



Connah's Quay Low Carbon Power

Environmental Statement Volume II Chapter 24: Cumulative and Combined Effects

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24. Cumulative and Combined Effects

24.1 Overview

- 24.1.1 This chapter of the Environmental Statement (ES) provides a summary of the approach to the assessment of cumulative and combined effects which may occur as a result of the Connah's Quay Combined Cycle Gas Turbine (CCGT) fitted with Carbon Capture Plant (CCP) (hereafter referred to as the 'Proposed Development') during the construction and operation (including maintenance) and decommissioning.
- 24.1.2 The Order limits represent land required for both permanent and temporary works as part of the construction and operation of the Proposed Development. The Proposed Development is located approximately 0.6 km north-west of Connah's Quay in Flintshire, North Wales and is located within the administrative boundary of Flintshire County Council (FCC).
- 24.1.3 The full extent of the Order limits is shown on **Figure 3-1: Order limits (EN010166/APP/6.3)** and the main components of the Proposed Development, as shown in **Figure 3-3: Areas described in the ES (EN010166/APP/6.3)**, include:
- Main Development Area;
 - Repurposed CO₂ Connection Corridor; Proposed CO₂ Connection Corridor;
 - Surface Water Outfall Area
 - Water Connection Corridor;
 - Electrical Connection Corridor; Construction and Indicative Enhancement Area (C&IEA); and
 - Accommodation Work Areas.
- 24.1.4 Further information on the Proposed Development is provided in **Chapter 4: The Proposed Development (EN010166/APP/6.2.4)** and the components of the Proposed Development are presented on **Figure 3-3: Areas Described in the ES (EN010166/APP/6.3)**.
- 24.1.5 This chapter is supported by the following figures in **ES Volume III - EN010166/APP/6.3**:
- **Figure 3-3: Areas Described in the ES;**
 - **Figure 24-1: Zones of Influence;**
 - **Figure 24-2: Identified Proposed Schemes;**
 - **Figure 24-3: Short List of Proposed Schemes;** and
 - **Figure 24-4: Short List of Proposed Schemes within 5 km of the Construction and Operation Area.**
- 24.1.6 This chapter is supported by the following appendices in **ES Volume IV - EN010166/APP/6.4**:

- **Appendix 1-A: Scoping Report;**
- **Appendix 1-B: Scoping Opinion;**
- **Appendix 2-B: Responses to the Scoping Opinion;**
- **Appendix 24-A: Long List of Proposed Schemes;** and
- **Appendix 24-B: Short List of Proposed Schemes.**

24.1.7 Cumulative and combined effects are defined as follows:

- **inter-project cumulative effects:** these occur when the environmental impacts and effects of the Proposed Development interact with those associated with other planned projects and developments (hereafter referred to as 'proposed schemes') located within a realistic geographical scope where environmental impacts could act together to result in a greater significance of effects on environmental resources and / or receptors; and
- **intra-project combined effects:** these are different environmental effects resulting from a single development i.e. the Proposed Development (such as noise, air quality, visual effects, etc.) on any one resource and / or receptor that may, in combination, cause an effect of greater significance as compared to a single environmental effect on that resource and / or receptor.

24.1.8 The assessment draws on the assessment of impacts provided in **Chapters 8 to 23 (EN010166/APP/6.2)**, and information in the public domain relating to other known developments that are proposed within the study area. This includes information on HyNet CO₂ Pipeline, into which the Proposed Development is anticipated to connect, as well as other existing and / or approved development that are under construction, permitted, not yet determined, but an application has been submitted, and refused, but subject to appeal procedures. Projects on PINS' programme are also considered, as is development not currently in planning.

24.1.9 The cumulative assessment does not consider developments that are already constructed and operating; such existing operational facilities are accounted for in the baseline conditions established for the main assessments reported within **Chapters 8 to 23 (EN010166/APP/6.2)**. Similarly, the assessment does not consider developments that are being constructed and would be completed/operational prior to construction of the Proposed Development. Effects of such future development are accounted for in the future baseline conditions established for the main assessments within **Chapters 8 to 23 (EN010166/APP/6.2)**.

24.1.10 This cumulative effects assessment considers the construction, operation (including maintenance) and decommissioning of the Proposed Development.

24.2 Legislation, Planning Policy and Guidance

24.2.1 Due to the potential for cumulative effects to occur as a result of the construction, operation (including maintenance) and decommissioning of the Proposed Development, a cumulative assessment is being undertaken as part of the Environmental Impact Assessment (EIA) in accordance with the

Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) (Ref 12-1) and the assessment requirements of the National Policy Statement (NPS) for Energy (EN-1) (Ref 12-2).

24.2.2 The requirement for cumulative and combined impact assessments is stated in the relevant European Directive and domestic legislation, as detailed below:

- European Directive 2014/52/EU on the assessments of effects of certain public and private projects on the environment requires an assessment of *'the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium term and long-term, permanent and temporary, positive and negative effects of the project'* (Ref 12-3);
- Paragraph 5 of Schedule 4 to the EIA Regulations requires: *'A description of the likely significant effects of the development on the environment resulting from, inter alia [...] (e) 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'*. The EIA Regulations state that this description of likely significant effects *'should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development'* (Ref 12-1);
- Paragraph 4.1.5 of NPS EN-1 states that: *'In considering any proposed development, in particular when weighing its adverse impacts against its benefits, the Secretary of State should take into account:*
 - its potential benefits including its contribution to meeting the need for energy infrastructure, job creation, reduction of geographical disparities, environmental enhancements, and any long-term or wider benefits;
 - its potential adverse impacts, including on the environment, and including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts following the mitigation hierarchy' (Ref 12-2); and
- Paragraph 4.3.19 of NPS EN-1 states that consideration should be given to *'how the accumulation of, and interrelationship between, effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place'*. (Ref 12-2).

24.2.3 Further details of legislation policy and guidance relevant to each of the technical assessments presented in **Chapters 8 to 23 (EN010166/APP/6.2)** which is also of relevance to the cumulative effects assessment is presented in **Appendix 7-A: Legislative, Policy and Guidance Framework for Technical Topics (EN010166/APP/6.4)**.

24.3 Consultation and scope of Assessment

Consultation

EIA Scoping Opinion

- 24.3.1 A request for an EIA Scoping Opinion was sought from the Secretary of State (SoS) through the Planning Inspectorate (PINS) in February 2024 as part of the EIA Scoping Process. The EIA Scoping Opinion was adopted on 20th March 2024 (**Appendix 1-B: Scoping Opinion (EN010166/APP/6.4)**).
- 24.3.2 Key issues raised in the EIA Scoping Opinion are summarised in **Table 24-1** along with a summary of how they have been addressed, where relevant. **Appendix 2-B: Scoping Opinion Responses (EN010166/APP/6.4)** provides a full response to all comments received in the EIA Scoping Opinion. All issues have been considered during the EIA process.

Statutory Consultation

- 24.3.3 Further consultation in response to formal pre-application engagement was undertaken through the Preliminary Environmental Information Report (PEIR), issued in October 2024. **Table 24-2** outlines the statutory consultation responses relating to cumulative effects.

Targeted Consultation

- 24.3.4 Following Statutory Consultation changes were made to the heights of the proposed absorber and HRSG stacks and the Applicant undertook further targeted consultation. This consultation included a Supporting Information Report which detailed the environmental considerations associated with these changes. This Targeted Consultation was held between Thursday 8 May to Friday 6 June 2025. There were no comments received with respect to the Cumulative and Combined Effects assessment.

Additional Relevant Engagement

- 24.3.5 Engagement has been undertaken with FCC with regard to the long and short list and this is presented in **Table 24-3**.

Scope of Assessment

- 24.3.6 Following the scoping process that has been undertaken and the feedback received from the consultees, the final short list of proposed schemes is presented in **Appendix 24-B: Short List of Proposed Schemes (EN010166/APP/6.4)**.

Table 24-1: Scoping Opinion Responses

Comment ID	Consultee	Comment	Response
3.16.1	PINS	<i>'The Inspectorate directs the Applicant to comments in ID 2.1.11, which should be addressed in the ES in relation to decommissioning and therefore does not agree to scope out this matter on the information provided.'</i>	This chapter considers decommissioning as appropriate to the inter-project effects and intra-project effects. Further information is provided in Section 24.4 on the consideration of decommissioning with each assessment.
3.16.2	PINS	<i>'The Scoping Report sets out that 15 km is the maximum study area. The Inspectorate considers that this may need to be revised to ensure consideration of all study areas in other environmental aspect chapters as some of these study areas may exceed 15 km.'</i>	The study area within this chapter remains 15 km and has been reviewed. Section 24.4.16 within the chapter details the justification for this.
3.16.3	PINS	<i>'It is noted that the Port of Mostyn is missing from the list of cumulative projects identified in Scoping Report Table 21-1. It is noted that this may be as a result of a nominal screening distance having been applied. The Applicant should ensure that a maximum screening distance is used and justified as being applicable to all assessments undertaken as part of the EIA.'</i>	The Port of Mostyn Energy Park Extension Project is included in the cumulative short-list within this chapter as proposed scheme ID 16.
3.16.4	PINS	<i>'It is noted that recent approved and proposed developments at the Shotton Paper Mill site (less than 1 km from the Proposed Development application site) have not been included in Appendix D, Table 1. These developments should be included in the ES and consideration should be given as to whether they should be scoped into the cumulative effects assessment.'</i>	Proposed developments at the Shotton Paper Mill site are included in the short list within this chapter as proposed scheme IDs 3, 55 and 114. A full list of cumulative developments is presented in Appendix 24-A: Long List of Proposed Schemes (EN010166/APP/6.4) of cumulative projects.

Comment ID	Consultee	Comment	Response
N/A	FCC	<i>'Planning/site constraints and opportunities': • BAE Outer Safeguarding Zone Consultation Zone, BAE Birdstrike 13 km Consultation Zone, BAE buildings above 15 m in height Consultation Zone Airport Safeguarding Area.'</i>	This information has been considered during the preparation of the ES.
N/A	FCC	<i>'Planning/site constraints and opportunities': • Overhead power line extends east to west'</i>	This information has been considered during the preparation of the ES.
N/A	FCC	<i>'Planning/site constraints and opportunities': • Green Barrier south of the site'</i>	This information has been considered during the preparation of the ES.
N/A	FCC	<i>'Planning/site constraints and opportunities': • Hynet Carbon Dioxide Pipeline Safeguarded Area'</i>	The Proposed Development is proposed to connect to the HyNet CO ₂ Pipeline Project and HyNet has been considered as part of the cumulative assessment presented in this chapter.
N/A	NRW	<i>'We note that the Port of Mostyn is missing from the list of cumulative projects identified in Table 21-1, this may be due to the relative constrained screening distance of 15 km. However, for some receptors this may need to be revised, please see our advice for benthic habitats and physical processes above.'</i>	The Port of Mostyn is included in the cumulative long list as proposed scheme ID 16 (The Mostyn Energy Park Extension Project).

Table 24-2: Statutory Consultee Responses

Consultee	Comment	Response
Environment Agency	<p><i>'Issue' – 'An awareness of the wider implications of the development on the delivery of the HyNet Industrial Cluster is needed.'</i></p> <p><i>'Impact' – 'To understand how the development fits into the greater HyNet Industrial Cluster to help ensure the delivery of the HyNet scheme in its entirety can be achieved.'</i></p> <p><i>'Solution' – 'A summary of how the development fits into the wider scheme should be provided, particularly in relation to water quality and resources and abstraction/ discharge licences.'</i></p> <p><i>'Additional narrative/ explanation (if necessary: the Environment Agency have recently published the Phase 3 outputs on the DESNZ funded Environmental Capacity for Industrial Clusters project which includes Hynet from a water resource / quality perspective: https://www.gov.uk/government/publications/environmental-capacity-for-industrial-clusters. This provides an overview of the environmental issues which need to be managed by Hynet related developments coming forward to ensure delivery of the scheme in its entirety can be achieved. Of note, an extract from the report states the following: 'In HyNet an assessment of abstraction licences in 2012 and 2023 found that surface water may be available for licensing at volumes required for HyNet up to 2030, however, future water availability for HyNet (2030+) is less certain. Uncertainty exists around wastewater impacts in HyNet from low carbon technologies and the potential thermal,</i></p>	<p>The Applicant proposes to maintain the Proposed Development's permitted abstraction and discharge parameters in relation to cooling water. As is currently the case, it is anticipated that abstraction would be intermittent and limited to no more than three hours abstraction per tide around high water (one hour before and two hours after).</p> <p>Purge discharge would also be consistent with the existing site operation, with no more than three hours commencing on the ebb tide one hour after high water.</p> <p>The cooling water (and process water) discharge will be consistent with the operation of the existing power station in terms of temperature and water quality and will comply with the existing environmental permit limits. As such, the baseline situation with regards to abstraction and discharge of River Dee water is unchanged and so does not cause any decrease in water availability or water quality against the existing Dee Estuary baseline. As such, the Proposed Development would not adversely affect the delivery of the HyNet Industrial Cluster with regard to water resources or water quality.</p>

toxicological and ecological impacts around catchments across the HyNet region. How wastewater is to be managed has yet to be fully determined. dA strategic whole system view of industrial cluster development is required, involving industry, government, regulators and spatial planners to address environmental challenges facing the deployment of low carbon technologies.”

Table 24-3: Additional Relevant Engagement

Consultee	Summary of Comment	Response
FCC	A meeting to discuss the intra-project effects, the methodology used, a re-cap of the longlist and to seek agreement on the Short List, which would be sent via email. It was noted that the Short List is not too different from PEI Report.	Agreement for FCC to review Short List email.
FCC	Email providing the details of the Short List.	Email acknowledged by FCC.

24.4 Assessment Methodology

Impact Assessment and Significance Criteria

- 24.4.1 A combination of professional judgement and established guidance have been used to confirm the scope of the cumulative effects assessment, and to aid the identification and (where necessary) mitigation of likely significant effects.
- 24.4.2 The cumulative effects have been primarily based upon guidance contained within PINS 'Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment' (Ref 12-4), which provides advice on the identification and assessment of proposed schemes, and the EIA Scoping Opinion (see **Appendix 1-B: Scoping Opinion (EN010166/APP/6.4)**).
- 24.4.3 With regard to cumulative effects, the ability to quantify the extent to which the environmental effects of other proposed schemes can interact with those associated with the Proposed Development depends upon on the level of information available regarding such other proposed schemes. Where environmental assessment information regarding other proposed schemes is not available or is uncertain, the cumulative assessment is necessarily qualitative and assessed using professional opinion. However, matrices and modelling have been used, where appropriate and where sufficient information is available.
- 24.4.4 Cumulative and combined effects have been assessed to be negligible, minor, moderate or major. Moderate or major effects are considered to be significant, using the methodologies outlined in each technical chapter (refer to **Chapters 8 to 23 (EN010166/APP/6.2)**).

Limitations or Difficulties

- 24.4.5 The cumulative effects assessment has been based on information available at the time of the assessment regarding the environmental effects of the other proposed schemes in the vicinity of the Order limits that have been scoped into the assessment.

Inter-Project Cumulative Effects

- 24.4.6 Cumulative effects are those that accrue over time and space caused by the interaction of impacts associated with a number of proposed schemes. PINS 'Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment' (Ref 12-4) sets out a four-stage approach to the assessment of cumulative effects:
- Stage 1: Establishing the long list of 'other existing development and / or approved development';
 - Stage 2: Establishing a shortlist of 'other existing development and / or approved development';
 - Stage 3: Information Gathering; and
 - Stage 4: Assessment.

- 24.4.7 There is no established EIA methodology for assessing and quantifying effect interactions that lead to combined effects on sensitive resources and / or receptors; however, the European Commission (EC) has produced guidance for assessing effect interactions '*which are not intended to be formal or prescriptive, but are designed to assist EIA practitioners in developing an approach which is appropriate to a project...*' (Ref 12-5).
- 24.4.8 An approach has been developed in line with these guidelines which consider the residual effects of the Proposed Development identified across the different environmental topics to determine the potential for effect interactions that lead to combined effects.
- 24.4.9 In general, where the effect of the Proposed Development on a resource and / or receptor is assessed as negligible, it is not considered that the Proposed Development would significantly contribute to a cumulative effect with other proposed schemes. This is because, by virtue of their definition, negligible effects are considered to be imperceptible changes to an environmental / socio-economic resource and / or receptor. Therefore, the cumulative effects assessment presented within this chapter has focused on effects of the Proposed Development that are minor, moderate, or major. On this basis, only the Construction and Operation Area of the Order limits is considered for this assessment, because the accommodation works at the Accommodation Work Areas, have been screened out of further assessment within the EIA, across all topics. Further information is provided in **Appendix 5-A: Environmental Screening of Accommodation Works (EN010166/APP/6.4)**.
- 24.4.10 The traffic and transport assessment presented in **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)** and the traffic-related construction air quality and noise impacts and effects reported in **Chapter 8: Air Quality (EN010166/APP/6.2.8)** and **Chapter 9: Noise and Vibration (EN010166/APP/6.2.9)** are based on traffic data which includes projected traffic levels from other committed developments and are therefore inherently cumulative. As such, these are not included in the cumulative assessment to avoid duplication.

Stage 1: Establishing the long list of 'other existing development and / or approved development'

- 24.4.11 Cumulative effects are generally unlikely to arise unless other proposed schemes are in close proximity to the Proposed Development, recognising that actual distance varies with the nature of the potential effect and the nature of the impact on a particular resource and / or receptor (for example cumulative air quality effects could occur for developments a greater distance apart than noise effects).
- 24.4.12 The Zone of Influence (Zoi) of the Proposed Development, within which any potential effects of the Proposed Development may combine with the effects arising from other proposed schemes, has been determined on the basis of the maximum study areas of the technical assessments considered within this ES. **Table 24-4** presents the Zois identified within each environmental topic assessment.
- 24.4.13 It is considered that a study area of 15 km from the Construction and Operation Area encompasses the maximum range of any potential likely

significant cumulative effects. It is considered disproportionate to collect data on proposed schemes at a scale larger than 15 km, particularly as some topic Zols extend to a national level.

Table 24-4: Summary of Indicative Zones of Influence

Environmental Topic	Zone of Influence (Construction and Operation Area)
Air Quality	<p>Construction: Up to 250 m Zol from the Construction and Operation Area, 50 m from access roads and 250 m from the Access to the Main Development Area entrance for potential impacts to human health and amenity. Up to 50 m Zol from the Construction and Operation Area, 50 m from access roads and 250 m from the Access to the Main Development Area for potential impacts on relevant ecological receptors.</p> <p>Up to 200 m Zol from the centreline of all road links in the affected road network for potential impacts on sensitive receptors from changes in pollutant concentrations.</p> <p>Operation: Up to 15 km Zol for ecological receptors from the Main Development Area (where operational emissions will arise) for ecological receptors (Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar sites (protected wetlands) and Sites of Special Scientific Interest (SSSIs)) and up to 2 km for non-statutory designated ecological receptors (ancient woodlands, local wildlife sites (LWS) and national and local nature reserves (LNR)). Impacts on human health receptors are likely to be negligible beyond 2 km of the stack(s).</p> <p>Up to 200 m Zol from the centreline of all road links in the affected road network for potential impacts on sensitive receptors from changes in pollutant concentrations.</p> <p>Refer to Chapter 8: Air Quality (EN010166/APP/6.2.8) for more information.</p>
Noise and Vibration	<p>Construction: Up to 1 km Zol from the Main Development Area. Noise Sensitive Receptors (NSR) within 100 m from the closest construction activity for construction vibration. The Zol for construction traffic is based on the spatial extent of traffic links in the transport model (as discussed in Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)). Up to 300 m Zol from the Proposed CO₂ Connection Corridor and Construction and Indicative Enhancement Area for construction noise (if these areas extend beyond 1 km from the Main Development Area).</p>

Environmental Topic	Zone of Influence (Construction and Operation Area)
	<p>Operation: NSR located within 1 km of the Main Development Area.</p> <p>Refer to Chapter 9: Noise and Vibration (EN010166/APP/6.2.9) for more information.</p>
Traffic and Transport	<p>Construction and Operation: The Zol is comprised of the main highway links as set out in Chapter 10: Traffic and Transport (EN010166/APP/6.2.10) and the public transport, cycle and walking provision within the immediate vicinity of these links. A 15 km study area around the Construction and Operation Area to net the proposed schemes that could qualify for the Zol.</p> <p>Refer to Chapter 10: Traffic and Transport (EN010166/APP/6.2.10) for more information.</p>
Terrestrial and Aquatic Ecology	<p>Construction and Operation: Up to 15 km Zol from the Construction and Operation Area.</p> <p>Up to 15 km study area around the Construction and Operation Area for statutory Habitat Sites (formerly known as International Sites), SSSIs and NNR) to be considered in terms of the potential for impacts and effects, including those supporting mobile species such as birds or marine mammals.</p> <p>Up to 2 km from the Construction and Operation Area for local non-statutory nature conservation sites.</p> <p>Refer to Chapter 11: Terrestrial and Aquatic Ecology (EN010166/APP/6.2.11) for more information.</p>
Marine Ecology	<p>Construction and Operation: Up to 10 km Zol from the Water Connection Corridor and Main Development Area for designated sites, benthic ecology, coastal and migratory fish, and 160 km for sites designated for marine mammals.</p>

Environmental Topic	Zone of Influence (Construction and Operation Area)
	Refer to Chapter 12: Marine Ecology (EN010166/APP/6.2.12) for more information.
Water Environment and Flood Risk	<p>Construction and Operation: Up to 1 km Zol from the Construction and Operation Area. Where relevant, the assessment considers a wider Zol to include impacts which may propagate downstream, and flood risk impacts upstream and downstream.</p> <p>Refer to Chapter 13: Water Environment and Flood Risk (EN010166/APP/6.2.13) for more information.</p>
Geology and Ground Conditions	<p>Construction and Operation: Up to 250 m Zol from the Construction and Operation Area, extended up to 1 km Zol for hydrogeology.</p> <p>Refer to Chapter 14: Geology and Ground Conditions (EN010166/APP/6.2.14) for more information.</p>
Landscape and Visual Amenity	<p>Construction and Operation:</p> <ul style="list-style-type: none"> • to the north approximately 5 km to 13 km from the Main Development Area; • to the south approximately 4 km to 6 km from the Main Development Area; • to the east approximately 10 km from the Main Development Area; and • to the west approximately 11 km from the Main Development Area. <p>Refer to Chapter 15: Landscape and Visual Amenity (EN010166/APP/6.2.15) for more information.</p>
Physical Processes	<p>Construction and Operation: Up to 15 km Zol from Main Development Area and Water Connection Corridor.</p> <p>Refer to Chapter 16: Physical Processes (EN010166/APP/6.2.16) for more information.</p>

Environmental Topic	Zone of Influence (Construction and Operation Area)
Terrestrial Heritage	<p>Construction and Operation: Up to 3 km from the Construction and Operation Area (excluding Accommodation Work Areas).</p> <p>The settings of designated assets of the highest value (i.e., World Heritage Sites, scheduled monuments, Grade I and II* listed buildings, Registered Parks and Gardens and Conservation Areas containing a number of assets of the highest value) outside of the 3 km study area have been considered, up to 5 km from the Construction and Operation Area (excluding the Accommodation Work Areas). As detailed in Appendix 17-A: Terrestrial Heritage Desk Based Assessment (EN010166/APP/6.4), all assets between 3 km and 5 km are scoped out of further assessment because the Proposed Development would not result in changes to their setting. On this basis, there would be no cumulative effects on these assets.</p> <p>A 50 m study area has been considered around the Accommodation Work Areas for designated assets.</p> <p>Refer to Chapter 17: Terrestrial Heritage (EN010166/APP/6.2.17) for more information.</p>
Marine Heritage	<p>Construction and Operation: The Water Connection Corridor plus a 1 km buffer.</p> <p>Refer to Chapter 18: Marine Heritage (EN010166/APP/6.2.18) for more information.</p>
Socio-Economics, Recreation and Tourism	<p>Construction and Operation: 2 km from the Construction and Operation Area.</p> <p>Refer to Chapter 19: Socio-Economics Recreation and Tourism (EN010166/APP/6.2.19) for more information.</p>
Climate Change	<p>Construction and Operation: The Zols for the Greenhouse Gas (GHG) assessment during construction, operation and decommissioning comprise the UK and Wales, where the UK and Wales have separate carbon budgets.</p>

Environmental Topic	Zone of Influence (Construction and Operation Area)
	<p>The ZoI for the Climate Change Risk Assessment (CCRA) will be the area of temporary and completed work within the Site and surrounding areas that may impact the Site (for example River Dee).</p> <p>The ZoI effects on agriculture and soils and development land are the Order limits and up to 500 m from the Order limits respectively.</p> <p>The In Combination Climate Change Impact (ICCI) Assessment will be based on data obtained from the closest meteorological station to the Proposed Development (Hawarden Airport weather station, situated approximately 6.9 km away).</p> <p>Refer to Chapter 20: Climate Change (EN010166/APP/6.2.20) for more information.</p>
Human Health	<p>Construction and Operation: It is determined that the core human health ZoI comprise the wards of:</p> <ul style="list-style-type: none"> • Connah's Quay: Golftyn; • Flint: Castle; • Flint: Coleshill and Trelawny; and • Flint: Oakenholt. <p>It should be noted that the wider ZoI for Human Health also reflects the ZoI from other disciplines. Refer to Chapter 21: Human Health (EN010166/APP/6.2.21) for more information.</p>
Major Accidents and Disasters	<p>Construction and Operation: Up to 5 km ZoI from the Construction and Operation Area. This has been selected on the basis that the Major Accident Hazard (MAH) sites greater than 5 km from the Construction and Operation Area are unlikely to be directly affected.</p>

Environmental Topic	Zone of Influence (Construction and Operation Area)
	Refer to Chapter 22: Major Accidents and Disasters (EN010166/APP/6.2.22) for more information.
Materials and Waste	<p>Construction and Operation: The Zol for the Proposed Development comprises the Order limits. For the expansive study area this includes areas within which landfills and other waste facilities that manage waste generated by the Proposed Development are likely to be located.</p> <p>Refer to Chapter 23: Materials and Waste (EN010166/APP/6.2.23) for more information.</p>

24.4.14 The following data sources were used to identify proposed schemes:


- National Infrastructure Planning website (Ref 12-6);
- FCC (planning portal/register) (Ref 12-7);
- Wirral Council (planning portal/register) (Ref 12-8);
- Cheshire West and Chester Council (planning portal/register) (Ref 12-9);
- Wrexham County Borough Council (planning portal/register) (Ref 12-10);
- Denbighshire County Council (planning portal/register) (Ref 12-11);
- Welsh Development of National Significance register (Ref 12-12); and
- Marine Management Organisation (MMO) Marine Case Management System (Ref 12-13).

24.4.15 The long list, as provided in **Appendix 24-A: Long List of Proposed Schemes (EN010166/APP/6.4)**, was prepared using the following criteria to screen out proposed schemes of insufficient scale or of a type that would not result in cumulative effects with the Proposed Development:

- any planning applications older than five years at the commencement date of study (July 2024), and prior to the end of the study (March 2025);
- construction of small-scale agricultural buildings;
- house extensions or cosmetic changes to buildings;
- work to trees;
- micro-generation wind turbines;
- roof mounted solar PV panels (or ground mounted less than 50kW output);
- renewal of planning permission for retention of existing operational use;
- variation to planning permission for retention of existing operational use;
- variation to planning permissions, including reserved matters applications (where the original application would not have been considered within the assessment); and
- small-scale residential uses (specifically, less than 20 dwellings) or changes of buildings' use (unless it could itself result in a cumulative effect, such as the conversion of several barns into a holiday village).

24.4.16 Each proposed scheme on the long list was reviewed to determine its status at the time of undertaking the assessment and was assigned a status and tier, as described in **Table 24-5** informed by the guidance and levels presented within PINS 'Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment' (Ref 12-4).

Table 24-5: Level of certainty for each tier

Tier	Degree of Certainty	Decreasing level of detail likely to be available
Tier 1	<ul style="list-style-type: none"> • Under construction; * • Permitted application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented; and • Submitted application(s) whether under the Planning Act 2008 or other regimes but not yet determined. 	
Tier 2	<ul style="list-style-type: none"> • Projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted. 	
Tier 3	<ul style="list-style-type: none"> • Projects on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted; • Identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that there will be limited information on any relevant proposals; and • Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward. 	

**Where proposed schemes are expected to be completed before construction of the proposed NSIP and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline and may be considered as part of both the construction and operational assessment. The ES should clearly distinguish between projects forming part of the dynamic baseline and those in the cumulative effects assessment. (Adapted from PINS 'Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment' (Ref 12-4).)*

24.4.17 The distance from each proposed scheme was measured from its approximate centre of the associated application boundary to the nearest point of the Construction and Operation Area to determine the Zols in which they would fall into. The long list is presented in **Appendix 24-A: Long List of Proposed Schemes (EN010166/APP/6.4)**.

Stage 2: Establishing a shortlist of 'other existing development and / or approved development'

24.4.18 This stage involved reviewing the long list to identify those to be taken forward (shortlisted) into the cumulative assessment.

24.4.19 The shortlisting process involved the application of inclusion/exclusion criteria and was informed by the professional judgement of the environmental specialists undertaking the EIA and through engagement with the relevant local authorities. The criteria for determining which proposed schemes to shortlist to the cumulative effects assessments, included considering the temporal overlap of the proposed schemes with the Proposed Development, the level of information available for them and their likelihood to result in cumulative effects with the Proposed Development on the basis of their scale or their potential to become a new receptor for effects from the Order limits.

24.4.20 Proposed schemes that are already in existence i.e. those which are completed and operational, are considered to form part of the environmental baseline conditions within which the Proposed Development would be implemented. They have therefore been accounted for through establishment of the current or future baseline within each technical assessment presented in **Chapters 8 to 23 (EN010166/APP/6.2)** and were therefore not considered for short listing.

24.4.21 Similarly, where proposed schemes are expected to be completed prior to Proposed Development construction, these have also been considered within the future environmental baseline adopted in the ES.

24.4.22 The short list of proposed schemes identified for the inter-project cumulative effect assessment is provided in **Table 24-6** and **Appendix 24-B: Short List of Proposed Schemes**. **Figure 24-3: Short List of Proposed Schemes** and **Figure 24-4: Short List of Proposed Schemes within 5 km of the Construction and Operation Area (EN010166/APP/6.3)** show the location of the short listed other developments in relation to the Proposed Development. The fixed short list of proposed schemes was provided to FCC in April 2025 following the final update to the long list at the end of March 2025 and finalised in April, following updates to the statuses of other developments, already captured in the long list. The short list is comprised of 28 developments.

24.4.23 Professional judgement has been applied to consider certain proposed schemes outside the Zol identified in **Table 24-4** for some of the technical topics. Because **Appendix 24-A: Long List of Proposed Schemes (EN010166/APP/6.4)** and **Appendix 24-B: Short List of Proposed Schemes (EN010166/APP/6.4)** are based on the numerical Zol distances only, there are some differences between the list of topics in the appendices and the topics listed within **Table 24-6** when read together. Whilst the

Appendices list the relevant topics by reference to the numerical Zol only, **Table 24-6** reflects the assessment presented in Section 24.5, once professional judgement has been applied to the consideration of certain technical topics.

24.4.24 The HyNet CO₂ Pipeline Project is expected to be constructed and operational prior to construction of the Proposed Development and intersect the Proposed CO₂ Connection Corridor. In order to assess a worst-case scenario, it has been considered that the construction works for this separate application may be delayed and coincide with those of the Proposed Development. Hence, the HyNet CO₂ Pipeline Project has been included in the short list of proposed schemes.

Table 24-6: Short list of proposed schemes within the 15 km Zol identified at Stage 2 of the cumulative effects assessment

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	FCC	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Approved 20/11/2024	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Water Environment and Flood Risk• Landscape and Visual Amenity• Physical Processes• Terrestrial Heritage• Socio Economics, Recreation and Tourism• Human Health• Major Accidents and Disasters
6	Proposed Residential Development Land off Holywell Road and Green Lane, Ewloe	FUL/000429/24	FCC	Construction of 315 dwellings (including 126 affordable homes), new vehicular and pedestrian accesses off Holywell Road and Green Lane, public open space, landscaping, offsite-highways works, foul and surface water drainage infrastructure and associated ancillary works.	3.53	Application submitted 04/06/2024. Decision Pending	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Water Environment and flood Risk

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<ul style="list-style-type: none">• Landscape and Visual Amenity• Physical Processes• Major Accidents and Disasters
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	FCC	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Application submitted 13/05/2024. Decision Pending	<ul style="list-style-type: none">• Air Quality• Noise and Vibration• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Water Environment and Flood Risk• Geology and Ground Conditions• Landscape and Visual Amenity• Terrestrial Heritage• Marine Heritage• Socio Economics, Recreation and Tourism• Human Health• Major Accidents and Disasters

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
16	The Mostyn Energy Park Extension Project	CML2283	N/A - Marine and Coastal Access Act 2009	Works comprising the construction of 360 m length of new quay, involving a reclamation (approximately 3.5 ha) to provide a continuous berthing frontage for the construction and O&M requirements of the offshore wind sector; Capital dredging to create a new berth pocket alongside the new quay wall, dredge the berths along the existing quay and the main navigation channel; Reuse a selected proportion of the suitable capital dredge arisings as engineering fill material for the reclamation and dispose of the remainder at the existing Mostyn Deep disposal site (IS102); Potential relocation of four existing dolphins (piles) to create a berth for Service Operation Vessels (SOVs) to provide O&M requirements of the offshore wind sector; Potential construction of a Ro-Ro pontoon linkspan; Maintenance dredging for the new berth, existing berths, navigational channel and harbour area; Disposal of maintenance dredge material at the existing marine disposal sites at Mostyn Deep (IS102) and Mostyn Breakwater (IS103) and / or reused as is currently permitted under the existing maintenance dredge and disposal marine licences; Use of reclaimed area as a storage/laydown area; and Providing environmental enhancements ¹⁵ to support natural mudflat restoration.	13.79	Application submitted 20/05/2024. Decision Pending Planned construction programme of approximately 2 years.	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Physical Processes
22	Residential Development at Land at Gladstone Way and Ash Lane, Hawarden, Deeside	FUL/000195/24	FCC	Construction of 300 dwellings (including 105 affordable homes), new vehicular and pedestrian accesses, public open space, landscaping and all associated ancillary works.	4.04	Application submitted 18/03/2024. Decision Pending.	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes• Human Health

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<ul style="list-style-type: none">• Major Accidents and Disasters
32	Residential Development at Land North of Dunkirk Way Norwich Drive Great Sutton Ellesmere Port	23/03825/FUL	Cheshire West & Chester Council	Erection of 267 No. dwellings with associated works.	9.64	Application Submitted 04/12/2023. Decision Pending	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	FCC	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	Scoping opinion decision date 28/02/2024	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Water Environment and Flood Risk• Landscape and Visual Amenity• Physical Processes• Terrestrial Heritage• Socio Economics, Recreation and Tourism• Human Health

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<ul style="list-style-type: none">• Major Accidents and Disasters
47	HyNet Carbon Dioxide Pipeline(HyNet CO ₂ Pipeline Project)	EN070007; CML2350	N/A – Nationally Significant Infrastructure Project; Marine and Coastal Access Act 2009	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing above-ground installations (AGI) to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or Horizontal Directional Drilling (HDD).</p>	0.07	<p>Development Consent Granted 20/03/2024.</p> <p>Construction start date planned 2024, for 16 months.</p> <p>Expected to be constructed and operational prior to construction of the Proposed Development – however included to assess a worst-case scenario of the project being delayed.</p>	<ul style="list-style-type: none">• Air Quality• Noise and Vibration• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Water Environment and Flood Risk• Geology and Ground Conditions• Landscape and Visual Amenity• Physical Processes• Terrestrial Heritage• Socio Economics, Recreation and Tourism• Human Health• Major Accidents and Disasters
49	Residential Development at Land North of Well Street, Buckley, Flintshire, CH7 2PQ	FUL/000826/23	FCC	Erection of 155 dwellings, construction of a new vehicular access, landscaping and associated works	6.89	Approved 20/03/2024	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<ul style="list-style-type: none">• Marine Ecology• Landscape and Visual Amenity• Physical Processes
54	Land adjacent to Cornist Lane, Flint, Pentre Halkyn & Babel	FUL/000633/23	FCC	Construction and operation of the three Block Valve Stations (BVS) at Cornist Lane near Flint, Pentre Halkyn and land off Racecourse Lane, Babel, Flintshire in connection with the HyNet Carbon Dioxide Pipeline proposal.	6.32	Approved 18/01/2024. Construction planned to finish in Q4 2027.	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	N/A – Development of National Significance	Combined Heat and Power (CHP) Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	Approved with Conditions 18/03/2025	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Water Environment and Flood Risk• Landscape and Visual Amenity• Physical Processes• Terrestrial Heritage• Socio Economics,

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<div>Recreation and Tourism</div> <ul style="list-style-type: none">• Human Health• Major Accidents and Disasters
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	FCC	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	<div>Approved 24/04/2023</div> <div>Construction to begin within 5 years of permission being granted (2028)</div>	<ul style="list-style-type: none">• Air Quality• Noise and Vibration• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Water Environment and Flood Risk• Geology and Ground Conditions• Landscape and Visual Amenity• Physical Processes• Terrestrial Heritage• Marine Heritage• Socio Economics, Recreation and Tourism• Human Health• Major Accidents and Disasters

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
83	Residential Development at Bromborough Wharf West Dock Road South, Bromborough, Wirral, CH62 3JQ	OUT/22/00957	Wirral Council	Application for outline planning permission with access considered for the demolition of all existing buildings and structures and the erection of up to 377 dwellings and associated infrastructure. (February 2024 Public Consultation on revised Environmental Statement, Plans, and Documents)	14.39	Application Submitted 11/10/2022. Decision Pending	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Physical Processes
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	FCC	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	Application Submitted 08/09/2022. Pending Decision	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes• Terrestrial Heritage• Socio Economics, Recreation and Tourism• Human Health• Major Accidents and Disasters
99	Residential Development at Bromborough Wharf East Dock Road South, Bromborough, Wirral, CH62 3JQ	OUT/22/00956	Wirral Council	Application for outline planning permission with access considered for the demolition of all existing buildings and structures and the erection of up to 598 dwellings and associated infrastructure. (February 2024 Public Consultation on revised Environmental Statement, Plans, and Documents)	14.64	Application Submitted 08/08/2022. Pending Decision	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Physical Processes

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
102	Padeswood Carbon Capture & Storage	DNS CAS-02009-W1R1Z7	N/A – Development of National Significance	Integrating Hanson UK's Padeswood Cement Works into the HyNet North West network through the capture of CO ₂ for transportation and subsequent storage in Eni's Liverpool Bay Storage facilities. The proposed project will capture approximately 7,200,000 tonnes of CO ₂ per year from cement Kiln located at Padeswood. The individual components of the development can be summarised as follows: Access roadways, construction and laydown compound areas, A CHP plant with 12MW electricity (minimum) and 83MW thermal of installed capacity, to produce electricity and heat to power the carbon capture equipment, a post Combustion Carbon Capture and Compression (PCCC) plant, to extract CO ₂ from waste gases and compress it for transport and storage, An underground CO ₂ transport pipeline, to transport capture CO ₂ from Padeswood Cement Works to Northop Hall Above Ground Installation (AGI) forming part of the HyNet CO ₂ pipeline approximately 10 km in length, The demolition of existing structures comprising a workshop, a block of residential garages, small office building and redundant slurry basins.	7.95	Approved with conditions 04/04/2025	<ul style="list-style-type: none"> • Air Quality • Traffic and Transport • Terrestrial and Aquatic Ecology • Marine Ecology • Landscape and Visual Amenity • Physical Processes • Human Health
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	FCC	Construction of a residential development of 141 no. dwellings and associated works	0.98	Approved 22/11/2023	<ul style="list-style-type: none"> • Air Quality • Noise and Vibration • Traffic and Transport • Terrestrial and Aquatic Ecology • Marine Ecology • Water Environment and Flood Risk • Geology and Ground Conditions

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<ul style="list-style-type: none">• Landscape and Visual Amenity• Physical Processes• Terrestrial Heritage• Marine Heritage• Socio Economics, Recreation and Tourism• Human Health• Major Accidents and Disasters
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	FCC; Marine License Application	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	Approved 26/10/2022	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Water Environment and Flood Risk• Landscape and Visual Amenity• Physical Processes• Terrestrial Heritage• Socio Economics, Recreation and Tourism• Human Health

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<ul style="list-style-type: none">• Major Accidents and Disasters
141	The Airfields (Airfields Delta) Welsh Road Sealand Deeside	063721	FCC	Erection of a Paper Processing Mill to produce and manufacture tissue paper (B2, B8 use class) with ancillary B1a office space; associated servicing and infrastructure including car parking, HGV parking and vehicle and pedestrian circulation; noise mitigation features; earthworks to create development platforms; creation of drainage features including a new outfall to the River Dee; water treatment plant; and landscaping.	3.64	Application submitted 04/11/2024. Decision Pending Planned construction programme of 13 years (2022-2035)	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes• Human Health• Major Accidents and Disasters
145	Residential Development at Land to the south of New Brighton Road, New Brighton, Mold, CH7 6RB	063507	FCC	Residential development comprising 90 Dwellings including the provision of affordable units, areas of public open space, landscaping and associated works.	5.16	Approved 08/07/2024	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes
159	Bretton Hall Solar Farm	DNS/3251545	N/A – Development of National Significance	A proposed solar farm and grid connection, supporting energy infrastructure including battery storage and associated site works incorporating partial widening of an existing access, maintenance tracks, perimeter and stock fencing, CCTV cameras and the provision of a customer cabin, outdoor classroom, and parking.	10	Approved with Conditions 19/12/2023. Construction start date planned Q4 2024	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<ul style="list-style-type: none">• Landscape and Visual Amenity• Physical Processes
183	Residential Development at Land to the north of Gwernaffield Road, Mold, Flintshire	061994	FCC	Erection of residential development of 235 no. units together with associated public open space and infrastructure	6.33	Approved 13/02/2025	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes
199	Residential Development at Land Bordering Clifton Drive and Sealand Road Chester Cheshire	20/02712/OUT	Cheshire West & Chester Council	Erection of up to 150 dwellings and demolition of nos. 272, 274, 276 and 278 Sealand Road with all matters reserved except access	9.87	Application submitted 30/07/2020. Pending Decision	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	FCC	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	Application submitted 18/04/2018. Pending Decision	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
							<ul style="list-style-type: none">• Physical Processes• Terrestrial Heritage• Socio Economics, Recreation and Tourism• Human Health• Major Accidents and Disasters
331	Residential Development at Land off Mold Road & Bryn Road, New Brighton, Mold, Flintshire, CH7 6WL	FUL/001091/24	FCC	Full planning for 135 affordable dwellings, on site public open space and site infrastructure.	5.48	Application submitted 17/12/2024. Pending Decision	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes
341	Land At Wrexham Road, Chester	24/02763/REM	Cheshire West & Chester Council	<p>Reserved matters application, pursuant to part of the outline element of the hybrid planning permission 17/02453/OUT (as amended by 22/01679/S73), with details (external appearance, landscaping, site layout and scale) of 1.5FE primary school (to be delivered over two phases) with associated playing fields and car parking.</p> <p>17/02453/OUT: Part A - (full permission) for phased development of 483 dwellings and associated infrastructure (including playing fields / open space); Part B - (outline permission - all matters reserved apart from access) for a local centre (comprising supermarket (Use Class A1 (500sqm); other shops (Use Class A1)(500sqm); cafe/restaurant (Use Class A3)(200sqm); public house (Use Class A4)(650sqm); and</p>	12.21	Approved 12/12/2024	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Landscape and Visual Amenity• Physical Processes

ID	Name of Development	Application Reference	Local Planning Authority	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Status	Relevant Technical Topics
				nursery/creche (Use Class D1) (600sqm) plus an outdoor play area) and a primary school with associated playing fields (Hybrid application)			
342	Land At Sutton New Hall Farm, Ledsham Road, Little Sutton, Ellesmere Port, Cheshire	24/02885/REM	Cheshire West & Chester Council	<p>Details of electric sub-station (intended to service the adjacent site for a primary school) under outline permission 12/02091/OUT</p> <p>12/02091/OUT: Residential development of up to 2,000 homes, up to 400 sqm of retail floor space for a local shop, a new primary school, a community building, a new linear park, playing fields and other public open space, new allotments, together with new accesses, streets and other related infrastructure. (Outline Application) (NB minor change removing reference to conversion of existing farm buildings to residential)</p>	9.23	Approved 20/02/2025	<ul style="list-style-type: none">• Air Quality• Traffic and Transport• Terrestrial and Aquatic Ecology• Marine Ecology• Landscape and Visual Amenity• Physical Processes
358	Former Mod Site, Wirral	DPP4/22/01080	Wirral Council	Outline planning application with all matters reserved except for points of access (from Old Hall Road and across Warren Lane) for residential development of up to 249 dwellings with associated parking, servicing, landscaping, drainage features and associated infrastructure	12.95	Approved with conditions 05/07/2022	<ul style="list-style-type: none">• Air Quality• Terrestrial and Aquatic Ecology• Landscape and Visual Amenity• Physical Processes

Stage 3: Information Gathering

24.4.25 In order to assess the potential for cumulative effects, there is a need to understand the environmental effects of proposed schemes. For each proposed scheme on the short list the following information has been reviewed (as relevant) to inform the cumulative effects assessment:

- EIA Screening Letters / Requests;
- EIA Scoping Reports;
- environmental reporting (included standalone reports, PEIRs and ESs);
- other reporting submitted with the relevant application, such as Design and Access Statements, Planning Statements and Construction Environmental Management Plans (CEMPs) (or similar); and
- details available on project website, such as consultation material.

Stage 4: Assessment

24.4.26 Consideration has been given, as relevant, to those short-listed proposed schemes, which may result in cumulative effects, together with the Proposed Development from the perspective of each relevant technical assessment.

24.4.27 The cumulative assessment has been undertaken on a topic-by-topic basis, rather than scheme-by-scheme, as recommended in Annex 2 to PINS 'Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment' (Ref 12-4). This has been done so that a cumulative assessment of the Proposed Development with all identified proposed schemes could be provided. Information recommended to be provided in Annex 2 to PINS 'Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment' (Ref 12-4) has been presented in the Section 24.5 of this chapter.

24.4.28 Mitigation of combined effects is best achieved through management and control measures to prevent the individual impacts in the first instance or reduce the impacts themselves and therefore reduce the likelihood of such interactions occurring, in accordance with the mitigation hierarchy.

24.4.29 The approach outlined has been used to assess potential combined effects, where more than one technical assessment chapter identifies a residual effect of minor significance or greater on an individual or group of common resources and / or receptors.

24.4.30 The inter-project effects assessment is presented in Section 24.5 of this chapter.

Intra-Project Effects

24.4.31 The EIA regulations explicitly refer to the requirement for an assessment of intra-project effects, stating:

- *“The EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors- ...(e) the interaction between the factors referred to in sub-paragraphs (a) to (d).”*

24.4.32 No further guidance or requirement beyond the need for an assessment of the interactions between types of effect is provided.

24.4.33 Examples of the types of impacts that could be experienced by human receptors, and which may interact are the combined impacts relating to different activities relating to noise, traffic, air quality and visual effects, during both construction and operation. Other examples include the impacts on local ecology as a result of physical disturbance and noise impacts, or the visual impact and impact caused to the cultural heritage setting as a result of a new part of the Proposed Development.

Study Area

24.4.34 The study area for the assessment of intra-project effects is defined by the study areas used in each of the environmental topics as set out in **Chapters 8 to 23 (EN010166/APP/6.2)**, summarised above in **Table 24-4**.

Methodology

24.4.35 There is no established methodology for assessing the effects on sensitive resources and / or receptors or resources resulting from the interaction of different environmental effects. The assessment of potential intra-project effects for the Proposed Development is therefore based on a screening exercise to identify the potential intra-project effects, and where they are considered within the ES. Where potential intra-project effects are not assessed within **Chapters 8 to 23 (EN010166/APP/6.2)** they have been considered within Section 24.6.

24.4.36 A two stage screening exercise was undertaken to identify the environmental resources and / or receptors considered within the ES to consider if they could experience a combination of adverse or beneficial effects (intra-project effects) as a result of the Proposed Development.

Stage 1: Shared Receptor List

24.4.37 The first stage of the screening exercise identified where resources and / or receptors could be affected by more than one type of effect (usually where they were considered in more than one technical chapter). Resources and / or receptors were categorised into two groups, those with potential to experience intra-project effects, and those with no potential to experience intra-project effects:

- potential - where it was identified that either there were two or more types of effect for a particular resource or receptor, or two or more topics had identified effects on that resource or receptor.

- no potential - Where it was identified that either there was only one type of effect for a particular resource or receptor, or only one topic had identified effects on that resource or receptor.

24.4.38 Where no potential interactions were identified these were not considered further within the assessment in Section 24.6.

Stage 2: Evaluation of Cross-Chapter Relationships

24.4.39 The second and final stage of the screening exercise was to identify the intra-project effects considered and assessed within the technical assessments presented in **Chapters 8 to 23 (EN010166/APP/6.2)**. Where potential for intra-project effects had been identified but were not already considered in **Chapters 8 to 23 (EN010166/APP/6.2)**, these were taken forward for separate and further consideration and assessment in Section 24.6.

Assessment Criteria

24.4.40 An assessment of intra-project effects not inherently considered within **Chapters 8 to 23 (EN010166/APP/6.2)** is presented in Section 24.6. The assessment considers the potential for an identified resource or receptor to experience a combination of adverse or beneficial effects as a result of the Proposed Development.

24.4.41 Each of the technical assessments reported within **Chapters 8 to 23 (EN010166/APP/6.2)** has identified residual effects which may occur as result of the Proposed Development, ranging from negligible or minor (not significant) to moderate and major (significant). In assessing potential intra-project effects, resources and / or receptors experiencing individual residual effects of minor or greater have been considered.

24.4.42 Multiple effects upon one or more common resources and / or receptors could theoretically interact or combine, to result in a combined effect which is more or less significant than the effects individually. The potential for new or different significant environmental effects to arise as a result of a combination of one or more environmental effects has been assessed using the criteria provided in **Table 24-7**.

Table 24-7: Criteria for assessing the potential for new or different significant environmental intra-project effects

Potential	Description
High (significant)	Where a resource or receptor is likely to experience two or more significant environmental effects.
Moderate (significant)	Where a resource or receptor is likely to experience one significant environmental effects with a number of not significant effects.
Low (not significant)	Where a resource or receptor is likely to experience one or more not significant, but no significant, environmental effects.

Potential	Description
None	Where a resource or receptor is considered in the intra-project assessment and is only considered in one technical assessment only as it is beyond the study area of other technical assessment.

24.4.43 The intra-project effects assessment is presented in Section 24.6 of this chapter.

24.5 Cumulative Effects Assessment: Effects with Other Plans, Projects and Programmes (inter-project effects)

- 24.5.1 Other proposed schemes that have been identified within the short listed proposed schemes list (**Appendix 24-B: Short List of Proposed Schemes (EN010166/APP/6.4)**) for each technical discipline are listed below within each topic they may generate cumulative effects for and are assessed further for their potential to generate these cumulative effects.
- 24.5.2 As the Proposed Development has a likely operational life of 30 years, it is not possible to state for certain which proposed schemes could result in cumulative effects when considered with the decommissioning of the Proposed Development. However, the effects of decommissioning identified within each of the topic assessments in **Chapters 8 to 23 (EN010166/APP/6.2)** are considered likely to be similar to those or less than during construction and it is assumed that any nearby construction/decommissioning sites future proposed schemes at the relevant time would operate to a similar level of good practice in accordance with their own CEMPs. As a result, decommissioning effects have not been considered in this section.

Air Quality

- 24.5.3 **Table 24-8** below provides a summary of how each of the proposed schemes included in the Short List (**Table 24-6**) has been evaluated in relation to potential cumulative effects on Air Quality. Only the proposed schemes that have been captured within the Air Quality ZOIs, as outlined in **Table 24-4**, have been considered as part of this assessment.
- 24.5.4 The following Air Quality impact pathways were considered for the cumulative effects assessment of the short listed proposed schemes during construction and operation:
- construction phase cumulative dust impacts - consideration of fugitive emissions of dust and particulate matter;
 - construction phase and operational phase - road traffic emissions, including emissions from Non-Road Mobile Machinery (NRMM); and
 - operational phase - prediction of the impacts and effects of emissions to air from the power plant on human health and ecological receptors.
- 24.5.5 There is a risk that there could be cumulative impacts at dust sensitive receptors screened into the construction dust assessment for the Proposed Development due to the construction of other committed developments happening simultaneously. The locations and timings of construction works and the location of road links that could potentially be affected by track out have been considered for all of the short-listed schemes. As there is no overlap between the assessment distance criteria for the Proposed Development and any other known scheme it can be concluded with confidence that combined effects would not occur.
- 24.5.6 The traffic data used in the road traffic emissions assessment includes predicted traffic growth on modelled roads between the current and the future year baselines. The methodology to determine the growth in traffic on the local road network is described in **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)**. The predicted growth included in the traffic data does account for increases in traffic flows associated with other committed developments in the area, as identified in **Table 24-10**. Therefore, the road traffic air quality assessment of the Proposed Development is inherently cumulative.
- 24.5.7 **Table 24-8** below provides a summary of how each of the proposed schemes included in the Short List has been evaluated in relation to potential cumulative effects due to emissions from stacks during the operational phase.

Table 24-8: Short listed proposed schemes within the Air Quality study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped in Stack emissions considered in the operational assessment
6	Proposed Residential Development Land off Holywell Road and Green Lane, Ewloe	FUL/000429/24	Construction of 315 dwellings (including 126 affordable homes), new vehicular and pedestrian accesses off Holywell Road and Green Lane, public open space, landscaping, offsite-highways works, foul and surface water drainage infrastructure and associated ancillary works.	3.53	Scoped out Not considered further – no stack emissions.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped out Not considered further – no stack emissions.
16	The Mostyn Energy Park Extension Project	CML2283	Works comprising the construction of 360 m length of new quay, involving a reclamation (approximately 3.5 ha) to provide a continuous berthing frontage for the construction and O&M requirements of the offshore wind sector; Capital dredging to create a new berth pocket alongside the new quay wall, dredge the berths along the existing quay and the main navigation channel; Reuse a selected proportion of the suitable capital dredge arisings as engineering fill material for the reclamation and dispose of the remainder at the existing Mostyn Deep disposal site (IS102); Potential relocation of four existing dolphins (piles) to create a berth for SOVs to provide O&M requirements of the offshore wind sector; Potential construction of a Ro-Ro pontoon linkspan; Maintenance dredging for the new berth, existing berths, navigational channel and harbour area; Disposal of maintenance dredge material at the existing marine disposal sites at Mostyn Deep (IS102) and Mostyn Breakwater (IS103) and / or reused as is currently permitted under the existing maintenance dredge and disposal marine licences; Use of reclaimed area as a storage/laydown area; and Providing environmental enhancements to support natural mudflat restoration.	13.79	Scoped out Not considered further – no stack emissions.
22	Residential Development at Land at Gladstone Way and Ash Lane, Hawarden, Deeside	FUL/000195/24	Construction of 300 dwellings (including 105 affordable homes), new vehicular and pedestrian accesses, public open space, landscaping and all associated ancillary works.	4.04	Scoped out Not considered further – no stack emissions.
32	Residential Development at Land North of Dunkirk	23/03825/FUL	Erection of 267 No. dwellings with associated works.	9.64	Scoped out

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
	Way Norwich Drive Great Sutton Ellesmere Port				Not considered further – no stack emissions.
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	Scoped out Currently at scoping stage
47	HyNet Carbon Dioxide Pipeline(HyNet CO ₂ Pipeline Project)	EN070007; CML2350	A CO ₂ pipeline that will transport CO ₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO ₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing above-ground installations (AGI) to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO ₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales. Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.	0.07	Scoped out Not considered further – no emissions apart from odours, which have been scoped out of this assessment.
49	Residential Development at Land North of Well Street, Buckley, Flintshire, CH7 2PQ	FUL/000826/23	Erection of 155 dwellings, construction of a new vehicular access, landscaping and associated works	6.89	Scoped out Not considered further – no stack emissions.
54	Land adjacent to Cornist Lane, Flint, Pentre Halkyn & Babel	FUL/000633/23	Construction and operation of the three BVS at Cornist Lane near Flint, Pentre Halkyn and land off Racecourse Lane, Babel, Flintshire in connection with the with HyNet Carbon Dioxide Pipeline proposal.	6.32	Scoped out Not considered further – no emissions apart from odours, which have been scoped out of this assessment.
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	Scoped in Stack emissions considered in the operational assessment.
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	Scoped out Scoped out

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					Not considered further – no stack emissions.
83	Residential Development at Bromborough Wharf West Dock Road South, Bromborough, Wirral, CH62 3JQ	OUT/22/00957	Application for outline planning permission with access considered for the demolition of all existing buildings and structures and the erection of up to 377 dwellings and associated infrastructure. (February 2024 Public Consultation on revised Environmental Statement, Plans, and Documents)	14.39	Scoped out Not considered further – no stack emissions.
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	Scoped out Not considered further – no stack emissions.
99	Residential Development at Bromborough Wharf East Dock Road South, Bromborough, Wirral, CH62 3JQ	OUT/22/00956	Application for outline planning permission with access considered for the demolition of all existing buildings and structures and the erection of up to 598 dwellings and associated infrastructure. (February 2024 Public Consultation on revised Environmental Statement, Plans, and Documents)	14.64	Scoped out Not considered further – no stack emissions.
102	Padeswood Carbon Capture & Storage	DNS CAS-02009-W1R1Z7	Integrating Hanson UK's Padeswood Cement Works into the HyNet North West network through the capture of CO ₂ for transportation and subsequent storage in Eni's Liverpool Bay Storage facilities. The proposed project will capture approximately 7,200,000 tonnes of CO ₂ per year from cement Kiln located at Padeswood. The individual components of the development can be summarised as follows: Access roadways, construction and laydown compound areas, A CHP plant with 12MW electricity (minimum) and 83MW thermal of installed capacity, to produce electricity and heat to power the carbon capture equipment, a PCCC plant, to extract CO ₂ from waste gases and compress it for transport and storage, An underground CO ₂ transport pipeline, to transport capture CO ₂ from Padeswood Cement Works to Northop Hall AGI (above ground installation) forming part of the HyNet CO ₂ pipeline approximately 10 km in length, The demolition of existing structures comprising a workshop, a block of residential garages, small office building and redundant slurry basins.	7.95	Scoped in Stack emissions considered in the operational assessment.
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped out Not considered further – no stack emissions.
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	Scoped in Stack emissions considered in the operational assessment.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
141	The Airfields (Airfields Delta) Welsh Road Sealand Deeside	063721	Erection of a Paper Processing Mill to produce and manufacture tissue paper (B2, B8 use class) with ancillary B1a office space; associated servicing and infrastructure including car parking, HGV parking and vehicle and pedestrian circulation; noise mitigation features; earthworks to create development platforms; creation of drainage features including a new outfall to the River Dee; water treatment plant; and landscaping.	3.64	Scoped in Stack emissions considered in the operational assessment.
145	Residential Development at Land to the south of New Brighton Road, New Brighton, Mold, CH7 6RB	063507	Residential development comprising 90 Dwellings including the provision of affordable units, areas of public open space, landscaping and associated works.	5.16	Scoped out Not considered further – no stack emissions.
159	Bretton Hall Solar Farm	DNS/3251545	A proposed solar farm and grid connection, supporting energy infrastructure including battery storage and associated site works incorporating partial widening of an existing access, maintenance tracks, perimeter and stock fencing, CCTV cameras and the provision of a customer cabin, outdoor classroom, and parking.	10	Scoped out Not considered further – no stack emissions.
183	Residential Development at Land to the north of Gwernaffield Road, Mold, Flintshire	061994	Erection of residential development of 235 no. units together with associated public open space and infrastructure	6.33	Scoped out Not considered further – no stack emissions.
199	Residential Development at Land Bordering Clifton Drive and Sealand Road Chester Cheshire	20/02712/OUT	Erection of up to 150 dwellings and demolition of nos. 272, 274, 276 and 278 Sealand Road with all matters reserved except access	9.87	Scoped out Not considered further – no stack emissions.
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	Scoped out Not considered further – no stack emissions.
331	Residential Development at Land off Mold Road & Bryn Road, New Brighton, Mold, Flintshire, CH7 6WL	FUL/001091/24	Full planning for 135 affordable dwellings, on site public open space and site infrastructure.	5.48	Scoped out Not considered further – no stack emissions.
341	Land At Wrexham Road, Chester	24/02763/REM	Reserved matters application, pursuant to part of the outline element of the hybrid planning permission 17/02453/OUT (as amended by 22/01679/S73), with details (external appearance, landscaping, site layout and scale) of 1.5FE primary school (to be delivered over two phases) with associated playing fields and car parking. 17/02453/OUT: Part A - (full permission) for phased development of 483 dwellings and associated infrastructure (including playing fields / open space);	12.21	Scoped out Not considered further – no stack emissions.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			Part B - (outline permission - all matters reserved apart from access) for a local centre (comprising supermarket (Use Class A1 (500sqm); other shops (Use Class A1)(500sqm); cafe/restaurant (Use Class A3)(200sqm); public house (Use Class A4)(650sqm); and nursery/creche (Use Class D1) (600sqm) plus an outdoor play area) and a primary school with associated playing fields (Hybrid application)		
342	Land At Sutton New Hall Farm, Ledsham Road, Little Sutton, Ellesmere Port, Cheshire	24/02885/REM	Details of electric sub-station (intended to service the adjacent site for a primary school) under outline permission 12/02091/OUT 12/02091/OUT: Residential development of up to 2,000 homes, up to 400 sqm of retail floor space for a local shop, a new primary school, a community building, a new linear park, playing fields and other public open space, new allotments, together with new accesses, streets and other related infrastructure. (Outline Application) (NB minor change removing reference to conversion of existing farm buildings to residential)	9.23	Scoped out Not considered further – no stack emissions.
358	Former Mod Site, Wirral	DPP4/22/01080	Outline planning application with all matters reserved except for points of access (from Old Hall Road and across Warren Lane) for residential development of up to 249 dwellings with associated parking, servicing, landscaping, drainage features and associated infrastructure	12.95	Scoped out Not considered further – no stack emissions.

Cumulative Effects During Construction

Dust

- 24.5.8 The cumulative impacts from existing sources of fugitive dust in the area are accounted for in the adoption of site-specific background pollutant concentrations from archive sources.
- 24.5.9 There is a risk that there could be cumulative impacts at dust sensitive receptors screened into the construction dust assessment for the Proposed Development due to the construction of other committed developments happening simultaneously. The locations and timings of construction works and the location of road links that could potentially be affected by track out have been considered for all of the short-listed proposed schemes. As there is no overlap between the assessment distance criteria for the Proposed Development and any other known proposed scheme it can be concluded with confidence that combined effects would not occur.
- 24.5.10 It is reasonable to assume, as a worst-case, that each of the short-listed proposed schemes would be required by their respective consent to consider the risk of dust impacts and to have to implement proportionate control measures to ensure impacts at sensitive receptors are minimised. The use of good practice measures to manage dust risk is standard practice on all well managed construction sites across the United Kingdom (UK) and its requirement through conditions on development consents is also established good practice.
- 24.5.11 It is concluded that none of the short-listed proposed schemes are undertaking construction works that would be able to give rise to a cumulative or combined effect on amenity, human health and ecosystems.

Traffic

- 24.5.12 Cumulative impacts from existing sources of pollution in the area are accounted for in the adoption of site-specific background pollutant concentrations from archive sources and a programme of project-specific baseline air quality monitoring in proximity to Proposed Development. It is recognised, however, that there is a potential impact on local air quality from emission sources which may not have been present at the time of the survey.
- 24.5.13 The traffic data used in this assessment includes predicted traffic growth on modelled roads between the current and the future year baselines. The methodology to determine the growth in traffic on the local road network is described in **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)**. The predicted growth included in the traffic data does account for increases in traffic flows associated with other committed developments in the area. Therefore, the construction traffic air quality assessment of the Proposed Development is inherently cumulative.
- 24.5.14 Additional vehicles from other committed developments were accounted for in the traffic assessment and included in the "Future Year without Proposed Development" data used in this assessment. Detailed results are presented in **Appendix 8-C: Air Quality Traffic Emissions Assessment (EN010166/APP/6.4)** and the assessment of significance is as detailed in **Chapter 8: Air Quality (EN010166/APP/6.2.8)**.

Cumulative Effects During Operation

- 24.5.15 An assessment of the potential for cumulative effects upon air quality during the operational phase of the Proposed Development is included in **Chapter 8: Air Quality (EN010166/APP/6.2.8)**. For the operational phase, the Zol for potential cumulative air quality effects is 15 km, as illustrated by **Figure 24-1: Zones of Influence (EN010166/APP/6.3)**. Following consideration of all developments within the Zol.
- 24.5.16 The results presented within the air quality assessment are inherently cumulative, as the air quality modelling for the operational phase includes all relevant committed developments on top of the existing background, both with and without the Proposed Development. The full results of the inherently cumulative assessment are presented in **Appendix 8-D: Air Quality Operational Assessment (EN010166/APP/6.4)**, with the details of the cumulative developments included in the model presented in Annex D of **Appendix 8-D: Air Quality Operational Assessment (EN010166/APP/6.4)** for process emissions (also detailed in **Table 24-8** above) and in **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)** for operational traffic.
- 24.5.17 The predicted growth included in the traffic data does account for increases in traffic flows associated with other committed developments in the area.
- 24.5.18 Additional vehicles from other committed developments were accounted for in the traffic assessment and included in the "Future Year without Proposed Development" data used in this assessment. Detailed results are presented in **Appendix 8-C: Air Quality Traffic Emissions Assessment (EN010166/APP/6.4)**.
- 24.5.19 The information considered within the air quality assessment for these developments come from planning applications and associated air quality assessment reports and ES chapters.
- 24.5.20 Cumulative effects are therefore accounted for in the predicted environmental concentrations (PECs) results. For impacts on human health, PECs are below their respective Air Quality Assessment Level (AQAL) for all pollutants, therefore cumulative operational effects are considered to be **not significant**. The cumulative effects for the ecological receptors are presented in **Chapter 11: Terrestrial and Aquatic Ecology (EN010166/APP/6.2.11)**.

Noise and Vibration

24.5.21 **Table 24-9** below provides a summary of how each of the proposed schemes included in the Short List (**Table 24-6**) has been evaluated in relation to potential cumulative effects on Noise and Vibration. Only the proposed schemes that were captured within the Noise and Vibration ZOIs, as outlined in **Table 24-4**, have been considered as part of this assessment.

24.5.22 The following Noise and Vibration impact pathways were considered for the cumulative effects assessment of the short listed proposed schemes during construction and operation:

- construction noise and vibration effects from the Proposed Development; and
- operational sound effects from the Proposed Development.

Table 24-9: Short listed proposed schemes within the Noise and Vibration study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped out Not considered for further assessment, due to distance from the construction works associated with the Proposed Development. No cumulative operational impacts
47	HyNet Carbon Dioxide Pipeline (HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.</p>	0.07	Scoped in Considered further as potential for cumulative effects at R1, R2, R3, R4 and R5 during construction phase
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car	0.47	Scoped out Not considered for further assessment, due to distance from the construction works associated with the Proposed Development. No cumulative operational impacts

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			parking arrangements and extended vehicular access off Ffordd Dewi.		
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped out Not considered for further assessment, due to distance from the construction works associated with the Proposed Development. No cumulative operational impacts

Cumulative Effects During Construction

- 24.5.23 There is the potential for cumulative effects if the construction works for Hynet Pipeline project (ID 47) which is located in the vicinity if the proposed CO₂ connection corridor and compound occur at the same time as construction works at the Proposed Development.
- 24.5.24 The predicted cumulative construction noise effects at NSRs 1-5 are the same as the Proposed Development alone. Given the generally localised nature of noise effects associated with the construction of each proposed scheme, and provided each proposed scheme complies with assigned noise and vibration limits and follows the general guidance contained within BS 5228-1 with respect to noise mitigation, it is considered unlikely that significant cumulative construction noise effects will occur, with the cumulative effects being **minor adverse or less (not significant)**.
- 24.5.25 The traffic data used in this assessment includes predicted traffic growth on modelled roads between the current and the future year baselines. The methodology to determine the growth in traffic on the local road network is described in **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)**. The predicted growth included in the traffic data does account for increases in traffic flows associated with other committed developments in the area. Therefore, the construction traffic noise assessment of the Proposed Development is inherently cumulative.

Cumulative Effects During Operation

- 24.5.26 There are no cumulative effects during operation due to distance between the Main Development Area and Hynet Pipeline project (ID 47).

Traffic and Transport

24.5.27 **Table 24-10** below provides a summary of how each of the short listed proposed schemes (**Table 24-6**) have been evaluated in relation to potential cumulative effects on Traffic and Transport.

24.5.28 It should be noted, in stage 1 and 2, that the search area for proposed schemes, as displayed in **Appendix 24-A: Long List of Proposed Schemes** and **Appendix 24-B: Short List of Proposed Schemes (EN010166/APP/6.4)**, covered a 15 km radius around the Construction and Operation Area. As part of this assessment, proposed schemes identified within 15 km have been reviewed to determine whether they will impact the assessed highway links as set out in **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)** and the public transport, cycle and walking provision within the immediate vicinity of these links (see **Table 24-4**). The proposed schemes that do not meet these criteria, and have not been included within **Table 24-10** below are as follows:

- ID 5, Proposed Residential Development Land off Holywell Road and Green Lane, Ewloe;
- ID 32, Residential Development at Land North of Dunkirk Way Norwich Drive Great Sutton Ellesmere Port;
- ID 49, Residential Development at Land North of Well Street, Buckley, Flintshire, CH7 2PQ;
- ID 83, Residential Development at Bromborough Wharf West Dock Road South, Bromborough, Wirral, CH62 3JQ;
- ID 92, Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH;
- ID 99, Residential Development at Bromborough Wharf East Dock Road South, Bromborough, Wirral, CH62 3JQ;
- ID 102, Padeswood Carbon Capture & Storage;
- ID 145, Residential Development at Land to the south of New Brighton Road, New Brighton, Mold, CH7 6RB;
- ID 183, Residential Development at Land to the north of Gwernaffield Road, Mold, Flintshire;
- ID 199, Residential Development at Land Bordering Clifton Drive and Sealand Road Chester Cheshire;
- ID 311, Residential Development at Street Record, Northop Road, Flint, Flintshire;
- ID 331, Residential Development at Land off Mold Road & Bryn Road, New Brighton, Mold, Flintshire, CH7 6WL;
- ID 341, 24/02763/REM;
- ID 342, 24/02885/REM; and
- ID 358, DPP4/22/01080.

24.5.29 The following Traffic and Transport impact pathways were considered for the cumulative effects assessment of the short listed proposed schemes during operation and construction:

- *construction* - the construction phase would give rise to an increase in Heavy Goods Vehicles (HGV) (for deliveries) and light vehicle (construction staff) movements on the highway network. The following impacts are considered within the construction phase assessment:
 - the impacts of a temporary increase in traffic during construction;
 - the impacts on PRow during construction;
 - the impacts relating to Abnormal Indivisible Load (AIL); and
 - the in-combination / cumulative effects arising as a result of other committed developments within the vicinity of the Proposed Development; and
- *operation* – this assessment includes an assessment of operational traffic impacts as part of in-combination / cumulative effects arising as a result of other committed developments within the vicinity of the Proposed Development.

Table 24-10: Short listed proposed schemes within the Traffic and Transport study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped out The proposed scheme material does not include any assessment of traffic generation during construction or operation and therefore has not been included in the cumulative assessment. As set out in Section 10.4 of Chapter 10: Traffic and Transport (EN010166/APP/6.2.10) , calculations included in the generation of TEMPro growth factors take account of local uplifts in housing, employment and car ownership and therefore some element of growth, associated with schemes of this nature, would already be accounted for within the future year assessments of the construction and operational phases of Proposed Development.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped in The proposed scheme material includes a Transport Assessment, which has been reviewed. Proposed Development traffic is noted to intercept the A548 and as such, 74 two-way trips have been included within the Traffic and Transport assessment of the construction and operational phases of development.
16	The Mostyn Energy Park Extension Project	CML2283	Works comprising the construction of 360 m length of new quay, involving a reclamation (approximately 3.5 ha) to provide a continuous berthing frontage for the construction and O&M requirements of the offshore wind sector; Capital dredging to create a new berth pocket alongside the new quay wall, dredge the berths along the existing quay and the main navigation channel; Reuse a selected proportion of the suitable capital dredge arisings as engineering fill material for the reclamation and dispose of the remainder at the existing Mostyn Deep disposal site (IS102); Potential relocation of four existing dolphins (piles) to create a berth for SOVs to provide O&M requirements of the offshore wind sector; Potential construction of a Ro-Ro pontoon linkspan; Maintenance dredging for the new berth, existing berths, navigational channel and harbour area; Disposal of maintenance dredge material at the existing marine disposal sites at Mostyn Deep (IS102) and	13.79	Scoped out The proposed scheme material does not include any assessment of traffic generation during construction or operation and therefore has not been included in the cumulative assessment. As set out in Section 10.4 of Chapter 10: Traffic and Transport (EN010166/APP/6.2.10) , calculations included in the generation of TEMPro growth factors take account of local uplifts in housing, employment and car ownership and therefore some element of growth, associated with schemes of this nature, would already be accounted for within the future year assessments of the construction and operational phases of development.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			Mostyn Breakwater (IS103) and / or reused as is currently permitted under the existing maintenance dredge and disposal marine licences; Use of reclaimed area as a storage/laydown area; and Providing environmental enhancements ¹⁵ to support natural mudflat restoration.		
22	Residential Development at Land at Gladstone Way and Ash Lane, Hawarden, Deeside	FUL/000195/24	Construction of 300 dwellings (including 105 affordable homes), new vehicular and pedestrian accesses, public open space, landscaping and all associated ancillary works.	4.04	Scoped in The proposed scheme material includes a Transport Assessment, which has been reviewed. Proposed development traffic is noted to intercept the B5129 and as such, 17 two-way trips have been included within the Traffic and Transport assessment of the construction and operational phases of development.
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	Scoped out EIA Scoping Report has been reviewed in relation to transport. Whilst transport effects are scoped in during construction, there is insufficient detail included to determine the level of trip generation and whether this would intercept the Traffic and Transport assessment links. As set out in Section 10.4 of Chapter 10: Traffic and Transport (EN010166/APP/6.2.10) , calculations included in the generation of TEMPro growth factors take account of local uplifts in housing, employment and car ownership and therefore some element of growth, associated with schemes of this nature, would already be accounted for within the future year assessments of the construction and operational phases of development.
47	HyNet Carbon Dioxide Pipeline(HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI) to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless</p>	0.07	Scoped out The proposed scheme material has been reviewed, and it has been determined that the peak construction scenario falls years prior to the assessed construction peak in the Traffic and Transport Chapter. Operational traffic for this proposed scheme has also been scoped out. Therefore, there is no consideration of development trips included in the Traffic and Transport assessment. As set out in Section 10.4 of Chapter 10: Traffic and Transport (EN010166/APP/6.2.10) , calculations included in the generation of TEMPro growth factors take account of local uplifts in housing, employment and car ownership and therefore some element of growth, associated with schemes of this nature, would already be accounted for within the future year assessments of the construction and operational phases of development.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			crossing technique, either micro-tunnelling or HDD.		
54	Land adjacent to Cornist Lane, Flint, Pentre Halkyn & Babel	FUL/000633/23	Construction and operation of the three BVS at Cornist Lane near Flint, Pentre Halkyn and land off Racecourse Lane, Babel, Flintshire in connection with the with HyNet Carbon Dioxide Pipeline proposal.	6.32	Scoped out The proposed scheme material has been reviewed, and it has been determined that the peak construction scenario falls years prior to the assessed construction peak in the Traffic and Transport Chapter. Operational traffic for this proposed scheme has also been scoped out. Therefore, there is no consideration of development trips included in the Traffic and Transport assessment.
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	Scoped in The proposed scheme material includes a Transport Assessment, which has been reviewed. Proposed development traffic is noted to intercept the A548 (East of Site Access) and as such, 596 two-way trips have been included within the Traffic and Transport assessment of the construction and operational phases of development.
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	Scoped out The proposed scheme material does not include any assessment of traffic generation during construction or operation and therefore has not been included in the cumulative assessment. As set out in Section 10.4 of Chapter 10: Traffic and Transport (EN010166/APP/6.2.10) , calculations included in the generation of TEMPro growth factors take account of local uplifts in housing, employment and car ownership and therefore some element of growth, associated with schemes of this nature, would already be accounted for within the future year assessments of the construction and operational phases of development.
113	Residential Development at Field West of, Highmere Drive, Connaught Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped in The proposed scheme material includes a Transport Assessment, which has been reviewed. Proposed development traffic is noted to intercept Golftyn Lane and Mold Road and as such, 142 and 75 two-way trips have been included within the Traffic and Transport assessment of the construction and operational phases of development, respectively.
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	Scoped out The Transport Assessment has been reviewed and replicates the trip generation captured as part of proposed scheme ID 55. This has

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					therefore already been considered within the cumulative assessment of the construction and operational phases of development.
141	The Airfields (Airfields Delta) Welsh Road Sealand Deeside	063721	Erection of a Paper Processing Mill to produce and manufacture tissue paper (B2, B8 use class) with ancillary B1a office space; associated servicing and infrastructure including car parking, HGV parking and vehicle and pedestrian circulation; noise mitigation features; earthworks to create development platforms; creation of drainage features including a new outfall to the River Dee; water treatment plant; and landscaping.	3.64	Scoped out The Transport Assessment and ES Chapter has been reviewed and it is considered that there is insufficient detail included to determine whether the level of Proposed Development trip generation would intercept the Traffic and Transport assessment links. As set out in Section 10.4 of Chapter 10: Traffic and Transport (EN010166/APP/6.2.10) , calculations included in the generation of TEMPro growth factors take account of local uplifts in housing, employment and car ownership and therefore some element of growth, associated with schemes of this nature, would already be accounted for within the future year assessments of the construction and operational phases of development.
159	Bretton Hall Solar Farm	DNS/3251545	A proposed solar farm and grid connection, supporting energy infrastructure including battery storage and associated site works incorporating partial widening of an existing access, maintenance tracks, perimeter and stock fencing, CCTV cameras and the provision of a customer cabin, outdoor classroom, and parking.	10	Scoped out The EIA Screening Report has been reviewed and it is considered that there is insufficient detail included to determine whether the level of Proposed Development trip generation would intercept the Traffic and Transport assessment links. Operational traffic is noted to be very limited, with only a temporary 6-month construction period.

Cumulative Effects During Construction and Operation

24.5.30 As described in Section 10.4 of **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)**, the traffic and transport assessment considered cumulative effects and the conclusions of this assessment are presented in that chapter. Therefore, a separate assessment of cumulative effects, relating to both the construction and operational phases of the Proposed Development, has not been presented here.

Terrestrial and Aquatic Ecology

24.5.31 **Table 24-11** below provides a summary of how each of the proposed schemes included in the Short List (**Table 24-6**) has been evaluated in relation to potential cumulative effects on Terrestrial and Aquatic Ecology. Only the proposed schemes that were captured within the Terrestrial and Aquatic Ecology Zols, as outlined in **Table 24-4**, have been considered as part of this assessment.

24.5.32 The following Terrestrial and Aquatic Ecology impact pathways were considered for the cumulative effects assessment of the short listed proposed schemes during operation and construction:

Construction

Terrestrial Ecology

- temporary disturbance impacts (including temporary habitat loss, changes in air quality and alteration of local hydrology and water quality) and permanent loss and degradation of nature conservation designations and other relevant terrestrial and aquatic habitats (including areas considered to be Functionally Linked Land¹ (FLL) following evaluation of survey data) within the Order limits during construction, and within the wider Zol;
- direct and indirect impacts on relevant protected and notable species, for example as a result of injury, habitat loss or noise, lighting and visual disturbance, during construction;
- temporary water quality (sediment run-off, other possible emissions to water) and air quality impacts (dust emissions) on relevant habitats and species during construction; and
- introduction and spread of any INNS from construction works.

Ornithology

- the effects on birds resulting from temporary habitat loss within the Order limits during construction;
- temporary noise and visual disturbance of birds from construction related activities; and
- permanent loss of habitats used by nesting, roosting, and feeding birds during construction of the Proposed Development.

Aquatic Ecology

- direct impacts associated with changes in land use resulting from the Proposed Development, for example temporary works associated with site clearance, and permanent land-take (mainly arable land) associated with the construction of the Proposed Development;

¹ FLL is a term often used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a SAC, SPA or Ramsar site has been designated. These habitats are frequently used by qualifying species and supports the functionality and integrity of the designated sites for these features.

- indirect disturbance impacts resulting from a change in normal conditions (for example light, noise, vibration and human activity) that result in individuals or populations of aquatic species changing behaviour or range;
- direct or indirect impacts resulting in the reduction in the condition of a habitat and its suitability for some or all of the species it supports, for example changes in chemical water quality, increased sedimentation and dust deposition, or changes in surface flow or groundwater;
- direct impacts on species populations associated with mortalities due to construction activities, for example site clearance; and
- introduction and/or spread of invasive non-native species (INNS), due to the movement of personnel, equipment and plant machinery, potentially facilitating the introduction of INNS.

Operation

Terrestrial Ecology

- direct impacts in association with operation of the proposed Connah's Quay Low Carbon Power (CQLCP) Abated Generating Station, on relevant protected and notable species, e.g. as a result of permanent lighting, noise and/or visual disturbance; and
- long-term air and water quality impacts on nature conservation designations and any associated protected and notable species in the vicinity of, or downwind/downstream of, the Order limits.

Aquatic Ecology

- direct impacts in association with operation of the proposed CQLCP Abated Generating Station, on relevant protected and notable species, for example as a result of permanent lighting, noise and/or visual disturbance; and,
- long-term water quality impacts on nature conservation designations and any associated protected and notable species in the vicinity of, or downstream of, the Order limits.

Table 24-11: Short listed proposed schemes within the Terrestrial and Aquatic Ecology study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped out The HRA assessment for this proposed scheme concluded that there will be no significant adverse effects on any of the identified European sites (Dee Estuary SPA/Ramsar/SAC and River Dee and Bala Lake SAC) as a result of this proposed scheme. This included assessing impacts in-combination with other committed developments. No potential for cumulative effects has been identified, no additional mitigation is required. There is no potential for cumulative effects during construction and operation of the Proposed Development.
6	Proposed Residential Development Land off Holywell Road and Green Lane, Ewloe	FUL/000429/24	Construction of 315 dwellings (including 126 affordable homes), new vehicular and pedestrian accesses off Holywell Road and Green Lane, public open space, landscaping, offsite-highways works, foul and surface water drainage infrastructure and associated ancillary works.	3.53	Scoped out This proposed scheme will result in the loss of grassland, however, boundary features will be retained, loss of habitat which supports amphibians (not great crested newt) and hedgehog. No significant effects on any relevant ecological features. No potential for cumulative effects has been identified, no additional mitigation is required. There is no potential for cumulative effects during construction and operation of the Proposed Development.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd	0.16	Scoped out

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.		<p>Ecology report assessed the habitats within this proposed scheme as being of negligible to low ecological value. This site provides habitat for nesting birds, hedgehog, amphibians and bats. Habitats within the site are to be lost to as a result of this proposed scheme, however as the areas are small and not of high ecological value, it is considered that their loss can be mitigated for and this proposed scheme will not adversely affect the ecological value of the wider area.</p> <p>In addition, the habitats on this proposed scheme which will be lost are not used by qualifying bird species of the Dee Estuary Ramsar/SPA site (shelduck, curlew and cormorant).</p> <p>No potential for cumulative effects have been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
16	The Mostyn Energy Park Extension Project	CML2283	Works comprising the construction of 360 m length of new quay, involving a reclamation (approximately 3.5 ha) to provide a continuous berthing frontage for the construction and O&M requirements of the offshore wind sector; Capital dredging to create a new berth pocket alongside the new quay wall, dredge the berths along the existing quay and the main navigation channel; Reuse a selected proportion of the	13.79	<p>Scoped out</p> <p>The potential effects of disturbance during construction of coastal water birds and direct loss and change in intertidal feeding and roosting habitat have been assessed as minor adverse.. Further mitigation measures were set out to reduce the level of impact associated with noise and visual disturbance during construction, including, soft starts to any piling, restrictions on construction works during cold weather, erection of acoustic</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			suitable capital dredge arisings as engineering fill material for the reclamation and dispose of the remainder at the existing Mostyn Deep disposal site (IS102); Potential relocation of four existing dolphins (piles) to create a berth for SOVs to provide O&M requirements of the offshore wind sector; Potential construction of a Ro-Ro pontoon linkspan; Maintenance dredging for the new berth, existing berths, navigational channel and harbour area; Disposal of maintenance dredge material at the existing marine disposal sites at Mostyn Deep (IS102) and Mostyn Breakwater (IS103) and / or reused as is currently permitted under the existing maintenance dredge and disposal marine licences; Use of reclaimed area as a storage/laydown area; and Providing environmental enhancements to support natural mudflat restoration.		<p>barriers/visual screening and use of noise suppression systems.</p> <p>The potential effects of disturbance on coastal water birds during operation of this proposed scheme have been assessed as minor adverse. To further reduce the level of impact the proposed visual screening erected during construction will remain into the initial phases of operation, with a phased removal of screens after 2 years to allow a gradual habituation by waterbirds to changes in operational activities.</p> <p>Residual effects on coastal birds during construction and operation are both minor adverse and not significant.</p> <p>Construction of this proposed scheme is now commenced and will be completed prior to construction of the Proposed Development, therefore there are no potential cumulative effects on coastal water birds during construction.</p> <p>There would be overlap between construction of the Proposed Development and the operation of this project, however, with the additional mitigation of screening during operation and the predicted habituation of coastal waterbirds to changes in operational activities, there is no potential for cumulative effects during the operation of the project and the construction and operational phases of the Proposed Development.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
22	Residential Development at Land at Gladstone Way and Ash Lane, Hawarden, Deeside	FUL/000195/24	Construction of 300 dwellings (including 105 affordable homes), new vehicular and pedestrian accesses, public open space, landscaping and all associated ancillary works.	4.04	<p>Scoped out</p> <p>This proposed scheme will result in the loss of grassland, tall ruderal and scrub, however, boundary features will be retained, loss of habitat which supports, foraging bats, nesting bird, amphibians (not great crested newt) and hedgehog. No significant effects on any relevant ecological features.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
32	Residential Development at Land North of Dunkirk Way Norwich Drive Great Sutton Ellesmere Port	23/03825/FUL	Erection of 267 No. dwellings with associated works.	9.64	<p>Scoped out</p> <p>The ecology report concludes that the wildlife value of this site is low, the majority of habitats are intensively managed arable farmland. No significant effects on any relevant ecological features.</p> <p>No potential for cumulative effects have been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	<p>Scoped out</p> <p>Potential for disturbance of qualifying bird populations due to proximity of Dee Estuary SSSI/SPA/Ramsar during construction. Potential impacts on other neutral grassland –</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					<p>wildflower grassland, amphibians, birds, reptiles and invertebrates during construction.</p> <p>Operation – changes in emissions adverse impact on habitats arising from deposition of airborne pollutants – Dee Estuary SSSI/SPA/Ramsar and River Dee and Bala Lake SSSI/SAC, Halkyn Mountain SAC, Shotton Lagoon and Reedbeds SSSI, potential impacts during operation on other neutral grassland – wildflower grassland, amphibians, bats, birds reptiles and invertebrates.</p> <p>There is insufficient information in the Scoping Report for this proposed scheme to allow for cumulative assessment to be undertaken at this stage.</p>
47	HyNet Carbon Dioxide Pipeline (HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River</p>	0.07	<p>Scoped out</p> <p>The ES chapter concluded that no significant residual effects are anticipated as a result of construction or operation of this proposed scheme. However minor adverse (but not significant) effects during construction on statutory, non-statutory designated sites, Habitats of Principal Importance (including woodland and Ancient Woodland, hedgerows, coastal and floodplain grazing marsh, watercourses, great crested newts, foraging and commuting bats, barn owl, riparian mammals and wintering birds, including Redshank, were reported. Hynet CO₂ Pipeline Project is expected to be completed before the construction of the Proposed Development. However, the works for this separate application may be delayed and coincide with those of</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			Dee using trenchless crossing technique, either micro-tunnelling or HDD.		<p>the Proposed Development. In order to assess the worst-case scenario, the HyNet CO2 Pipeline Project has been included in the shortlist of other developments.</p> <p>Of the wintering bird species reported by the project, only populations of non-breeding Redshank recorded using the banks of the River Dee and associated with the Dee Estuary SSSI/SPA/Ramsar site, could share an impact pathway with the Proposed Development, namely construction disturbance. However, with the project proposing construction mitigation measures, such as acoustic fencing/visual screening, as well as the Proposed Development not concluding any adverse effects on non-breeding Redshank during construction, there is no potential for cumulative effects on the species.</p> <p>There are no significant residual effects during operation and therefore no potential for cumulative effects has been identified, no additional mitigation is required. There is no potential for cumulative effects during operation of the Proposed Development.</p>
49	Residential Development at Land North of Well Street, Buckley, Flintshire, CH7 2PQ	FUL/000826/23	Erection of 155 dwellings, construction of a new vehicular access, landscaping and associated works	6.89	<p>Scoped out</p> <p>Ecology report assessed the habitats within this proposed scheme as being of negligible to low ecological value. This proposed scheme provides habitat for nesting birds, badger, hedgehog, amphibians and bats. Habitats within the site are to be lost to the proposals, however as the areas are small and not of high ecological value, it is considered that</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					<p>their loss can be mitigated for and the proposals will not adversely affect the ecological value of the wider area. This is secured through a planning condition.</p> <p>No potential for cumulative effects have been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
54	Land adjacent to Cornist Lane, Flint, Pentre Halkyn & Babell	FUL/000633/23	Construction and operation of the three BVS at Cornist Lane near Flint, Pentre Halkyn and land off Racecourse Lane, Babell, Flintshire in connection with the with HyNet Carbon Dioxide Pipeline proposal.	6.32	<p>Scoped out</p> <p>The ES chapter for the proposed scheme identified no significant effects on any ecological features during construction or operation of the BVS.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	<p>Scoped out</p> <p>ES chapter identified potential for impacts on the Dee Estuary SAC/SPA/Ramsar and Shotton Lagoons and Reedbeds SSSI due to changes in air quality and increased noise and visual disturbance. However with implementation of a CEMP residual effects are not significant.</p> <p>Potential impacts were reported to Habitats of Principal Importance</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					<p>(open mosaic habitat and reedbed) However, with implementation of a Biodiversity Management Plan and creation of habitats, residual effects are not significant.</p> <p>Potential change in species composition of Ancient Woodland due to air quality changes, however, implementation of an Ancient Woodland Site Management Plan will result in no significant residual effects.</p> <p>Potential impacts on aquatic and terrestrial invertebrates, reptiles, birds (including SPA assemblage) and bats, however, with implementation of a CEMP and following best practise measures will result in no significant residual effects.</p> <p>No potential for cumulative effects have been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	<p>Scoped out</p> <p>The ecology reports identified no significant effects on any relevant ecological features. No impacts on designated sites, loss of modified grassland and sections of hedgerows. Best practice measures to be implemented for the proposed scheme.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					<p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
83	Residential Development at Bromborough Wharf West Dock Road South, Bromborough, Wirral, CH62 3JQ	OUT/22/00957	Application for outline planning permission with access considered for the demolition of all existing buildings and structures and the erection of up to 377 dwellings and associated infrastructure. (February 2024 Public Consultation on revised Environmental Statement, Plans, and Documents)	14.39	<p>Scoped out</p> <p>Ecology report identified potential for indirect impacts on Mersey Estuary and New Ferry Statutory Sites during construction of the proposed scheme, CEMP proposed which if implemented would result in no significant effects.</p> <p>No other significant effects on relevant ecological features were identified.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	<p>Scoped out</p> <p>The preliminary ecological appraisal identified the following ecological features on or adjacent to site: amphibians, reptiles, breeding birds, bats, water voles, invasive species, watercourse, hedgerows, trees and woodland. Provided recommendations within the report are implemented the development would not adversely impact these ecological features.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					<p>No potential for cumulative effects have been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
99	Residential Development at Bromborough Wharf East Dock Road South, Bromborough, Wirral, CH62 3JQ	OUT/22/00956	Application for outline planning permission with access considered for the demolition of all existing buildings and structures and the erection of up to 598 dwellings and associated infrastructure. (February 2024 Public Consultation on revised Environmental Statement, Plans, and Documents)	14.64	<p>Scoped out</p> <p>Due to the scale of the proposals and the distance involved it is considered that the Mersey Estuary and New Ferry Statutory Sites may be affected during construction operations. A CEMP is proposed to avoid significant effects.</p> <p>The ecology reports identified no additional significant effects on ecology features.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
102	Padeswood Carbon Capture & Storage	DNS CAS-02009-W1R1Z7	Integrating Hanson UK's Padeswood Cement Works into the HyNet North West network through the capture of CO ₂ for transportation and subsequent storage in Eni's Liverpool Bay Storage facilities. The proposed project will capture approximately 7,200,000 tonnes of CO ₂ per year from cement Kiln located at Padeswood. The individual components of the development can be	7.95	<p>Scoped out</p> <p>The ES chapter identified no residual significant effects to relevant ecological features provided mitigation measures are implemented.</p> <p>No potential for cumulative effects have been identified, no additional mitigation is required.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			summarised as follows: Access roadways, construction and laydown compound areas, A CHP plant with 12MW electricity (minimum) and 83MW thermal of installed capacity, to produce electricity and heat to power the carbon capture equipment, a PCCC plant, to extract CO ₂ from waste gases and compress it for transport and storage, An underground CO ₂ transport pipeline, to transport capture CO ₂ from Padeswood Cement Works to Northop Hall AGI forming part of the HyNet CO ₂ pipeline approximately 10 km in length, The demolition of existing structures comprising a workshop, a block of residential garages, small office building and redundant slurry basins.		There is no potential for cumulative effects during construction and operation of the Proposed Development.
113	Residential Development at Field West of, Highmere Drive, Connaught Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped out No direct impacts to any designated sites will occur and no indirect construction-related impacts are anticipated on any of the identified statutory designations owing to their distance and separation from the site. The ecology reports identified no further significant effects on relevant ecological features. No potential for cumulative effects has been identified, no additional mitigation is required. There is no potential for cumulative effects during construction and operation of the Proposed Development.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	<p>Scoped out</p> <p>ES chapter identified potential effects on Dee Estuary SAC/SPA/Ramsar associated with air quality and potential disturbance due to increased noise and visual disturbance.</p> <p>Potential effects on The River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC due to changes in air quality.</p> <p>Potential effects on Shotton Lagoons and Reedbeds SSSI due to changes in air quality and increased noise and visual disturbance.</p> <p>Standard good-practice methods of working to minimise impacts from changes in air quality, increased traffic, hydrology and increase in noise and visual disturbance including screening delivered through CEMP – assessed as not significant.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
141	The Airfields (Airfields Delta) Welsh Road Sealand Deeside	063721	Erection of a Paper Processing Mill to produce and manufacture tissue paper (B2, B8 use class) with ancillary B1a office space; associated servicing and infrastructure including car parking, HGV parking and vehicle and pedestrian	3.64	<p>Scoped out</p> <p>The ES chapter concluded no residual impacts on statutory or non-statutory designated sites and minor beneficial for habitats and species.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			circulation; noise mitigation features; earthworks to create development platforms; creation of drainage features including a new outfall to the River Dee; water treatment plant; and landscaping.		<p>No potential for cumulative effects have been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
145	Residential Development at Land to the south of New Brighton Road, New Brighton, Mold, CH7 6RB	063507	Residential development comprising 90 Dwellings including the provision of affordable units, areas of public open space, landscaping and associated works.	5.16	<p>Scoped out</p> <p>The ecology reports identified no significant effects on any relevant ecological features.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
159	Bretton Hall Solar Farm	DNS/3251545	A proposed solar farm and grid connection, supporting energy infrastructure including battery storage and associated site works incorporating partial widening of an existing access, maintenance tracks, perimeter and stock fencing, CCTV cameras and the provision of a customer cabin, outdoor classroom, and parking.	10	<p>Scoped out</p> <p>ES identified potential impacts on The River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC due to pollution during construction, implementation of CEMP, residual significance negligible to minor adverse.</p> <p>With the above measures in place, there will be no significant adverse residual effect on any ecological features as result of the Proposed Development. All residual effects are limited to minor or negligible adverse.</p> <p>No potential for cumulative effects have been identified, no additional mitigation is required.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					There is no potential for cumulative effects during construction and operation of the Proposed Development.
183	Residential Development at Land to the north of Gwernaffield Road, Mold, Flintshire	061994	Erection of residential development of 235 no. units together with associated public open space and infrastructure	6.33	Scoped out The ecology reports identified no significant effects on any relevant ecological features. No potential for cumulative effects has been identified, no additional mitigation is required. There is no potential for cumulative effects during construction and operation of the Proposed Development.
199	Residential Development at Land Bordering Clifton Drive and Sealand Road Chester Cheshire	20/02712/OUT	Erection of up to 150 dwellings and demolition of nos. 272, 274, 276 and 278 Sealand Road with all matters reserved except access	9.87	Scoped out The ecology report stated no impacts on any statutory designated site or significant effects on any relevant ecological features. No potential for cumulative effects has been identified, no additional mitigation is required. There is no potential for cumulative effects during construction and operation of the Proposed Development.
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	Scoped out The Ecological Impact Assessment (EclA) has identified various impacts up to a local level due to the presence, or potential presence, of protected or priority species / habitats within the site boundary of the residential development, notably; amphibians, badgers, bats, breeding birds, invasive species, woodland,

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					<p>trees and hedgerows and a watercourse.</p> <p>The measures required to establish, manage, monitor, and if required remediate the new and retained habitats can be fully detailed in a Landscape and Ecological Management Plan (LEMP), which would be secured through a planning condition. No significant effects on any relevant ecology features.</p> <p>No potential for cumulative effects have been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
331	Residential Development at Land off Mold Road & Bryn Road, New Brighton, Mold, Flintshire, CH7 6WL	FUL/001091/24	Full planning for 135 affordable dwellings, on site public open space and site infrastructure.	5.48	<p>Scoped out</p> <p>The ecology reports identified no significant effects on any relevant ecological features.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
341	Land At Wrexham Road Chester	24/02763/REM	Reserved matters application, pursuant to part of the outline element of the hybrid planning permission 17/02453/OUT (as amended by 22/01679/S73), with details (external appearance, landscaping, site layout and scale) of 1.5FE primary school (to be delivered	12.21	<p>Scoped out</p> <p>A revised ecology impact assessment found no changes on any important ecological features. Therefore, the information presented within the ES (as amended) remains relevant. All mitigation previously identified can be implemented, no</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			<p>over two phases) with associated playing fields and car parking.</p> <p>17/02453/OUT: Part A - (full permission) for phased development of 483 dwellings and associated infrastructure (including playing fields / open space); Part B - (outline permission - all matters reserved apart from access) for a local centre (comprising supermarket (Use Class A1 (500sqm); other shops (Use Class A1)(500sqm); cafe/restaurant (Use Class A3)(200sqm); public house (Use Class A4)(650sqm); and nursery/creche (Use Class D1) (600sqm) plus an outdoor play area) and a primary school with associated playing fields (Hybrid application)</p>		<p>significant effects on any relevant ecology features.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>
342	Land At Sutton, New Hall Farm, Ledsham Road, Little Sutton, Ellesmere Port, Cheshire	24/02885/REM	<p>Details of electric sub-station (intended to service the adjacent site for a primary school) under outline permission 12/02091/OUT</p> <p>12/02091/OUT: Residential development of up to 2,000 homes, up to 400 sqm of retail floor space for a local shop, a new primary school, a community building, a new linear park, playing fields and other public open space, new allotments, together with new accesses, streets and other related infrastructure. (Outline Application) (NB minor change removing reference to conversion of existing farm buildings to residential)</p>	9.23	<p>Scoped out</p> <p>Updated ecology assessment stated that the proposed electric sub-station site is of low ecological value and proposed scheme will not adversely effect biodiversity.</p> <p>No potential for cumulative effects has been identified, no additional mitigation is required.</p> <p>There is no potential for cumulative effects during construction and operation of the Proposed Development.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
358	Former MOD Site, Wirral	DPP4/22/01080	Outline planning application with all matters reserved except for points of access (from Old Hall Road and across Warren Lane) for residential development of up to 249 dwellings with associated parking, servicing, landscaping, drainage features and associated infrastructure	12.95	Scoped out The ecology reports identified no significant effects on any relevant ecological features. No potential for cumulative effects has been identified, no additional mitigation is required. There is no potential for cumulative effects during construction and operation of the Proposed Development.

Cumulative Effects During Construction

24.5.33 The review of the proposed schemes within the Zol, presented in **Table 24-11**, has demonstrated that there is **no potential** for significant cumulative terrestrial and aquatic ecological effects to arise during the construction of the Proposed Development.

Cumulative Effects During Operation

24.5.34 The review of the proposed schemes within the ZOI, presented in **Table 24-11**, has demonstrated that there is **no potential** for significant cumulative terrestrial and aquatic ecological effects to arise during the operation of the Proposed Development.

Marine Ecology

24.5.35 **Table 24-12**, below provides a summary of how each of the proposed schemes in the Short List (**Table 24-6**) has been evaluated in relation to potential cumulative effects on Marine Ecology. Only the proposed schemes that were captured within the Marine Ecology Zols, as outlined in **Table 24-4**, have been considered as part of this assessment. Also, note that effects that were deemed negligible (not significant) were not included in this assessment, in line with paragraph 24.4.9 above which states that no negligible effects are included as part of this assessment.

24.5.36 The following marine ecological impact pathways were considered for the cumulative effects assessment of the short-list proposed schemes during operation and construction:

- indirect effects to marine ecology from changes in marine water quality (excluding turbidity) within the Zol during construction;
- effects on intertidal habitats and species from the deposition of airborne pollutants (e.g. from emissions from the power plant stacks and vehicles) during operation; and
- physical disturbance and potential mortality to marine ecology from entrainment and impingement within the cooling water abstraction and discharge infrastructure within the Water Connection Corridor during operation.

Table 24-12 Short listed other developments within the Marine Ecology study area (10km)

ID No. (from long list)	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped out – no potential impact pathways to marine ecological receptors. Potential cumulative impacts on water quality in the River Dee and Dee Estuary have been considered in the Water Environment and Flood Risk Section (refer to Table 24-13) and potential air quality impacts to intertidal habitats have been considered within the Terrestrial and Aquatic Ecology Section (refer to Table 24-11).
6	Proposed Residential Development Land off Holywell Road and Green Lane, Ewloe	FUL/000429/24	Construction of 315 dwellings (including 126 affordable homes), new vehicular and pedestrian accesses off Holywell Road and Green Lane, public open space, landscaping, offsite-highways works, foul and surface water drainage infrastructure and associated ancillary works.	3.53	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped out – no potential impact pathways to marine ecological receptors. Potential cumulative impacts on water quality in the River Dee and Dee Estuary have been considered in the Water Environment and Flood Risk Section (refer to Table 24-13) and potential air quality impacts to intertidal habitats have been considered within the Terrestrial and Aquatic Ecology Section (refer to Table 24-11).
22	Residential Development at Land at Gladstone Way and Ash Lane, Hawarden, Deeside	FUL/000195/24	Construction of 300 dwellings (including 105 affordable homes), new vehicular and pedestrian accesses, public open space, landscaping and all associated ancillary works.	4.04	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
32	Residential Development at Land North of Dunkirk Way Norwich Drive Great Sutton Ellesmere Port	23/03825/FUL	Erection of 267 No. dwellings with associated works.	9.64	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park,	SCO/000970/23	construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	Scoped out – there is currently limited information available on this development however, it is likely a terrestrial project and therefore, no likely impact

ID No. (from long list)	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
	Weighbridge Road, Sealand, Deeside, CH5 2LL				<p>pathways to marine ecological receptors.</p> <p>Potential cumulative impacts on water quality in the River Dee and Dee Estuary have been considered in the Water Environment and Flood Risk Section (refer to Table 24-13) and potential air quality impacts to intertidal habitats have been considered within the Terrestrial and Aquatic Ecology Section (refer to Table 24-11).</p>
47	HyNet Carbon Dioxide Pipeline (HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.</p>	0.07	<p>Scoped in –this scheme is located adjacent to the Proposed Development, and transverses under the River Dee. While, it is expected to be constructed and operational prior to the Proposed Development, intersecting the Proposed CO₂ Connection Corridor. However, potential delays in the HyNet CO₂ Pipeline Project could result in construction works overlapping with the Proposed Development.</p> <p>Therefore, during construction, there is potential for cumulative effects to occur, from the following impacts:</p> <ul style="list-style-type: none"> - Indirect effects to marine ecology from changes in water quality during construction. <p>No vessels will be used for this scheme, so there is no risk of marine mammal collisions. This potential impact has not been assessed further.</p> <p>All impacts during the operational phase were found to be negligible and not significant. In addition, this scheme will not produce airborne pollution or affect water quality. Therefore, no combined effects are expected during operation, and this has not been assessed further.</p>
49	Residential Development at Land North of Well Street, Buckley, Flintshire, CH7 2PQ	FUL/000826/23	Erection of 155 dwellings, construction of a new vehicular access, landscaping and associated works	6.89	<p>Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment.</p> <p>Therefore, it does not require further consideration for cumulative effects.</p>
54	Land adjacent to Cornist Lane, Flint, Pentre Halkyn & Babell	FUL/000633/23	Construction and operation of the three BVS at Cornist Lane near Flint, Pentre Halkyn and land off Racecourse Lane, Babell, Flintshire in connection with the with HyNet Carbon Dioxide Pipeline proposal.	6.32	<p>Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment.</p> <p>Therefore, it does not require further consideration for cumulative effects.</p>
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	<p>Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment.</p>

ID No. (from long list)	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					Potential cumulative impacts on water quality in the River Dee and Dee Estuary have been considered in the Water Environment and Flood Risk Section (refer to Table 24-13) and potential air quality impacts to intertidal habitats have been considered within the Terrestrial and Aquatic Ecology Section (refer to Table 24-11).
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
102	Padeswood Carbon Capture & Storage	DNS CAS-02009-W1R1Z7	Integrating Hanson UK's Padeswood Cement Works into the HyNet North West network through the capture of CO ₂ for transportation and subsequent storage in Eni's Liverpool Bay Storage facilities. The proposed project will capture approximately 7,200,000 tonnes of CO ₂ per year from cement Kiln located at Padeswood. The individual components of the development can be summarised as follows: Access roadways, construction and laydown compound areas, A CHP plant with 12MW electricity (minimum) and 83MW thermal of installed capacity, to produce electricity and heat to power the carbon capture equipment, a PCCC plant, to extract CO ₂ from waste gases and compress it for transport and storage, An underground CO ₂ transport pipeline, to transport capture CO ₂ from Padeswood Cement Works to Northop Hall AGI forming part of the HyNet CO ₂ pipeline approximately 10 km in length, The demolition of existing structures comprising a workshop, a block of residential garages, small office building and redundant slurry basins.	7.95	Scoped out – this development is located almost 8 km from the Proposed Development away from the River Dee and Dee Estuary with no direct impact pathway to the marine environment. Potential cumulative impacts on water quality in the River Dee and Dee Estuary have been considered in the Water Environment and Flood Risk Section (refer to Table 24-13) and potential air quality impacts to intertidal habitats have been considered within the Terrestrial and Aquatic Ecology Section (refer to Table 24-11).
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment.

ID No. (from long list)	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					Therefore, it does not require further consideration for cumulative effects.
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	Scoped out – no potential impact pathways to marine ecological receptors. Potential cumulative impacts on water quality in the River Dee and Dee Estuary have been considered in the Water Environment and Flood Risk Section (refer to Table 24-13).
141	The Airfields (Airfields Delta) Welsh Road Sealand Deeside	063721	Erection of a Paper Processing Mill to produce and manufacture tissue paper (B2, B8 use class) with ancillary B1a office space; associated servicing and infrastructure including car parking, HGV parking and vehicle and pedestrian circulation; noise mitigation features; earthworks to create development platforms; creation of drainage features including a new outfall to the River Dee; water treatment plant; and landscaping.	3.64	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
145	Residential Development at Land to the south of New Brighton Road, New Brighton, Mold, CH7 6RB	063507	Residential development comprising 90 Dwellings including the provision of affordable units, areas of public open space, landscaping and associated works.	5.16	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
183	Residential Development at Land to the north of Gwernaffield Road, Mold, Flintshire	061994	Erection of residential development of 235 no. units together with associated public open space and infrastructure	6.33	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
199	Residential Development at Land Bordering Clifton Drive and Sealand Road Chester Cheshire	20/02712/OUT	Erection of up to 150 dwellings and demolition of nos. 272, 274, 276 and 278 Sealand Road with all matters reserved except access	9.87	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.

ID No. (from long list)	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
331	Residential Development at Land off Mold Road & Bryn Road, New Brighton, Mold, Flintshire, CH7 6WL	FUL/001091/24	Full planning for 135 affordable dwellings, on site public open space and site infrastructure.	5.48	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
342	Land at Sutton New Hall Farm, Ledsham Road, Little Sutton, Ellesmere Port, Cheshire	24/02885/REM	Details of electric sub-station (intended to service the adjacent site for a primary school) under outline permission 12/02091/OUT 12/02091/OUT: Residential development of up to 2,000 homes, up to 400 sqm of retail floor space for a local shop, a new primary school, a community building, a new linear park, playing fields and other public open space, new allotments, together with new accesses, streets and other related infrastructure. (Outline Application) (NB minor change removing reference to conversion of existing farm buildings to residential)	9.23	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.

Schemes for Consideration

24.5.37 Cumulative impacts to marine ecological receptors may arise in-combination with the following proposed scheme:

- HyNet Carbon Dioxide Pipeline (HyNet CO₂ Pipeline Project)

24.5.38 This proposed scheme has therefore been considered in detail in the following section.

Cumulative Effects During Construction

Indirect effects to marine ecology from changes in marine water quality (excluding turbidity) within the Zol

24.5.39 If construction activities were to occur simultaneously, there is the potential for cumulative effects to marine ecological receptors from changes in water quality if not mitigated.

24.5.40 However, the proposed schemes is expected to comply with national and local planning policies, incorporating good practice mitigation measures and pollution prevention strategies during construction (for example through their respective CEMPs). As a result, the magnitude of impact on water quality, would be negligible in all cases. This results in a negligible effect for all receptors regardless of their importance / sensitivity classification, and this is not significant.

24.5.41 Several design avoidance measures are proposed as part of the Proposed Development to avoid and minimise indirect effects to marine ecology from changes in marine water quality, including surface runoff. These design measures include the production of a **Framework CEMP (EN010166/APP/6.5)** with measures to manage fine sediment in surface runoff, risk of accidental spillages on the Proposed Development site and the management of construction dewatering. In addition, the Proposed Development is not changing the currently licensed abstraction or discharge arrangements from and to the River Dee in terms of water volume, temperature or quality. As current permit conditions are to be maintained and have been considered appropriate by NRW in order to not cause significant effects to the receiving water body, then there will be no new impact to water resources or water quality from the Proposed Development given the mitigation outlined.

24.5.42 Therefore, the indirect cumulative effects to marine ecology due to changes in marine water quality are expected to be **minor** and **not significant**.

Water Environment and Flood Risk

24.5.43 **Table 24-14** below provides a summary of how each of the short listed proposed schemes (**Table 24-6**) have been evaluated in relation to potential cumulative effects on Water Environment and Flood Risk. Only the developments that captured within the Water Environment and Flood Risk Zols, as outlined in **Table 24-4**, have been considered as part of this assessment.

24.5.44 The following Water Environment and Flood Risk impact pathways were considered for the cumulative effects assessment of the short listed proposed scheme during operation and construction:

Construction

Surface Water

- potential temporary impacts on surface water quality due to deposition or spillage of soils, sediments, oils, fuels, or other construction chemicals, or through uncontrolled site run-off;
- potential water quality impacts to surface water through mobilisation of contamination following disturbance of contaminated ground or groundwater;
- potential impacts to water levels and water quality associated with works within the River Dee;
- potential impacts on any surface water abstractions and other water resources in terms of quality or quantity;
- potential morphological impacts to water features associated with construction activities;
- water quality impacts on receiving watercourses from foul drainage from construction compounds and welfare facilities; and
- potential impact upon receiving watercourses as a result of hydrostatic testing of the Repurposed and Proposed CO₂ Connection Corridors.

Groundwater

- potential temporary impacts on groundwater quality due to deposition or spillage of oils, fuels, or other construction chemicals, or through uncontrolled site run-off;
- potential water quality impacts to groundwater through mobilisation of contamination following disturbance of contaminated ground or groundwater;
- potential impacts on groundwater level, flow and quality as a result of abstraction and discharge associated with potential dewatering; and
- potential impact on groundwater levels, flow and quality due to excavation and sub-surface structures; and there is the potential for reduction in infiltration to groundwater due to the construction of worksites, stockpiles and roads which could temporarily reduce groundwater levels.

Flood Risk

- potential impacts to water conveyance or groundwater flow where proposed construction activities cross watercourses during construction (above and below ground);
- potential for temporary loss of floodplain storage and/or impact on flood flow conveyance due to construction works within Zones C1 and Zone B (including potentially the functional floodplain) could lead to the displacement of tidal and fluvial floodwater during construction (above ground), this could be associated with the Water Connection Corridor works, land raising and any construction within the Tidal floodplain; and
- potential changes to surface water drainage characteristics due to changes to construction within flow paths, changes to ground levels or construction drainage.

Operation

Surface Water

- potential water quality impacts on the Dee Estuary and other surface water features that may receive surface water run-off, cooling water or treated effluent discharges from the Proposed Development;
- potential entry of contaminated run-off into the River Dee or other surface water features as a result of chemical spills (for example from the chemical storage area or fire water runoff if needed) and subsequent water quality impacts;
- potential hydromorphological impacts to freshwater features, including changes to physical form (for example scour or culverting), hydraulic processes and sediment dynamics (for example constriction of flows, flood plain or culverting.); and
- potential impacts on surface water abstractions and water resources for other users.

Groundwater

- potential impact on groundwater levels and flow due to sub-surface structures;
- potential for new pathways. Contaminants may migrate to non-contaminated soils, geology, and groundwater via the foundations of structures;
- potential impact on recharge rates to the underlying aquifers due to the introduction of impermeable surfaces;
- contamination of groundwater as a result of chemical spills in the chemical storage area and its subsequent run-off; and
- potential reduction in recharge to underlying aquifers due to the land raising.

Flood Risk

- the potential impact of the Proposed Development on future flood risk from all sources to the development and elsewhere; and

- potential impact of land raising, above ground structures, and below ground structures on flood risk, including changes to flow paths, levels, and groundwater flooding, which could increase flood risk to the surrounding areas.

Table 24-13: Short listed proposed schemes within the Water Environment and Flood Risk study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.73	Scoped in This proposed scheme is located within the Water Environment study area. Watercourses adjacent to the cumulative site feed into the Shotton lagoons and reedbeds, a designated SSSI, which ultimately discharges into the River Dee and Dee Estuary downstream (approximately 1 km). Given the potential to impact the River Dee, it is necessary to include this proposed scheme in the cumulative assessment. Construction may begin between 2022 and 2027 and take up to four years, with potential overlap with the Proposed Development.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped in This proposed scheme lies 0.16 km from the Proposed Development and is located a few hundred meters from the Dee Estuary, adjacent to the Lead Brook and Alt-Goch tributary. Construction may overlap with the Proposed Development.
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	Scoped in There are watercourses adjacent to the site through which pollution could propagate downstream, potentially impacting the River Dee and Dee Estuary. Given the proximity to these receptors, further assessment of potential interactions is warranted. Being at EIA Scoping stage, the project is in the early phase of development but could have potential impacts on the water environment associated with the integration of a carbon capture system. As such, this proposed scheme is included in the assessment.
47	HyNet Carbon Dioxide Pipeline(HyNet CO ₂ Pipeline Project)	EN070007; CML2350	A CO ₂ pipeline that will transport CO ₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO ₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's	0.07	Scoped in This proposed scheme shares many of the same receptors as the Proposed Development, including the River Dee.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			Flint AGI) that will be covered under the DCO (of the HyNet CO ₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales. Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.		Expected to be constructed and operational prior to the Proposed Development, intersecting the Proposed CO ₂ Connection Corridor. However, potential delays in the HyNet CO ₂ Pipeline Project could result in construction works overlapping with the Proposed Development. To assess the worst-case scenario, this project has been included in the shortlist of other developments for cumulative assessment.
55	Shotton Paper Mill (CHP Facility)	DNS/3279559	Combined Heat and Power (CHP) Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.		Scoped in Watercourses adjacent to the site feed into the Shotton lagoons and reedbeds, a designated SSSI, which ultimately discharges into the River Dee and Dee Estuary downstream (approximately 1 km). Given the potential to impact the River Dee, it is necessary to include this proposed scheme in the cumulative assessment. The project has a four-year construction period, beginning up to five years from the decision date, which may overlap with the Proposed Development.
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	Scoped in This proposed scheme is located between identified receptors (Pentre Brook and Alt-Goch Brook) and in close proximity to the Dee Estuary. Given its location, there is potential for interaction with shared water environment receptors. Construction could begin five years from permission (2028), which may overlap with the Proposed Development.
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped in This proposed scheme is located within the Kelsterton Brook catchment, which is a shared receptor with the Proposed Development. Construction may overlap with the Proposed Development and so there is potential for cumulative impacts.
114	Shotton Paper Mill, Weighbridge Road,	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory	1.73	Scoped in

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
	Deeside (Redevelopment)		buildings and processing plant and associated landscaping, offices, access and parking.		Watercourses adjacent to the site feed into the Shotton lagoons and reedbeds, a designated SSSI, which ultimately discharges into the River Dee and Dee Estuary downstream (approximately 1 km). Given the potential to impact the River Dee, it is necessary to include this proposed scheme in the cumulative assessment. Construction may begin between 2022 and 2027 and take up to four years, with potential overlap with the Proposed Development.

Cumulative Effects During Construction

- 24.5.45 The construction of the proposed schemes outlined in **Table 24-14** has the potential to result in adverse effects on water quality if not mitigated, due to deposition or spillage of soil, sediment, oils, fuels, or other construction chemical split on site. There are also potential impacts on groundwater resources and local water supplies due to altered drainage systems and increased water demand. Additionally, increased flood risk in catchments may arise where developments introduce significant impervious areas or modify existing drainage features.
- 24.5.46 These proposed schemes are expected to comply with national and local planning policies, incorporating good practice mitigation measures and pollution prevention strategies during construction (for example through their respective CEMPs). As a result, the magnitude of impact on water quality, morphology, groundwater and flood risk would be negligible in all cases. This results in a **negligible** effect for all receptors regardless of their importance / sensitivity classification, and this is **not significant**.

Cumulative Effects During Operation

- 24.5.47 The operation of these proposed schemes has the potential to result in adverse effects on the water quality if not mitigated, due to diffuse urban runoff, increased impervious surfaces altering hydrology and flood risk, and potential contamination from operational activities such as water abstraction, discharge and chemical handling.
- 24.5.48 These proposed schemes are required to comply with national and location planning policies, implementing good practice mitigation measures to manage water quality, flood risk and hydrological impacts. These measures include adherence to planning and permit conditions, the implementation of Sustainable Drainage Strategy (SuDS) to attenuate and treat runoff, appropriately design drainage and discharge management, and controls for pollution prevention. With these measures in place, all impacts in relation to water quality, morphology, groundwater and flood risk would be considered negligible. This results in a **negligible** effect for all receptors regardless of their importance / sensitivity classification, and this is **not significant**.
- 24.5.49 In addition, the Proposed Development is not changing the currently licensed abstraction or discharge arrangements from and to the River Dee in terms of water volume, temperature or quality. As current permit conditions are to be maintained and have been considered appropriate by NRW in order to not cause significant effects to the receiving water body, then there will be no new impact to water resources or water quality from the Proposed Development given the mitigation outlined, and so **no cumulative effect**.

Geology and Ground Conditions

24.5.50 **Table 24-15** below provides a summary of how each of the short listed proposed schemes (**Table 24-6**) has been evaluated in relation to potential cumulative effects on Geology and Ground Conditions. Only the proposed schemes that captured within the Geology and Ground Conditions Zols, as outlined in **Table 24-4**, have been considered as part of this assessment.

24.5.51 The following Geology and Ground Conditions impact pathways were considered for the cumulative effects assessment of the short listed proposed schemes during operation and construction:

Construction

- potential reduction of flow to surface water bodies through soils and change in hydrogeological and hydrological setting locally;
- mobilisation and migration of contamination to unsaturated soils, groundwater and surface water courses;
- potential impacts on groundwater as a pathway may be created for drilling fluids during ground investigations, or other fluids used in construction to reach sensitive groundwater receptors;
- potential for contaminants in unsaturated soils to be exposed to surface water run-off and to leach to groundwater in open excavations;
- potential impacts from migration of contaminants from uncovered stockpiles to surface water and groundwater receptors;
- creation of preferential pathways for the migration of soil contamination and gases;
- potential impacts on groundwater from construction of underground structures / piling;
- impacts from potential contamination in dust and fine particulate matter, groundwater migration and surface run-off on ecological receptors;
- impacts on human health from contamination within unsaturated soil (dust and fine particulate matter) and groundwater; and
- the disturbance or mobilisation of contamination towards buildings or service pipelines on-site or off-site may result in damage or deterioration of buried concrete and potential permeation of drinking water pipes by contaminants, due to aggressive conditions caused by the contaminants present or through the introduction of fill materials (lowering pH).

Post-Construction / Post-Decommissioning²

- any contamination removed, remediated, or mitigated leading to removal of contaminant sources and pathway interruption from the source – pathway – receptor linkage (may result in potential beneficial impacts on

² For this topic, a post-construction and post-decommissioning stage is introduced which recognises that the potential beneficial effect from any soil and/or groundwater remediation undertaken, is realised upon completion of construction but it's not an effect related to the operation of the scheme.

human health, controlled waters, property receptors and ecological receptors).

Operation

- permanent degradation of soil function and withdrawal from agriculture; and
- permanent mineral severance or sterilisation.

Table 24-14: Short listed proposed schemes within the Geology and Ground Conditions study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes, new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.1	<p>Scoped in</p> <p>Within the 250 m study area for geology and land contamination; and 1 km study area for hydrogeology.</p> <p>There is potential for construction works to result in cumulative effects on land contamination. Once operational there is no pathway for effect.</p> <p>Most of the site (excluding the southernmost parcel) was subject to agricultural land classification survey in 1989. It is principally Subgrade 3b with a margin of Subgrade 3a at the north-western part. It was noted in relation to the proposals that the soil has poor infiltration. The site is 4.87 ha.</p>
47	HyNet Carbon Dioxide Pipeline (HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.</p>	0.07	<p>Scoped in</p> <p>Within the 250 m study area for geology and land contamination; and 1 km study area for hydrogeology.</p> <p>Considered for soils and agricultural land.</p>
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.41	<p>Scoped in</p> <p>Within the 1 km study area for hydrogeology.</p> <p>During construction only for effects from land contamination. Not considered agricultural land</p>
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	<p>Scoped out</p> <p>Within the 1 km study area for hydrogeology.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					The land was allocated for residential development under the local plan and was not within 500m study area which was applied to soils and agricultural land.

Cumulative Effects During Construction

- 24.5.52 It is assumed that the proposed schemes listed in **Table 24-14** may require a degree of earthworks during construction. Based on the contaminated land risk and impact assessment in **Chapter 14: Geology and Ground Conditions (EN010166/APP/6.2.14)**, and proximity of potential land contamination sites to these short-listed proposed schemes, there may be some temporary adverse effects during construction from ground disturbance or where groundwater controls may inadvertently mobilise contamination or create preferential pathways. It is assumed that the proposed schemes listed in **Table 24-14** would comply with national and local planning policies, incorporating good practice mitigation measures and pollution prevention strategies during construction (for example through their respective CEMPs). Residual cumulative effect would be expected to be **negligible to minor adverse (not significant)**.
- 24.5.53 Other developments may cause temporary sterilisation of MSA resources / impact on geological sites (if present) during construction works. It is assumed that the proposed schemes listed in **Table 24-14** would comply with national and local planning policies, incorporating good practice mitigation measures and a strategic plan during construction (for example through their respective CEMPs).
- 24.5.54 The removal of an additional 4.87ha of Subgrade 3b land from agriculture (of low sensitivity) would cumulatively remain a minor adverse effect.
- 24.5.55 The development of the HyNet CO₂ pipeline cumulatively extends effects to soil of the Proposed CO₂ pipeline. The burial depth of the pipelines would allow continuation of agricultural operations after soil restoration, during operation. The temporary withdrawal from agriculture of soils, including ALC Subgrade 3a, would cumulatively remain a **minor adverse effect (not significant)**.

Cumulative Effects Post-Construction

- 24.5.56 Beneficial impacts associated with remediation if the proposed schemes affect contaminated land that results in removal of potential contaminant sources or mitigation.
- 24.5.57 There may be beneficial effects associated with remediation if the proposed schemes listed in **Table 24-14** affects contaminated land that results in removal of potential contaminant sources or mitigation. However, it is not considered that this would result in any significant beneficial effects based on the distance of the proposed schemes from the Proposed Development. There is unlikely to be any potential for cumulative effects; the residual cumulative effect would be expected to be **negligible to minor beneficial (not significant)**.

Cumulative Effects During Operation

- 24.5.58 No cumulative effects identified for Geology and Ground Conditions during operation.
- 24.5.59 Permanent and temporary effects on soils and agricultural land are captured within the construction assessment. There are **no cumulative effects** during operation.

Landscape and Visual Amenity

24.5.60 **Table 24-17** below provides a summary of how each of the short listed proposed schemes (**Table 24-6**) has been evaluated in relation to potential cumulative effects on Landscape Character and Visual Amenity. Only the proposed schemes that captured within the Landscape and Visual Amenity Zols, as outlined in **Table 24-4**, have been considered as part of this assessment.

24.5.61 The following Landscape and Visual Amenity impact pathways were considered for the cumulative effects assessment of the short listed proposed schemes during operation and construction:

- the assessment on landscape/ seascape and visual receptors during construction; and
- the assessment of landscape/ seascape and visual receptors during winter and summer at operation.

Table 24-15: Short listed proposed schemes within the Landscape and Visual Amenity study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped in This proposed scheme will likely result in cumulative visual effects during the construction and operational phase due to intervisibility. Changes to the landscape character and visual amenity are considered minor adverse (not significant) as both developments are not uncharacteristic considering their setting adjacent to existing similar industrial developments.
6	Proposed Residential Development Land off Holywell Road and Green Lane, Ewloe	FUL/000429/24	Construction of 315 dwellings (including 126 affordable homes), new vehicular and pedestrian accesses off Holywell Road and Green Lane, public open space, landscaping, offsite-highways works, foul and surface water drainage infrastructure and associated ancillary works.	3.53	Scoped in The extension of suburban housing estate character due to the introduction of proposed scheme will affect the landscape character locally at construction and operation. Visibility of the construction of both schemes, if occurring simultaneously, would be limited to the upper sections of the proposed scheme. The majority will not be perceived in conjunction with the Proposed Development due to intervening built structures, vegetation and topography. Cumulative effects during construction are considered minor adverse (not significant) . At operation, additional cumulative effects resulting from local alterations to the landscape and visual character would be negligible (not significant) as neither development is uncharacteristic to the existing prevailing landscape and visual character.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped in The construction of both the proposed scheme and Proposed Development will be visible if occurring simultaneously. In that case, there will be an increased perception of construction activity adversely impacting the landscape character and visual amenity locally and temporarily.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					The significance of cumulative effects from addition of the Proposed Development would be minor adverse (not significant) . At operation, additional cumulative effects resulting from local alterations to the landscape and visual character would be negligible (not significant) as neither development is uncharacteristic to the existing prevailing landscape and visual character.
22	Residential Development at Land at Gladstone Way and Ash Lane, Hawarden, Deeside	FUL/000195/24	Construction of 300 dwellings (including 105 affordable homes), new vehicular and pedestrian accesses, public open space, landscaping and all associated ancillary works.	4.04	Scoped out This proposed scheme will be embedded within existing suburban housing and not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation due to its location and lack of intervisibility.
32	Residential Development at Land North of Dunkirk Way Norwich Drive Great Sutton Ellesmere Port	23/03825/FUL	Erection of 267 No. dwellings with associated works.	9.64	Scoped out This proposed scheme will be an extension to the existing suburban housing character and visual amenity and not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation despite likely partial distant intervisibility between both elements.
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	Scoped in This proposed scheme will likely result in cumulative visual effects during the construction and operational phase due to intervisibility. Changes to the landscape character and visual amenity are considered minor adverse (not significant) as both developments are not uncharacteristic considering their setting adjacent to existing similar industrial developments.
47	HyNet Carbon Dioxide Pipeline(HyNet CO ₂ Pipeline Project)	EN070007; CML2350	A CO ₂ pipeline that will transport CO ₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO ₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing above-ground installations (AGI) to allow operation and maintenance works in	0.07	Scoped in This proposed scheme will likely result in cumulative visual effects during the construction phase due to intervisibility if construction activities happen simultaneously. In that case

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			<p>relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.</p>		<p>changes to the landscape character and visual amenity during construction are considered moderate adverse (significant) and temporary.</p> <p>At operation, cumulative effects are considered negligible (not significant) due to the underground nature of the proposed scheme.</p>
49	Residential Development at Land North of Well Street, Buckley, Flintshire, CH7 2PQ	FUL/000826/23	Erection of 155 dwellings, construction of a new vehicular access, landscaping and associated works	6.89	<p>Scoped out</p> <p>This proposed scheme will be an extension to the existing suburban housing character and visual amenity and not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation despite likely partial distant intervisibility between both elements.</p>
54	Land adjacent to Cornist Lane, Flint, Pentre Halkyn & Babell	FUL/000633/23	Construction and operation of the three BVS at Cornist Lane near Flint, Pentre Halkyn and land off Racecourse Lane, Babell, Flintshire in connection with the with HyNet Carbon Dioxide Pipeline proposal.	6.32	<p>Scoped out</p> <p>This proposed scheme will not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation despite likely partial distant intervisibility between both elements due to the scale and distance of the proposed scheme as well as intervening vegetation and built structures.</p>
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	<p>Scoped in</p> <p>This proposed scheme will likely result in cumulative visual effects during the construction and operational phase due to intervisibility. Changes to the landscape character and visual amenity are considered minor adverse (not significant) as both developments are not uncharacteristic considering their setting adjacent to existing similar industrial developments.</p>
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of	0.47	<p>Scoped in</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.		<p>The construction of both the proposed scheme and Proposed Development will be visible if occurring simultaneously. In that case, there will be an increased perception of construction activity adversely impacting the landscape character and visual amenity locally and temporarily.</p> <p>The significance of cumulative effects from addition of the Proposed Development would be minor adverse (not significant).</p> <p>At operation, additional cumulative effects resulting from local alterations to the landscape and visual character would be negligible (not significant) as neither development is uncharacteristic to the existing prevailing landscape and visual character.</p>
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	<p>Scoped in</p> <p>The construction of both schemes will be visible if occurring simultaneously. In that case, there will be an increased perception of construction activity adversely impacting the landscape character and visual amenity locally and temporarily.</p> <p>The significance of cumulative effects from addition of the Proposed Development would be minor adverse (not significant).</p> <p>At operation, additional cumulative effects resulting from local alterations to the landscape and visual character would be negligible (not significant) as neither development is uncharacteristic to the existing prevailing landscape and visual character.</p>
102	Padeswood Carbon Capture & Storage	DNS CAS-02009-W1R1Z7	Integrating Hanson UK's Padeswood Cement Works into the HyNet North West network through the capture of CO ₂ for transportation and subsequent storage in Eni's Liverpool Bay Storage facilities. The proposed project will capture approximately 7,200,000 tonnes of CO ₂ per year from cement Kiln located at Padeswood. The individual components of the development can be summarised as follows: Access roadways, construction and laydown compound areas, A CHP plant with 12MW electricity (minimum) and 83MW thermal of installed	7.95	<p>Scoped out</p> <p>This proposed scheme will not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation due to its location and lack of intervisibility.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			capacity, to produce electricity and heat to power the carbon capture equipment, a PCCC plant, to extract CO ₂ from waste gases and compress it for transport and storage, An underground CO ₂ transport pipeline, to transport capture CO ₂ from Padeswood Cement Works to Northop Hall AGI (above ground installation) forming part of the HyNet CO ₂ pipeline approximately 10 km in length, The demolition of existing structures comprising a workshop, a block of residential garages, small office building and redundant slurry basins.		
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped out This proposed scheme is already part of the existing landscape character and visual amenity of the baseline environment.
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	Scoped in This proposed scheme will likely result in cumulative visual effects during the construction and operational phase due to intervisibility. Changes to the landscape character and visual amenity are considered minor adverse (not significant) as both developments are not uncharacteristic considering their setting adjacent to existing similar industrial developments.
141	The Airfields (Airfields Delta) Welsh Road Sealand Deeside	063721	Erection of a Paper Processing Mill to produce and manufacture tissue paper (B2, B8 use class) with ancillary B1a office space; associated servicing and infrastructure including car parking, HGV parking and vehicle and pedestrian circulation; noise mitigation features; earthworks to create development platforms; creation of drainage features including a new outfall to the River Dee; water treatment plant; and landscaping.	3.64	Scoped in This proposed scheme will likely result in cumulative visual effects during the construction and operational phase due to intervisibility. Changes to the landscape character and visual amenity are considered minor adverse (not significant) as both developments are not uncharacteristic considering their setting adjacent to existing similar industrial developments.
145	Residential Development at Land to the south of New Brighton Road, New Brighton, Mold, CH7 6RB	063507	Residential development comprising 90 Dwellings including the provision of affordable units, areas of public open space, landscaping and associated works.	5.16	Scoped out This proposed scheme will be an extension to the existing suburban housing character and visual amenity and not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					during operation. There is also a lack of intervisibility between both developments due to intervening vegetation and built structures.
159	Bretton Hall Solar Farm	DNS/3251545	A proposed solar farm and grid connection, supporting energy infrastructure including battery storage and associated site works incorporating partial widening of an existing access, maintenance tracks, perimeter and stock fencing, CCTV cameras and the provision of a customer cabin, outdoor classroom, and parking.	10	Scoped out This proposed scheme will not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation due to its location and lack of intervisibility.
183	Residential Development at Land to the north of Gwernaffield Road, Mold, Flintshire	061994	Erection of residential development of 235 no. units together with associated public open space and infrastructure	6.33	Scoped out This proposed scheme will be an extension to the existing suburban housing character and visual amenity and not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation. There is also a lack of intervisibility between both developments due to intervening vegetation and built structures.
199	Residential Development at Land Bordering Clifton Drive and Sealand Road Chester Cheshire	20/02712/OUT	Erection of up to 150 dwellings and demolition of nos. 272, 274, 276 and 278 Sealand Road with all matters reserved except access	9.87	Scoped out This proposed scheme is under construction and will not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation due to its location and lack of intervisibility.
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	Scoped in This proposed scheme will likely result in cumulative visual effects during the construction and operational phase due to intervisibility. Changes to the landscape character and visual amenity are considered minor adverse as both developments are not uncharacteristic considering their setting adjacent to existing similar developments.
331	Residential Development at Land off Mold Road & Bryn Road, New Brighton, Mold, Flintshire, CH7 6WL	FUL/001091/24	Full planning for 135 affordable dwellings, on site public open space and site infrastructure.	5.48	Scoped out This proposed scheme will not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					during operation due to its location and lack of intervisibility.
341	Land At Wrexham Road, Chester	24/02763/REM	<p>Reserved matters application, pursuant to part of the outline element of the hybrid planning permission 17/02453/OUT (as amended by 22/01679/S73), with details (external appearance, landscaping, site layout and scale) of 1.5FE primary school (to be delivered over two phases) with associated playing fields and car parking.</p> <p>17/02453/OUT: Part A - (full permission) for phased development of 483 dwellings and associated infrastructure (including playing fields / open space); Part B - (outline permission - all matters reserved apart from access) for a local centre (comprising supermarket (Use Class A1 (500sqm); other shops (Use Class A1)(500sqm); cafe/restaurant (Use Class A3)(200sqm); public house (Use Class A4)(650sqm); and nursery/creche (Use Class D1) (600sqm) plus an outdoor play area) and a primary school with associated playing fields (Hybrid application)</p>	12.21	<p>Scoped out</p> <p>This proposed scheme will not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation due to its location and lack of intervisibility.</p>
342	Land At Sutton New Hall Farm, Ledsham Road, Little Sutton, Ellesmere Port, Cheshire	24/02885/REM	<p>Details of electric sub-station (intended to service the adjacent site for a primary school) under outline permission 12/02091/OUT</p> <p>12/02091/OUT: Residential development of up to 2,000 homes, up to 400 sqm of retail floor space for a local shop, a new primary school, a community building, a new linear park, playing fields and other public open space, new allotments, together with new accesses, streets and other related infrastructure. (Outline Application) (NB minor change removing reference to conversion of existing farm buildings to residential)</p>	9.23	<p>Scoped out</p> <p>This proposed scheme will not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation due to its location and lack of intervisibility.</p>
358	Former Mod Site, Wirral	DPP4/22/01080	Outline planning application with all matters reserved except for points of access (from Old Hall Road and across Warren Lane) for residential development of up to 249 dwellings with associated parking, servicing, landscaping, drainage features and associated infrastructure	12.95	<p>Scoped out</p> <p>This proposed scheme will not result in additional landscape or visual changes in conjunction with the Proposed Development at construction and during operation due to its location and lack of intervisibility.</p>

Cumulative Effects During Construction

24.5.62 Cumulative landscape and visual effects at construction would be **temporary** and arise if construction works of the Proposed Development and the other proposed schemes, as listed in the **Table 24-15** above, occur simultaneously. For the majority of cumulative projects, the significance of cumulative landscape and visual effects would range between **negligible** and **minor adverse (not significant)**. **Moderate adverse (significant) effects** would only occur for developments in close proximity to the Proposed Development due to short distance intervisibility of construction works and where the increase in construction traffic due to both developments would be noticeable along the local road network.

24.5.63 A number of proposed schemes are residential developments. It should be noted that the type and scale of these developments are not similar when compared to the Proposed Development. Considering the distance to some of these developments, intervening topography, existing vegetation and existing built structures, cumulative effects for residential developments will most likely occur locally for adjoining suburban receptors and are less likely to be associated with the Proposed Development.

Cumulative Effects During Operation

24.5.64 The significance of cumulative landscape and visual effects at operation ranges between **negligible and minor adverse (not significant)**. The existing landscape character and visual amenity contain large industrial features. The introduction of the Proposed Development would extent and intensify the industrial character and the visual prominence of industrial features in the study area, however, it would not be seen as uncharacteristic given its setting adjacent to existing similar developments.

24.5.65 As stated above for construction, residential developments are different in type and scale when compared to the Proposed Development, despite intervisibility between sections of either development, residential developments would result in localised effects by extending the suburban character of the landscape and affect visual receptors in close proximity to these residential developments. At operation, residential developments would integrate into their surrounding environment locally. Visibility of the Proposed Development in the distance would increase the presence of industrial features but this is considered not uncharacteristic due to other visible existing industrial features.

Physical Processes

24.5.66 Other short listed proposed schemes (**Appendix 24-B: Short List of Other Developments (EN010166/APP/6.4)**), that are within the 15 km Zol for this topic, would not affect physical processes resources and / or receptors, and therefore there is no potential for cumulative impacts to arise.

24.5.67 Whilst ID 47 (HyNet Carbon Dioxide Pipeline (HyNet CO₂ Pipeline Project) is considered in this assessment for marine ecology, it is not considered here because the development will not affect physical processes resources and / or receptors, as it will utilise a trenchless crossing technique, and therefore there is no potential for cumulative impacts to arise.

Table 24-16. Short listed other developments within the Physical Processes study area (15 km)

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped out – no potential impact pathways to marine physical processes resources and / or receptors.
6	Proposed Residential Development Land off Holywell Road and Green Lane, Ewloe	FUL/000429/24	Construction of 315 dwellings (including 126 affordable homes), new vehicular and pedestrian accesses off Holywell Road and Green Lane, public open space, landscaping, offsite-highways works, foul and surface water drainage infrastructure and associated ancillary works.	3.53	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment and physical processes. Therefore, it does not require further consideration for cumulative effects.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or marine physical processes. Therefore, it does not require further consideration for cumulative effects.
16	The Mostyn Energy Park Extension Project	CML2283	Works comprising the construction of 360 m length of new quay, involving a reclamation (approximately 3.5 ha) to provide a continuous berthing frontage for the construction and O&M requirements of the offshore wind sector; Capital dredging to create a new berth pocket alongside the new quay wall, dredge the berths along the existing quay and the main navigation channel; Reuse a selected proportion of the suitable capital dredge arisings as engineering fill material for the reclamation and dispose of the remainder at the existing Mostyn Deep disposal site (IS102); Potential relocation of four existing dolphins (piles) to create a berth for SOVs to provide O&M requirements of the offshore wind sector; Potential construction of a Ro-Ro pontoon linkspan; Maintenance dredging for the new berth, existing berths, navigational channel and harbour area; Disposal of maintenance dredge material at the existing marine disposal sites at Mostyn Deep (IS102) and Mostyn Breakwater (IS103) and / or reused as is currently permitted under the existing maintenance dredge and disposal marine licences; Use of reclaimed area as a storage/laydown area; and Providing environmental enhancements ¹⁵ to support natural mudflat restoration.	13.79	Scoped out - the Proposed Development does not involve any changes to the existing outfall discharge permit. Further, there will be no temporary or permanent structures or dredging required at the location of the existing intake structure and therefore no resulting changes in hydrodynamic conditions or sedimentary regime within the River Dee Estuary. Consequently, there is no pathway for interaction with the Mostyn Energy Park Extension Project development located almost 14 km from the Proposed Development. Therefore, no further consideration for cumulative effects is required.
22	Residential Development at Land at Gladstone Way and Ash Lane,	FUL/000195/24	Construction of 300 dwellings (including 105 affordable homes), new vehicular and pedestrian accesses, public open space, landscaping and all associated ancillary works.	4.04	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine physical environment or marine physical processes. Therefore, it does not require further consideration for cumulative effects.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
	Hawarden, Deeside				
32	Residential Development at Land North of Dunkirk Way Norwich Drive Great Sutton Ellesmere Port	23/03825/FUL	Erection of 267 No. dwellings with associated works.	9.64	<p>Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine physical environment.</p> <p>Therefore, it does not require further consideration for cumulative effects.</p>
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	Construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	<p>Scoped out – there is currently limited information available on this development however, it is assumed to be primarily a terrestrial project and therefore unlikely to impact the marine environment and physical processes.</p> <p>Potential cumulative impacts on water quality in the River Dee and Dee Estuary have been considered in the Water Environment and Flood Risk Section (refer to Table 24-13).</p>
47	HyNet Carbon Dioxide Pipeline (HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.</p>	0.07	<p>Scoped out –this scheme is located adjacent to the Proposed Development, and transverses under the River Dee. It is expected to be constructed and operational prior to the Proposed Development, intersecting the Proposed CO₂ Connection Corridor. Potential delays in the HyNet CO₂ Pipeline Project could result in construction works overlapping with the Proposed Development.</p> <p>Whilst ID 47 (HyNet Carbon Dioxide Pipeline (HyNet CO₂ Pipeline Project)) is considered in this assessment for marine ecology, the development will not affect physical processes and / or receptors, as it will utilise trenchless crossing technique, and therefore there is no potential for cumulative impacts to arise.</p>
49	Residential Development at Land North of Well Street, Buckley, Flintshire, CH7 2PQ	FUL/000826/23	Erection of 155 dwellings, construction of a new vehicular access, landscaping and associated works	6.89	<p>Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine physical environment or physical processes.</p> <p>Therefore, it does not require further consideration for cumulative effects.</p>

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
54	Land adjacent to Cornist Lane, Flint, Pentre Halkyn & Babell	FUL/000633/23	Construction and operation of the three BVS at Cornist Lane near Flint, Pentre Halkyn and land off Racecourse Lane, Babell, Flintshire in connection with the with HyNet Carbon Dioxide Pipeline proposal.	6.32	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine physical environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine physical environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
83	Bromborough Wharf West, Dock Road South, Bromborough, Wirral, CH62 3JQ	OUT/22/00957	Application for outline planning permission with access considered for the demolition of all existing buildings and structures and the erection of up to 377 dwellings and associated infrastructure. (February 2024 Public Consultation on revised Environmental Statement, Plans, and Documents)	14.39	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
99	Bromborough Wharf, East Dock Road South, Bromborough, Wirral, CH62 3JQ	OUT/22/00956	Application for outline planning permission with access considered for the demolition of all existing buildings and structures and the erection of up to 598 dwellings and associated infrastructure. (February 2024 Public Consultation on revised Environmental Statement, Plans, and Documents)	14.64	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
102	Padeswood Carbon Capture & Storage	DNS CAS-02009-W1R1Z7	Integrating Hanson UK's Padeswood Cement Works into the HyNet North West network through the capture of CO ₂ for transportation and subsequent storage in Eni's Liverpool Bay Storage facilities. The proposed project will capture approximately 7,200,000 tonnes of CO ₂ per year from cement Kiln located at Padeswood. The individual components of the development can be summarised as follows: Access roadways, construction and laydown compound areas, A CHP plant with 12MW electricity (minimum) and 83MW thermal of installed capacity, to produce electricity and heat to power the carbon capture equipment, a PCCC plant, to extract CO ₂ from waste gases and compress it for transport and storage, An underground CO ₂ transport pipeline, to transport capture CO ₂ from Padeswood Cement Works to Northop Hall AGI (above ground installation) forming part of the HyNet CO ₂ pipeline approximately 10 km in length, The demolition of existing structures comprising a workshop, a block of residential garages, small office building and redundant slurry basins.	7.95	Scoped out – this development is located almost 8 km from the Proposed Development away from the River Dee and Dee Estuary with no direct impact pathway to the marine physical environment. Therefore, it does not require further consideration for cumulative effects.
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
141	The Airfields (Airfields Delta) Welsh Road Sealand Deeside	063721	Erection of a Paper Processing Mill to produce and manufacture tissue paper (B2, B8 use class) with ancillary B1a office space; associated servicing and infrastructure including car parking, HGV parking and vehicle and pedestrian circulation; noise mitigation features; earthworks to create development platforms; creation of drainage features including a new outfall to the River Dee; water treatment plant; and landscaping.	3.64	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
145	Residential Development at Land to the south of New Brighton Road, New Brighton, Mold, CH7 6RB	063507	Residential development comprising 90 Dwellings including the provision of affordable units, areas of public open space, landscaping and associated works.	5.16	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
159	Bretton Hall, Chester Road, Flintshire, CH4 0DF	DNS/3251545	A proposed solar farm and grid connection, supporting energy infrastructure including battery storage and associated site works incorporating partial widening of an existing access, maintenance tracks, perimeter and stock fencing, CCTV cameras and the provision of a customer cabin, outdoor classroom, and parking.	10.00	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
183	Residential Development at Land to the north of Gwernaffield Road, Mold, Flintshire	061994	Erection of residential development of 235 no. units together with associated public open space and infrastructure	6.33	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or physical processes. Therefore, it does not require further consideration for cumulative effects.
199	Residential Development at Land Bordering Clifton Drive and Sealand Road Chester Cheshire	20/02712/OUT	Erection of up to 150 dwellings and demolition of nos. 272, 274, 276 and 278 Sealand Road with all matters reserved except access	9.87	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or marine physical processes. Therefore, it does not require further consideration for cumulative effects.
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or marine physical processes. Therefore, it does not require further consideration for cumulative effects.
331	Residential Development at Land off Mold Road & Bryn Road, New Brighton, Mold, Flintshire, CH7 6WL	FUL/001091/24	Full planning for 135 affordable dwellings, on site public open space and site infrastructure.	5.48	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or marine physical processes. Therefore, it does not require further consideration for cumulative effects.
341	Land At Wrexham Road, Chester	24/02763/REM	Reserved matters application, pursuant to part of the outline element of the hybrid planning permission 17/02453/OUT (as amended by 22/01679/S73), with details (external appearance, landscaping, site layout and scale) of 1.5FE primary school (to be delivered over two phases) with associated playing fields and car parking.	12.21	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment or marine physical processes.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			17/02453/OUT: Part A - (full permission) for phased development of 483 dwellings and associated infrastructure (including playing fields / open space); Part B - (outline permission - all matters reserved apart from access) for a local centre (comprising supermarket (Use Class A1 (500sqm); other shops (Use Class A1)(500sqm); cafe/restaurant (Use Class A3)(200sqm); public house (Use Class A4)(650sqm); and nursery/creche (Use Class D1) (600sqm) plus an outdoor play area) and a primary school with associated playing fields (Hybrid application).		Therefore, it does not require further consideration for cumulative effects.
342	Land at Sutton New Hall Farm, Ledsham Road, Little Sutton, Ellesmere Port, Cheshire	24/02885/REM	Details of electric sub-station (intended to service the adjacent site for a primary school) under outline permission 12/02091/OUT 12/02091/OUT: Residential development of up to 2,000 homes, up to 400 sqm of retail floor space for a local shop, a new primary school, a community building, a new linear park, playing fields and other public open space, new allotments, together with new accesses, streets and other related infrastructure. (Outline Application) (NB minor change removing reference to conversion of existing farm buildings to residential).	9.23	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.
358	Former Mod Site, Wirral	DPP4/22/01080	Outline planning application with all matters reserved except for points of access (from Old Hall Road and across Warren Lane) for residential development of up to 249 dwellings with associated parking, servicing, landscaping, drainage features and associated infrastructure.	12.95	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment. Therefore, it does not require further consideration for cumulative effects.

Terrestrial Heritage

24.5.68 **Table 24-20** below provides a summary of how each of the short listed proposed schemes (**Table 24-6**) has been evaluated in relation to potential cumulative effects on Terrestrial Heritage. Only the proposed schemes that are captured within the Terrestrial Heritage Zols, as outlined in **Table 24-4**, have been considered as part of this assessment.

24.5.69 The following Terrestrial Heritage impact pathways were considered for the cumulative effects assessment of the short listed proposed schemes during operation and construction:

- permanent physical impacts to below ground archaeological remains during the construction phase of the Proposed Development; and
- permanent and temporary changes to the setting of assets as a result of the Proposed Development during the construction, operation (including maintenance) of the Proposed Development. With regards to setting, the physical presence of the Proposed Development is assessed as a permanent construction phase impact which continues through the operation phase.

Table 24-17: Short listed proposed schemes within the Terrestrial Heritage study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped out. Cultural heritage was scoped out of this proposed scheme as it was assessed that the development would not result in harm to any heritage assets through change to their setting. In addition, this proposed scheme does not interact with the spatial extent of the Proposed Development, therefore there is no potential for physical impacts to the same receptors that may be impacted by the Proposed Development. Therefore, there is no potential for cumulative impacts/effects to arise.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped in. This proposed scheme has the potential to result in change to the setting of the Croes Atti Roman Site (FL213) scheduled monument during the construction phase, and the Proposed Development is assessed as having the potential to result in changes to the setting of this asset. Therefore there is a potential for cumulative impacts to arise.
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	Scoped out This proposed scheme would not affect heritage assets identified as being affected by the Proposed Development, and therefore there is no potential for cumulative impacts to arise.
47	HyNet Carbon Dioxide Pipeline(HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.</p>	0.07	Scoped in With regards to the setting of heritage assets, this proposed scheme does not result in significant effects to any heritage assets identified within the assessment for the Proposed Development, therefore there is no potential for cumulative effects to arise. The Hynet Scheme interacts with the Proposed Development at the Proposed CO ₂ Connection Corridor. There is potential for physical impacts to the non-designated marl pits (HER 85035; 85036) and potential archaeological remains within

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					this area as a result of this proposed scheme, and there is the potential for cumulative effects to arise.
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	Scoped out This proposed scheme would not affect heritage assets identified as being affected by the Proposed Development, and therefore there is no potential for cumulative impacts to arise.
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	Scoped out This proposed scheme would not affect heritage assets identified as being affected by the Proposed Development, and therefore there is no potential for cumulative impacts to arise.
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	Scoped out This proposed scheme would not affect heritage assets identified as being affected by the Proposed Development, and therefore there is no potential for cumulative impacts to arise.
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped out This proposed scheme would not affect heritage assets identified as being affected by the Proposed Development, and therefore there is no potential for cumulative impacts to arise.
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	Scoped out This proposed scheme would not affect heritage assets identified as being affected by the Proposed Development, and therefore there is no potential for cumulative impacts to arise.
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	Scoped out This proposed scheme would not affect heritage assets identified as being affected by the Proposed Development, and therefore there is no potential for cumulative impacts to arise.

Cumulative Effects During Construction

Archaeology

24.5.70 In terms of buried archaeological remains, physical impacts associated with the construction, operation and maintenance (where relevant) of the proposed schemes listed at paragraph 24.5.35 do not have the potential to physically impact the same buried archaeological remains that may be impacted by the Proposed Development due to the spatial distance between the Proposed Development and the other proposed schemes.

24.5.71 However, there is one other proposed scheme which has the potential to result in impacts to the same buried archaeological remains as the Proposed Development during the construction phase. The HyNet Carbon Dioxide Pipeline (EN070007; CML2350) interfaces with the Proposed Development within the Proposed CO₂ Connection Corridor. Two non-designated archaeological assets are located within this area, the Little Leadbrook Farm marl pits (HER 85035; 85036), and there is also the potential for further previously unrecorded archaeological remains to survive within this area. These remains may be physically impacted by the Proposed Development as well as the HyNet Carbon Dioxide Pipeline. Proposed mitigation for the Proposed Development includes avoiding remains through the design (where viable), as well as a programme of archaeological investigation, recording and reporting prior to groundworks, where remains cannot be avoided.

24.5.72 The HyNet Scheme Environmental Statement (WSP, 2023, HyNet North West Environmental Statement Volume II Chapter 8) does not expect significant impacts to the marl pits and has proposed mitigation in the form of trial trenching. It is not anticipated that the HyNet development would raise the assessed level of impact identified as a result of the Proposed Development as the works are of a similar limited nature and would not result in the total loss of any remains. Therefore, no cumulative impact is identified and effects would remain as described in **Chapter 17: Terrestrial Heritage (EN010166/APP/6.2.17)**, which is assessed as a **minor adverse** effect and considered to be **not significant**.

Built Heritage

24.5.73 The assessment undertaken for the Proposed Development has identified the potential for change to the setting of the Croes Atti Roman Site (FL213) scheduled monument as a result of the Proposed Development during the construction phase, which is assessed as a very low magnitude of impact, which is considered to be not significant. The proposed scheme Land at Quarry Farm and Leadbrook Drive Scheme (FUL/000372/24) is partially located within the scheduled monument boundary, although the land within the scheduled monument has been excluded from the development's design. The development of the land immediately surrounding the scheduled monument has the potential to result in changes to the setting of the scheduled monument which would give rise to a cumulative effect. The resulting cumulative effect is considered to result in a low magnitude of impact, which, on an asset of high value would result in a **moderate adverse** effect, which is considered to be **significant**. However, it is considered that the other proposed scheme would result in a greater impact than that assessed as a result of the Proposed Development. The Proposed

Development makes a lesser, non-significant contribution to the identified cumulative effect. Further, the Proposed Development alone does not result in a significant effect. Therefore, there is no further mitigation that can be applied to the Proposed Development to reduce the cumulative effect.

Cumulative Effects During Operation

Archaeology

24.5.74 In terms of below ground archaeological remains, physical impacts are limited to the construction phase, as reported above, therefore there is no potential for cumulative effects during operation as a result of the HyNet Carbon Dioxide Pipeline (EN070007; CML2350).

Built Heritage

24.5.75 Potential impacts related to the operational phase of the other proposed schemes are not considered to result in any change to the assessed levels of impact identified during the construction phase. Therefore, it is not considered that there is the potential for cumulative effects to arise during operation.

Marine Heritage

- 24.5.76 A review of all schemes in the Zol of 1 km for this topic (**Appendix 24-B: Short List of Other Developments (EN010166/APP/6.4)**) has been undertaken, as presented in **Table 24-18**.
- 24.5.77 Three of the projects (land at Quarry Farm ID 9, land at Ffwrdd Dewi ID 75 and a field west of Highman Drive ID 113) are terrestrial. Due to the spatial extents of the projects, there would be no interactions between these schemes and the marine heritage assets affected by the Proposed Development, and therefore no cumulative impacts are considered to arise.
- 24.5.78 The fourth project within the Zol is Hynet Carbon Dioxide Pipeline (HyNet CO₂ Pipeline Project ID 47), which has marine components. However, given the distance between the projects, marine heritage cumulative impacts between them are not likely. Additionally, suitable mitigation measures have been recommended as part of the EIA for both developments. Therefore, any possible effects on marine heritage will be managed.

Table 24-18: Short listed proposed schemes within the Marine Heritage study area

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment and physical processes. Therefore, it does not require further consideration for cumulative effects.
47	HyNet CCS CO2 pipeline	N070007; CML2350	A new build CO ₂ pipeline that will transport CO ₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO ₂ pipeline will comprise both newbuild and existing pipelines that will be covered under the DCO. When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.	0.07	Scoped out – given the distance between the projects potential impacts on marine heritage, cumulative effects are not likely

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			Will involve Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD. Up to four weeks working for either micro-tunnelling, or for HDD with the following parameters for the licensable activities under the River Dee: The trenchless crossing depth below riverbed for HDD would be a minimum of 15m and a minimum of 8m for micro-tunnelling. The trenchless crossing under the River Dee must be undertaken in line with the parameters stated in the Environmental Report		
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external	0.47	Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment and physical processes.

ID	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.		Therefore, it does not require further consideration for cumulative effects.
113	Field West of Highmere Drive, Connah's Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	<p>Scoped out – this development is located entirely within the terrestrial environment with no impact pathway to the marine environment and physical processes.</p> <p>Therefore, it does not require further consideration for cumulative effects.</p>

Socio-Economics, Recreation and Tourism

24.5.79 The relevant Zol for Socio-Economics, Recreation and Tourism effects varies depending on the type of effect being assessed. As set out in **Chapter 19: Socio-Economics, Recreation and Tourism (EN010166/APP/6.2.19)**:

- a. local economy effects (employment) are considered across a 60-minute drive time area, and temporary worker accommodation effects are considered across both a 30- and 60-minute drive-time area from the Order limits;
- b. skills and training effects are considered across the FCC Local Authority Area; and
- c. agricultural Land effects are considered within the Order limits.

24.5.80 In line with paragraph 24.4.9 above, any negligible effects have not been included as part of the below assessment.

Table 24-19: Short listed proposed schemes within the Socio-Economics, Recreation and Tourism study area

ID No.	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped in during the construction and operational phase, potential for: <ul style="list-style-type: none">Local economy cumulative effects (employment and GVA;Temporary worker accommodation cumulative effects;Local PRow and severance cumulative effects;Local land use cumulative effects on agriculture and soils; andLocal amenity cumulative effects.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. new vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	
47	HyNet Carbon Dioxide Pipeline (HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI) to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.</p>	0.07	Scoped in during the construction and operational phase, potential for: <ul style="list-style-type: none">Local economy cumulative effects (employment and GVA³);Temporary worker accommodation cumulative effects;Local PRow and severance cumulative effects;Local land use cumulative effects on agriculture and soils; andLocal amenity cumulative effects.
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69MWe.	1.91	Scoped in during the construction and operational phase, potential for: <ul style="list-style-type: none">Local economy cumulative effects (employment and GVA⁴);Temporary worker accommodation cumulative effects;
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access	0.47	

³ GVA is assessed only for construction phase.

⁴ GVA is assessed only for construction phase.

ID No.	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
			points, new car parking arrangements and extended vehicular access off Ffordd Dewi.		<ul style="list-style-type: none">Local PRow and severance cumulative effects;Local land use cumulative effects on agriculture and soils; andLocal amenity cumulative effects.
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works	0.98	Scoped in during the construction and operational phase, potential for: <ul style="list-style-type: none">Local economy cumulative effects (employment and GVA⁵);Temporary worker accommodation cumulative effects;Local PRow and severance cumulative effects;Local land use cumulative effects on agriculture and soils; andLocal amenity cumulative effects.
114	Shotton Paper Mill, Weighbridge Road, Deeside (Redevelopment)	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings and processing plant and associated landscaping, offices, access and parking.	1.63	
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	

⁵ GVA is assessed only for construction phase.

Cumulative Effects During Construction

Net Construction Employment

- 24.5.81 Should they go ahead, all the approved and submitted proposed schemes listed above are anticipated to generate construction related employment in the local economy and employment study area (60-minute drive-time area from the Construction and Operation Area).
- 24.5.82 The scale of the construction employment generated cannot be readily quantified as for some proposed schemes this information is commercially sensitive and not publicly available. However, the combined effect of the construction of the proposed schemes and the Proposed Development would bring additional employment to the study area. Based on the scale of proposed scheme taking place, and the timeframes for which the proposed scheme is overlapping with the Proposed Development, it is considered that the overall effect from the generation of construction employment at the 60-minute drive-time study area is likely to increase from a minor beneficial (not significant) effect to a cumulative **moderate beneficial (significant)** effect.

Temporary Worker Accommodation

- 24.5.83 To assess the effects of demand from the construction workforce on the local housing market, it is necessary to understand both the size of the cumulative workforce who might require accommodation and the likely availability of accommodation available to meet this requirement. If the construction phases of multiple proposed schemes were to overlap, then this would in turn increase demand in the accommodation sector from the increased workforce at a peak construction period.
- 24.5.84 Using the assumptions from Section 19.6 of **Chapter 19: Socio-Economics, Recreation and Tourism (EN010166/APP/6.2.19)**, there are approximately 632 private rented homes and 5,657 rooms in hotel, bed and breakfast and inns accommodation during peak seasonal occupancy (August), within a 60-minute drive time from the Order limits. This provides a representative baseline of temporary accommodation capacity within a reasonable commuting distance for non-home-based workers.
- 24.5.85 **Chapter 19: Socio-Economics, Recreation and Tourism (EN010166/APP/6.2.19)** concluded that effects on the temporary accommodation sector, considering both peak construction staff in isolation, and peak construction staff plus operational and outage workers at the existing Connah's Quay Power Station would be minor adverse (not significant). This represents a worst-case scenario, considering the assumption that approximately 45% of the workforce would likely be living within a 60-minute drive time of the Order limits and therefore be home-based (i.e. would live sufficiently close-by to return home in the evenings rather than needing overnight accommodation).
- 24.5.86 While there is limited publicly available information on workforce numbers, phasing, and accommodation strategies for other proposed schemes, based on the available evidence, professional judgement, and the supply of temporary accommodation within a 60-minute drive time, it is considered that cumulative effects on the accommodation sector are likely to remain **minor adverse (not significant)**. This judgement is based on the availability of

temporary accommodation across the 60-minute drive-time area, and standard practice for major infrastructure schemes to adopt embedded mitigation measures such as construction workforce management plans to minimise pressure on local housing.

PRoW and Severance

24.5.87 The proposed schemes could generate transport and traffic impacts, which, in combination with the Proposed Development, could generate cumulative community severance effects. Such effects would be most likely to arise if construction periods overlap and impacts on key road links and public access routes coincide temporally and spatially.

24.5.88 **Chapter 19: Socio-Economics, Recreation and Tourism**

(EN010166/APP/6.2.19) concluded that effects on the PRoW network around the Order limits would be minor adverse (not significant). Similarly, severance effects on the local, strategic, and all road links would be minor adverse (not significant). It is understood that the PRoW 404/66/10 (including 404/66/20)) forming part of the network around Little Leadbrook Farm linking Leadbrook Drive to Allt Goch Lane that would be temporarily diverted and permanently reinstated as part of the Proposed Development, would also face disruption as part of the HyNet Carbon Dioxide Pipeline (Application Reference: EN070007; CML235). As a result, this PRoW may need to be diverted twice or remain diverted for a longer period due to the overlapping construction timelines of both schemes. Although there is limited information available regarding the construction timing, routing, and traffic volumes of the proposed scheme, it is reasonable to assume that each development would be subject to standard planning controls requiring Construction Traffic Management Plans (CTMPs), which are designed to minimise disruption to communities and PRoW users.

24.5.89 Taking these factors into account and applying professional judgement, it is considered that the cumulative effect is likely to remain **minor adverse (not significant)**.

Local Amenities

24.5.90 The proposed schemes have the potential to generate adverse amenity effects on local land uses including residential properties, local businesses, open space, community facilities, visitor attractions and development land.

Cumulative Effects During Operation

Agriculture and Soils

24.5.91 **Chapter 19: Socio-Economics, Recreation and Tourism**

(EN010166/APP/6.2.19) has found effects on permanent land take of agricultural land during operation to be minor adverse (not significant) at the Main Development Area.

24.5.92 It is not possible to quantify the land use or permanent land take requirements of agricultural land for every planned proposed scheme due to data limitations. However, it is reasonable to assume that proposed schemes will be subject to national and local planning policy requirements, including those in the National Planning Policy Framework (NPPF) and relevant Local Development Plans, which seek to minimise the permanent loss of Best and

Most Versatile (BMV) agricultural land wherever possible. Therefore, based on the available evidence and professional judgement, the cumulative effect on agricultural land associated with the Proposed Development is assessed to remain as **minor adverse** and **not significant**.

24.5.93 Chapter 19: Socio-Economics, Recreation and Tourism

(**EN010166/APP/6.2.19**) found no effect within the Proposed CO₂ Connection Corridors. Therefore, in line with the methodology presented in paragraph 24.4.9, effects are not considered within the cumulative assessment.

Climate Change

GHG Assessment

- 24.5.94 Climate change is the result of many cumulative impacts. As it is the result of innumerable minor activities, a single activity may itself result in a minor or insignificant impact, but when combined with many other activities, the cumulative effect could be significant. The GHG emissions assessment by its nature is a cumulative assessment and considers whether the Proposed Development would contribute significantly to GHG emissions on a national level. By comparing the Proposed Development against the national inventory, as being representative of the global climate, the cumulative impact of the Proposed Development is being considered on a national scale.
- 24.5.95 The global atmosphere is the receptor for climate change impacts and has the ability for holding GHG emissions. Nevertheless, as stated by the Institute of Environmental Management and Assessment⁶ (IEMA) (Ref 12-14), all GHG emissions are considered significant and therefore would contribute to climate change. While the impact of any individual proposed development may be limited, it is the cumulative impact of many proposed developments over time that could have a significant effect on climate change. The IEMA guidance goes on to state that 'Effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other.'
- 24.5.96 As such, it is not possible to define a study area for the assessment of cumulative effects of GHG emissions, nor to undertake a cumulative effects assessment, due to the geographically unconstrained nature of GHG emissions. Therefore, this assessment does not consider cumulative GHG impacts from developments being brought forward under separate planning applications together with the Proposed Development. Furthermore, the assessment (Section 20.3 of **Chapter 20: Climate Change (EN010166/APP/6.2.20)**) considers the impact of GHG emissions from the Proposed Development against the UK and Welsh Carbon Budgets and targets. In doing so this assessment is considered inherently cumulative as it considers GHG emissions from the Proposed Development in context of the UK as a whole.

CCRA

- 24.5.97 The CCR assessment considers how changing climatic conditions may potentially affect the Proposed Development. As the receptor is the Proposed Development itself, and climate projection data is not influenced by other proposed schemes, a cumulative assessment is deemed not applicable for CCR.

⁶ The Institute of Environmental Management Assessment (IEMA) has changed its name to the Institute of Sustainability and Environmental Professionals (ISEP). Where general reference is made to the institute in this document, the following distinction has been made: ISEP (formerly IEMA). When referencing legacy IEMA documents, this distinction is not made.

ICCI

24.5.98 The In-Combination Climate Impact (ICCI) assessment is, by nature, a cumulative assessment, and any effects are detailed in **Chapter 20: Climate Change (EN010166/APP/6.2.20)**.

Human Health

24.5.99 The relevant ZOI where human health impacts are likely to occur has been determined to be in the following four wards:

- Connah's Quay: Golftyn;
- Flint: Castle;
- Flint: Coleshill and Trelawny; and
- Flint: Oakenholt.

24.5.100 There is the potential for cumulative human health effects as a result of the Proposed Development, where effects associated act in conjunction with those associated with other planned projects above.

24.5.101 Some determinants (education and training, and radiation) have been deemed not relevant to the cumulative assessment, as there would be no cumulative impacts on them and therefore have not been assessed.

24.5.102 **Chapter 21: Human Health (EN010166/APP/6.21)** is based on findings from **Chapter 8: Air Quality (EN010166/APP/6.2.8)**, **Chapter 9: Noise and Vibration (EN010166/APP/6.2.9)**, **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)**, **Chapter 13: Water Environment and Flood Risk (EN010166/APP/6.2.13)**, **Chapter 19: Socio-economics, Recreation and Tourism (EN010166/APP/6.2.19)**, and **Chapter 20: Climate Change (EN010166/APP/6.2.20)**. Therefore, whilst the study area displayed in **Appendix 24-A: Long List of Proposed Schemes** and **Appendix 24-B: Short List of Proposed Schemes (EN010166/APP/6.4)** for Human Health is limited to the above four wards, the ZOI set out in the afore mentioned chapters also determine whether a short listed proposed scheme is considered for potential cumulative human health effects, as explained in **Table 24-4**.

Table 24-20: Short listed proposed schemes within the Human Health study area

ID No. (from long list)	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
3	Shotton Paper Mill, Weighbridge Road, Deeside (Tissue Machine Facility)	FUL/000353/24	Full application for a new tissue machine facility and associated structures at Shotton Paper Mill	1.63	Scoped in This proposed scheme is considered in the Air Quality and Socio-economics, Recreation and Tourism Sections of this chapter.
9	Land at Quarry Farm and Leadbrook Drive, Oakenholt, Flint	FUL/000372/24	Construction of 130 affordable homes. New vehicular and pedestrian accesses off Ffordd Pedrog including public open space, landscaping, highways works, foul and surface water drainage infrastructure and associated ancillary works.	0.16	Scoped in This proposed scheme is considered in the Air Quality (for Construction and Operation), Noise and Vibration, Traffic and Transport, and Landscape and Visual Amenity Sections of this chapter.
22	Residential Development at Land at Gladstone Way and Ash Lane, Hawarden, Deeside	FUL/000195/24	Construction of 300 dwellings (including 105 affordable homes), new vehicular and pedestrian accesses, public open space, landscaping and all associated ancillary works.	4.04	Scoped in This proposed scheme is considered in the Traffic and Transport Section of this chapter.
38	Parc Adfer Ltd, Zone 4, Deeside Industrial Park, Weighbridge Road, Sealand, Deeside, CH5 2LL	SCO/000970/23	EIA Scoping Opinion Request for the construction and operation of carbon capture technology (retrofit of post-combustion carbon capture technology to the Parc Adfer Energy Recovery Facility).	1.91	Scoped in This proposed scheme is considered in the Water Environment and Flood Risk Section of this chapter.
47	HyNet Carbon Dioxide Pipeline(HyNet CO ₂ Pipeline Project)	EN070007; CML2350	<p>A CO₂ pipeline that will transport CO₂ produced and captured by future hydrogen producing facilities and existing industrial premises in North West England and North Wales for offshore storage. The CO₂ pipeline will comprise both newbuild and existing pipelines (and newbuild and existing AGI to allow operation and maintenance works in relation to the pipeline, including the newbuild Proposed Liverpool Bay CCS Ltd's Flint AGI) that will be covered under the DCO (of the HyNet CO₂ Pipeline Project). When complete it will run from the Ince AGI in Cheshire to Talacre Beach in North Wales.</p> <p>Includes a Marine License for a Pipeline crossing of the River Dee using trenchless crossing technique, either micro-tunnelling or HDD.</p>	0.07	Scoped in This proposed scheme is considered in the Air Quality (for Construction and Operation), Noise and Vibration, Traffic and Transport, and Landscape and Visual Amenity Sections of this chapter.
55	Shotton Paper Mill (Combined Heat & Power Facility)	DNS/3279559	CHP Facility relating to redevelopment and expansion of Shotton Paper Mill. The generation capacity of the CHP Facility will be 69Mwe.	1.91	Scoped in This proposed scheme is considered in the Air Quality, Traffic and Transport, Socio-economics,

ID No. (from long list)	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
					Recreation and Tourism, and Water Environment and Flood Risk Sections of this chapter.
75	Land at Ffordd Dewi, Flint, Flintshire, CH6 5WB	FUL/000776/22	New, two storey 240 FTE Place Welsh Medium Primary School building and 30 Place PTE Nursery. New, partial two storey wrap around childcare, Welsh Immersion and Community building. Project associated external works, inclusive of boundary treatments, new pedestrian access points, new car parking arrangements and extended vehicular access off Ffordd Dewi.	0.47	Scoped in This proposed scheme is considered in the Air Quality (for Operation), Noise and Vibration, Traffic and Transport, and Landscape and Visual Amenity Sections of this chapter.
92	Residential Development at Land off Northop Road, Flint Mountain, Flint, Flintshire, CH6 5LH	FUL/000414/22	Residential development of 200 dwellings, means of access open space and all associated works.	1.45	Scoped in This proposed scheme is considered in the Air Quality (for Operation), Noise and Vibration, Traffic and Transport, and Landscape and Visual Amenity Sections of this chapter.
102	Padeswood Carbon Capture & Storage	DNS CAS-02009-W1R1Z7	Integrating Hanson UK's Padeswood Cement Works into the HyNet North West network through the capture of CO ₂ for transportation and subsequent storage in Eni's Liverpool Bay Storage facilities. The proposed project will capture approximately 7,200,000 tonnes of CO ₂ per year from cement Kiln located at Padeswood. The individual components of the development can be summarised as follows: Access roadways, construction and laydown compound areas, A CHP plant with 12MW electricity (minimum) and 83MW thermal of installed capacity, to produce electricity and heat to power the carbon capture equipment, a PCCC plant, to extract CO ₂ from waste gases and compress it for transport and storage, An underground CO ₂ transport pipeline, to transport capture CO ₂ from Padeswood Cement Works to Northop Hall AGI (above ground installation) forming part of the HyNet CO ₂ pipeline approximately 10 km in length, The demolition of existing structures comprising a workshop, a block of residential garages, small office building and redundant slurry basins.	7.95	Scoped in This proposed scheme is considered in the Air Quality Section of this chapter.
113	Residential Development at Field West of, Highmere Drive, Connahs Quay, CH5 4YH	FUL/000034/22	Construction of a residential development of 141 no. dwellings and associated works.	0.98	Scoped in This proposed scheme is considered in the Air Quality (for Operation), Noise and Vibration, Traffic and Transport, and Landscape and Visual Amenity Sections of this chapter.
114	Shotton Paper Mill, Weighbridge Road,	FUL/000011/22	Redevelopment and expansion of former UPM Shotton Paper Mill site comprising 82 hectares of new paper factory buildings	1.63	Scoped in

ID No. (from long list)	Name of Development	Application Reference	Brief Description of Development	Approximate Distance from Construction and Operation Area (km)	Consideration for Assessment
	Deeside (Redevelopment)		and processing plant and associated landscaping, offices, access and parking.		This proposed scheme is considered in the Air Quality, Socio-economics, Recreation and Tourism and Water Environment and Flood Risk Sections of this chapter.
141	The Airfields (Airfields Delta)	63721	Erection of a Paper Processing Mill to produce and manufacture tissue paper (B2, B8 use class) with ancillary B1a office space; associated servicing and infrastructure including car parking, HGV parking and vehicle and pedestrian circulation; noise mitigation features; earthworks to create development platforms; creation of drainage features including a new outfall to the River Dee; water treatment plant; and landscaping.	3.64	Scoped in This proposed scheme is considered in the Air Quality Section of this chapter.
311	Residential Development at Street Record, Northop Road, Flint, Flintshire	058314	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	2.00	Scoped in This proposed scheme is considered in the Socio-economics, Recreation and Tourism Section of this chapter.

Cumulative Effects During Construction

- 24.5.103 An assessment of the potential cumulative effects upon human health during the construction phase of the Proposed Development is included below, summarizing the relevant aspects of each cumulative assessment in regard to human health.

Health and Social Care Services

- 24.5.104 Construction workers working on the Proposed Development and the other proposed schemes could potentially place additional demand on health and social care services if they move to the area, or if emergency treatment is required. **Chapter 19: Socio-economics, Recreation and Tourism (EN010166/APP/6.2.19)** finds that other proposed schemes could lead to an increase in the number of people in the area if construction phases take place at the same time. **Chapter 21: Human Health (EN010166/APP/6.2.21)** found that, on average, GP practices local to the Proposed Development are operating above benchmark patient to GP ratios. However, due to the temporary nature of the construction phase, construction workers are unlikely to place additional demand on GP services, and the overall cumulative effect on the 'Health and Social Care Services' human health determinant is assessed to remain at **minor adverse (not significant)** for the general population and **minor adverse (not significant)** for the more vulnerable sub-population.

Employment and income

- 24.5.105 **Chapter 19: Socio-economics, Recreation and Tourism (EN010166/APP/6.2.19)** finds that the construction phases of the Proposed Development and other proposed schemes in the local area are anticipated to generate construction related employment in the local economy and employment study area (60-minute drive-time area from the Order limits). Although the scale of construction employment generated cannot be readily quantified due to commercial sensitivities, it is considered that the overall effect from the 'Employment and Income' human health determinant is assessed to be **moderate beneficial (significant)**.

Transport modes, access, and connections

- 24.5.106 **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)** concludes that it is possible that the cumulative effect on the construction traffic of the development could have an adverse effect in terms of access to healthcare, educational, and community facilities as construction traffic is likely to use the same strategic roads as the local community. Increased traffic flows and severance effects may impact the ability of local residents to access these facilities. However, it is expected that through the adoption of the Final CTMP(s) and Final CWTP(s) any effect upon road users in regard to severance is likely to be reduced to an acceptable level. Therefore, the overall cumulative effects on the 'Transport Modes, Access, and Connections' human health determinant is assessed to remain at **minor adverse (not significant)** for the general population, and **minor adverse (not significant)** for the more vulnerable sub-population.

Air Quality

- 24.5.107 **Chapter 8: Air Quality (EN010166/APP/6.2.8)** finds that proposed developments in the vicinity of the Proposed Development may interact with the air quality impacts and effects outlined in the chapter. It finds that cumulative dust impacts are not likely and cumulative traffic impacts are already accounted for in the traffic assessment. It is also reasonable to assume that each of the proposed schemes would be required by their respective consent to consider the risk of air quality impacts and to have to implement proportionate control measures to ensure impacts at sensitive receptors are minimised. Based on this, the overall cumulative effect on the 'Air Quality' human health determinant is assessed to remain at **minor adverse (not significant)** for the general population and **minor adverse (not significant)** for the vulnerable sub-population.

Noise and Vibration

- 24.5.108 **Chapter 9: Noise and Vibration (EN010166/APP/6.2.9)** finds that given the generally localised nature of noise effects associated with the construction of each proposed scheme, and provided each proposed scheme complies with assigned noise and vibration limits and follows the general guidance with respect to noise mitigation, it is considered unlikely that significant cumulative construction noise effects would occur. Therefore, the overall cumulative effect on the 'Noise and Vibration' human health determinant is assessed to remain at **minor adverse (not significant)** for the general population and **minor adverse (not significant)** for the vulnerable sub-population.

Open space, leisure, and play

- 24.5.109 **Chapter 19: Socio-economics, Recreation and Tourism (EN010166/APP/6.2.19)** identifies that if construction periods overlap from other proposed schemes, transport could increase. Moreover, temporary closures and diversions of PRoWs can result in changes to journey times, local travel patterns, and certainty of routes for users would arise from the temporary closure and temporary diversion of PRoWs from the proposed schemes. However, it is reasonable to assume that each development would be subject to standard planning controls requiring CTMPs, which are designed to minimise disruption to communities and PRoW users. Therefore, the overall cumulative effects on the 'Open space, leisure, and play' human health determinants are assessed to remain as **minor adverse (not significant)**.

Climate change mitigation and adaption

- 24.5.110 **Chapter 20: Climate Change (EN010166/APP/6.2.20)** does not include a GHG cumulative assessment because the GHG assessment is inherently cumulative as all GHG emissions have the potential to equally impact the receptor i.e. the global climate (see **Chapter 20: Climate Change (EN010166/APP/6.2.20)** for more information). This is because all GHG emissions have the potential to equally impact the receptor i.e. the global climate. Therefore, the overall cumulative effects on the 'Climate change mitigation and adaption' is assessed to remain as **negligible (not significant)** for the general population, and **minor adverse (not significant)** for the more vulnerable sub-population.

Water quality or availability

- 24.5.111 **Chapter 13: Water Environment and Flood Risk (EN010166/APP/6.2.13)** concludes that other proposed schemes could potentially cause adverse effects on water quality due to deposition or spillage of soil, sediment, oils, fuels, or other construction chemical split on site. In addition, groundwater resources and local water supplies could be impacted due to altered drainage systems and increase water demand. In terms of human health, this could have an impact on the quality and quantity of drinking water to the local population. However, it is anticipated that all proposed schemes will comply with national and local planning policies, incorporating good practice mitigation measures and pollution prevention strategies during construction. Therefore, the cumulative effect on the 'Water Quality or Availability' determinant during construction is assessed to remain as **minor adverse (not significant)**.

Cumulative Effects During Operation

Health and Social Care Services

- 24.5.112 Similar to the Proposed Development, operational workforces of the other developments are expected to be relatively small in the context of the wider economy. Due to this, access to health and social services is likely to remain unchanged and therefore the cumulative effect on the 'Health and Social Care Services' determinant during operation is assessed to remain at **Negligible (Not Significant)** for the general population and **minor adverse (not significant)** for the more vulnerable sub-population.

Transport modes, access, and connections

- 24.5.113 **Chapter 10: Traffic and Transport (EN010166/APP/6.2.10)** states that once operational the Proposed Development is not considered to result in a severe impact upon the local highway network and therefore no further assessment has been undertaken. Therefore, there are no cumulative effects anticipated.

Air Quality

- 24.5.114 The air quality assessment set out in **Chapter 8: Air Quality (EN010166/APP/6.2.8)** is inherently cumulative, as the modelling for the operational phase includes all relevant committed developments on top of the existing background, both with and without the Proposed Development. Therefore, the overall cumulative effect on the 'Air Quality' human health determinant during operation is assessed to remain at **minor adverse (not significant)** for the general population and **minor adverse (not significant)** for vulnerable sub-population.

Noise and Vibration

- 24.5.115 **Chapter 9: Noise and Vibration (EN010166/APP/6.2.9)** finds that there are no cumulative effects anticipated during operation due to distance between the Proposed Development and the cumulative projects. Therefore, no cumulative effects are anticipated on the health determinant for 'Noise and Vibration'.

Open space, leisure, and play

24.5.116 **Chapter 19: Socio-economics, Recreation and Tourism**

(**EN010166/APP/6.2.19**) finds that once operational the Proposed Development is not considered to result in significant impacts upon PRow's, therefore no further assessment has been undertaken. No cumulative effects are anticipated on the health determinant for 'Open space, leisure, and play'.

Climate change mitigation and adaption

24.5.117 **Chapter 20: Climate Change (EN010166/APP/6.2.20)** does not include a GHG cumulative assessment because the GHG assessment is inherently cumulative as all GHG emissions have the potential to equally impact the receptor i.e. the global climate (see **Chapter 20: Climate Change (EN010166/APP/6.2.20)** for more information). The carbon capture and sequestration elements of the Proposed Development would contribute to GHG avoidance and the Proposed Development would enable Wales and the UK to make the transition to net-zero emissions. The Applicant is not preventing other climate change mitigation or adaptation from coming forward for the proposed schemes. Therefore, the overall cumulative effects on the 'Climate change mitigation and adaption' is assessed to remain as **minor beneficial (not significant)** for the general population, and **moderate beneficial (significant)** for the more vulnerable sub-population.

Water quality or availability

24.5.118 **Chapter 13: Water Environment and Flood Risk (EN010166/APP/6.2.13)** concludes that cumulative developments could potentially cause adverse effects on water quality due to diffuse urban runoff, increased impervious surfaces altering hydrology and flood risk, and potential contamination from operational activities such as water abstraction, discharge and chemical handling. However, it is anticipated that all proposed schemes will comply with national and local planning policies, implementing good practice mitigation measures to manage water quality, flood risk and hydrological impacts. Therefore, the cumulative effect on the 'Water Quality or Availability' determinant during operation is assessed to remain at **minor adverse (not significant)**.

Major Accidents and Disasters

24.5.119 Major Accidents and Disasters has a different assessment approach from other technical assessment within the ES. The vulnerability of the Proposed Development to major events is assessed, including where incidents may occur on third party land or developments. Consequently, a cumulative approach is inherently built into the assessment undertaken in **Chapter 22: Major Accidents and Disasters (EN010166/APP/6.2.22)**. Therefore, a separate cumulative assessment has not been presented here.

Materials and Waste

24.5.120 A cumulative assessment for materials and waste has not been undertaken since:

- As part of their planning function, Waste Planning Authorities (WPAs) are required to ensure that enough land is available to accommodate facilities for the treatment of all waste arising in the area, either within the WPA area, or through export to suitable facilities in other areas;
- Minerals Planning Authorities (MPAs) are similarly required to ensure an adequate supply of minerals, sufficient to meet the needs of national and regional supply policies, and local development needs;
- In preparing their waste management strategies, the WPAs already take into account waste generation at the regional and sub-regional scale, since these are the figures which are then used for determining the need for waste facilities. The landfill void capacity remaining (which is used to evaluate the effects of the Proposed Development) already takes into account the cumulative effects of waste generated by other developments, and hence a separate cumulative impact assessment is not required for waste. It is, therefore, not necessary or feasible for each development within the region to, in effect, duplicate the function of the WPA as part of the EIA process; and
- It is assumed that each of the cumulative developments will also be considering and implementing the waste hierarchy as per requirements set out in The Waste (England and Wales) Regulations 2011 (Ref 12-15).

24.6 Cumulative Effects Assessment: Intra-Project Effects

Screening of Potential Intra-Project Effects

- 24.6.1 This stage of the intra-project effects screening exercise was undertaken to identify where resources and / or receptors could be affected by more than one type of residual effect (usually where they were considered in more than one technical chapter) identified within the technical assessments of the ES (**EN010166/APP/6.2**). Resources and / or receptors were categorised into two groups: those with potential to experience intra-project effects; and those with no potential to experience intra-project effects.
- 24.6.2 For the purposes of this assessment, impacts of decommissioning of the Proposed Development are considered to be comparable to, or less than, those assessed associated with construction activities. This is because the scale and nature of the activities required for decommissioning and construction are considered to be very similar and consequently the likely magnitude and duration of emissions are very similar.
- 24.6.3 The receptors or resources which may experience effect interactions are identified in **Table 24-21** below.

Table 24-21: Intra-Project Cumulative Effects

Resource/Receptor	Potential Effects	Potential for Effect Interaction
Residential Receptors	Air Quality, Noise and Vibration, Landscape and Visual	<p>There is potential for effect interaction. The majority of residential receptors have been screened out on the basis that where minor adverse effects (or greater) have been identified in one assessment, the other assessment have identified negligible effects and new, or different significant environmental effects would not arise as a result of interactions. As the receptor locations are not consistent across each of the assessment professional judgement has been used to determine a suitable representative receptor. Only the following receptors are considered to have the potential to experience intra-project effects:</p> <ul style="list-style-type: none"> • Construction: <ul style="list-style-type: none"> – Residential Properties West end of Kelsterton Road; – Kelsterton Farm; – Residential Properties at Kelsterton Lane / Kelsterton Road intersection; and – Residential properties close to Spar shop on Chester Road. • Operation: <ul style="list-style-type: none"> – Residential Properties West end of Kelsterton Road.
Human Health	Air Quality, Geology and Ground Conditions, Human Health, Accidents and Disasters	There is no potential for effect interaction because each potential effect relates to a different dimension of human health and have been assessed in the respective chapters.

Resource/Receptor	Potential Effects	Potential for Effect Interaction
Communities	Noise and Vibration, Landscape and Visual, Terrestrial Heritage, Socio-economics, Recreation and Tourism	There is no potential for effect interaction because there are no neighbouring communities which have been identified to experience multiple effects above the negligible effect category.
Community Facilities	Air Quality, Landscape and Visual, Socio-economics, Recreation and Tourism	Both Connah's Quay High School and Deeside Sixth Form College, There is potential for effect interaction.
Commercial Facilities	Air Quality, Noise and Vibration, Landscape and Visual, Terrestrial Heritage, Marine Heritage, Major Accidents and Disasters	There is no potential for effect interaction because there are no neighbouring commercial facilities which have been identified to experience multiple effects above the negligible effect category.
Landscape Character Areas	Landscape and Visual	No intra-project effects are anticipated as the impacts to landscape and visual receptors are wholly assessed within Chapter 15: Landscape and Visual Amenity (EN010166/APP/6.2.15) .
Public Rights of Way	Traffic and Transport, Landscape and Visual, Socio-Economics, Recreation and Tourism	There is no potential for effect interaction because Public Rights of Way users are not expected to experience any worse effect through exposure to landscape and visual and socio-economic effects.
Cycle Routes	Traffic and Transport, Landscape and Visual	There is no potential for effect interaction because Cycle Routes' users are not expected to experience any worse effect through exposure to landscape and visual effects.

Resource/Receptor	Potential Effects	Potential for Effect Interaction
Roads and Railways	Noise and Vibration, Traffic and Transport, Landscape and Visual	There is no potential for effect interaction because road and rail users subject to traffic and transport impacts are not expected to experience any worse effect through exposure to noise and vibration and landscape and visual effects.
Users of Local Roads / Trunk Roads	Noise and Vibration, Traffic and Transport, Landscape and Visual	There is no potential for effect interaction because road users subject to traffic and transport impacts are not expected to experience any worse effect through exposure to noise and vibration and landscape and visual effects.
Businesses	Air Quality, Noise and Vibration, Landscape and Visual, Socio-Economics, Recreation and Tourism	There is no potential for effect interaction because there are no neighbouring businesses which have been identified to experience multiple effects above the negligible effect category.
Designated Heritage Assets	Landscape and Visual, Terrestrial Heritage, Marine Heritage, Major Accidents and Disasters	There is no potential for effect interaction because there are no neighbouring heritage assets which have been identified to experience multiple effects above the negligible effect category.
Archaeological Sites	Terrestrial Heritage, Marine Heritage, Major Accidents and Disasters	There is no potential for effect interaction because there are no neighbouring archaeological sites which have been identified to experience multiple effects above the negligible effect category.
Ecological Receptors (including protected and notable species and designated sites)	Noise and Vibration, Terrestrial and Aquatic Ecology, Marine Ecology, Geology and Ground Conditions, Physical Processes, Major Accidents and Disasters	There is potential for effect interactions, however the assessment presented within Chapter 11: Terrestrial and Aquatic Ecology (EN010166/APP/6.2.11) and Chapter 12: Marine Ecology (EN010166/APP/6.2.12) covers any combined effects on

Resource/Receptor	Potential Effects	Potential for Effect Interaction
		identified ecological features. As such, no further assessment on effect interactions is provided within this chapter.
Freshwater Designated Sites	Terrestrial and Aquatic Ecology, Marine Ecology, Water Environment and Flood Risk, Geology Ground Conditions, Physical Processes	There is potential for effect interactions, however the assessment presented within Chapter 12: Marine Ecology (EN010166/APP/6.2.12) covers any combined effects on freshwater designated sites. As such, no further assessment on effect interactions is provided within this chapter.
Water Framework Directive (WFD) Waterbodies	Water Environment and Flood Risk, Geology and Ground Conditions, Physical Processes	There is no potential for effect interaction because the risk of pollution from existing ground conditions is very low to low across the Order limits, and as such, it is not considered likely that mobilisation of pollution from existing ground conditions would lead to an increased adverse effect.
Water Resources	Water Environment and Flood Risk	No intra-project effects are anticipated as the impacts to water resources receptors are wholly assessed within Chapter 13: Water Environment and Flood Risk (EN010166/APP/6.2.13) .
Flood Risk Receptors	Water Environment and Flood Risk, Climate Change	There is potential for effect interactions, however climate change impacts in relation to flood risk have been assessed within Chapter 13: Water Environment and Flood Risk (EN010166/APP/6.2.13) and associated appendices.
Agricultural Land	Geology and Ground Conditions, Socio-Economics, Recreation and Tourism	There is no potential for effect interaction because there is no agricultural lands which have been identified to experience multiple effects above the minor effect category.

Resource/Receptor	Potential Effects	Potential for Effect Interaction
Geology and Soils	Water Environment, Geology and Ground Conditions	There is no potential for effect interaction because there are no geological receptors which have been identified to experience multiple effects above the minor effect category.
Groundwater	Water Environment, Geology and Ground Conditions	There is no potential for effect interaction because there are no groundwater receptors which have been identified to experience multiple effects above the negligible effect category.
Climate	Climate Change	No intra-project effects are anticipated as the impacts to climate change receptors are wholly assessed within Chapter 20: Climate Change (EN010166/APP/6.2.20) .
Materials and Waste	Materials and Waste	No intra-project effects are anticipated as the impacts to material and waste receptors are wholly assessed within Chapter 23: Materials and Waste (EN010166/APP/6.2.23) .

24.6.4 As shown in **Table 24-21** the following resources and / or receptors have been identified to have no potential to experience intra-project effects and are therefore not considered further within this assessment:

- Human Health;
- Commercial Facilities;
- Communities;
- Landscape Character Areas;
- Public Rights of Way;
- Cycle Routes;
- Roads and Railways;
- Users of Local Roads / Trunk Roads;
- Businesses;
- Designated Heritage Assets;
- Archaeological Sites;
- Ecological Receptors (including protected and notable species and designated sites);
- Freshwater Designated Sites;
- WFD Waterbodies;
- Water Resources;
- Flood Risk Receptors;
- Agricultural Land;
- Geology and Soils;
- Groundwater;
- Climate; and
- Materials and Waste.

24.6.5 The following resources and / or receptors have been identified as having potential for intra-project effects, and were not already considered in **Chapters 8 to 23 (EN010166/APP/6.2)**:

- Residential Receptors; and
- Community Facilities.

Assessment

24.6.6 This assessment considers the following potential intra-project effects where a receptors is identified experience two or more minor adverse residual effects or greater:

- Residential receptors: potential interactions between air quality, noise and vibration and landscape and visual effects.

- Community Facilities: potential interactions between air quality, noise and vibration and landscape and visual effects.

24.6.7 Following a review of the assessments presented in **Chapter 8: Air Quality (EN010166/APP/6.2.8)**, **Chapter 9: Noise and Vibration (EN010166/APP/6.2.9)** and **Chapter 15: Landscape and Visual (EN010166/APP/6.2.15)**, the majority of residential receptors have been screened out on the basis that where minor adverse effects (or greater) have been identified in one assessment, the other assessment have identified negligible effects and new, or different significant environmental effects would not arise as a result of interactions. As the receptor locations are not consistent across each of the assessment professional judgement has been used to determine a suitable representative receptor. Only the following receptors are considered to have the potential to experience intra-project effects:

- Construction:
 - Residential Properties West end of Kelsterton Road (including the travellers' encampment);
 - Kelsterton Farm;
 - Residential Properties at Kelsterton Lane / Kelsterton Road intersection; and
 - Residential properties close to Spar shop on Chester Road.
- Operation:
 - Residential Properties West end of Kelsterton Road.

24.6.8 The potential for new, or different significant environmental effects to occur as a result of interactions has been assessed using the criteria provided within **Table 24-7**, above.

Construction

Residential Properties West end of Kelsterton Road (including the traveller's encampment)

24.6.9 A high impact / major adverse (significant) visual effect and a moderate adverse (significant) noise effect is predicted to arise during construction at these receptors. There is therefore **high (significant)** potential for a new or different significant environmental effect to occur at this receptor as a result of the interaction of these two effects.

Kelsterton Farm

24.6.10 A high impact / major adverse (significant) visual effect and a minor adverse or less (not significant) noise effect is predicted to arise during construction at this receptor. There is therefore **moderate (significant)** potential for a new or different significant environmental effect to occur at this receptor as a result of the interaction of these two effects.

Residential Properties at Kelsterton Lane / Kelsterton Road intersection

24.6.11 A moderate adverse (significant) visual effect from and a minor adverse or less (not significant) noise effect is predicted to arise during construction at these receptors. There is therefore **moderate (significant)** potential for a

new or different significant environmental effect to occur at this receptor as a result of the interaction of these two effects.

Residential properties close to Spar shop on Chester Road

24.6.12 A minor adverse (not significant) visual effect and a minor adverse (not significant) noise effect is predicted to arise during construction at this receptor. There is therefore **low (not significant)** potential for a new or different significant environmental effect to occur at this receptor as a result of the interaction of these two effects.

Operation

Residential Properties West end of Kelsterton Road (including the traveller's encampment)

24.6.13 There is therefore no potential for intra-cumulative effects to occur at these receptors as only one effect of minor adverse of higher has been identified.

Decommissioning

24.6.14 As noted in paragraph 24.6.2, impacts of decommissioning of the Proposed Development are considered to be comparable to, or less than, those assessed associated with construction activities. On this basis the follow conclusions from the construction assessment are considered relevant to the decommissioning assessment:

- **low (not significant)** potential for a new or different significant environmental effect to occur at:
 - Residential properties close to Spar shop on Chester Road.
- **moderate (significant)** potential for a new or different significant environmental effect to occur at:
 - Kelsterton Farm; and
 - Residential Properties at Kelsterton Lane / Kelsterton Road intersection.
- **High (significant)** potential for a new or different significant environmental effect to occur at:
 - Residential Properties West end of Kelsterton Road (including the travellers' encampment).

Mitigation

24.6.15 There is no further mitigation available to minimise the potential for intra-project effects. On this basis the effects described above are considered residual effects.

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