

5. Consideration of Alternatives

5.1 This Chapter reports the ‘reasonable alternatives’ considered with respect to the Proposed Scheme.

5.2 Paragraph 2, Schedule 4, of the EIA Regulations¹ states that an ES should include:

“description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the applicant or appellant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.

Approach to the Consideration of Alternatives

5.3 The EIA Regulations do not identify a specific methodology for the assessment of alternatives or criteria to be used to inform the assessment of ‘reasonable alternatives’. The methodology adopted is based on professional experience of similar projects and an understanding of the Proposed Scheme and its characteristics, as well as focus on the delivery of a proportionate assessment.

5.4 The consideration of alternatives has followed a two-step approach, set out as follows:

- **Step 1:** Consideration of ‘factors’ that constitute alternatives and justification / discussion for the inclusion / exclusion from further assessment; and
- **Step 2:** Qualitative appraisal of the ‘factors’ brought forward from Step 1 and, where appropriate, comparison of environmental effects.

Step 1: Consideration of ‘Factors’

5.5 Step 1 was considered as part of the EIA Scoping Report (**Appendix 2.1**). This concluded that only alternative sites, alternative technology and the ‘do nothing’ scenario would require consideration at Step 2. Since preparation of the EIA Scoping Report, it is now considered that the ‘do nothing’ scenario does not require consideration at Step 2.

5.6 A summary of the justification / discussion set out in the EIA Scoping Report as to why other alternatives do not require consideration is set out below:

- **Alternative development design (including size and scale):** Due to the industrial nature of the Proposed Scheme, there are limited ‘alternative design’ aspects to consider. The primary consideration under alternative design has been in respect to layout/arrangement, which has been responsive to the overall Site area, requirements for operational plant for the production of SAF to be located together (i.e., in sequence) and result in a safe working environment (i.e., suitable stand-off distance from the flare and storage tanks etc.). Furthermore, the orientation of the main production development zone (PDZ) to the nearby Crown Wharf and Unnamed Port Road has meant these aspects have needed to be factored into layout/arrangement to ensure a sensible processing flow within the Site. Overall, although possible alternative

layout/arrangements could have been devised, the environmental effects would likely be the same. On this basis, alternative designs have not been considered at Step 2.

- **‘Do nothing’ scenario:** The EIA (as reported within this ES) has assessed the likely significant effects largely based on a deviation from the baseline environment, which is in essence the current scenario. **Technical Chapters 6 – 13** have also stated a ‘future baseline’ in the absence of the Proposed Scheme coming forward (i.e., a ‘do nothing’ scenario).

Broadly, the ‘do nothing’ scenario hypothesises that the likely significant effects identified and reported in this ES would not occur (i.e., no adverse or beneficial effects). However, the Site and surrounding area will continue to change regardless of the Proposed Scheme due to the following:

- Continued growth of existing vegetation on-Site, including Japanese Knotweed;
- Changes in employment trends; and
- Projected reduction in GHG emissions.

5.7 Therefore, the ‘do nothing’ scenario is not considered to require further assessment and therefore will not be taken forward to Step 2, as there are perceived limited changes to the future baseline that would require further consideration as considered by **Technical Chapters 6 – 13**.

Step 2: Assessment of ‘Factors’

Alternative Sites (Location)

- 5.8 At the outset the Applicant considered several potential sites for the Proposed Scheme, both geographically within the UK and at Port Talbot Docks, with several key factors driving preliminary site identification and selection process. Factors included commercial and viability factors, as well as a selection of environmental constraints, albeit the environmental constraints were not the primary consideration and were not assessed, rather just identified.
- 5.9 Initially, the Applicant (through engagement with relevant landowners) identified seven potential sites for analysis. Four of the sites have been discounted from further analysis here, as they are not of a sufficient size (i.e., area) to accommodate the Proposed Scheme and therefore not considered to be ‘reasonable’ alternatives. The Site (**Figure 4.1**) was one of the remaining three sites and therefore, consideration of alternative sites has been focused on the remaining two options.
- 5.10 The appraisal of the two alternative sites (Options A and B) comprises a high-level comparison of the environmental effects between the Proposed Scheme and the alternative sites, which is presented in **Table 5.1** and **5.2**. The appraisal is necessarily high level as no full environmental analysis of the alternative sites has been undertaken and there are limitations on available information associated with the alternative sites. Therefore, the appraisal has been based on an understanding of the potential environmental constraints associated with the alternative sites (informed by desk-based analysis using publicly available sources).

- 5.11 Furthermore, the focus of the appraisal has been on the environmental topics scoped into this ES and how Options A and B may differ (resulting in different adverse or beneficial effects) from the Proposed Scheme, with a conclusion provided based on the following:
- A larger scope / worsened effects than reported for the Proposed Scheme – shaded red;
 - A smaller scope / improved effects than reported for the Proposed Scheme – shaded green;
 - No change to the scope/effects reported for the Proposed Scheme – shaded grey; or
 - Unable to make a comparison of environmental effect owing to limitations – shaded purple.
- 5.12 In addition, an overall conclusion has then been presented for each alternative site, in line with the above criteria (**Table 5.1**).
- 5.13 For clarity the following topics have been scoped in for assessment within this ES (**Technical Chapters 6 – 13**):
- Major Accidents and/or Disasters;
 - Terrestrial Ecology;
 - Landscape and Visual;
 - Socio-Economics and Human Health;
 - Climate Change;
 - Air Quality;
 - Noise and Vibration; and
 - Marine Ecology.
- 5.14 Further details on the scope of the EIA and ES is set out within **Chapter 2: Approach to EIA**.

Table 5.1: Alternative site appraisal – Option A

Technical Topic	Appraisal of Environment Effects
Major Accidents and/or Disasters	<p>Option A is not anticipated to result in a difference to the main potential risks that could give rise to major accidents and/or disaster effects compared to the Site. This is given that the risks associated with the Proposed Scheme are largely linked to the ‘process’ of the Proposed Scheme, which would be unaltered by the alternative site.</p> <p>With respect to accidents or disasters associated with shipping, Option A is also connected to Port Talbot Docks and therefore could include a similar marine unloading/loading facility as the Site thus allow potential transportation of materials by ship, mirroring the Proposed Scheme. Nonetheless, the connectivity to Port Talbot Docks is smaller and located closer to the dock gates, which would potentially require more convoluted tracking/manoeuvres of ships, near the dock gates. This could potentially give rise to a greater ‘likelihood’ of risks occurring, when considered against the Site. In contrast, Option A could utilise the existing Port Talbot Harbour to the south-west of the Option A as an alternative location for the marine unloading/loading facility.</p> <p>In terms of existing sources of potential risk that could give rise to major accidents and disasters, Option A is located similar distances to TATA Steelworks as the Site, albeit further away from the main ‘activities’ of the steelworks. Nonetheless, the risk arising from the existing COMAH facility is still considered to be like that experienced at the Site.</p>
Terrestrial Ecology	<p>In the absence of site-specific survey data it is expected that habitat and species present within the Site are also likely be present within Option A. This is given that both are ‘connected’ in terms of habitat and green corridors/routes for common species, as well as being located in similar areas with similar previous development influences. One aspect of habitat within Option A that is considered different to the Site is the presence of standing water, with the apparent presence of ponds, evident from aerial imagery and mapping data. This could result in Option A supporting more potential aquatic related species and habitat types than identified for the Site (i.e., Great Crested Newts). Overall, although some variation may be present between the two, they would largely be similar and thus potential losses of habitat and species would be similar and to similar scales. Regardless of the comparability of the habitat and species to be impacted, it is assumed that with any development there would be the need for</p>

Technical Topic	Appraisal of Environment Effects	
	<p>mitigation to compensate the habitat loss and associated species impacts, which is expected to achieve similar outcomes regardless of location (i.e., necessary compensation to offset impacts).</p> <p>In terms of operational disturbance to habitat and species, there is likely to be similar environmental effects arising from either site, given the likely common species. The only potential deviation would be a species present within the Port Talbot Harbour located adjacent to Option A (i.e. marine bird species) which are less likely to be present within Port Talbot Docks given existing sources of disturbance. Nonetheless, it is not possible to rationalise such an impact in the absence of specific species data.</p>	
Landscape and Visual	<p>There is considered to be minimal difference between Option A and the Site with respect to landscape characteristic (given their proximity to each other and both in the wider context of the TATA Steelworks) that would mean one site has a greater/lesser environmental effect. However, Option A is considered to be potentially more visually prominent given its proximity to residential receptors at Mariners Point (to the north across the River Afan), Traeth Afan Beach and associated coastal walk(s), compared to the Site. On this basis, visual effects associated with Option A are likely to be slightly worse than the Site.</p>	
Socio-Economics and Human Health	<p>Given that Option A is located within the Port Talbot area, there are no perceived notable differences in environmental effects between it and the Site. This is even with the relocation of existing commercial premises that are present within the Site^a, as they are to be relocated to the wider Port Talbot area.</p>	
Climate Change	<p>In terms of greenhouse gas (GHG) emissions, there is no perceived difference in environmental effect(s), as the emissions associated with the Proposed Scheme are influenced by the source of ethanol, on-site process, and savings from the use of the product, none of which is amended by siting the Proposed Scheme at Option A.</p> <p>Climate resilience issues are also considered to be similar between Option A and the Site, given the similarity in potential resilience issues between the two sites (i.e. flooding, operational landscape principles etc.) with the necessary measures required to control such issues to be standard across sites.</p>	
Air Quality	<p>Generally, the scope of the air quality assessment is linked to the quantum of construction and operational vehicles, construction practices and operational processes. These aren't likely to change across alternative sites.</p>	

^a Specifically, those within Temporary Construction Area East, see **Chapter 4: Development Specification** for more details.

Technical Topic	Appraisal of Environment Effects	
	<p>Option A is located closer to residential properties than the Site (i.e., those on Mariners Point) which may result in potentially greater pollutant concentrations at these receptors, however, this would need to be considered against receptors considered as part of the assessment of the Proposed Scheme located further east and north-east (given their proximity to the Site), not experiencing any change in pollutant concentrations.</p> <p>Therefore, overall, environmental effects between Option A and the Site would be potentially comparable, albeit impacting on differing receptors.</p>	
Noise and Vibration	<p>Operational noise associated with the Proposed Scheme would be derived from the same plant/equipment and therefore potential differences in environmental effect would likely occur due to proximity to noise sensitive receptors.</p> <p>Option A is located closer to residential properties (approximately 250m) than the Site (approximately 460m), in terms of potential location of noise generating plant/equipment.</p> <p>Temporary construction noise environmental effects are potentially worse for the Site compared to Option A, given the proximity of Temporary Construction Area 1 to residential properties at Lower West End, which is closer than noise sensitive receptors for Option A. However, it is not known how Option A would be built and therefore its potential temporary construction noise impacts on nearby residential receptors, or the requirement for temporary construction areas located similar distances to that of TCA 1. Overall, although a potential difference may occur, the deviation would be in terms of temporary short-term noise effects and not considered to be overly different to the Site.</p>	
Marine Ecology	<p>Option A is connected to Port Talbot Docks and Port Talbot Harbour, with both being potential options for a marine unloading/loading facility. Port Talbot Docks is a brackish environment^b, whilst Port Talbot Harbour would be saltwater environment as it is connected to Swansea Bay. As such, potential marine ecology species would differ between the two environment and therefore associated environmental effects. As such, it is not possible to directly compare potential environmental effects in such circumstances. Only where the proposed marine unloading/loading facility for Option A would be</p>	

^b See **Chapter 13: Marine Ecology** for greater details.

Technical Topic	Appraisal of Environment Effects	
	located in Port Talbot Docks would it be comparable and in such instances the environmental effects considered to be similar to that of the Site.	
Overall	The environmental effects associated with Option A are considered largely similar to the Site of the Proposed Scheme.	

Table 5.2: Alternative site appraisal – Option B

Technical Topic	Appraisal of Environment Effects	
Major Accidents and/or Disasters	<p>Option B is not anticipated to result in a difference to the main potential risks that could give rise to major accidents and/or disaster effects compared to the Site. This is given that the risks associated with the Proposed Scheme are largely linked to the ‘process’ of the Proposed Scheme, which would be unaltered by the alternative site.</p> <p>Option B does not offer the potential for use of shipping as a form transportation for ethanol feedstock or SAF product and therefore would require the use of road tankers for both, or utilise connectivity to nearby rail lines. As such, although it would have reduced risks from shipping, alternative risks would arise for shipment via rail, or increased movement via road. Overall the environmental effects are considered comparable with the Proposed Scheme and use of Site .</p> <p>In terms of existing sources of potential risk that could give rise to major accidents and disasters, Option B is not located as near to TATA Steelworks as the Site, but is located near to the BOC facility at Margham, another COMAH facility. As such, risks arising from existing COMAH facility is still considered to be similar to the use of the Site.</p>	
Terrestrial Ecology	<p>Due to its location, Option B is expected to have different habitat and associated species, compared to the Site. As such there would be differing specific effects on habitat and species, dependent on the Site, and which are not necessarily comparable. Furthermore, Option B is located adjacent to Eglwys Nunydd Reservoir and associated Site of Special Scientific Interest (SSSI).</p> <p>Regardless of the comparability of the habitat and species to be impacted, it is assumed that with any development there would be the need for mitigation to compensate that habitat loss and associated</p>	

Technical Topic	Appraisal of Environment Effects	
	<p>species impacts, which is expected to achieve similar outcomes regardless of location (i.e., necessary compensation to offset impacts).</p> <p>Potential disturbance effects arising from the Proposed Scheme may be different again between Option B and the Site, owing to the differing habitat and species likely to be present. Although it is not possible to directly compare such effects in the absence of clarity of species subject to disturbance or how the scheme may be 'designed' to overcome any arising impacts.</p>	
Landscape and Visual	<p>Option B is in a less urbanised environment, with therefore fewer residential properties for a visual interaction to occur. However, other forms of visual receptors are present, including the nearby Margam Country Park (and associated listed buildings) that would be equally sensitive to changes in their visual amenity/character. Given the less urbanised nature of Option B, effects on landscape character may be greater than the Site, which is located in the context of notable and far reaching existing industrial facilities, albeit the BOC facility and Margam Green Energy facility is presently immediately north which provide industrial context. Therefore, overall it is considered that environmental effects would be comparative.</p>	
Socio-Economics and Human Health	<p>Given that Option B is located within the Port Talbot area, there are no perceived notable differences in environmental effects between it and the Site. This is even with the relocation of existing commercial premises that are present within the Site^c, as they are to be relocated to the wider Port Talbot area.</p>	
Climate Change	<p>In terms of greenhouse gas (GHG) emissions, there is no perceived difference in environmental effect(s), as the emissions associated with the Proposed Scheme are influenced by the source of ethanol, on-site process, and savings from the use of the product, none of which is amended by siting the Proposed Scheme at Option B.</p> <p>Climate resilience issues are also considered to be similar between Option B and the Site, given the focus of key resilience issues (i.e. increased summer temperature etc.) and the mechanism by which mitigation is defined and adopted by the Proposed Scheme design.</p>	
Air Quality	<p>Generally, the scope of the air quality assessment is linked to the quantum of construction and operational vehicles, construction practices and operational processes. Given the location of Option B</p>	

^c Specifically, those within Temporary Construction Area East, see **Chapter 4: Development Specification** for more details.

Technical Topic	Appraisal of Environment Effects	
	<p>and absence of the ability to incorporate a marine unloading/loading facility, there would be a greater reliance on road and rail. This could give rise to a greater level of pollutant concentrations linked with such mode of transport in comparison to shipping, or at least in terms of release of emissions in closer proximity to sensitive receptors. Albeit Option B is located close to key road links, which may facilitate transportation via road to avoid residential receptors somewhat, in the absence of specific modelling it is not possible to directly compare the environmental effects.</p>	
Noise and Vibration	<p>The sources of noise and vibration environmental effects arising from the Proposed Scheme is the same, regardless of the location. However, Option B is located in a less urbanised area and therefore a lower number of potential noise sensitive receptors, when compared to the Site. Albeit the increased use of rail and road for the transportation, depending on routing, has the potential to cause increased nuisance and disturbance to noise sensitive receptors. In the absence of detailed modelling it is not possible to compare the environmental effects.</p>	
Marine Ecology	<p>Option B, unlike the Site, would not have a ‘marine’ element to it that would cause an environmental effect in relation to noise and vibration impacts from piling activities. However, depending on the way in which raw water for the process was obtained, specifically if it were to be abstraction from the Eglwys Nunydd Reservoir and associated SSSI (given proximity to Option B), there could be greater environmental effects associated with Option B, given the likely higher ecological quality/value of Eglwys Nunydd reservoir (albeit it is noted this wouldn’t necessarily be a marine ecology effect, rather it would be a water environment effect). In such a circumstance it could be argued that such an effect would be worse than effects arising from the Proposed Scheme located at the Site.</p>	
Overall	<p>The environmental effects associated with Option B are considered largely similar to the Site of the Proposed Scheme, with the potential for worsened effects on marine ecology, depending on the potential source of raw water for the process. In terms of comparison of environmental effects associated with air quality and noise and vibration, it is considered that a comparison can not be made as it would require detailed modelling to reach a conclusion.</p>	

Summary

- 5.15 The justification for the selection of the Site by the Applicant was based on a number of criteria, most critically the presence of infrastructure that would support the long term operation of the Proposed Scheme (i.e. ability to utilise road and shipping as modes of transport), more than environmental criteria. The key environmental criteria utilised in the decisions making process was in terms of restrictions to 'construction' and 'build-ability' (i.e., design responding to potential flooding issues).
- 5.16 The above high-level appraisal of Option A and B (**Table 5.1** and **5.2**) indicates that overall, both options are expected to have similar or comparable environmental effects as the Site chosen from the Proposed Scheme. Given the proximity of Option A to the Site, there is a greater ability to compare environmental effects with more confidence around the key environmental issues and the implementation of the Proposed Scheme, which is likely to be similar to the Proposed Scheme. However, comparison of environmental effects for Option B is limited in the absence of key baseline data, understanding of how the Proposed Scheme would be implemented within the site, and detailed modelling for the likes of air quality and noise.

Alternative Technologies

- 5.17 The industrial nature of the Proposed Scheme means that an environmental permit^d will be required to operate the facility, which will directly influence the 'technology' adopted as part of the Proposed Scheme.
- 5.18 The environmental permitting process is established through the Environmental Permitting Regulations (England and Wales) 2016 (as amended) (the 'EP Regulations'), which is the legislation by which the Directive 2010/75/EU of the European Parliament and the Council on industrial emissions (the Industrial Emissions Directive or IED) was transposed into Welsh law. The IED, and therefore the EP Regulations, set out 'schedules' of projects within which a project is evaluated, as well as corresponding Best Available Technology (BAT) (and corresponding BAT Reference Documents known as BREFs) to be implemented as part of a project. In simple terms, a project is expected to implement/adopt the corresponding BATs in line with the IED (and thus EP Regulations), which are established on the basis of protecting human health and the environment. As part of the environmental permitting process, it will be the responsibility of Natural Resources Wales (NRW) as the regulatory authority for environmental permits, to ensure the Proposed Scheme has adopted BAT as part of the design. BAT has been established with the view to ensure the highest level of protection of human health and the environment, thus exhibiting the 'best' level of effects possible.
- 5.19 The Proposed Scheme has been categorised as Schedule 1 Part (A) activity falling under 'refineries and/or the production Large Volume Organic Chemicals (LVOC)'². On this basis, the corresponding BAT is applicable and will be investigated as part of the environmental permitting process. The corresponding BREF identifies the key environmental issues associated with the defined schedule of project, including:
- Emission to atmosphere;

^d To be sought in accordance with Environmental Permitting Regulations (England and Wales) 2016 (as amended)

