challenge, paragraph 3.44

[16] Department for Transport (2020) Decarbonising Transport – Setting the Challenge, paragraph 3.45 to 3.48

may play a role in middle distance flights but that larger planes and long haul travel will still need something similar to sustainable aviation fuel.

4.34 Historically, liquid transport fuels have essentially been quite uniform in that they have consisted of relatively few blends of products and fuels. In the future, it is considered likely that this uniformity will fracture with the ongoing development of different types and grades of biofuels and synthetic fuels. This, in turn, will have implications for the way in which products are stored and distributed.

4.35 Even with the move towards decarbonising transport there will, therefore, still be significant demand for liquid transport fuels in the period to 2050, and that an increasing amount of this demand will be for imported biofuels and synthetic fuels alongside the residual demand for oil derived diesel, gasoline and jet fuel.

4.36 This conclusion is supported by the recently published Energy White Paper – 'Powering our Net Zero Future' (December 2020). Against a recognition that the downstream oil sector is already exploring the potential for low-carbon liquid fuels – particularly in aviation, shipping and heavy goods vehicles – the strategy makes clear that the sector will *"continue to play a vital role in the transition to a net zero economy, delivering fuels to consumers"* and that as the transition is made away from fossil fuels, secure supplies of fuel to the people and businesses whose livelihoods depend on it must be maintained.

4.37 This conclusion is also supported by the fact that Oikos has regular and ongoing enquiries from existing and potential customers relating to the availability of fuel import, export and storage capacity at the facility. Fundamentally, these enquiries reflect the fact that, amongst other things, the Oikos Facility is in the right location, is independently owned and is well connected in terms of both land and marine connections – benefits and characteristics highlighted earlier in this chapter.

The significance of a flexible, resilient, competitive and safe fuel provision and distribution system that provides capacity where it is required

4.38 At the national level, the Government has identified that it is critical that the UK continues to have secure, affordable and reliable energy supplies. Furthermore, as already explained, whilst the Government is committed to moving towards an energy sector with lower carbon emissions, the use of liquid fuels, particularly in respect of fuelling transport, will continue to play a significant role in the UK's economy for some time to come.

4.39 In the context of a broad recognition that ports operating in a free market environment – as is the case with UK ports – have a vital role to play in the import and export of energy supplies, the NPSfP makes it clear that the overall need for new port infrastructure depends not only on demand - matters touched on in the proceeding sections - but also on:

(i) the need to retain the flexibility that ensures that port capacity is located where it is required;

(ii) the need to ensure effective competition in port operations, and

(iii) the need to ensure resilience in port operations.

4.40 Dealing with these elements in turn:

4.41 *The location of port capacity* – As indicated within the earlier parts of this chapter, the Oikos Facility is very well located in terms of where capacity is required. Fundamentally, the Oikos Facility is in a location where the market requires and needs capacity to be provided, namely at a key accessible location within the UK's largest fuel market region.

4.42 *Effective competition* – The facility also provides effective competition by reason of a combination of its independent ownership and beneficial marine and landside accessibility whilst also providing resilience in terms of the UK's fuel supplies.

4.43 In terms of the provision of effective competition, the NPSfP highlights, amongst other things, that effective competition requires both sufficient spare capacity to ensure real choices for port users and also requires ports to operate at efficient levels, which is not the same as operating at full physical capacity.

4.44 *Resilience* – In terms of resilience, the Government has indicated that it believes that resilience is provided most effectively as a by-product of a competitive ports sector.

4.45 As explained in further detail in Chapter 5 of this PEIR, the Government, against this background, has concluded that excluding the possibility of providing additional capacity for the movement of goods and commodities through new port development would be to accept limits on economic growth and on price, choice and availability of goods imported and available to consumers. Such an outcome is identified as being strongly against the public interest.

4.46 A further important factor to have regard to is the need to ensure that the handling and storage of energy supplies, such as transport fuels, is undertaken safely and in a way which protects the environment. Following the incident at the Buncefield Oil Storage Depot in Hertfordshire in December 2005, an investigation was undertaken which led to the establishment of the 'Process Safety Leadership Group' (PSLG). The PSLG issued its final report in December 2009, within which it specified standards of safety and environmental protection for all UK sites storing large volumes of gasoline. The Oikos Facility complies with these standards.

The recognised significance of the need for the type of infrastructure provided by the Oikos Facility

4.47 Section 3.5 of the NPSfP sets out guidance to the decision maker on assessing the need for additional port capacity. It is made clear that the decision maker should accept the need for future capacity to, amongst other things:

- Cater for long-term forecast growth in volumes of imports and exports by sea of all commodities indicated in national forecasts;

- Offer sufficiently wide range of facilities at a variety of locations to match existing and expected trade, ship call and inland distribution patterns and to facilitate and encourage coastal shipping;
- Ensure effective competition among ports and provide resilience in the national infrastructure.

4.48 The Oikos Facility already provides existing capacity that meets these aspects of policy and has the ability to provide additional capacity in this respect.

4.49 Section 3 of the Overarching National Policy Statement for Energy (EN-1) begins by making it clear that the UK needs all of the types of energy infrastructure which are covered by the policy statement in order to achieve energy security whilst at the same time dramatically reducing greenhouse gas emissions. Section 3.9 of the policy statement specifically discusses the need for new nationally significant oil infrastructure projects and highlights the need for, amongst other things, reliable import terminals and distribution networks.

4.50 Although the Government has announced - within the Energy White Paper[17] – its intention to complete a review of the energy national policy statements, it has also made it clear within that White Paper that the need for the energy infrastructure set out in the current policy statements remain, except in the case of coal fired generation facilities.

The significance of ports contributing to the achievement of sustainable development

4.51 A key element of the Government's policy for ports – a policy described as fundamental within the NPSfP – is to:

'encourage sustainable port development to cater for long-term forecast growth in volumes of imports and exports by sea with a competitive and efficient port industry capable of meeting the needs of importers and exporters cost effectively and in a timely manner, thus contributing to long-term economic growth and prosperity.' [18]

4.52 In order to help meet its policy requirements on sustainable development, the Government's policy for ports highlights that new port infrastructure should:

- *"contribute to local employment, regeneration and development;*
- *ensure competition and security of supply;*
- *preserve, protect and where possible improve marine and terrestrial biodiversity;*
- *minimise emissions of greenhouse gases from port related development;*
- *be well designed, functionally and environmentally;*
- *be adapted to the impacts of climate change;*

[17] HM Government (2020) Energy White Paper – Powering our Net Zero Future

[18] Department for Transport (2012) National Policy Statement for Ports (paragraph 3.3.1)

- *minimise use of greenfield land;*
- *provide high protection for the natural environment;*
- *ensure that access to and condition of heritage assets are maintained and improved where necessary; and*
- *enhance access to ports and the jobs, service and social networks they create, including for the most disadvantaged"* [19]

4.53 In general terms the achievement of these policy objectives is easier in respect of development proposals which seek to make the best use of an existing port facility in comparison to the development of a new facility on a greenfield site.

4.54 In this context generally, it is also noted that the National Planning Policy Framework (2019) (NPPF) makes it clear that the purpose of the planning system is to contribute to the achievement of sustainable development. It continues that this is delivered through the preparation and implementation of development plans and the application of the policies of the NPPF.[20]

4.55 Notably, the Oikos Facility is identified within the emerging Castle Point Borough Council Local Plan as a nationally significant facility where – subject to the meeting of certain criteria – existing and further port activity is supported.

Identification of the need

4.56 Having regard to the matters set out in the preceding background analysis, there is, in summary, considered to be a clear need to ensure that the best use is made of the existing critical piece of national infrastructure that is the Oikos Facility in respect of its contribution to the UK's fuel supply and distribution system.

4.57 Having regard to the preceding background context, this overall need is considered to have several strands or objectives, including in summary:

(i) The need to provide additional capacity to meet the identified demand at the Oikos Facility.

(ii) The need to make best use of existing deep-water accessibility and sustainable, safe and secure storage and distribution opportunities that are available at the Oikos Facility.

(iii) The need to ensure that capacity is located in the right place to effectively and efficiently serve the needs of the market.

[19] Department for Transport (2012) National Policy Statement for Ports (paragraph 3.3.3)

[20] Ministry of Housing, Communities & Local Government (2019) National Planning Policy Framework (paragraphs 7 and 9)

(iv) The need to ensure that the Oikos harbour facility continues to provide effective competition and resilience in the market, thereby assisting in the provision of secure, sustainable and affordable energy supplies for the UK.

4.58 Achieving these objectives, and as a consequence meeting the identified need will be of clear benefit to the nation. This is because the contribution which the Oikos Facility makes to the security, resilience, flexibility, affordability and sustainability of the UK's fuel supply and distribution system – a critical element of the nation's energy requirements – will be significantly enhanced.

Background to the Consideration of Alternatives

4.59 Regulation 14(2)(d) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 makes clear that, amongst other things, an Environmental Statement (ES) requires, *"a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment."*

4.60 In addition, the NPSfP (2012) sets out (at paragraph 4.9.3) a series of principles to guide the consideration of alternatives by the relevant decision maker. These principles are reproduced for completeness in Table 4.1.

4.61 Having regard to these legislative requirements and policy guidance, the second part of this chapter, therefore, provides a preliminary description of the consideration Oikos has given to potential alternatives to meeting the need that has been identified, explaining the rationale as to why the OMSSD project has been selected as the best solution to meeting the need that has been identified.

Table 4.1: The NPSfP principles to guide decision makers consideration of alternatives

Guiding Principles
1. The consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner.
2. Whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security and climate change benefits in the same timescale as the proposed development.
3. An application should not be rejected for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and regard should be had as appropriate to the possibility that other suitable sites for port infrastructure of the type proposed may be needed for future proposals.
4. Alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the decision maker thinks they are both important and relevant to its decision.
5. If – in respect of a port development proposal that constitutes a Nationally Significant Infrastructure Project – the relevant decision maker concludes that a decision to grant consent to a hypothetical alternative proposal would not be in accordance with the policies set out in the NPSfP, the existence of that alternative is unlikely to be important and relevant to the decision.
6. Suggested alternative proposals which mean the primary objectives of the application could not be achieved, for example because alternative proposals are not commercially viable or alternative proposals for sites would

Guiding Principles
not be physically suitable, can be excluded on the grounds that they are not important and relevant to the decision.
7. Potential alternatives to a proposed development should, wherever possible, be identified before an application is made in respect of it. Where, therefore, an alternative is first put forward by a third party after an application has been made, the person considering that application may place the onus on the person proposing the alternative to provide the evidence for its suitability as such, and the applicant should not necessarily be expected to have assessed it.

The Approach Taken to the Consideration of Alternatives

4.62 The preliminary consideration of possible alternative solutions to meeting the identified need that has been undertaken can be explained by reference to a series of different stages.

4.63 The *first stage* consists of the identification and analysis of potential broad options that might be available to meet the need. This results in the identification of a preferred broad option to be taken forward to the next stage.

4.64 The *second stage* consists of the identification and analysis of initial potential alternative solutions to meeting the need that fall within the parameters of the preferred broad option identified at the first stage. This involves an identification of the principal requirements which any potential alternative solution would need to meet. Completion of this stage results in the identification of a preferred initial solution.

4.65 The *third stage* consists of the working up of the preferred initial solution into a more detailed proposal.

Stage 1: Identification and consideration of potential broad options

Broad Option 1: The option of doing nothing

4.66 The UK ports industry, as outlined earlier and explained further in Chapter 5 of this PEIR document, is based on market demand and effective competition between ports and port facilities. This has resulted in an efficient industry where facilities are well able to compete against each other. Nevertheless, however efficient a business, and unless it is a monopoly, if it cannot meet market demand for the services it offers it runs the risk of decline and the loss of its place in the market.

4.67 If Oikos adopted the potential option of doing nothing, the consequence would be that the identified need set out in the first part of this chapter would not – and indeed could not - be met. This, in turn, would mean that the Oikos Facility would, going forward, be unable to satisfy the market demand for the type of facilities required by those who wish to import refined and other related liquid products into the UK.

4.68 Since users of facilities such as the Oikos Facilty have to take a commercial view, the ‘do nothing’ course of action would inevitably result in the Oikos Facility being less attractive to the market.

4.69 Furthermore, in the context of an acceptance at the national level that port facilities such as the Oikos Facility have a vital role in the import and export of oil products, and that port facilities operate in a market led industry where they need to be competitive, resilient and in locations able to efficiently and effectively serve the needs of the market, proceeding with a strategy of doing nothing is, to quote national ports policy, an outcome 'strongly against the public interest'.

4.70 For the reasons summarised above, doing nothing is not considered to be a realistic option. If it were to happen by default, it is considered that it would result in significant adverse implications for the UK as a whole.

Broad Option 2: The option of development at a non Oikos location

4.71 For similar reasons to those outlined in the preceding paragraphs, the potential development of liquid bulk import, export and storage infrastructure at locations elsewhere other than at the Oikos Facility is not considered to be a realistic alternative option. This is because, fundamentally, such an option would not meet the need which has been identified.

4.72 In this regard it is noted that, amongst other guiding principles on the consideration of alternatives, the NPSfP (see Table 4.1) makes it clear that *'suggested alternative proposals which mean the primary objectives of the application could not be achieved …. can be excluded on the grounds that they are not important and relevant to the decision'.* Developing liquid bulk import, export and storage infrastructure on other non-Oikos sites and facilities would not meet the primary objectives – summarised in paragraph 4.57 – that have been identified.

4.73 Furthermore, any suggestion that an alternative site or location should be developed as an alternative to the Oikos Facility runs counter to the market led, competitive and resilient aspects of national ports policy, which are outlined earlier in this chapter and in Chapter 5.

4.74 In reaching this conclusion Oikos is not suggesting that other fuel import and distribution facilities may not need to be developed. It is, as national policy indicates, necessary for each facility to take its own view. In any event, however, Oikos does not consider that there is another existing or potential facility that has the combination of the various significant characteristics and benefits highlighted at the start of this chapter.

4.75 Having regard to these matters Oikos consider that development at another location would not result in as significant a benefit to the nation's fuel supply and distribution system as development at the Oikos Facility.

Broad Option 3: The option of development at the Oikos facility

4.76 From the preceding summary analysis, it is concluded that the only realistic broad option for meeting the need that has been identified is to undertake further capacity development at the Oikos Facility.

Stage 2: Identification and analysis of initial solutions

4.77 The next stage in the preliminary consideration of alternatives is identifying initial potential solutions that fall within the parameters of the identified broad option of further capacity development at the existing Oikos Facility.

4.78 In order to be able to identify and analyse the available initial solutions, it is first necessary to determine, at a relatively high level, the main principal requirements that any potential solution would be required to provide in order to meet the identified need.

4.79 In simple terms, these requirements are determined by considering those elements of the facility that have the potential to influence its overall capacity. Capacity is the product of a number of variables including berth capability and suitability, storage capability and suitability, the capability and suitability of the available marine infrastructure to unload and load product and landside distribution capability and suitability.

Berth Capability and Suitability

4.80 Oikos, following confidential discussions with the market in the form of its existing and potential future customers, identified that to enable the best use to be made of the Oikos Facility there needs to be the ability to accommodate, at all states of the tide, a wider range of the worldwide LR2 120,000 DWT tanker fleet when fully laden whilst also simultaneously being able to provide the ability for smaller tanker vessels to be handled at the facility.

4.81 As well as helping to meet likely demand, such a capability will assist in providing effective resilience, flexibility, efficiency and competitive benefits at the Oikos Facility – and thereby to the UK as a whole. It is also considered that this capability would facilitate and encourage the break bulk and subsequent transhipment or coastal shipping of products from the facility to other locations which would maximise the efficiency of long distance shipping economics to the benefit of the UK market whilst also reducing the environmental impact of essential trade movements.

4.82 The Oikos Facility already has a berth (at Jetty 1) that can handle the 'smaller' tanker vessels. This berth, therefore, has the ability to service coastal shipping / transhipment tanker vessels. As a consequence, no further works are necessary in this regard.

4.83 The ability to accommodate a wider range of LR2 tanker vessels can quickly be determined to be best achieved by carrying out a relatively minor capital dredge at the existing Jetty 2 berth – to a depth of 16.5m below chart datum over an appropriate area.

4.84 Any alternative to meeting the requirements relating to berth capability and suitability would involve either the physical creation of a new deep water berth or the undertaking of a far greater amount of capital dredging. Even if such activities were commercially viable and could be accommodated within the existing stretch of the Thames fronting the Oikos facility, they would generate far greater environmental effects than a minor dredge at Jetty 2 due to significantly greater activities and works being required within the marine environment.

Storage Capability and Suitability

4.85 The Oikos Facility currently has in the order of 270,000m^3 of total storage in a variety of different storage tanks – ranging in size from approximately 1,500m^3 to 20,000m^3 - located within four protected compounds. This storage capacity is largely located in the northern part of the Oikos Facility and is fully utilised.

4.86 Oikos, again following discussions with the market in the form of its existing and potential future customers, quickly identified that if the best and most efficient use was to be made of the Oikos Facility additional landside storage capacity would have to be provided.

4.87 In terms of the location of any such additional storage capacity, this can only be provided on those parts of the facility not already occupied by existing operational storage infrastructure or other key elements of the facility. These areas are in the southern part of the facility which historically contained storage tanks but today consist, in large part, of vacant land. As already identified, one of the significant current assets of the Oikos Facility is the fact that it contains areas of previously developed but currently vacant land. That vacant land was, however, formerly occupied by storage tanks and infrastructure and used for the storage of bulk liquid products. It is located within the existing boundary of the facility.

4.88 From its experience of the industry and knowledge of its facility it is, however, recognised by Oikos that, largely due to surrounding land uses and the need to comply with strict regulatory requirements, additional storage of 'hazardous products' can generally only be provided within the central and eastern areas of the southern part of the facility. Non-hazardous products can potentially be stored in the western area, with the defining line generally being an existing pipe track running from Jetty 1 in a roughly north south orientation to the existing Compound 2.

4.89 As a commercial facility operating within a competitive industry, and having regard to a number of the background elements to the need and the need itself, Oikos wishes to maximise the amount of additional product storage capacity provided at the site. This is not, however, the only factor that is taken into account when determining the most appropriate amount and form of additional storage to be provided. Regard is also had to:

(i) The cost of providing the new storage and the extent to which there would be customers wanting to utilise the new storage – matters which influence the viability of providing the new storage;

(ii) The extent to which the new storage would be able to efficiently and effectively accommodate the large parcels of the different products that are likely to be handled in the future at the facility;

(iii) The extent to which environmental effects would be generated by the provision of the additional storage, with the aim being to ensure that the new storage capacity is provided without unacceptable environmental effects;

(iv) The need to ensure that, having regard to the parcel size and type of products likely to be handled, the storage provided minimises risk; and

(v) The need to ensure that the storage provided maintains segregation between different types of product.

4.90 The preliminary conclusions reached on the amount of additional storage capacity to be provided and the form that storage should take required a balancing exercise to be undertaken having regard to all these factors. In terms of requirements, following an initial analysis, Oikos identified the following elements.

4.91 *Approximately 300,000m³ of additional fuel product storage in 10 tanks each with a working capacity of around 30,000m³.* Whilst Oikos consider, from the discussions which they have had with the market, that there is a demand for a greater amount of additional storage capacity at the facility, the general level identified is one which Oikos were confident would balance commercial demand and could be accommodated satisfactorily, including in respect of environmental and safety regulations, within the area available.

4.92 The alternative of an increased number of smaller tanks would have disadvantages in that the handling of larger product parcels would likely require an increased number of tank changes – with increased operational and product contamination risks – during the product unloading process. Furthermore, such tank changes would also increase the time taken for products to be unloaded, adding to costs as a result of vessels needing to be alongside for a longer period of time and affecting the efficiency of the process.

4.93 The alternative of a smaller number of larger tanks would also have disadvantages. Larger tanks would generate adverse operational, efficiency and flexibility issues. The commercial demand for product batches much above 30,000m³ in size (or multiples of) is not considered by Oikos to be significant – meaning that if larger tanks were constructed they would likely often only be partially filled, or only part of a tank's product would be sold leaving the remainder occupying the tank, rendering it unusable until completely emptied. In addition, a reduced number of tanks would also reduce the number of different products that could be stored, thereby reducing the versatility and flexibilty of the facility in respect of the storage needs of different customers. It is also considered that adverse environmental effects – primarily visual effects – would be more significant the larger the tank.

4.94 *Approximately 10,000m³ of specific non-hazardous biofuel blending product storage.* This amount of storage was initially identified by Oikos – following discussions with existing and potential future customers - as appropriate having regard to both the way in which biofuels are increasingly becoming an important element of the liquid fuels market and the amount of other related additional fuel storage being sought. The biofuel product is currently typically sourced from facilities within Europe and transported in smaller loads over shorter distances utilising smaller vessels.

4.95 Two approximately 5,000m³ storage tanks were initially identified as the most appropriate option having regard to the likely future operational requirements of biofuel blending activity at the facility and the typical size of load delivered by sea. The non-hazardous storage tanks could be located in that part of the facility closest to residential properties, minimising the visual impact and in accordance with relevant regulatory standards and guidance.

Loading / unloading marine infrastructure

4.96 In simple terms, determining the capability and suitability of the infrastructure required to move products between the vessels and storage areas is achieved by considering the characteristics of the cargo to be handled (which in turn relates to berth capability and suitability) and the storage capability and suitability of the facility – matters discussed in the preceding paragraphs.

4.97 The existing loading / unloading marine infrastructure at the Oikos Facility is insufficient to serve both the existing capacity at the facility and the new capacity to be created. Having analysed the position Oikos concluded that the solution should consist of the provision of two further marine loading arms on Jetty 2 and one further marine loading arm on Jetty 1 along with necessary connecting pipework and infrastructure.

Landside distribution capability and suitability

4.98 As the Oikos Facility is already connected to two distribution pipeline networks, it was recognised that no further consideration was necessary in respect of this aspect of landside distribution.

4.99 During this stage of its consideration Oikos determined that to make the best use of the facility, the provision of up to seven further road loading bays should be sought. This level of provision was determined following discussions with existing and potential future customers and having regard to the amount of additional new storage to be provided, the likely type of products needing to be distributed from the site by road and the need to segregate product types.

4.100 With the increasing number of fuel products likely to be stored in the future through the ongoing development of biofuels and synthetic fuels, this number of additional road loading bays was targeted to seek to provide the Oikos Facility with the flexibility and resilience considered necessary to enable it to continue to competitively contribute to the UK's fuel supply network in the future.

4.101 In addition, initial high level considerations concluded that environmental effects likely to be generated by the provision of this level of additional road loading capacity would not be significant.

Supporting operational infrastructure

4.102 Determining the type and extent of supporting operational infrastructure such as pumps, pipework and control mechanisms necessary to enable the new infrastructure to operate is, fundamentally, a function of the amount and type of storage and handling infrastructure to be provided.

4.103 The operation of the additional storage and handling infrastructure would be highly automated and would need to be carried out from a new control room facility. The preferred option chosen to achieve this was to provide a small extension to the existing site control building (located in the eastern end of the site office building). This was chosen over the

alternative of constructing a new separate control room building because it would ensure that all of the operations of the site were contained within one control building with corresponding efficiency and safety benefits. It also ensured that these activities – which require operatives to occupy buildings – are located in that part of the facility where product storage cannot take place in accordance with relevant regulations.

4.104 The development of the new product storage tanks would require the demolition of the existing engineering workshop that serves the Oikos Facility. As a key element of overall site operations, a new workshop and stores have to be provided. Due to the fact that this would also be a building occupied by operatives, this replacement facility would again have to be relocated to that part of the facility where product storage could not take place.

Summary

4.105 In summary, therefore, as a result of the initial considerations undertaken by Oikos it was concluded that the initial solution to meeting the need identified should consist of:

(i) a dredge of the Jetty 2 berth to provide 16.5m below chart datum water depth over an appropriate area;

(ii) two additional Marine Loading Arms on the Jetty 2 jetty head platform connected to two new pipelines along the jetty approach into the storage area of the facility;

(iii) an additional Marine Loading Arm on the Jetty 1 jetty head platform connected to a new pipeline along the jetty approach into the storage area of the facility;

(iv) approximately 300,000m^3 of additional storage provided in ten approximately 30,000m^3 storage tanks;

(v) approximately 10,000m^3 of biofuel product storage in two approximately 5,000m^3 storage tanks;

(vi) up to seven additional road loading bays to export product from the facility; and

(vii) necessary supporting equipment and infrastructure such as pipework and pumps, control equipment and workshop facilities.

4.106 The above elements were worked up into a preferred initial solution. Elements of this preferred initial solution formed the basis of the initial Oikos Marine & South Side project information publicly announced and subject to initial non statutory consultation in November 2019. The preferred initial solution also formed the basis of the project details subject to formal EIA scoping in early 2020.

Stage 3: Working up a detailed proposal

4.107 Following the announcement of the project in November 2019 and the scoping of the project in early 2020, the preferred initial solution was then subject to a 'Front End Engineering Design' (FEED) study. The purpose of the FEED study was to undertake a detailed review

of the preferred initial proposal to determine the engineering feasibility of the project and any major implications and any potential amendments required.

4.108 Through this exercise – and taking account of relevant views of consultees and the outcomes of the preliminary environmental assessment work being undertaken – the OMSSD project was refined, these refinements having arisen as a result of further consideration being given to:

(i) the size of the new storage tanks to be constructed, their location within the land available and the most appropriate size and form of the compounds surrounding those tanks. This consideration took account of relevant guidance and regulations relating to the design of fuel storage tanks and associated infrastructure;

(ii) how the new tanks and compound structures would be constructed having regard to matters such as ground conditions;

(iii) the provision of appropriate access to and around the new tank compounds;

(iv) the type and amount of supporting infrastructure needed to operate the project and where this should most appropriately be located on site having regard to environmental and operational matters;

(v) the ability to physically accommodate up to seven additional road loading bays within the space available – with the analysis demonstrating that only five additional bays could be accommodated satisfactorily; and

(vi) the preliminary conclusions on certain potential environmental effects that would be generated by the project emerging from the assessment work undertaken.

4.109 The OMSSD project emerging from this process is the project as now described in Chapter 3 of this PEIR.