

15. Summary of ES

15.1 The purpose of this Chapter is to provide a summary of the outcome of the assessments reported within **Technical Chapters 6 – 13**, focussing on the following key objectives:

- Provide a summary of residual and likely significant effects;
- Provide a summary of the cumulative effects assessment, in particular how such effects differ from project-level effects.

Summary of Residual and Significant Effects

15.2 Each of the **Technical Chapters 6 – 13** report the output of the assessment through residual and likely significant effects, inclusive of a tabular summary. All likely residual and significant effects across the ES are summarised for both the construction and operation stages in **Table 15.1** and **Table 15.2**, respectively.

15.3 Adverse effects are highlighted in **red** and beneficial effects are highlighted in **green**. Negligible effects are provided in automatic / normal text. The effects identified as 'significant' are highlighted in **bold and underlined**.

Table 15.1: Summary of Residual and Significant Effects During Construction

Likely Significant Effect	Receptor	Residual Effect
Chapter 6: Major Accidents and/or Disasters		
None scoped in for assessment		
Chapter 7: Terrestrial Ecology		
Habitat loss Section 7 Habitats and equivalent	Naturally regenerated grassland (PDZ, TCA West, TCA East) Coastal grassland and dune slack vegetation (PDZ) Open Mosaic Habitat (TCA1)	Minor beneficial
Loss of Other on-site Habitats (PDZ, TCA West, TCA East, TCA1, Crown Wharf dockside)	Willow scrub (grey willow) Scrub, bramble, and bracken Seasonally flooded ground	Minor beneficial
Partial loss of colony of Schedule 8 plant species	Oxtongue broomrape	Minor adverse

Likely Significant Effect	Receptor	Residual Effect
Degradation of habitats as a result of the spread of Japanese knotweed or other Schedule 9 plant species	On-site and off-site habitats	Negligible
Permanent loss of roost / foraging habitat, temporary disturbance of bat foraging habitat and flightlines	Bats	Minor adverse
Loss of nesting sites and foraging areas Indirect disturbance as a result of construction noise, vibration and lighting	Breeding birds	Minor adverse
Habitat loss / displacement from terrestrial habitats	Overwintering birds (terrestrial habitats)	Minor adverse
Disturbance from site construction activities including piling	Overwintering birds (open water docks)	Minor adverse
Habitat loss and displacement of reptiles	Reptile populations (common lizard, slow-worm and grass snake)	Negligible beneficial
Permanent habitat loss and indirect effects (construction lighting)	Invertebrate populations	Minor adverse
Chapter 8: Landscape and Visual		
Changes to the character and amenity of views	Users of the Wales Coast Path to the north and west of Crown Wharf (as demonstrated by RVs 1, 2, 3, & 7)	Varies from moderate adverse¹ to negligible
	Users of the Wales Coast Path on Margam Mountain (as demonstrated by RV6)	Varies from moderate adverse² to negligible
Changes to landscape components within the Site	Vegetation on Site	Moderate adverse
Chapter 9: Socio-Economics and Human Health		
Employment generated in the construction stage	Local labour force Vulnerable Groups	Minor beneficial
Chapter 10: Climate Change		

¹ Significant for direct views across TCA1 only.

² Significant where construction works block views of Port Talbot Docks only.

Likely Significant Effect	Receptor	Residual Effect
Net GHG effect reported in Table 15.2 ³		
Chapter 11: Air Quality		
Change to local air quality in terms of human health and ecology due to transport emissions including vehicle and shipping emissions	Residential, community and educational facilities	Negligible
Chapter 12: Noise and Vibration		
Generation of noise from construction activities and on-site construction traffic (daytime and Saturday)	SSRs 1-11 ⁴ and Talbot Memorial Park and Vivian Park	Negligible adverse
Generation of noise from construction activities and on-site construction traffic evenings and weekends (excl. Sat 0700-1300hrs)	SSRs 1-6, 8, 10 & 11 ⁵	Negligible adverse
	SSRs 7 & 9 ⁶	Moderate adverse
Generation of noise from construction traffic off-site	SSRs 1-11 and Talbot Memorial Park	Negligible adverse
Chapter 13: Marine Ecology		
Remobilisation of sediments causing increased suspended solids concentration in the water column	Sediment Quality	Negligible
	Water Quality	Minor adverse
Remobilisation of sediments causing potential resuspension of contaminated sediments into the water column	Sediment Quality	Minor adverse
	Water Quality	Minor adverse
Accidental release of pollutants and sewage waste and into the water	Sediment Quality	Minor adverse
	Water Quality	Minor adverse

³ The assessment of GHG emissions undertaken within **Chapter 10: Climate Change** is focused on 'net' GHG emissions from the Proposed Scheme, essentially considering all direct emission from construction and operational of the Proposed Scheme, emission downstream for the sourcing of ethanol, as well as the savings in GHG achieved through the use of the SAF compared to the use of standard fossil fuel aviation fuel. This approach means the effect is not prescribed to a single stage of the Proposed Scheme and therefore extends across the entire construction and operational stage. Given the approach taken and the fact the GHG savings is factored into the conclusion of effects and significance, which would only be realised once the Proposed Scheme is operational, the effect is reported in **Table 15.2**.

⁴ Dwellings at Mariners Point; Dwellings at Darwin Rd / Newbridge Rd; Dwellings on Isaac's Place / Borough St; Dwellings on Green Park St; Dwellings on Water St / Blanco's Hotel; Flats above shops on Station Rd; Dwellings on Talbot Rd; Dwellings on Lower West End; Dwellings on St Alban's Terrace Dwellings on Duke St; Port Talbot Magistrates' Court.

⁵ As above, but excluding Dwellings on Talbot Rd and Dwellings on St Alban's Terrace.

⁶ Dwellings on Talbot Rd and Dwellings on St Alban's Terrace

Likely Significant Effect	Receptor	Residual Effect
column from vessels during transit and construction operations		
Accidental release of litter and debris into the water column from vessels during transit and construction operations	Sediment Quality	Minor adverse
	Water Quality	Minor adverse
Disturbance through underwater noise and vibration	Fish with a swim bladder-inner ear connection used in hearing	Minor adverse
	Fish without a swim bladder-inner ear connection used in hearing	Minor adverse

Table 15.2: Summary of Residual and Significant Effects During Operation

Likely Significant Effect	Receptor	Residual Effect
Chapter 6: Major Accidents and/or Disasters		
Operational plant/infrastructure failure (i.e. structure/building collapse, human error, explosion, non-descriptive accident)	Future on-site users and members of public	Minor adverse
Fire event occurring during ship transportation of input/output material	Members of public	Negligible up to Minor adverse
Fire event occurring on-site and impacting operational activities on-site, as well as consequential chain reaction events	Future on-site users and members of public	Minor adverse
Chapter 7: Terrestrial Ecology		
Disturbance as a result of operational noise, artificial lighting and general site operations	Bats	Negligible
Disturbance to breeding birds as a result of operational noise, artificial lighting and general site activities; (Operation)	Breeding birds	Negligible to Minor adverse
Disturbance as a result of operational noise, artificial lighting and general site operations	Overwintering birds	Minor adverse

Likely Significant Effect	Receptor	Residual Effect
Operational lighting effects on populations	Invertebrates	Negligible adverse
Chapter 8: Landscape and Visual		
Changes to the character and amenity of views	Users of the Wales Coast Path to the north and west of Crown Wharf (as demonstrated by RVs 1, 2, 3, & 7)	Varies from <u>moderate adverse</u> ⁷ to negligible
Changes to Landscape components within the Site	Vegetation on Site	<u>Moderate adverse</u>
Chapter 9: Socio-Economics and Human Health		
Employment generated in the operational stage	Local labour force Vulnerable Groups	<u>Moderate beneficial</u>
Chapter 10: Climate Change		
Net GHG Effect	Global Climate System	<u>Moderate beneficial</u>
Chapter 11: Air Quality		
Change to local air quality in terms of human health and ecology due to on-site emissions associated with heating plant (gas fired boiler) which will be used as the main source of energy on the Site	Nearest sensitive human receptors (residential, educational, health facilities) located to the east, northeast, west, north, northwest and west (Please see Figure 11.1)	Negligible
	On-site receptors (i.e. workers)	Negligible
	Ecological Receptors – Kenfig Special Area of Conservation (SAC), Crymlyn Bog SAC and Cefn Cribwr SAC (Figure 11.2)	Negligible
Change to local air quality in terms of human health and ecology due to on-site emissions associated with flare and emergency point sources (i.e. emergency diesel engines and fire water pump) ¹	Nearest sensitive human receptors (residential, educational, health facilities) located to the east, northeast, west, north, northwest and west (Please see Figure 11.1)	Negligible

⁷ Significant for direct views across TCA1 only.

Likely Significant Effect	Receptor	Residual Effect
	On-site receptors (i.e. workers)	Minor adverse
	Ecological Receptors – Kenfig Special Area of Conservation (SAC), Crymlyn Bog SAC and Cefn Cribwr SAC (Figure 11.2)	Negligible
	Change to local air quality in terms of human health and ecology due to transport emissions including vehicle and shipping emissions	Negligible
	Nearest sensitive human receptors (residential, educational, health facilities) located adjacent to Harbour Road (Please see Figure 11.1)	Negligible
	Ecological Receptors – Kenfig SAC/SSSI (Figure 11.3)	Negligible
Chapter 12: Noise and Vibration		
Generation of Noise from Plant during Operation	SSRs 1, 2, 4, 5, 6 & 9 ⁸	Minor adverse
	SSRs 3 & 7 ⁹	Moderate adverse
	SSRs 8, 10 & 11 ¹⁰ and Talbot Memorial Park and Vivian Park	Negligible adverse
Chapter 13: Marine Ecology		
Water abstraction affecting water flow and volume within the water body	Sediment Quality	Negligible
	Water Quality	Minor adverse
Removal of biofouling from the subsea structures and leeching of antifouling, anticorrosive agents from coated infrastructure	Sediment Quality	Negligible
	Water Quality	Minor adverse
Accidental release of pollutants and sewage waste and into the water column from vessels during transit and operations	Sediment Quality	Minor adverse
	Water Quality	Minor adverse

⁸ Dwellings at Mariners Point; Dwellings at Darwin Rd / Newbridge Rd; Dwellings on Green Park St; Dwellings on Water St / Blanco's Hotel; Flats above shops on Station Rd; Dwellings on St Alban's Terrace

⁹ Dwellings on Isaac's Place / Borough St and Dwellings on Talbot Rd

¹⁰ Dwellings on Lower West End; Dwellings on Duke St; Port Talbot Magistrates' Court.

Likely Significant Effect	Receptor	Residual Effect
Accidental release of litter and debris into the water column from vessels during transit	Sediment Quality	Minor adverse
	Water Quality	Minor adverse
Increased salinity caused by Dock's gates more frequent usage due to increased vessel traffic	Sediment Quality	Negligible
	Water Quality	Minor adverse
Entrapment of fish during abstraction of water	All fish species	Minor adverse

Summary of Cumulative Effects Assessment

- 15.4 The assessment of cumulative effects considered intra-project cumulative effects (where more than one effect is experienced by a single receptor), including considering scoped out effects relative to human health influencing the assessment output, and in-combination effects (where effects on a receptor may combine with those of other projects in the locale).

Intra-Project Cumulative Effects

- 15.5 Intra-project effects were identified for the 'population and human health' (construction and operational stage), 'biodiversity' (construction stage) and 'water (construction and operational stage) receptors groups. Each have been summarised below.
- 15.6 The evaluation of scoped out human health effects was not judged to change the conclusions of the intra-project cumulative effects assessments.

Population and Human Health

- 15.7 For both the construction and operational stage of the Proposed Scheme, potential intra-project effects were considered for the 'population and human health' receptor group. Given the broadness of this receptor group and focus of much of the assessment within the ES on human receptors, potential intra-project effects are not unexpected.
- 15.8 Of the relevant effects identified for the construction stage assessment, it was concluded that an intra-project effect would occur upon users of the Wales Coast Path, arising from adverse visual amenity effects and adverse noise effects arising from construction works at weekends. It was judged that this effect interaction would be moderate adverse and significant, no worse than conclusions at the individual effect level.
- 15.9 During the operational stage, it was concluded that intra-project cumulative effects could occur with respect to:
- (a) Identified risks of major accident and disasters in conjunction with the intermittent adverse air quality effects. This would only be experienced by on-site workers. This effect interaction is considered highly unlikely to occur, but where it may occur the effect interaction is considered no worse than conclusions at the individual effect level (minor adverse at worst and not significant).
 - (b) Identified risks of major accidents and disasters in conjunction with worst-case noise impacts occurring alongside the use of the flare for emergency scenarios. The effects would likely be experienced in sequence rather than at the same time and the effect

interaction is considered highly unlikely to occur. Nonetheless, were it to occur the effect interaction was considered to be up to moderate adverse effect and significant, which is again is no worse than conclusions at the individual effect level.

- 15.10 Additional operational effects relating to operational employment and visual amenity changes for users of the Wales Coast Path may interact with (b), but it was judged that in such instances the overarching intra-project effect would remain at the same level.

Biodiversity

- 15.11 At the construction stage of the Proposed Scheme, it was judged that potential intra-project effects would occur upon 'habitats' as three separate distinct habitat groups/type had been considered within **Chapter 7: Terrestrial Ecology**. However, given that each of the habitat groups were different, it was concluded that on a precautionary basis any intra-project effect would be derived from the worst individual effect, which was minor adverse but not significant (which was concluded for the Schedule 8 species habitat type).

Water

- 15.12 Conclusions for intra-project effects across both construction and operational stage of the Proposed Scheme were judged to be the same, even with slightly differing effects being considered at each stage. This was due to potential for an intra-project effect was judged to be highly unlikely at either stage due to mitigation for each effect individually. However, for both the construction and operational stage a precautionary worst-case assumptions was made that all effect identified for each stage could occur simultaneously. In such a scenario it was judged that at both the construction and operational stage a minor to moderate adverse and potentially significant effect could occur.

In-Combination Effects

- 15.13 The assessment of in-combination effects considered 4 Approved Projects on a technical topic by topic basis (i.e. **Technical Chapters 6 – 13**).
- 15.14 The assessment of in-combination effects across topics has concluded that there is the potential for in-combination effects in relation to major accidents and disasters; landscape and visual; air quality and noise but the conclusions do not change from the project level, for which in-combination visual effects to users of the Wales Coast Path are the only significant in-combination effect (adverse).
- 15.15 For socio-economics, there is also the potential for in-combination effects, specifically in relation to employment generation but the conclusions do change from the project level as they are now considered significant and beneficial during construction, where they were not previously considered significant and during operation, they remain significant, albeit the level of beneficial effect is greater.
- 15.16 For climate change and specifically GHG emissions, the consideration of in-combination contributions is holistically considered at the project level. There is an in-combination effect and this is considered to be moderate beneficial and significant.
- 15.17 A summary of the evaluation of in-combination effects is provided within **Table 15.3**, which outlines:
- Assessing the in-combination effect was not relevant – denoted by N/A;

- No in-combination effect was identified – denoted by ×;
- In-combination effects were identified but determined to be no greater level of effect or significance than that reported for the Proposed Scheme in isolation – denoted by =; and
- In-combination effects were identified and determined to be a level of effect or significance greater than the Proposed Scheme in isolation – denoted by >.

15.18 Where an in-combination effect is identified and is considered to be significant, this has been highlighted in **bold** and **shaded**.

Table 15.3: Summary of In-Combination Effects

Technical Topic	Approved Project 1	Approved Project 2	Approved Project 3	Approved Project 4
Major Accidents and/or Disasters	×	N/A	=	N/A
Terrestrial Ecology ^a	=	=	=	=
Landscape and Visual	=	=	=	>
Socio-Economics and Human Health	>	>	>	>
Air Quality ¹¹	=	N/A	=	N/A
Noise and Vibration	N/A	N/A	=	N/A
Marine Ecology	×	×	×	×

a – the assessment text for terrestrial ecology did consider a absolute worst case ‘regional’ in-combination effect, but only for context and not for the purposes of reaching a conclusion for this chapter.

Summary of Mitigation (Environmental Management Plan)

15.19 All mitigation committed to throughout the ES is included in **Volume 3: Environmental Management Plan**.

¹¹ This summarizes the output of the air quality in-combination assessment, albeit, for specific individual effects within this in-combination assessment, some Approved Projects are not considered to be relevant.