14. Assessment of Cumulative Effects

Introduction

14.1 This Chapter reports the assessment of cumulative effects arising from the Proposed Scheme, in line with Schedule 4, Paragraph 5(e) of the EIA Regulations, which states the need to consider the likely significant effects of the Proposed Scheme on the environment resulting from:

"the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources".

In defining 'approved projects' for the purpose of this assessment, it is considered to be those projects for which a planning application (or other type of application) has been submitted[a] by July 2023 (the timing of the last database review), or another relevant strategic project whereby there is a level of robust information upon which it is possible to undertake a high-level cumulative appraisal (this is further discussed below).

14.2 To accord with the EIA Regulations, in terms of providing an assessment of cumulative effects, this assessment has considered the following types of cumulative effects:

- **Intra-project cumulative effects (effect interactions)**: the interaction of more than one environmental effect of the Proposed Scheme affecting the same receptor either within the Site or in the local area; and

- **In-combination effects**: the combination of environmental effects of the Proposed Scheme with proposed or approved projects affecting the same receptor.

14.3 To note, at the point of PAC submission, **Chapter 7: Terrestrial Ecology** was a work in progress, and therefore is not available for PAC. As such, this chapter has not informed the assessment of cumulative effects relating to terrestrial ecology. This will be updated for submission of the Application for planning. For context, the Ecological Impact Assessment (**Appendix 7.1**) has been provided for PAC.

Legislative Framework and Guidance

14.4 At present, there is no widely accepted current methodology or best practice for the assessment of cumulative effects. As such, the methodology has been based on professional judgment, previous experience and knowledge at Turley, the types of receptors being assessed and the nature of the Proposed Scheme.

[a] And therefore could be consented in a similar consenting timeframe to the Proposed Scheme).

Assessment Methodology

14.5 The assessment of cumulative effects, for both intra-project cumulative effects (effect interactions) and in-combination effects, is largely qualitative in nature. The assessment of intra-project cumulative effects is based on information contained within the Environmental Statement (ES), whilst the assessment of in-combination effects is based on publicly available information (i.e. the planning applications submitted for the projects considered for in-combination effects). The approach to the assessment of both effect and in-combination effects is set out in the following sections.

Intra-project cumulative effects

14.6 The assessment of intra-project cumulative effects has followed the below approach. Following the completion of the **Technical Chapters 6 – 13**, the residual effects have been collated into a matrix so that intra-project cumulative effects on common receptors[b] can be identified. For the consideration of intra-project cumulative effects with respect to human health, an addition level of evaluation has been undertaken to take account of scoped out effects (see '*Human Health'* below for more details). Where a residual effect is concluded in **Technical Chapters 6 – 13** to be neither adverse nor beneficial, i.e. negligible, then this was excluded from the matrix (**Table 14.3** and **14.4**). This is on the basis that a negligible residual effect is unlikely to cause a noticeable change at a receptor or the receptor is not considered sensitive to a change.

14.7 Where residual effects have been considered to be 'minor' or greater, receptors have been categorised into receptor categories (where relevant and applicable to the effects and associated receptors), defined by the 'factors' categories outlined in Schedule 4, of the EIA Regulations, comprising.

- Population and human health.
- Biodiversity (for example fauna and flora).
- Land (for example land take).
- Soil (for example organic matter, erosion, compaction, sealing).
- Water (for example hydromorphological changes, quantity and quality).
- Air.
- Climate (for example greenhouse gas emissions, impacts relevant to adaptation).
- Material assets.
- Cultural heritage, including architectural and archaeological aspects.
- Landscape.

[b] The common sensitive receptors considered within this assessment are those which are assessed within two or more of the technical assessments within the ES.

14.8 The threshold has been set at 'minor' as this is considered to address the potential for a number of 'not significant' effects to a receptor becoming significant when they are considered together.

14.9 Where the level of effect ranged across receptors that were assessed, the worst case level of effect was included in **Tables 14.4** and **14.5**, i.e. the 'least beneficial' or 'most adverse'. If no residual effects for a receptor group were identified, these were not included in **Tables 14.3** and **14.4**.

14.10 Furthermore, 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 operation 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 linked 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 are factored into the conclusion of effects and significance, which would only be realised once the Proposed Scheme is operational, when undertaking the assessment of intra-project cumulative effects, this effect has only been incorporated into the 'operational stage' assessment.

14.11 Where intra-project cumulative effects have been identified, a qualitative appraisal has been undertaken for the relevant receptor categories. The qualitative evaluation at the receptor level considered the following:

- Magnitude of change for each residual effect;
- Sensitivity/value/importance of the receptor/receiving environment to change; or/and
- Duration and reversibility of effect.

14.12 An overall qualitative assessment of the cumulative effect on the common receptors identified has then been made using professional judgement and informed by the technical information provided in the ES (**Technical Chapters 6 – 13**) and supporting appendices where appropriate, as well as evidence set out within this EIA Scoping Report (**Appendix 2.1**).

14.13 This process has been documented within the '*Assessment of Intra-project cumulative effects* ' section of this Chapter.

Human Health

14.14 As set out within **Appendix 2.1: EIA Scoping Report** and confirmed within **Chapter 2: Approach to EIA**, considering the importance of human health when assessing intra-project effects, (i.e. people are often the receptor where the greatest number of impacts interact), the human health impacts 'scoped out' in **Appendix 2.1: EIA Scoping Report** have been re-appraised alongside the identified intra-project effects following the above methodology.

14.15 This additional appraisal undertaken comprises a high level evaluation of the potential for the scoped out effects to fundamentally change the identified intra-project cumulative effects to the population and human health receptor group already being considered (see '*intra-project cumulative effects*' above) or the concluding level of effect or significance of any identified effect interaction.

14.16 For the purpose of clarity all effects considered across the entire EIA process (i.e., EIA Scoping and the ES) that have an influence on human health, either directly or indirectly, have been identified within **Chapter 2: Approach to EIA** as way of a mechanism to sign post a reader to all effects on human health.

In-Combination Effects

14.17 The assessment of potential in-combination effects has followed a two-step approach, as detailed below.

Step 1: Identification and Evaluation of Projects for Further Consideration

14.18 A review of planning applications submitted to Neath Port Talbot County Borough Council (NPTCBC) was undertaken[c] as part of the EIA Scoping Report (**Appendix 2.1**) to identify an initial list of projects (referred to as 'Approved Projects') that could give rise to in-combination effects with the Proposed Scheme. A review of the Planning Inspectorate Nationally Significant Infrastructure Project portal was also undertaken at the same time.

14.19 the following criteria were used to determine the projects for which it is relevant to consider in-combination effects:

- Permitted application(s) submitted to NPTCBC from May 2017 onwards. It is anticipated that application(s) prior to this date will already have been built out (and therefore part of the baseline) and/or where a subsequent application(s) has been submitted this would be captured within the search dates;
- Permitted application(s), either under construction or not yet implemented, unless already considered as part of the baseline scenario;
- Submitted applications(s) not yet determined but which have the potential to be determined prior to the planning determination of the Proposed Scheme (and thus become an 'Approved Project');
- The project being of a relevant scale: the threshold for consideration has been the Schedule 2 criteria in the EIA Regulations, at which there is a potential for 'likely significant effects' (however, it is recognised that this needs to be applied with caution), Schedule 1 projects and nationally significant infrastructure projects; and
- Applications within a 5km radius of the Site, with consideration given to projects on the periphery of this 5km radius (i.e., just beyond it).

[c] The search of the NPTCBC planning portal occurred in May 2022.

14.20 It has been assumed that where projects have not been considered by NPTCBC as EIA development they do no give rise to likely significant environmental effects as they would have been 'screened' by NPTCBC at point of a request for an EIA Screening Opinion or upon receipt of a planning application. Nonetheless, as set out above, this criteria is applied with caution.

14.21 As identified in the criteria, the review did not account of projects where no application had been submitted (i.e., allocated sites within the local plan). This was due to it being unlikely that there would be sufficient information to inform a robust in-combination assessment for projects where no application is yet submitted. However, where relevant due to scale and proximity, projects subject to requests for EIA Screening or EIA Scoping Opinions (or directions) were identified as 'projects to monitor'.

14.22 The above methodology was shared with NPTCBC in a Technical Note in November 2022 for their comment prior to adopting within the EIA Scoping Report (**Appendix 2.1**). An informal response was received that NPTCBC were happy with this approach.

14.23 It should be noted that as part of the Technical Note (Appendix 14.1 of the EIA Scoping Report (**Appendix 2.1**)) a list of relevant projects, using the above criteria, was identified (provided in Appendix 14.1 of the EIA Scoping Report (**Appendix 2.1**)). However, at the point of performing the same search for the purpose of the EIA Scoping Report (**Appendix 2.1**) a previously identified project - Swansea Bay Tidal Lagoon (Ref: P2014/0145) – was removed from the list of relevant projects. It was understood that the Development Consent Order (DCO) for the project, agreed by the UK Government in June 2015, had lapsed as its conditions hadn't been compiled with. Furthermore, the Court of Appeal had ruled that as work on the project did not commence within five years of receiving approval the DCO was no longer valid (confirmed December 2022). As such, the EIA Scoping Report (**Appendix 2.1**) identified three relevant projects to consider and two projects to monitor.

14.24 Prior to the submission of the ES for PAC, a further search and review of the identified relevant projects was undertaken[d].This identified that of the two projects to monitor[e], both remained at pre-application stage, with both having submitted requests for EIA Scoping Opinion/Direction. These two projects have not been considered further within the assessment of in-combination effects as the ability to undertake an assessment is limited by insufficient information (i.e., in the absence of ES / planning application for each).

14.25 The final list of Approved Projects is set out in **Table 14.1** and shown on **Figure 14.1**.

[d] The updated search and review of the identified relevant projects occurred July 2023.
[e] P2021/0057 / P2023/0444 and P2023/0181.

Table 14.1: List of Approved Projects for In-Combination Assessment

ID	Planning Ref	Location	Description	Status	EIA/ Not EIA
1	P2021/1255	Land West Of Junction 38 Of The M4 Port Talbot Margam SA13 2NU	Full planning application of the development of a metal processing facility totalling 28,500sq.m of floorspace comprising a powder processing plant (17,377sq.m), warehouse and store (5,428 sq.m) office building (1,442 sq.m), amenity building (776 sq.m), laboratory (200 sq.m), services building (470 sq.m), substation (107 sq.m), phase 2 (2,700 sq.m), CCTV, storage tanks and plant, parking, servicing and roads and associated works.	Approved	EIA
2	P2022/0470	Land At Baglan Way Port Talbot	Erection of an industrial unit (use class B2) (GIA 25,545sqm) with associated works including sustainable drainage, car parking, cycle storage and landscaping.	Approved	Not EIA
3	P2018/1036	Land Adjacent To The Existing Sinter Plant Port Talbot Steelworks Margam Port Talbot SA13 2NG	Demolition of existing structures accommodating the secondary dust extraction system for the sinter plant and installation of a replacement secondary system, including a bag filter system comprising a 6 storey structure, pipework and ducting, chimney stack (55m tall), electrical equipment, hard and soft landscaping and associated development.	Construction ongoing	Not EIA

Off-Site Utilities Infrastructure

14.26 As set out in **Chapter 2: Approach to EIA**, in addition to the Approved Projects set out in **Table 14.1**, in-combination effects of the Proposed Scheme have also been considered with the new proposed electricity connection required for the Proposed Scheme, where off-site works are required, which will be undertaken by National Grid Electricity Distribution (NGED) as the statutory undertaker responsible for the network in the area. NGED is the body with the relevant expertise to design and carry out the work, and the owner and operator of all associated connecting infrastructure.

14.27 As noted in **Chapter 2: Approach to EIA** and **Chapter 4: Development Specification**, the level of works required for the electricity connection is limited, with various aspects to be agreed/finalised with NGED, albeit information regarding the point of connection and preferred route of the connection between the Site and point of connection is understood. Nevertheless, in the absence of full details for other aspects, the assessment of in-combination effects within this Chapter can only be informed by a series of assumptions based on knowledge of similar types of projects, as well as the preferred point of connections and associated routing. Therefore, with the use of a series of assumptions (likely scale of works and associated activities), a high level, qualitative appraisal of potential in-combination effects has been considered, i.e. a level of assessment appropriate to the level of information available or possible assumptions, at this stage. All assumptions and understanding of the proposed works are set out below.

14.28 In addition, on the assumption that the works associated with the connections would occur before the Proposed Scheme is operational (as it is required for the operational stage), in-combination effects are anticipated to be limited to the construction stage only. Furthermore, it has been assumed that all works being undertaken by NGED (or appointed third party specialist utilities engineering company) would be done in line with best practice measures and additional standard measures (i.e., adopted on similar types of works undertaken regularly by NGED) to avoid and reduce nuisance and disturbance to nearby receptors.

14.29 The Proposed Scheme requires a new 33kV power cable from the proposed on-site National Grid Switchroom (**Figure 4.8**) back to NGED primary substation located at Pyle. The proposed routing of the power cable is all within the boundaries of highways, including the A48, various streets within Margam, passing under the railway lines at Central Road, then onto Harbour Way, North Road and then on Unnamed Port Road.

14.30 On this basis, it is assumed that the power cable would be laid in section, traversing the assumed connection route. This would likely include the excavation/cutting for cable trench, cable laying followed by reinstatement of highways surface. Such works would require partial/full lane closures (with the potential for supporting signalised flow control) to install cabling.

14.31 As set out in **Chapter 4: Development Specification**, the Proposed Scheme does require a new mains gas connection for operation, which will need a connection directly to the Wales and West Utilities (WWU) high pressure network. At this time further engagement is required with WWU to identify the proposed point of connection to the high-pressure network and corresponding connection back to the

Site (i.e., routing of connection). Technical studies are to be undertaken by WWU across August 2023. As such, for the purpose of PAC, there is insufficient information to inform a robust assessment of in-combination effects with the Proposed Scheme. Assuming completion of the technical studies by WWU it is the intention to provide an assessment of in-combination effects as part of the ES and this Chapter for submission of the Application.

14.32 **Chapter 2: Approach to EIA** set out further details on other connecting infrastructure and the approach to the assessment or consideration as part of the EIA and ES.

Step 2a: Identification of Common Receptors

14.33 For there to be an in-combination effect between the Proposed Scheme and an Approved Project, there needs to be a common receptor that will experience effects from the Proposed Scheme and Approved Project for a similar duration. Following the identification of the list of Approved Projects, a further stage of analysis has been undertaken to establish if the Approved Projects (**Table 14.1**) are likely to share a common receptor with the Proposed Scheme. To inform the likelihood of potential common receptors, a further stage of analysis was undertaken utilising 'zones of influence'[f] (ZOIs) for both the Proposed Scheme and the identified Approved Projects, on a topic-by-topic basis.

14.34 ZOI's for the Proposed Scheme have been informed by the likely scope of technical assessment works[g] and the 'study areas'[h] applied for each technical topic, as these are the extents to which receptors of the Proposed Scheme were expected to be contained. The Proposed Scheme ZOIs are set out in **Table 14.2** for reference. Where a technical topic is absent from **Table 14.2** it is not assessed within the ES (i.e., scoped out).

Table 14.2: Zone of Influences for Topics Scoped in for the Proposed Scheme

Topic	Study Area	ZOI
Major Accidents and Disasters	No specific study area applied	1.5km[i]
Terrestrial Ecology	Internationally designated sites – 10km; Nationally designated sites – 5km; Non-statutory designated site – 2km; and Protected and notable species / habitats – within / adjacent to the Site.	10km
Landscape and Visual	2km	2km

[f] i.e. the extent to which effects may extend from the specific project.

[g] As informed by the EIA Scoping process for the project, that commenced in July 2022 and is due to be concluded with the formal submission of the EIA Scoping Report to NPTCBC in December 2022.

[h] AS defined across **Technical Chapters 6 – 13**.

[i] Precautionary ZOI applied based on specifics of the Proposed Scheme.

Topic	Study Area	ZOI
Socio-Economics and Human Health	Local impact area, defined as NPTCBC; and wider impact area defined as Wales	N/A[j]
Climate Change	No specific study area applied.	N/A[k]
Noise and Vibration	1.3km radius	1.3km
Air Quality	The assessment will consider impacts at human receptors within Port Talbot.	2km[l]
Marine Ecology	Port Talbot Docks	N/A

14.35 Additionally, ZOIs have been determined for the Approved Projects, again on a topic-by-topic basis[m]. These have been informed by a review of technical information submitted in support of each Approved Project and their corresponding study areas. Where no technical information for a specific topic has been submitted or where technical information has been prepared but is not explicit in defining a study area, an element of judgement has been applied to establish a reasonable ZOI. The identified ZOIs for each Approved Project and relevant technical topic is set out within Appendix 14.1 of the EIA Scoping Report (**Appendix 2.1**).

14.36 All ZOIs have subsequently been mapped using GIS software and then analysed to determine where there is an overlap in ZOIs between the Proposed Scheme and Approved Project, thus identifying the potential for a common receptor and a possible in-combination cumulative effect. The output of this process is set out in **Table 14.3**.

[j] Given the extent of the study areas, which will encompass all Approved Projects, no ZOI has been mapped and it is assumed that all Approved Projects will exhibit a potential in-combination effect.

[k] Climate Change does not have a geographical boundary and therefore it will be assumed that all Approved Projects will exhibit a potential in-combination effect.

[l] This is applied for human receptors only, it is assumed ecological receptors are capture through the ZOI for ecology set out in **Table 14.2**.

[m] Only those topics that overlap with the expected scope of topics for the Proposed Scheme have been identified. Where an Approved Project has identified a potential effect for a topic that is not expected for the Proposed Scheme it has been assumed there is no potential in-combination cumulative effect.

Table 14.3: Potential for Common Receptors between the Proposed Scheme and Approved Projects

Topic	Approved Project (numbering per **Appendix 14.1**)		
	1	2	3
Air Quality	Y	N	Y
Terrestrial Ecology	Y	Y	Y
Climate Change [k]	Y	Y	Y
Noise and Vibration	Y	N	Y
Socio-Economics and Human Health [l]	Y	Y	Y
Landscape and Visual	Y	Y	Y
Major Accidents and Disasters[n]	Y	N	Y
Marine Ecology	N	N	N

14.37 As is evident from **Table 14.3** there is no perceived in-combination effects between the Proposed Scheme and Approved Projects with respect to Marine Ecology, given that none of the Approved Projects interact with Port Talbot Docks. As such, Marine Ecology will not be considered further within this assessment or Chapter.

14.38 Furthermore, only where the application of ZOIs has identified the potential for a common receptor (i.e., denoted as Y in **Table 14.3**) has this Approved Project been taken through to *Step 2b: Assessment of In-combination Effects*. If the ZOIs identified the potential for a common receptor between the Approved Project(s) and the Proposed Scheme, the existence of a common receptor has been explored further through *Step 2b: Assessment of In-combination Effects* and evaluation of material submitted for each Approved Project, as set out below.

Step 2b: Assessment of In-Combination Effects

14.39 The shortlist outlined in **Table 14.1** has been further evaluated in the ES where common receptors have been identified in **Table 14.3** using the available documentation which supported the planning applications. Where available, consideration has also been given to whether there is a concurrent construction or operational stage with the Proposed Scheme.

14.40 Where there are common receptors, a qualitative evaluation at the receptor level has considered the following:

[n] The potential for in-combination effects has been determined by applying the Proposed Scheme ZOI and where it interacts with an Approved Project's boundary, rather than a corresponding technical ZOI for the Approved Projects. This is because no other Approved Project has considered this topic.

- Magnitude of change identified in the relevant technical assessments;
- Sensitivity/value/importance of the receptor/receiving environment to change; and/or
- Duration and reversibility of effect.

14.41 Through a combination of the qualitative evaluation and mitigation identified in the EIA and presented in the ES, conclusions have been drawn as to the likelihood for in-combination environmental effects, whether these are significant or not and how such effects differ from those reported for the Proposed Scheme.

Assessment of Intra-project cumulative effects

14.42 **Tables 14.4** and **14.5** detail those receptor categories where residual effects were identified within **Technical Chapters 6 – 13** (or for effects scoped out in the EIA Scoping Report (**Appendix 2.1**)) for the construction and operational stages of the Proposed Scheme, respectively. **Technical Chapters 6 – 13** have each identified specific sensitive receptors within their assessments, and these have been grouped into common categories in **Table 14.4** and **14.5** for further consideration.

14.43 Where effects are reported as significant in **Technical Chapters 6 – 13**, these are shown in **Table 14.4** and **14.5** as **bold** and shaded.

Construction Stage

Table 14.4: Matrix of Intra-project cumulative effects (Construction Stage)

	Population and Human Health	Biodiversity	Landscape
Chapter 7: Terrestrial Ecology			
Not provided for PAC.			
Chapter 8: Landscape and Visual			
Changes to the character and amenity of views	**Moderate adverse**[o]		
Changes to landscape components within the Site			**Moderate adverse**
Chapter 9: Socio-Economics and Human Health			
Employment generated in the construction stage	Minor beneficial		
Chapter 12: Noise and Vibration			
Generation of noise from construction activities and on-site construction traffic evenings and weekends (excl. Sat 0700-1300hrs)	Moderate adverse		
Chapter 13: Marine Ecology			
Disturbance through underwater noise and vibration		Minor adverse	
POTENTIAL INTRA-PROJECT CUMULATIVE EFFECTS	**YES**	NO	NO

[o] Direct views across TCA 1 (Users of the Wales Coast Path to the north and west of Crown Wharf) and where construction works block views of Port Talbot Docks (Users of the Wales Coast Path on Margam Mountain).

14.44 As shown in **Table 14.4**, there were no effects above negligible reported during the construction stage for **Chapter 6: Major Accidents and Disasters** and **Chapter 11: Air Quality**. As per the assessment methodology (see '*Assessment Methodology - Intra-project cumulative effects'*) climate change effects have only been considered at the operational stage and therefore not as part of **Table 14.4**.

14.45 Whilst there were residual effects reported to the 'landscape' receptor group, there was only one effect reported to this group and therefore there is no effect interaction (i.e., there are not multiple effects to interact on this receptor group).

14.46 As noted in '*Introduction*' **Chapter 7: Terrestrial Ecology** is not available for PAC and therefore any evaluation of intra-project cumulative effects relating to 'Biodiversity' receptor group is pending.

14.47 Therefore, the intra-project cumulative effects are limited to the 'population and human health' receptor group, to which a number of residual effects are reported. The intra-project cumulative effects to this receptor group during the construction stage are considered below.

Population and Human Health (Construction Stage)

14.48 Intra-project cumulative effects with respect to the population and human health receptor group is not unexpected, given the broadness of this receptor group and the focus of assessments across the ES on human receptors. As identified in **Table 14.4**, the key effects interacting upon the receptor group comprise:

- Adverse impacts upon the visual amenity and character of users of the Wales Coast Path, arising from presence of construction activities and development of the Site (primarily the PDZ);
- Temporary beneficial effects on local jobs due to labour demand for the construction of the Proposed Scheme; and
- Adverse impacts at evenings (1900 – 2300hrs) and weekends (outside of 0700 – 1300hrs Sat) arising from construction noise.

14.49 With respect to the socio-economic effect, the receptor considered within **Chapter 9: Socio-Economics and Human Health** is NPTCBC administrative area. Given this receptor is relatively extensive, in comparison to the two other effects identified, which are localised to very specific areas, there is considered to be very limited potential for an effect interaction to occur between this and the other effects.

14.50 Users of the Wales Coast Path may experience the changes in visual amenity during construction stage and potential noise effects at weekends, where the route passes in proximity to receptor locations tested in **Chapter 12: Noise and Vibration**, which also corresponds to the worst-case effects in terms of visual enmity (see **Chapter 8: Landscape and Visual** for more details). It should be noted that noise effects

within **Chapter 12: Noise and Vibration** have been focused on residential receptors rather than recreational users of the Wales Coast Path, as such a receptor is transient and therefore likely to have a short-term exposure to noise effects. Nonetheless, they may experience a noise effect, even if only short term, whilst using the path. 'Evening' in terms of the noise assessment is defined 1900 – 2300hrs. During these hours use of the Wales Coast Path is considered to be somewhat limited (i.e., due to darkness and the primary utilisation of the route at daytime). Therefore, an effect interaction of the evening noise impacts on users of the Wales Coast Path is very unlikely to occur alongside the changes in visual amenity. When considering the effect interaction on users of the Wales Coast Path from the visual amenity changes and noise effects during weekends, the in-combination effect is considered to be short-term given the transient nature of the receptor and the confined extent (geographically) of the worst-case effects for visual amenity and noise, as well as being temporary to the construction stage only. In addition, the way in which the receptor experiences the individual effects is not directly comparable to easily quantify a combined effect level. The most adverse individual effect would likely determine the effect interaction. In this instance, as both the individual effects are deemed to be moderate adverse and significant, the effect interaction is also considered to be moderate adverse and significant.

Operational Stage

Table 14.5: Matrix of Intra-project cumulative effects (Operation Stage)

	Population and Human Health	Biodiversity	Climate	Landscape
Chapter 6: Major Accidents and Disasters				
Operational plant/infrastructure failure (i.e. structure/building collapse, human error, explosion, non-descriptive accident)	Minor adverse			
Fire event occurring during ship transportation of input/output material	Minor adverse (at worst)			
Fire event occurring on-site and impacting operational activities on-site, as well as consequential chain reaction events	Minor adverse			
Chapter 7: Terrestrial Ecology				

	Population and Human Health	Biodiversity	Climate	Landscape
Not provided for PAC.				
Chapter 8: Landscape and Visual				
Changes to the character and amenity of views	**Moderate adverse**[p]			
Changes to landscape components within the Site				**Moderate adverse**
Chapter 9: Socio-Economics and Human Health				
Employment generated in the operational stage	**Moderate beneficial**			
Chapter 10: Climate Change				
Net GHG effect			**Major beneficial**	
Chapter 11: Air Quality				
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)	Minor adverse[q]			
Chapter 12: Noise and Vibration				
Generation of noise from plant during operation	Moderate adverse			
Chapter 13: Marine Ecology				
Entrapment of fish during abstraction of water		Minor adverse		

[p] Direct views across TCA 1 (Users of the Wales Coast Path to the north and west of Crown Wharf) only.
[q] Work place receptors only.

	Population and Human Health	Biodiversity	Climate	Landscape
POTENTIAL INTRA-PROJECT CUMULATIVE EFFECTS	**YES**	NO	NO	NO

14.51 As shown in **Table 14.5**, whilst there were residual effects reported to the 'climate' and 'landscape' receptor groups during the operational stage, there was only one effect reported to each of these groups and therefore there is no effect interaction (i.e. there are not multiple effects to interact on those receptor groups).

14.52 As noted in '*Introduction*', **Chapter 7: Terrestrial Ecology** is not available for PAC and therefore any evaluation of intra-project cumulative effects relating to 'biodiversity' receptor group is pending.

14.53 Therefore, the intra-project cumulative effects are limited to the 'population and human health' receptor group, to which a number of residual effects are reported. The intra-project cumulative effects to this receptor group during the operation stage are considered below.

Population and Human Health (Operation Stage)

14.54 As per the construction stage intra-project cumulative effects assessment, the focus on the population and human health receptor group is expected. At the operational stage, the following effects have the potential to interact, as identified through **Table 14.5**:

- Various effects relating to risks of major accidents and disasters occurring on-Site, with potential impacts beyond the Site;
- Adverse impacts upon the visual amenity and character of users of the Wales Coast Path, arising from the redevelopment of the PDZ;
- Permanent beneficial effects on local jobs due to employment arising from the operation of the Proposed Scheme and indirect employment in the supply chain;
- Intermittent adverse effects on on-site workers, associated with emission to air from heat plant, flare and emergency point sources; and
- Adverse noise impacts arising from the operation of the Proposed Scheme, albeit the worst-case effects have been considered, which relate to ship movements/ unloading and loading at night, including in conjunction with the flare being used in emergency situations.

14.55 In terms of the identified effects, there is an effect interaction for on-site workers with respect to the effects associated with risks of major accident and disasters, in conjunction with the intermittent adverse air quality impacts. The individual level of effect for each has been determined to be minor adverse at worst. The likelihood of the aforementioned effects interacting is considered to be notably limited, given the nature of the major accident and disasters, which would warrant specific response activities on-site, negating the likely maintenance testing of the diesel generators, which is the driver of the operational air quality effect. Furthermore, as per **Chapter 6: Major Accidents and/or Disasters**, the risk of the identified major accident and disasters have been controlled to as low as reasonably practicable (ALARP) and therefore are not determined to be a commonly occurring effect. On this basis, this effect interaction is considered highly unlikely to occur, but where it does occur the effect interaction is considered comparable to the level of effects experienced individually and thus to be minor adverse at worst and not significant.

14.56 Operational effects related to risks of major accidents and disasters does extend to receptors beyond the Site, and therefore could interact with the effects in terms of worst-case noise impacts identified. Like the above evaluation, the worst-case noise impacts are considered to be in associated with infrequent aspects of the Proposed Scheme, albeit this is inclusive of the use of the flare for emergency scenarios. Therefore, there is the potential for the flare to be operating under the emergency scenario, as it is an engineering control mechanism to manage the risk of major accident and disaster. In such a scenario, the use of the flare would be a mechanism to reduce risks of major accidents and disasters to ALARP. On this basis, it is perceived that the effects would likely be experience in sequence rather than at the same time. Overall, this effect interaction is considered highly unlikely to occur, but where it could occur the effect interaction is considered to be up to moderate adverse effect and significant.

14.57 The other worst case noise scenario considered was in relation to ship movements and/or loading/unloading at night. It is not considered that this would experience an effect interaction with the major accident and disasters effects, as the resulting disasters would result in the ship ceasing loading/unloading, or moving. Therefore, the effects could only be experienced individually.

14.58 The beneficial socio-economic impacts have been assessed at the NPTBC administrative area level and therefore there is the potential for this effect to interact with the risk of major accidents and disasters upon receptors outside the Site, and noise impacts to sensitive receptors. Although this could arise, it is considered to be limited as the receptor experiencing the beneficial effect would also need to live near the Site. Nonetheless, in the unlikely scenario of this occurring, it is perceived that the interaction of the adverse effects discussed above, would dictate that overall effect interaction – therefore, would be up to moderate adverse effect and significant.

14.59 Like the above, users of the Wales Coast Path who experienced adverse visual effects, may also interact with the aforementioned effect interaction between risk of major accidents and disasters upon receptors outside the Site, and noise impacts to noise sensitive receptors outside the Site. This would only occur where the user of the path is near Port Talbot Docks and thus within proximity to the Site. Therefore,

any effect interaction would be limited in geographic extent in terms of the entire Wales Coast Path. However, as per the socio-economic effects, it is considered that the adverse effect interaction already identified would dictate the overall effect interaction, given the nature of those effects. As such it would remain moderate adverse and significant.

14.60 Effect interactions between users of the Wales Coast Path and noise impacts associated with ship movements and/or loading/unloading at night is not considered to arise. During these hours attributed to 'night-time' as part of **Chapter 12: Noise and Vibration**, use of the Wales Coast Path is considered to be somewhat limited (i.e., due to darkness and the primary utilisation of the route at daytime) and thus remove this potential effect interaction.

Human Health

14.61 As set out within '*Assessment Methodology*' the conclusion of the above intra-project cumulative effects evaluation (and significance) has been considered with respect to all effects scoped out of the EIA where there is a direct or indirect effect on human health. Again, this has been considered for the construction and operational stages.

Construction Stage

14.62 Scoped out effects relevant to human health, informed by the full list of human health effects set out within **Chapter 2: Approach to EIA**, and the construction stage are as follows:

- Direct effects to human health due to exposure to existing on-site contamination and the accidental release of contamination;
- Indirect effect to human health due to potential ingress and accumulation of bulk ground gas into proposed structures;
- Direct effects to human health due to presence of UXO;
- Flood risk event impacting construction workers;
- Increase in fear and intimidation and accidents and safety as a result of temporary construction traffic;
- Disturbance to nearby residents due to obtrusive light during construction;
- Major road traffic accident during construction resulting in death or permanent injury to members of public;
- Natural disasters events (i.e. hurricanes and earthquakes) impacting users of the site and on-site operations;
- Access to healthy food;
- Accessibility and active travel;
- Access to work and training;
- Heat stress during construction;
- Nuisance, disturbance and a reduction in human health as a result of dust and particulate matter emissions from construction activities (including demolition) and Non-Road Mobile Machinery (NRMM); and
- Vibration from construction activities impacting upon surrounding residential receptors.

14.63 The above additional scoped out effects generally apply to on-site construction works as experienced by the local community. The rational for their exclusion from assessment (and not classified as being significant) was reached due to the

implementation of key standard practices and measure during the construction stage, as per the Environmental Management Plan (EMP) (**Volume 3**).

14.64 Although multiple negligible or non-significant effects could combine to give rise to a cumulative effect that is greater, it is likely that receptors would need to experience all such direct adverse effects simultaneously, which is highly unlikely. Furthermore, it would require all standard control mechanisms to fail simultaneously, which is not perceived to be likely.

14.65 Overall, it is considered that the additional scoped out effects relating to human health would not result in an amendment to the conclusion of the above intra-project cumulative effects undertaken above (see '*Intra-project cumulative effects assessment – Construction Stage*').

Operational Stage

14.66 Scoped out effects relevant to human health, informed by the full list of human health effects set out within **Chapter 2: Approach to EIA**, and the construction stage are as follows:

- Accidental release of contamination from on-site operation activity;
- Flood risk event impacting on-site workers and surrounding area;
- Increase in fear and intimidation and accidents and safety as a result of operational traffic;
- Disturbance to nearby residents due to obtrusive light during operation;
- Major road traffic accident during operational stage resulting in death or permanent injury to members of public;
- Extreme flooding event (including under the influence of climate change) causing risk to human life or failure of operational safety measures, indirectly resulting other forms of incidents;
- Natural disasters events (i.e. hurricanes and earthquakes) impacting users of the site and on-site operations;
- Access to quality housing, healthcare services, open space and nature, and other social infrastructure;
- Access to healthy food;
- Accessibility and active travel;
- Social cohesion and lifetime neighbourhoods;
- Crime reduction and community safety;
- Access to work and training;

- Implications of extreme weather on the Proposed Scheme and users;
- Overheating of on-site structures during summer months; and
- Operational road traffic noise impacting upon surrounding residential receptors.

14.67 A number of the operational effects set out above were discounted at the EIA Scoping stage due to an absence of an effect arising from the Proposed Scheme or absence of sensitive receptor (i.e. access to quality housing, given the nature of the Proposed Scheme, and operational noise traffic, due to the very low levels of operational traffic).

14.68 Those effects were discounted due to the mitigation measures built into the design of the Proposed Scheme (i.e. raising ground levels to ensure the Proposed Scheme avoid risk of flooding, including accounting for climate change) as per the Environmental Management Plan (EMP) (**Volume 3**). As with the construction stage assessment, for these effects to arise it would require failure of these measures, which is unlikely.

14.69 In terms of the other risks of major accidents and disaster related effects, although these could be perceived to interact with the effects considered within the intra-project effects assessment, it is highly unlikely for all risks to arise simultaneously. Nor would detailed risk assessment and appraisal of major accidents and disasters amend the conclusion of the existing intra-project effects assessment.

14.70 Therefore, overall, additional scoped out effects relating to human health would not result in an amendment to the conclusion of the above intra-project cumulative effects undertaken above (see '*Intra-project cumulative effects assessment – Operation Stage*').

Assessment of In-Combination Effects

14.71 Approved Projects identified for the assessment of in-combination effects are detailed in **Table 14.1** and shown on **Figure 14.1**. The assessment of in-combination effects is set out below.

Major Accidents and/or Disasters

14.72 As set out within **Table 14.3** only Approved Projects 1 and 3 have been considered further.

14.73 An ES was prepared and submitted for Approved Project 1, within which it sets out that major accidents and/or disasters has not been assessed as a technical topic. Further review of the submitted EIA Scoping Report does not identify any conclusions in terms of evidence base for the exclusion (or inclusion) of this technical topic with their ES[r]. Nonetheless, given the notable distance of Approved Project 1 from the Site (approximately 6.4km) and the focus of receptors within **Chapter 6: Major Accidents and/or Disasters** being within the immediate presence of the Site of the Proposed Scheme, there are considered to be no common receptors and therefore there is no in-combination effect.

14.74 Approved Project 3 is approximately 0.9km south of the Site, and therefore there is the potential for common receptors, although this is limited to the members of the public surrounding the Proposed Scheme.

14.75 There was no major accident and/or disaster assessment undertaken for Approved Project 3. This is largely due to the nature of the project proposed, comprising a small-scale replacement of existing aging infrastructure for the Sinter Plant within Port Talbot Steelworks and not fundamentally amending the existing operations of the steelworks. In such a way, Approved Project 3 in itself is not perceived to give rise to major accidents and/or disasters that are not already part of the wider Tata Steelworks overarching 'risk', as defined by their existing COMAH consent, which was considered as part of the 'baseline' within **Chapter 6: Major Accidents and/or Disasters**. Given the limited nature of the proposals, any potential in-combination effect(s) would likely be no greater than the Proposed Scheme in isolation (minor adverse), as reported in **Chapter 6: Major Accidents and Disasters** (which were not considered to be significant).

14.76 Overall, there is the potential for in-combination effects between Approved Project 3 and the Proposed Scheme, but the conclusions at the project level do not change (minor, adverse and not significant).

[r] It is noted that the EIA Scoping Opinion issued by NPTCBC identified that the project may require a submission of a Hazardous Substances application and therefore the EIA should consider the impact associated with this, if it is indeed required. The absence of assessment in the ES has been taken to assumed that a Hazardous Substances application was not required.

Terrestrial Ecology

14.77 As noted in '*Introduction*' **Chapter 7: Terrestrial Ecology** in not available for PAC and therefore any evaluation of in-combination cumulative effects relating to 'Terrestrial Ecology' is pending.

Landscape and Visual

14.78 As set out in **Table 14.3**, all three Approved Projects have been considered further. Furthermore, given that the only landscape character elements considered within **Chapter 8: Landscape and Visual** was on-site vegetation, there is only the potential for an in-combination effect in terms of visual amenity and character.

14.79 Approved Project 1 is located approximately 6.4km south-east of the Site, with notable development in the intervening landscape, including TATA Steelworks. At such distance there are considered to be very limited potential for common receptors with the Proposed Scheme, contained to only the users of the Wales Coast Path. The ES submitted with Approved Project 1 identified users of the Wales Coast Path as sensitive visual receptors, concluding major adverse and significant effects during both construction and operational stages. However, these conclusions were at the points where the route extends around the eastern and southern boundary of Approved Project 1.

14.80 The assessment within **Chapter 8: Landscape and Visual** did not extend the consideration of visual receptors as far south on the Wales Coast Path as to correspond with the areas of the routes considered by Approved Project 1, and there is considered to be limited opportunities for the Proposed Scheme and Approved Project 1 to be seen in conjunction with each other across much of the Wales Coast Path. Nonetheless, users of the Wales Coast Path may experience views of the Approved Project 1 and Proposed Scheme subsequently, given the transient nature of the receptors. Overall, on this basis, although an in-combination effect may occur, either simultaneously or subsequently, the nature of any cumulative effect would vary as the users utilise the Wales Coast Path and would be driven largely by its proximity to either the Proposed Scheme or Approved Project 1. On that basis, it is considered that any in-combination effect would be no greater than the Proposed Scheme insolation (up to moderate adverse and significant).

14.81 Approved Project 2 is located approximately 2.6km north-west of the Proposed Scheme. A Landscape and Visual Impact Assessment (LVIA) was prepared and submitted in support of the application, which considered visual receptors up to 2km from the Approved Project, resulting in some overlap between this and the study area identified for the Proposed Scheme. Of the photoviewpoint locations[s] identified through the LVIA, most were located in close proximity to the Approved Project (c. 0.5km), but a single location on the Wales Coast Path was identified. As such, visual common receptors are considered limited to the Wales Coast Path, albeit as per the evaluation for Approved Project 1, there is considered to be limited potential for both the Approved Project and the Proposed Scheme to be seen in conjunction but could be view subsequently. Nonetheless, as above, it is also considered that an in-combination effect may occur, either simultaneously or subsequently, the nature of any cumulative

[s] Term used within the submitted LVIA.

effect would vary as the users utilise the Wales Coast Path and be driven largely by its proximity to either the Proposed Scheme or Approved Project 1. On that basis, it is considered that any in-combination effect would be no greater than the Proposed Scheme insolation (up to moderate adverse and significant).

14.82 Although Approved Project 3 is nearer the Proposed Scheme (at 0.9km), given the scale and nature of the Approved Project, its visual influence is considered to be limited, somewhat confirmed by the 'neutral' effect concluded as part of the landscape and visual appraisal submitted in support of Approved Project 2. This was due to the minor increase in massing and its position within TATA Steelworks.

14.83 As such, even though both the Proposed Scheme and Approved Project 3 may be seen cumulatively, any in-combination effect is likely to be derived from the Proposed Scheme and therefore any resulting level of effect would be the same as the Proposed Scheme in isolation (up to moderate adverse and significant).

14.84 Overall, there is the potential for in-combination effects on the Wales Coast Path across Approved Projects 1 – 3, but the conclusions at the project level do not change (moderate, adverse and significant).

Socio-Economics and Human Health

14.85 The construction stage of Approved Projects 1 – 3 may overlap with the Proposed Scheme in terms of timescales, albeit it is noted that Approved Project 3 is currently under construction. Nonetheless, for the purpose of completeness it has been assumed there may be potential overlap in construction timescales with the Proposed Scheme. In-combination effects with the relevant construction stage receptor (local labour force and vulnerable groups) are likely. Approved Projects 1 – 3 will generate employment opportunities in the construction sector. Considering each Approved Project individually in-combination with the Proposed Scheme, each would result in an in-combination effect that exceeds the effect of the Proposed Scheme in isolation. Considering all Approved Projects with the Proposed Scheme, based on the elevated number of construction employment opportunities that will be generated across the Approved Projects, the combined magnitude of change is anticipated to be large, and therefore the beneficial effect (major) will exceed the level of effect (minor) considered at the Proposed Scheme in isolation. This effect will be temporary and medium-term and is considered significant.

14.86 The operational stage of Approved Projects 1 – 3 will overlap with the Proposed Scheme in terms of timescales. In-combination effects with the relevant operational stage receptors (labour force in the local and wider impact areas and labour force and businesses in the local and wider impact areas) are likely. Given the nature of Approved Project 2, being a replacement of an existing piece of infrastructure at TATA Steelworks, potential additional employment generation is considered to be very limited and therefore not considered to result in operational stage in-combination effects with the Proposed Scheme. Based on the elevated number of operational employment opportunities that will be generated across Approved Projects 1 and 3, the combined magnitude of change is anticipated to be large, and therefore the beneficial effect (major) will exceed the level of effect (moderate) considered at the

Proposed Scheme in isolation. This effect will be permanent and long-term and is considered significant.

14.87 Overall, there is the potential for in-combination effects in relation to employment opportunities. The conclusions at the project level do change. At construction these remain beneficial but in-combination they increase from minor to major and from not significant to significant. At operation, these again remain beneficial but in-combination they increase from moderate to major (albeit the conclusion on this being significant does not change).

Climate Change

14.88 All global cumulative GHG sources are relevant to the effect on climate change, i.e. the global climate system is considered the receptor for the Proposed Scheme. As recognised by IEMA guidance[1], effects of GHG emissions from specific Approved Projects should not be assessed due to limitations and is better represented through contextualisation of GHG emissions / savings.

14.89 The contextualisation of GHG emissions / savings utilised within **Chapter 10: Climate Change** to local, regional and national carbon budgets and the UK Carbon Budget Delivery Plan incorporates by its nature the cumulative contributions of other GHG sources which make up that context, whether baseline emissions or future carbon budgets. Where the contextualisation is geographically or sector-bounded (e.g. involves contextualising emissions within a local authority carbon budget, or a sector level net zero carbon roadmap), then the consideration of in-combination contributions to that context is within that boundary. As such, any in-combination effect is deemed to be the same as the Proposed Scheme in isolation, given the nature of assessment provided within **Chapter 10: Climate Change** (moderate beneficial and significant).

Air Quality

14.90 In line with **Table 14.3**, the assessment of in-combination effects has considered Approved Project 1 and 3, and only with respect to operational point source emissions. However, Approved Project 1 does not include any on-site point source emissions and therefore discounted from further assessment with respect to on-site emissions.

14.91 Approved Project 3 will generate on-site PM_{10} emissions during operation. However, these would be mitigated and are unlikely to be significant when combined with emissions from on-site point sources from the Proposed Scheme in respect of human receptors. This is because of the low baseline concentrations identified and the separation distances between source and receptors. Furthermore, the ecological receptors are not sensitive to particulate emissions and therefore in-combination effects at the special areas of conservation would not be significant. On this basis, in-combination effects in terms of on-site emission would be no greater than the Proposed Scheme in isolation (minor, adverse and not significant for on-site work place receptors and negligible and not significant for all other receptors).

14.92 In terms of in-combination effects arising from emissions from traffic, the human health related receptors considered within **Chapter 11: Air Quality** were limited to those near to Harbour Way during construction only. Approved Project 1 is not anticipated to result in additional traffic on Harbour Way, as no construction stage

traffic assessment was provided within the submitted Transport Assessment, nor was Harbour Way considered within any of the junctions for assessment. As for Approved Project 3, given its scale and nature of development (replacement infrastructure), as well as already being under construction, any construction related traffic is expected to be minimal. Therefore, any in-combination effect would likely be derived from the Proposed Scheme and therefore the level of effect would be as that defined for the Proposed Scheme in isolation (negligible and not significant).

14.93 However, with respect to emissions to air from operational traffic upon ecological receptors undertaken as part of **Chapter 11: Air Quality**, operational traffic from both Approved Project 1 and 3 were included within an assessment scenario for completeness. The resulting assessment scenario, presented in **Chapter 11: Air Quality** confirmed that the 'combined' effect on the ecological designations would be negligible and not significant.

14.94 Overall, there is the potential for in-combination effects to on-site work place receptors from Approved Projects 1 and 3, but the conclusions at the project level do not change (minor, adverse and not significant).

Noise and Vibration

14.95 **Table 14.3** identified the need to consider Approved Projects 1 and 3. However, given the significant distance of Approved Project 1 from the Site (approximately 6.4km south-east), there are no common receptors and therefore this project is discounted from further assessment.

14.96 Approved Project 3 has common receptors with the Proposed Scheme, namely SSRs 1 – 11 and Designated Quiet Areas. The noise impact assessment report prepared in support of Approved Project 3 concluded the following in terms of construction and operational noise impacts:

- Construction – "*the calculated noise levels during the construction and demolition works… are well below the BS5228 lowest impact threshold levels for all the considered receptors*"

- Operation – *"It should be noted that since noise levels for the operation of the new plant are predicted to be more than 10 dB(A) below the existing noise levels, the operation of the new plant is expected to have no influence on the overall noise levels for the north boundary of the Sinter Plant site."*

14.97 Given such conclusions any potential for in-combination effects relating to noise from construction activities and on-site construction traffic and generation of noise from plant during operation (as assessed within **Chapter 12: Noise and Vibration**) would be derived solely from the Proposed Scheme and therefore, no greater than the Proposed Scheme in isolation (up to moderate adverse and not significant).

14.98 **Chapter 12: Noise and Vibration** also considered noise arising from construction traffic off-site, however, this has not been assessed as part of the noise impact assessment reported for Approved Project 3. Nonetheless, given its scale and nature of development (replacement infrastructure), as well as already being under construction, any construction related traffic is expected to be minimal. Therefore, any in-

combination effect would likely be derived from the Proposed Scheme and therefore the level of effect would be as that defined for the Proposed Scheme in isolation (negligible and not significant).

14.99 Overall, there is the potential for in-combination effects with respect to noise from construction activities and on-site construction traffic, generation of noise from construction traffic off-site, and noise from plant during operation but the conclusions at the project level do not change (moderate, adverse and not significant).

Consideration of Off-Site Utilities Infrastructure

Electricity Connection

14.100 With respect to the proposed electricity connection works, the preferred routing of new cabling between the Site and Pyle primary substation is known and is located wholly within the highways boundary. Therefore, as set out previously, the expected works associated with the installation of the new connection would include the excavation/cutting of a cable trench and subsequent laying of cable and reinstatement of the highways surface. All works would be undertaken in sections given the overall length of the connection.

14.101 The primary environmental effects arising from such works would likely include:

- Temporary loss / degradation of habitat adjacent to the highways boundary, arising from potential use of areas for storage of construction materials or similar construction activities;
- Disturbance to habitat and potential notable or protected species present adjacent to highway boundary, occurring from noise, vibration, lighting and other general construction activities;
- Noise and vibration effects upon nearby noise sensitive receptors associated with the excavation/cutting works, corresponding use of construction plant/equipment/machinery, and compactors (or similar) used as part of the reinstatement of road surface;
- Creation of dust, particulate matter and other air pollutants, impacting upon human heath receptors, associated with the construction activities, associated movement and use of plant/equipment/machinery;
- Disturbance to residential receptors due to temporary construction lighting required to support safe working conditions;
- Temporary impacts to road users associated with temporary road or land closures; and
- Noise, vibration and air quality impacts arising from movement of construction traffic.

14.102 Given that the cable would be laid in sections, the above effects would vary across the connection route, with effects potentially being limited or non-existent where

receptors are absent (i.e. when works occur away from residential properties). Furthermore, except for the traffic related impacts (both direct and indirect), most effects would be localised, temporary and generally short-term (lasting less than 1 year) as works progressed along the connection route.

14.103 Given the above, the potential for in-combination effects with the Proposed Scheme are generally considered to only arise where the works on the connection route are in close proximity to the Site (within approximately 1km of the Site). This would generally limit potential in-combination effects to the point at which works on the connection route passes under the existing railway lines (at Central Road). Works on the connection route beyond this point (back to the Pyle primary substation) are not considered to share common receptors with the Proposed Scheme, given the outputs of assessment within **Technical Chapters 6 – 13**. The only potential for an in-combination effect would be from construction traffic. Construction traffic related to the proposed connection route works are minimal.

14.104 As presented across **Chapter 11: Noise and Vibration** and **Chapter 12: Air Quality** (the only chapters in the ES to consider indirect traffic effects) the impacts of construction traffic for the Proposed Scheme were negligible[t]. The additional traffic is unlikely to change the conclusions at the project level (negligible and not significant with the exception of moderate, adverse and not significant for noise generation during evening and weekend construction working hours).

14.105 Focusing on the remaining potential in-combination effects (potentially including disturbance/nuisance from noise, vibration, and air pollutants (i.e., dust, particulate matter etc.)) although an in-combination effect would occur, it is considered that the primary contributor to associated impacts would be the Proposed Scheme, more so than the works for the connection route. This is largely due to the scale of works required for the connection works (broken into sections with only the current section giving rising to environmental effects) in comparison to the Proposed Scheme. Furthermore, in terms of construction dust impacts for the Proposed Scheme, these were determined to be not significant for the Proposed Scheme given the adoption of similar best practice measures (i.e. adherence to IAQM guidance).

14.106 Overall, considering the implementation of the off-site infrastructure, in-combination effects are limited to air quality and noise and vibration, with the off-site infrastructure contributing very little to the overall effect. There are in-combination effects during the implementation of the section of off-site infrastructure closest to the Site, but the conclusions considered in the above assessment do not change (effects are negligible and not significant with the exception of noise generation during evening and weekend construction working hours which is considered to be moderate, adverse and not significant).

Summary

14.107 The assessment of cumulative effects considered intra-project cumulative effects (where more than one effect is experienced by a single receptor), including considering

[t] For **Chapter 11: Noise and Vibration**, the off-site traffic effects have been considered at this point.

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

14.108 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.

14.109 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.

14.110 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.

14.111 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.

14.112 The evaluation of scoped out human health effects was not judged to change the conclusions of the intra-project cumulative effects assessments.

In-Combination Effects

14.113 The assessment of in-combination effects considered 3 Approved Projects on a technical topic by topic basis (i.e. **Technical Chapters 6 – 13**).

14.114 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).

14.115 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.

14.116 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.

14.117 A summary of the evaluation of in-combination effects is provided within **Table 14.6**, 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 >.

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

Table 14.6: Summary of In-Combination Effects

Technical Topic	Approved Project 1	Approved Project 2	Approved Project 3
Major Accidents and/or Disasters	×	N/A	=
Terrestrial Ecology	Not available for PAC		
Landscape and Visual	**=**	**=**	**=**
Socio-Economics and Human Health	**>**	**>**	**>**
Climate Change	= (considering in-combination effects are an inherent part of the project level effect assessment methodology)		

Technical Topic	Approved Project 1	Approved Project 2	Approved Project 3
Air Quality[u]	=	N/A	=
Noise and Vibration	N/A	N/A	=
Marine Ecology	×	×	×

References

[1] IEMA (2022). EIA Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance. Available at: https://www.iema.net/resources/blog/2022/02/28/launch-of-the-updated-eia-guidance-on-assessing-ghg-emissions.

[u] 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.