

# A30 Chiverton to Carland Cross TR010026

## 6.2 ENVIRONMENTAL STATEMENT CHAPTER 15 CONSIDERATION OF CUMULATIVE EFFECTS

Planning Act 2008

APFP Regulation 5(2)(a)  
Infrastructure Planning (Applications: Prescribed  
Forms and Procedure) Regulations 2009

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Infrastructure Planning

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**The Infrastructure Planning  
(Applications: Prescribed Forms and  
Procedure) Regulations 2009**

**A30 Chiverton to Carland Cross  
Development Consent Order 201[x]**

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**6.2 ENVIRONMENTAL STATEMENT  
CHAPTER 15 CONSIDERATION OF CUMULATIVE EFFECTS**

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## 15 Consideration of Cumulative Effects

### 15.1 Introduction

15.1.1 DMRB Volume 11 Section 2 Part 5 HA 205/08 provides guidance for assessment of cumulative impacts. It identifies two types of cumulative impacts:

- Cumulative impacts from different projects: “the impact may arise from the combined action of a number of different projects, in combination with the project being assessed, on a single receptor/ resource.”
- In-combination effects: “the impact arises from the combined action of a number of different environmental topic specific impacts upon a single receptor/resource.”

15.1.2 Both of these types of cumulative effects are considered within this assessment although as they are distinct from each other, they are considered separately, following different guidance.

15.1.3 An In-combination climate change impact (ICCI) assessment has also been carried out as part of the **In-combination climate change impacts** (Volume 6 Document Ref 6.4 ES Appendix 15.2) which considers the combined effect of the scheme and potential climate change impacts on the receiving environment during construction and operation. The conclusions from this assessment are included within this chapter in order to keep consideration of all cumulative effects together. However, the full ICCI assessment is kept within **In-combination climate change impacts** (Volume 6 Document Ref 6.4 ES Appendix 15.2).

### 15.2 Legislative Context

15.2.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 sets out in Schedule 4 Part 5 that the ES should include ‘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’.

15.2.2 The requirement for cumulative effects is also outlined in planning policy of relevance to the scheme. National Policy Statement for National Networks, paragraph 4.3 states that:

*‘In considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account:*

- *its potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long-term or wider benefits;*
- *its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.’*

### 15.3 Consultation

15.3.1 The list of projects considered within the cumulative effects assessment (CEA) has been obtained through consultation with Cornwall Council. A list of other approved developments from 2014 to 2018 were provided from Cornwall Council

for consideration in the CEA. Environmental information relating to each of the developments identified has been obtained from the Cornwall Council planning register and from publicly available reports. From the National Infrastructure Planning<sup>1</sup> database, no other DCO projects which require consideration within this cumulative assessment have been identified.

## 15.4 Assessment Methodology

15.4.1 There is currently no standard methodology for cumulative effects assessment and in-combination effects assessment although there is a range of guidance available. The following guidance has been taken into consideration during the preparation of this assessment:

- DMRB Volume 11 Section 2 Part 5 HA 205/08
- Advice Note 17: Cumulative effects assessment relevant to nationally significant infrastructure projects (Planning Inspectorate, 2015).
- Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018).

15.4.2 This assessment has been split into three sections, as described above, i.e.:

- cumulative effects assessment;
- in-combination assessment; and
- in-combination climate change impact (ICCI) assessment

15.4.3 The methodology for each of these assessments is described separately below.

### Cumulative effects assessment methodology

15.4.4 Planning Inspectorate Advice Note 17 (Planning Inspectorate, 2015) provides a systematic approach to cumulative effects assessment which can be split into four distinct phases explained in Table 15-1. The guidance notes that the recommended process focusses on cumulative effects with 'other developments'.

**Table 15-1 Stages of Cumulative Effects Assessment**


CEA stage	Activity
Stage 1: Establish the scheme's Zone of Influence (ZOI) and identify long list of 'other developments'	Identify the ZOI for each of the environmental topics covered by the ES; Identify a long list of other developments in the vicinity of the scheme which may have cumulative effects; Undertake desktop review of available environmental information for identified cumulative developments
Stage 2: Identify short list of 'other developments'.	Identify which of the identified other developments from Stage 1 has the potential to give rise to significant cumulative effects by virtue of overlaps in temporal scope, due to the scale and nature of the 'other development'/receiving environment; or any other relevant factors.
Stage 3: Information gathering	Information related to the shortlisted cumulative developments is gathered and reviewed
Stage 4: Assessment	CEA of shortlisted cumulative development is undertaken. Each individual 'other development' is reviewed in turn to identify whether there is potential for significant cumulative effects; Mitigation measures are identified.

<sup>1</sup> <https://infrastructure.planninginspectorate.gov.uk/projects/> - National Infrastructure Planning

**Stage 1 Establish the maximum ZOI and Long List of ‘Other Development’**

- 15.4.5 The Zone of Influence (ZOI) refers to the spatial area over which an effect from a project is likely to be experienced. The ZOI for the proposed scheme represents the study area for each environmental topic. These are set out in Table 15-6 towards the end of this methodological section and are also presented in Figure 15.1.
- 15.4.6 The Planning Inspectorate guidance recommends that a wide range of future projects is included within the CEA which can be tiered (from Tier 1 – 3) according to how far advanced the development is within the planning system and to the level of detail that is likely to be available for each tier. These are set out in Table 15-2.

**Table 15-2 Project tiering for the purpose of CEA**

<b>Tier 1</b>	<b>Projects under construction; Permitted application(s) but not yet implemented; and Submitted application(s) but not yet determined.</b>	<p><b>Decreasing level of detail likely to be available.</b></p> 
Tier 2	Projects on the Planning Inspectorate’s Programme of Projects where a scoping report has been submitted.	
Tier 3	<p>Projects on the Planning Inspectorate’s Programme of Projects where a scoping report has not been submitted.</p> <p>Identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited; and</p> <p>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.</p>	

- 15.4.7 The less information that is available for future projects (i.e. environmental impacts predicted, project definition), the less likely it is that the CEA will be able to make any robust assessment in relation to these projects.
- 15.4.8 It is considered that there is limited value in including Tier 2 and 3 schemes unless there is sufficient environmental assessment information available as it will not be possible to assess environmental effects. It is recognised that for Tier 2 in particular there is a variation in the level/detail of environmental information which applicants for proposed schemes may have been able to include. For the CEA, a reasonable and proportionate approach has been employed which takes into account the level of environmental information included in scoping which could meaningfully contribute to an understanding of effects for the schemes being promoted.



15.4.9 The identification of 'other development' has been undertaken by a review of Cornwall Council Planning website, the National Infrastructure Planning website, and through consultation with Cornwall Council. For the purpose of this assessment, cumulative developments identified only fell under the definition of Tier 1 developments.

### **Stage 2 Identify Potential Cumulative Impacts, Receptors and Shortlist of 'Other Development' for CEA**

15.4.10 The environmental residual effects identified in the ES (chapters 5 to 14 of this ES) have been used in this cumulative assessment to determine how and when 'other developments' could affect the same receptors as the A30 scheme.

15.4.11 The long list of other developments which has been identified under Stage 1 has been subject to further threshold and criteria to identify a proportionate 'shortlist' of developments to be assessed within the CEA.

The threshold and criteria considered in shortlisting development is outlined below. Criteria has been adapted from the Planning Inspectorate guidance and the EIA Regulations 2017:

**Table 15-3 Criteria for shortlist of 'Other Development'**

Threshold	Description
The temporal scope of 'other development' potential for interaction.	<ul style="list-style-type: none"> <li>• Consideration of relative construction, operation and decommissioning programmes of the 'other development' identified in the ZOI with the scheme programme, to establish whether there is overlap, or similar temporal scope for construction and operation phases, and any potential for interaction.</li> </ul>
The scale and nature of 'other development'	<ul style="list-style-type: none"> <li>• Consideration of whether the scale and nature of the developments identified in the ZOI are likely to interact with the proposed scheme and to result in a cumulative effect.</li> <li>• Characteristics of other developments in relation to use of natural resources, pollution and nuisances, and risks to human health.</li> <li>• The scale of developments which are more than 1 hectare of urban development which is not a dwelling development; or the development includes more than 150 dwellings; or the overall area of the development exceeds 5 hectares.</li> </ul>
Any other relevant factors	<ul style="list-style-type: none"> <li>• Nature and/or capacity of the receiving environment that would make a significant cumulative effect with 'other development'. The sensitivity of the receiving environment includes whether the sites are within:               <ol style="list-style-type: none"> <li>a. wetlands, riparian areas, river mouths;</li> <li>b. coastal zones and the marine environment;</li> <li>c. mountain and forest areas;</li> <li>d. nature reserves and parks;</li> <li>e. European sites and other areas classified or protected under national legislation</li> <li>f. areas in which there has already been a failure to meet the environmental quality</li> </ol> </li> </ul>

Threshold	Description
	<p>standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure;</p> <p>g. densely populated areas;</p> <p>h. landscapes and sites of historical, cultural or archaeological significance.</p> <ul style="list-style-type: none"> <li>• The relative abundance, availability, quality and regenerative capacity of natural resources in the area.</li> <li>• Potential for creation of source-pathway-receptor impacts.</li> <li>• The likely significance of effects where environmental assessments have been undertaken for the 'other developments' as having moderate to large significance.</li> </ul>

15.4.12 Within this assessment, professional judgement has been applied to 'other developments' identified within Table 15-7 which exceed the thresholds but do not give rise to discernible effects for specific topics.

### Stage 3 Information Gathering

15.4.13 Information on the 'other developments' has been compiled from publicly available documents on Cornwall Council's website, the Planning Inspectorate's website and through direct liaison with Cornwall Council.

### Stage 4 Assessment

15.4.14 The assessment of significance of the cumulative effects has been determined in accordance with the significance assessment as detailed under **Approach to EIA** (Volume 6 Document Ref 6.4 ES Chapter 4) of this Environmental Statement (ES).

15.4.15 For the purposes of this CEA, the value of a resource and magnitude of impact is determined according to the criteria set within the preceding topic chapters of this ES. The significance of effect is then carried forward from preceding chapters to enable an on-balance assessment of combined significance upon environmental receptors, as well as to identify the significance of cumulative effects with other developments.

15.4.16 Where significant cumulative effects beyond those identified as residual effects from the scheme in isolation are identified, an assessment of the need for additional mitigation (further to that already set out in the preceding chapters) has been undertaken.

15.4.17 It should be noted that traffic associated with the cumulative developments where they are not yet constructed are not included within the modelled baseline year (2015). For future baseline, i.e. opening year 2023, these developments are included within the traffic model and are therefore already considered within the transport assessment within **Transport Reports** (Volume 7 Document Reference 7.5). Effects related to traffic are therefore not considered further within this assessment.

15.4.18 Air quality and noise assessments of operational effects are based on traffic data. Therefore, any cumulative operational effects are inherent within the results outlined in the respective chapters. No further cumulative effects would be anticipated, therefore operational air quality and noise effects are not considered further. Cumulative effects related to construction are considered as these are not inherent within the topic chapter assessments.

#### **In-combination effects assessment methodology**

15.4.19 Cumulative impacts from the combined action of a number of different impacts upon a single resource/receptor (including the interrelationship of visual, noise and air quality impacts on residential, commercial, ecological and heritage receptors) have also been considered. As mentioned in the stage 4 CEA methodology above, the assessment of combined effects is based on the significance assessment as detailed under Chapter 4 of this ES.

#### **In-combination climate change impact (ICCI) assessment methodology**

15.4.20 Potential climate change impacts relevant to the scheme were considered for all environmental topics for the ES and this formed the basis for an ICCI assessment.

15.4.21 Through considering assessments of all environmental topics in the context of current and future climate conditions, high level qualitative statements of potential climate change impacts can be made, taking into account existing mitigation measures.

15.4.22 Following the initial ICCI assessment, topics are categorised in one of five categories; based on the number and significance of potential in-combination impacts, as summarised in Table 15-4. The results of the entire ICCI assessment are presented in **In-combination climate change impacts** (Volume 6 Document Ref 6.4 ES Appendix 15.2).

**Table 15-4 Topic categories for ICCI assessment**

<b>Category</b>	<b>Description</b>
1	At least one potential in-combination climate change effect with high significance (to remain scoped in)
2	More than five potential in-combination climate change effects with medium significance (to remain scoped in)
3	Five or fewer potential in-combination climate change effects with medium significance (to be scoped out)
4	Potential in-combination climate change effects with low significance only (to be scoped out)
5	No potential in-combination climate change effects (to be scoped out)

15.4.23 Significance of the in-combination climate change impacts is assessed based on the impact's likelihood and consequence for the relevant environmental topic, as shown in Table 15-5. If a potential in-combination climate change impact score is

3 in accordance with Table 15-5, it is a significant in-combination climate change effect.

**Table 15-5 Significance scores for in-combination climate change impacts**

<b>Consequence</b>	High	2	3	3
	Medium	1	2	3
	Low	1	1	2
		Low	Medium	High
		<b>Likelihood</b>		

15.4.24 If existing mitigation measures<sup>2</sup> were considered insufficient to address the ability of resources and receptors to adapt, then additional mitigation measures were considered by the climate change topic specialists in collaboration with the environmental topic specialists.

**Limitations and assumptions**

15.4.25 Assessment of cumulative effects is limited by the level of information that is available for each of the topic assessments. When consideration is given to effects that may arise as a result of impacts from other developments, the assessment becomes limited by the amount of information that is made publicly available.

15.4.26 The lack of construction programme may limit the assessment of the cumulative effects of the temporal overlap of respective schemes.

15.4.27 With respect specifically to the ICCI assessment the following assumptions and limitations apply:

- The measures set out in the Outline EMP will provide appropriate mitigation for extreme weather-related effects during construction.
- Assumptions associated with climate modelling and climate change projections, incorporated in UKCP09.
- The ICCI assessment is qualitative with the exception of the assessment of Road Drainage and the Water Environment, which is quantitative and takes into account current Environment Agency climate change allowances for increases in peak rainfall intensity.
- The evidence base relating to climate change impacts for some environmental topics (e.g. air quality, geology and soils) is limited, due to material uncertainty in projections for specific climate variables.
- The relationship between changes in climatic drivers and effects on environmental resources and receptors has sometimes been uncertain and the assessment is based on professional judgement.

<sup>2</sup> Existing mitigation measures refers to embedded design mitigation measures and environmental mitigation measures identified by topics as part of their assessments.

- There is inherent uncertainty in climate change projections. This has been quantified using UKCP09, the latest set of probabilistic climate projections for the UK.

## 15.5 Assessment

### Cumulative effects assessment

- 15.5.1 Table 15-6 sets out the Zone of Influence (ZOI) for each environmental topic of the ES, a summary of the residual effects of the A30 Chiverton to Carland Cross scheme (as assessed by each ES topic chapter) and identifies sensitive receptors potentially affected by the other developments. The long-list of other developments is provided within **Consideration of cumulative effects** (Volume 6 Document Ref 6.4 ES Appendix 15.1).

**Table 15-6 Zone of Influence, residual effects and receptors for ES environmental topics**

<b>ES topic, ZOI (m)</b>	<b>Residual effect of the scheme (Summary)</b>	<b>Key Receptors</b>
<b>Air Quality, 200m from the affected road network (ARN)</b>	<p>Potential impact: Reduction in air quality from dust emissions during construction.</p> <p>The baseline assessment demonstrates that there are no existing exceedances of the annual mean NO<sub>2</sub> objective along the A30 scheme area. There are existing exceedances in Newquay, Truro and Grampound on the ARN.</p> <p>Assessment of predicted annual mean NO<sub>2</sub> concentrations in 2023 indicated that the scheme effect is considered to be not significant for human receptors and ecological sites.</p>	<p>People living and working within the study and construction area (i.e. 200m from the ARN).</p> <p>European designated ecological sites – Special Area of Conservation (SAC), Special Protected Area (SPA), Ramsar.</p>
<b>Cultural Heritage, 1km</b>	<p>No designated assets would experience direct impacts, however the scheme would lead to some adverse effects upon their settings.</p> <p>Non-designated buried archaeology will experience direct impacts resulting in significant adverse effects. These will however be mitigated by ‘preservation by record’ and the residual effects will not be significant.</p>	<p>Scheduled monuments – impact on Bronze Age barrows within the study area</p> <p>Non-designated assets in the form of buried archaeological remains.</p>
<b>Landscape, 5km</b>	Residual effects on the character of the local landscape will not be significant	<p>Conservation Area (CA) 11 – Redruth, Camborne, and Gwennap</p> <p>CA 14 – Newlyn Downs</p>
<b>Visual, 5km</b>	Significant long term adverse effects on the visual amenity of receptor groups within close proximity of the scheme as listed to the right.	<p>Residents at Marazanvose, Journey’s End, Racland House, Four Winds, and Silverwell;</p> <p>Users of footpath 319/16/1,</p> <p>Open Access Land at Newlyn Downs;</p> <p>People enjoying the views to and from the Barrow Cemetery at Carland Cross; and</p> <p>Outdoor workers at NFH.</p>

ES topic, ZOI (m)	Residual effect of the scheme (Summary)	Key Receptors
<b>Nature Conservation, 2km (Bats, 30km)</b>	<p>No significant adverse construction stage or operational stage effects have been identified on statutory designated sites.</p> <p>The loss of 3 x CRVI non-statutory sites for nature conservation was assessed as a slight adverse significance of effect during the construction stage only.</p> <p>Taking into account proposed landscape planting, effects during operation are considered to be neutral but potentially increasing to a slight beneficial significance.</p>	<p><u>Designated sites</u></p> <p>Newlyn Downs SAC</p> <p>Newlyn Downs SSSI</p> <p>Carnkief Heath SSSI</p> <p>Carnkief Pond SSSI</p> <p>Ventongimps SSSI</p> <p><u>Non-statutory sites</u></p> <p>15 non-statutory CWS and four CRVI sites.</p>
	<p>Moderate adverse effects due to habitat loss during construction.</p> <p>Moderate beneficial during operation following establishment of planting.</p>	<p>Habitats including semi-natural woodland (broadleaved, coniferous and mixed), semi-improved grassland, marshy grassland and acid dry dwarf shrub heath.</p>
	<p>Moderate adverse effects on hedgerows during construction.</p> <p>Moderate beneficial effect during operation following establishment of new hedgerows.</p>	<p>Hedgerows</p>
	<p>A slight adverse significance of effect has been identified for terrestrial invertebrates during construction.</p> <p>A moderate beneficial significance of effect has been identified during operation once planting has fully established.</p>	<p>Terrestrial Invertebrates</p>
	<p>A moderate adverse significance of effect has been identified for bats during construction due to the temporary severance and fragmentation of foraging and commuting features.</p>	<p>Bat assemblages which include Annex II species.</p>

ES topic, ZOI (m)	Residual effect of the scheme (Summary)	Key Receptors
	Following construction of the multi-species crossings and the establishment of landscape planting the significance of effect is considered to be neutral.	
	A slight adverse significance of effect has been identified due to loss of this roost during construction only.	Multi-species bat roost of local importance at NDH
	Disturbance effects including noise, vibration, movement of plant and personnel within 20 metres of these roosts has been identified as slight adverse during construction only.	Three maternity roosts (common pipistrelle, brown long-eared and <i>Myotis</i> species (likely natterer's) within 20 metres of the scheme, and 8 x maternity roosts between 20 and 50 metres of the scheme (all common pipistrelle and brown long-eared).
	Long-term disturbance from traffic noise and vibration impacts during operation has been identified as a slight to moderate adverse significance of effect.	Maternity roosts of common pipistrelle, brown long-eared and <i>Myotis</i> species within 20 to 50 metres of the proposed main alignment.
<b>Geology and Soils, 250m</b>	Consolidation of soils due to the applied load of embankment materials considered Neutral effect	Local geological/ geomorphological interest.
	Damage to geologically protected sites considered Neutral effect	Locally or nationally designated site of geological importance.
	Subsidence/collapse of shallow underground mine workings considered Moderate adverse effects due to construction of: <ul style="list-style-type: none"> <li>- Chiverton Embankment (Ch1+150 to 1+320);</li> <li>- Journey's End Embankment (Ch12+030 to 12+160);</li> </ul>	Inactive mining features



ES topic, ZOI (m)	Residual effect of the scheme (Summary)	Key Receptors
	<ul style="list-style-type: none"> <li>- Nanteague Cutting (Ch6+380 to 6+430);</li> <li>- Tolgroggan cutting and side road (Ch8+150 to 8+250);</li> <li>- Carland Crossing Cutting (Ch13+950 to 14+120);</li> </ul>	
	<p>Subsidence/collapse of shallow underground mine workings due to construction considered Neutral effects for:</p> <ul style="list-style-type: none"> <li>- Chiverton Embankment (Ch1+820 to 1+890);</li> <li>- Quarry Retaining Wall (Ch12+650 to 12+780);</li> </ul>	Inactive mining features
	Removal or limit access to resource within a Mining Safeguarding Area considered as Neutral effect.	Locally protected former mining area
	Removal or limit access to regionally important resource considered Slight adverse effect	Interbedded sandstone and slate/shale.
	Excavation of cuttings into bedrock considered Slight beneficial effect.	Exposures of geological/ geomorphological interest
	Exposure of existing or unexpected contamination to construction workers considered Neutral or slight adverse effect.	Construction workers
	Potential impact of existing or unexpected contaminated land or groundwater and surface water quality during construction considered Slight Adverse short-term effect.	Groundwater in the Secondary A Aquifer, Surface water features near or passing beneath the scheme.
<b>Materials</b>	The assessment identified potential slight adverse residual impacts in relation to materials resources during construction.	Sources of imported secondary materials  Waste management infrastructure capacity in the region

ES topic, ZOI (m)	Residual effect of the scheme (Summary)	Key Receptors
<b>Noise and Vibration, 600m (of construction works)</b>	Construction and Operational effects have been assessed as significant adverse at a range of locations (direct and indirect effects) as described in Volume 6 Document Ref 6.3 ES Section 11.3. Suitable mitigation protocols are to be applied as part of OCEMP to minimize construction effects and operational mitigation has been incorporated into the scheme, as described in Volume 6 Document Ref 6.3 ES Table 11.10.	Residential and commercial facilities within the assessment area.
<b>People and Communities, 5km</b>	<b>Views from the Road</b> – Neutral effect	Drivers/users of the A30
	<b>Driver Stress</b> – Slight adverse during construction/moderate beneficial during operation.	Drivers and road users
	<b>Bus Travellers</b> – Slight adverse during construction/moderate beneficial during operation.	Bus users
	<b>Walking, Cycling and Horse Riding (WCH)</b> – Slight adverse during construction/slight beneficial during operation.	Walkers, cyclists and horse riders using the PRow network and local routes.
	<b>WCH/PRow Amenity</b> – Slight adverse during construction/neutral during operation	Walkers, cyclists and horse riders using the PRow network and local routes.
<b>People and Communities – Land and Property, 2km</b>	<b>Commercial property/businesses</b> - slight adverse during construction/slight beneficial during operation	Business owners, occupiers, employees and future investors
	<b>Agricultural land and farm holdings/plots</b> – Moderate adverse during construction and operation	Agricultural land, farm owners and tenants
	<b>Tourism and recreation</b> – Slight adverse during construction/slight beneficial during operation	Businesses, tourism

ES topic, ZOI (m)	Residual effect of the scheme (Summary)	Key Receptors
	<b>Allocated/Future development land</b> – Slight adverse during construction/slight beneficial during operation	Land owners
	<b>Other land uses</b> – neutral during construction/slight beneficial during operation	Land owners and those using the land
<b>People and Communities – Communities, 1km</b>	<b>Settlements and access to open space/services</b> – slight adverse during construction/slight beneficial during operation.	Individuals living within communities in proximity of the scheme and those wishing to access services/facilities locally.
	<b>Employment</b> – slight beneficial during construction and operation	Individuals employed to construct the proposed development and those benefitting from skills/training for the longer term.
	<b>Community Safety</b> – Slight adverse during construction/slight beneficial during operation	Those living within communities in close proximity to the A30.
	<b>Health</b> – Slight adverse during construction/slight beneficial during operation	Those living within communities in close proximity to the A30.
	<b>Amenity</b> – Slight adverse during both construction and operation	Settlements and community facilities situated in close proximity to the proposed scheme.
<b>Road Drainage and the Water Environment, 1km</b>	Slight Adverse impact on Surface Water Quantity due to proposed embankment works to be constructed over waterbodies and blocking the flow of the headwater stream both in construction and operation of the scheme.	Streams crossing the scheme which eventually merge with River Allen, River Gannel and Zelah Brook.
	Slight Adverse impact on Groundwater Levels. Construction of embankments and cuttings have the potential to result in surface water connection loss following installation of cutting drainage. This may result in a change in hydrology and potential loss of surface water feature both in construction and operation of the scheme.	Groundwater, ponds and watercourses

ES topic, ZOI (m)	Residual effect of the scheme (Summary)	Key Receptors
	<p>Geomorphology effects considered Slight to Moderate Adverse effect as a result of new culverts and outfalls proposed as part of the scheme. Impacts include:</p> <p>Local shading of watercourse;  Local conversion of natural river channel to culvert;  Scour at inlet/outlet if poorly designed.  Barrier to fish and invertebrate passage; and  Barrier to sediment transport.</p>	Tributaries affected by the scheme
<b>Climate Change</b>	Climate change residual effects include the effects considered for all topics.	All receptors described for other topics

### Identification of 'other developments' to be assessed

- 15.5.2 For each identified other development, consideration was made as to the likelihood that the development could take place at the same time as the scheme or affect similar receptors or resources. Where there is considerable uncertainty over the nature and timescales of the development, the developments were deemed to be not reasonably foreseeable and therefore scoped out of the assessment. Table 15-7 provides details where this was the case and presents the short list of other developments.
- 15.5.3 The 'long list' of Tier 1 developments provided by Cornwall Council is given in **Consideration of cumulative effects** (Volume 6 Document Ref 6.4 ES Appendix 15.1). The number of developments considered within each topic has been condensed between Stage 1 and Stage 2 assessments using the criteria listed in Table 15-3. Table 15-7 provides the 'shortlist' of developments used for this CEA.

Table 15-7 Other development' for Assessment in the CEA

Application Reference	Distance from Project (km)	Proposal	Construction Dates	Topic for which other development is within ZOI
PA15/02972	0	Proposed erection of a 1 x 1.5 Mw wind turbine, transformer, grid connection, access road and ancillary infrastructure.	Construction to start before 26/10/18 over 6 to 9 months.  Likely to be completed before A30 construction work begins.	Cultural Heritage (1km) Landscape (5km) Visual (5km) Nature Conservation (2km (Bats, 30km)) Geology and Soils (250m) Noise and Vibration (600m (of construction works)) People and Communities (5km) People and Communities – Land and Property (2km) People and Communities – Communities (1km) Road Drainage and the Water Environment (1km)
PA16/08707	0.01	Application for removal of condition 9 of application PA14/04515 (Development of ultra eco office space as an extension to existing office space and proposed solar array)	Not identified within public available documents	Cultural Heritage (1km) Landscape (5km) Visual (5km) Nature Conservation (2km (Bats, 30km)) Geology and Soils (250m) Noise and Vibration (600m (of construction works)) People and Communities (5km) People and Communities – Land and Property (2km)

Application Reference	Distance from Project (km)	Proposal	Construction Dates	Topic for which other development is within ZOI
				<p>People and Communities – Communities (1km)</p> <p>Road Drainage and the Water Environment (1km)</p>
PA15/06100	0.04	Proposed construction of roadside hotel and restaurant adjacent to A30 trunk road	Not identified within public available documents	<p>Cultural Heritage (1km)</p> <p>Landscape (5km)</p> <p>Visual (5km)</p> <p>Nature Conservation (2km (Bats, 30km))</p> <p>Geology and Soils (250m)</p> <p>Noise and Vibration (600m (of construction works))</p> <p>People and Communities (5km)</p> <p>People and Communities – Land and Property (2km)</p> <p>People and Communities – Communities (1km)</p> <p>Road Drainage and the Water Environment (1km)</p>
PA14/08092	1.25	Outline mixed use proposal for retail (Use Class A1) with associated petrol filling station and car parking (providing space for mobile library), food and drink (Use Classes A3, A4 and A5)/day nursery (Use Class D1) and	2015 to 2025 over 7 phases	<p>Landscape (5km)</p> <p>Visual (5km)</p> <p>Nature Conservation (2km (Bats, 30km))</p> <p>People and Communities (5km)</p> <p>People and Communities – Land and Property (2km)</p>

Application Reference	Distance from Project (km)	Proposal	Construction Dates	Topic for which other development is within ZOI
		residential (Use Class C3) alongside the provision of a community and sports facility (Use Classes D1 and D2), public open space (including formal playing pitch provision), and other associated infrastructure (inclusive of linkage to consented Langarth/Stadium sites). [Means of access to be determined only]		
PA14/07885	1.3	Residential development comprising the erection of 24 units	Not identified within public available documents	Landscape (5km) Visual (5km) Nature Conservation (2km (Bats, 30km)) People and Communities (5km) People and Communities – Land and Property (2km)
PA15/11489	1.8	Reserved matters approval following outline PA11/06124 for layout, appearance, landscaping and scale related to the construction of 494 dwelling houses (use class C3) and internal roads/paths alongside the creation of areas of public open space and realm, and landscaping.	Not identified within public available documents	Landscape (5km) Visual (5km) Nature Conservation (2km (Bats, 30km)) People and Communities (5km) People and Communities – Land and Property (2km)



Application Reference	Distance from Project (km)	Proposal	Construction Dates	Topic for which other development is within ZOI
PA16/09294	3.1	Erection of 14 hybrid office/industrial units (B1 Use Class) together with car parking and landscaping.	Not identified within public available documents	Landscape (5km) Visual (5km) Nature Conservation (Bats, 30km) People and Communities (5km)
PA14/10755	3.3	Outline approval with all matters other than access reserved for 435 dwellings, nursing home, food store, petrol station; 1 form entry primary school, community hall, public house/restaurant, central component of the Northern Access Road (NAR) (including vehicular/pedestrian/cycle details), public open space, service diversions and foul and surface water drainage infrastructure, ground remodelling works including moving of material on and off-site and demolition of existing buildings and detailed approval of access point from the A390.	2015 to 2025 over 7 phases	Landscape (5km) Visual (5km) Nature Conservation (Bats, 30km) People and Communities (5km)
PA17/00957	3.4	Installation of a two 500 kw EWT wind turbines with tip heights of 76 m, with three	Not identified within public available documents	Landscape (5km) Visual (5km)

Application Reference	Distance from Project (km)	Proposal	Construction Dates	Topic for which other development is within ZOI
		blades and a rotor blade diameter of 54 m for the purpose of generating renewable energy (decision PA13/00848) with variation of submitted plans to allow amended access track and amended overall tip height of turbines to 77m.		Nature Conservation (Bats, 30km) People and Communities (5km)
PA14/00703	3.9	Hybrid planning application comprising in outline up to 515 dwellings (including extra care), school, employment space, convenience shop, community pavilion, infrastructure works, landscaping and public open spaces; district centre including supermarket, petrol station, retail units, community hall, restaurant/cafe uses, hotel, creche, medical centre, mobile library parking, parking and servicing; and in detail access from the A390, the Northern Access Road and connections to Penventinnie Lane within the Royal Cornwall Hospital.	Phase 1 - 2016-17 Phase 2 - 2017-2020 Phase 3 - 2020-22 Phase 4 - 2021-24 Phase 5 - 2024-25	Landscape (5km) Visual (5km) Nature Conservation (Bats, 30km) People and Communities (5km)

Application Reference	Distance from Project (km)	Proposal	Construction Dates	Topic for which other development is within ZOI
		Including Environmental Impact Assessment.		
PA15/00502	4.6	Proposed residential development comprising 84 dwellings and associated works - (non material amendment in relation to decision notice PA14/10306) - Substitution of proposed houses type P303 with P401 house type on plot 60, moving garage next to and connected to plots 59's and revision of tandem bays to plot 61-62 and the access path to plot 60-63 to suit.	Not identified within public available documents	Landscape (5km) Visual (5km) Nature Conservation (Bats, 30km) People and Communities (5km)

## Significance of Cumulative Effects

- 15.5.4 Cumulative effects have been identified by considering the residual effects from the scheme (Table 15-5) alongside those of the other developments. Where available, the relevant Environmental Statements for each development have been assessed.

### Air Quality

- 15.5.5 Cumulative effects of the resultant traffic changes from the scheme and other cumulative developments are incorporated into the assessment in Chapter 5 and are therefore not assessed further.

### Cultural Heritage

- 15.5.6 The settings of the scheduled barrows at Callestick Vean, north of Higher Ennis farm and Warren's Barrow at Carland Cross may be affected by the proposed wind turbine developments PA 15/02972 and PA17/00957. The proposed developments are located at a considerable distance from the barrow at Callestick Vean and are not likely to result in significant effect. The proposed developments are closer to the barrows at Higher Ennis Farm and Carland Cross. For PA 15/02972, the resulting effect was determined to be minor adverse. No heritage assessment was undertaken for PA17/00957, however at a distance of 3km the impact on the setting of the barrows would be unlikely to be significant. Therefore, these developments are not anticipated to cause significant adverse cumulative effects relating to the A30 Chiverton to Carland Cross scheme.
- 15.5.7 None of the proposed developments within the ZOI are close to the location of known archaeological remains. It is therefore considered that non-designated assets in the form of buried archaeological remains will not be subject to cumulative effects.

### Landscape

- 15.5.8 The only development likely to give rise to any cumulative landscape and visual effects is PA15/02972 for the proposed erection of a 1 x 1.5 MW wind turbine, transformer, grid connection, access road and ancillary infrastructure on land off Ventonteague, approximately 100m north of the scheme midway between Pennycomequick and Journeys End. The cumulative effect of this project with the A30 scheme would lead to an increase in the presence of wind development and road infrastructure in views.
- 15.5.9 It is important to note that both wind turbines and the existing A30 are already present in the landscape and local views. These receptors would experience a slight increase in the presence of humanising elements detracting further from what would otherwise be a rural area. This cumulative effect would be noticeable, but not prominent and would not change the character of views or the landscape from one where infrastructure is noticeable to one where infrastructure is prominent or dominant. This cumulative effect on the character of the landscape and views would be of minor significance.
- 15.5.10 None of the other cumulative developments assessed are visible at the same time as the A30 scheme from any notable public viewpoints in the landscape; none are 'concurrently intervisible' with the scheme. Therefore, none of the other

developments are likely to give rise to significant cumulative landscape or visual effects. The following potential effects have been identified and assessed

- 15.5.11 The effect of PA17/00957, PA15/00502 and PA14/00703 on the intensification of the detracting humanising effect of infrastructure on the character of the landscape.
- 15.5.12 Potential cumulative effects of PA15/06100 on the intensification of the detracting effect of Built form on the already poor character of the landscape at Chiverton Cross
- 15.5.13 The potential cumulative effects of PA16/08707, PA15/11489, PA14/08092 and PA14/10755 on the incremental intensification of the detracting effect of Built form on the character of the local landscape.
- 15.5.14 In all of the above cases, the cumulative change to the moderately sensitive character of the local landscape would be barely perceptible leading to negligible cumulative effects on the character of the landscape. This is due to a lack of intervisibility, intervening distances and the different nature of the projects to that of the scheme.
- 15.5.15 There are no significant landscape or visual cumulative effects predicted as a result of the scheme in combination with the cumulative projects assessed.

### **Nature Conservation**

- 15.5.16 The relevant ecological assessments and reports available on the Cornwall Council website have been consulted when determining the impacts of the respective projects.
- 15.5.17 No further assessment has been made for the following other developments due to the following reasons:
- PA16/08707: No ecological report currently available, development is not in/near a designated site or in an important habitat.
  - PA16/09294: With the incorporation of mitigation, no negative impact has been predicted for the features of nature conservation identified at the site.
  - PA14/07885: No significant impacts identified within Ecological report. Recommendations for enhancements stated.
  - PA17/00957: No ecological report currently available
  - PA15/00502: No ecological report currently available

### **Hedgerows**

- 15.5.18 The construction impacts of PA15/06100, a proposed roadside hotel and restaurant 40m west of the A30 scheme at Chiverton, include the loss of approximately 37m of hedgerow. At the time of writing, construction dates for this proposal were not available. The A30 scheme would result in moderate adverse effects on hedgerows during construction although there are no hedgerows being lost which adjoin or connect to PA15/06100. PA15/06100 is outside the footprint of the A30 scheme, nevertheless, if the construction stages of the two schemes overlap, there would be a moderate adverse cumulative effect on hedgerows in the area.

- 15.5.19 Following landscape mitigation planting, for which both PA15/06100 and the A30 propose hedgerow creation, there would be a moderate to slight beneficial cumulative effect on hedgerows habitat in the area.

### **Impacts on Bats**

- 15.5.20 The ecological assessment for PA15/02972, a proposed single wind turbine in an improved grassland field to the north of the existing A30 at Ch 11+400, identified residual operational effects on bat populations. The area required during construction of the wind turbine overlaps with that required for the construction of the A30 scheme. It is only the operational stage of the wind turbine project which will overlap in time with the A30 scheme and the turbine itself would be 71m away from the A30 construction stage boundary. The direct impact of mortality from collisions with the c. 50-metre-high turbine was assessed as a moderate negative significant effect on the noctule population and as a minor negative significant effect on barbastelle. The construction stage of the A30 scheme will overlap with the operational phase of PA15/02972. Habitat loss during the construction stage of the A30 would result in the severance and fragmentation of foraging and commuting bats including noctule and barbastelle bat. However, these severance and fragmentation effects were found to be significant only for eight areas identified as hotspots for bats activity. The habitats in the vicinity of Ch 11+400 were not identified as one of these hot spot areas. Furthermore, the removal of all existing habitat in the footprint of the A30 during construction in this location is likely to deter bats from the area which may result in less collisions with the proposed turbine. Therefore, there is unlikely to be any significant cumulative effect on bat species. No cumulative effects are anticipated during the operational stage of the A30 with the operational stage of this project as no residual effect on foraging and commuting noctules or barbastelles (or any other bat species) was identified during operation of the A30.
- 15.5.21 The mixed-use development PA14/08092, which is proposed on the A396 1.25km southeast of the proposed A30 scheme at Chiverton, would result in a slight adverse effect on bats through habitat loss and potential fragmentation of foraging habitat. There is also a slight adverse impact of disturbance during the operational phase. It is likely the construction phase of the A30 scheme will overlap with the construction and operational phase of PA14/08092. A moderate adverse significance of effect has been identified for bats during construction of the A30 due to the temporary severance and fragmentation of foraging and commuting features. If the construction stages of the two schemes do overlap, the overall cumulative effect is not likely to be more than a moderate adverse effect on bat populations from loss of foraging and commuting habitat.
- 15.5.22 The two mixed-use developments PA14/10755 and PA14/00703, 3.3km and 3.9km respectively southeast of the A30 scheme along the A396 towards Truro, identified moderate beneficial impacts on foraging and commuting bats during operation. The ecological assessment for the A30 scheme also identified slight to moderate beneficial effects for foraging and commuting bats and neutral effects on roosting bats. The operational stages of the two schemes will overlap, nevertheless, due to the uncertainty in success of habitat mitigation and enhancement measures of the projects there is not deemed to be any significant cumulative impact on foraging and commuting or roosting bats.
- 15.5.23 For the proposed residential development PA15/11489, a minor negative to neutral effect on bats was identified during construction from loss of foraging

habitat due to loss of hedgerow and fragmentation of commuting corridors, as well as disturbance of bats from construction activities. It is not known when the construction stage of this development will be. As with PA14/08092, if the construction stages of the two schemes do overlap, the overall cumulative effect is not likely to be more than a moderate adverse effect on bat populations from loss of foraging and commuting habitat.

### **Geology and Soils**

- 15.5.24 Three developments have been identified as being within the ZOI of the scheme (PA15/02972, PA15/06100 and PA16/08707) for geology and soils. However, the assessment considers that these developments are not anticipated to interact with the proposed scheme and therefore not result in a cumulative effect.

### **Materials**

- 15.5.25 There may be additive impacts upon material use and waste in combination with other developments where construction periods coincide. However, insufficient information is available on other developments to quantify this effect. Proposed mitigation for the scheme is set out in **Materials** (Volume 6 Document Ref 6.4 ES Chapter 10).

### **Noise and vibration**

- 15.5.26 The assessment already takes account of the cumulative effect of predicted future development generating traffic therefore no further cumulative effects assessment in relation to noise and vibration during operation is required.
- 15.5.27 The large wind turbine development of PA15/02972, despite 6-9 month construction period (ES para 3.68), noisy construction works are likely to be limited to foundation works although piling is not expected to be necessary. Excavation and construction of the turbine base is expected to take approximately 3 to 4 weeks. The superstructure works and assembly of the turbine using cranes is not expected to be intensive in terms of construction noise. It is assessed that there is no cumulative noise effect.
- 15.5.28 The PA16/08707 proposal is a relatively small development bounded between existing A30 and A3075, not close to residential development. It is assessed that there is no cumulative noise effect during construction works.
- 15.5.29 PA15/06100, there are residential receptors nearby on the opposite side of B3277. Construction works are not likely to be intensive as this is a largely flat site, hence no major groundworks expected for two-storey construction. The nearby receptors are close to A30 works to the east at Chiverton junction. If these two construction projects were to occur simultaneously, no significant cumulative noise effects could occur for a short duration during ground works/excavation at the hotel/restaurant (estimated 2 months)

### **People and Communities**

- 15.5.30 The following other developments have been identified to be unlikely to result in cumulative effects relating to people and communities and therefore no further assessment has been made:

- PA15/02972 Construction periods unlikely to coincide. Limited potential for operational cumulative effects on people and communities.
- PA16/09294 Given the location of this identified development and the unknown construction timescales cumulative impacts are considered unlikely.
- PA14/07885 Located approximately 1.5km from the proposed scheme but of a small scale with limited information in relation to construction timescales.
- PA17/00957 Given the location and nature of the proposed development it is not considered likely to give rise to any cumulative impacts on people and communities receptors.
- PA15/00502 Given the location and scale of this development it is not considered likely to give rise to any cumulative impacts on people and communities receptors.

15.5.31 Although located just off the Chiverton Cross junction, the identified development of PA15/06100 is small in scale and includes a roadside hotel and restaurant. Given this scale any potential cumulative effects on All Travelers are predicted to be minor. It is not considered the scale of the development would lead to any cumulative effect in terms of Employment or Tourism and Recreational facilities.

15.5.32 The PA16/08707 development relates to the extension of existing office space in close proximity to the existing and proposed A30. The receptor has been considered specifically in relation to Land and Property as part of the People and Communities assessment. Given the existing context for the receptor and the scale of the proposed development, it is not considered this will lead to any significant effects for All Travellers, Communities or Land and Property, should the development progress at similar timescales to the proposed A30.

15.5.33 The large scale residential/mixed use proposals of PA15/11489, PA14/08092, PA14/10755 and PA14/00703 are all located along the A390 into Truro which is accessed from the Chiverton Cross junction with the A30.

15.5.34 Given the scale of the proposed developments and the phased way in which such schemes are normally developed it is assumed that there may be some overlap between the A30 proposed scheme construction and construction of part of these identified developments. Despite this, the location of the identified developments means that cumulative effects on All Travellers are unlikely and should these occur it is considered they would not be significant. Similarly, no cumulative effects are predicted on any of the tourism and recreation receptors identified and considered as part of this ES and therefore potential cumulative effects on Land and Property receptors of relevance are not considered to be significant.

15.5.35 There is considered to be potential minor beneficial cumulative effects in relation to construction employment. The scale of the identified developments and the timescales over which construction is likely is considered to offer opportunities for training and skills development as well as potential opportunities for those involved in the A30 construction who then may be seeking employment in the construction sector locally.

### **Road Drainage and the Water Environment**

15.5.36 The PA15/02972 development assessment concluded that there were neutral hydrology effects of the development during construction and operation. Interaction between the development's access road and the impacted features from the development are mitigated within the development's design; "A drainage



plan and ground investigations will ensure appropriate selection of foundation materials, siting of access roads and management of surface water on site.”

Therefore, the significance of the cumulative effects with this scheme is minor/ not significant.

- 15.5.37 The development of PA16/08707; a proposed office building, solar panel farm and access road would presumably comprise shallow subsurface structures (shallow footings) and shallow infrastructure (services). Therefore, it is not anticipated this development would have an impact on groundwater levels or quality.
- 15.5.38 PA15/06100 is also within the ZOI of the scheme. With this feature located at Ch 0+600, it is over 1km from the closest feature affected by the scheme which is seepage at 1+750 – 1+950. Cumulative effects are therefore not anticipated.

## 15.6 In-combination Cumulative Effects

- 15.6.1 There is no defined methodology for assessing in-combination effects of a development. Impact interactions are indirect and therefore difficult to quantify. The likely in-combination effects on a receptor have been assessed in this chapter by considering each receptor and the effects on it in turn. Due to the large number of receptors in this ES, receptors have been grouped into the following categories:

Humans, property, ecology, historic environment, landscape, surface or groundwater features and the economy

- 15.6.2 Table 15-8 shows which type of impacts each receptor category is predicted to experience. Where impacts overlap for receptor categories, there are likely to be in-combination effects. Due to the Climate Change and Materials chapters having no specific receptors, they have not been included in the in-combinations assessment.

**Table 15-8 In-combination impacts of topics on receptor categories**

Topic	Receptor Category					
	Humans	Property	Ecology	Historic Environment	Surface/ Groundwater features	Economy
Air Quality	X		X		X	X
Cultural Heritage				X		X
Landscape and Visual	X	X		X		X
Nature Conservation			X		X	
Geology and Soils		X	X		X	

Noise and Vibration	X	X				X
People and Communities	X	X				X
Road Drainage and the Water Environment		X	X		X	

- 15.6.3 Each individual chapter has then been reviewed for specific receptors. The long list of receptors given in Table 15-6 has been filtered by removing those which have a 'neutral' (or equivalent) significance.
- 15.6.4 Table 15-9 shows the impact interactions for the remaining receptors which have been categorised into receptor categories and topic interactions identified have been assessed.

**Table 15-9 Assessment of impact interactions relating to specific receptors**

Receptor Category	Topic Interactions	Specific receptor	Impact Interaction
Humans	Air Quality Landscape & Visual Noise and Vibration People and Communities	People enjoying the views to and from the Barrow Cemetery at Carland Cross; and Outdoor workers at NFH. Residents at Marazanvose, Journey's End, Racland House, Four Winds, and Silverwell	Noise and air quality impacts resulting in the loss of tranquillity as well as the change in character of the landscape and views of the area will affect travellers, residents and communities. As described in the respective chapters, mitigation measures have been incorporated into the scheme design for noise and visual impacts on these specific receptors. Due to the nature of visual and noise effects meaning they are closely linked, the incorporation of mitigation measures as part of the landscape and visual design results in mitigation for both effects. For example, a 1.8m Cornish hedge at Chiverton Cross is proposed for aesthetic reasons as opposed to a noise barrier, however it also provides necessary noise mitigation. These measures minimise the impact on people and communities through reducing the resultant impact on the specific receptors listed.
Property	Landscape and Visual Geology and Soils Noise and Vibration Road Drainage and the Water Environment People and Communities	Agricultural land, farm owners and tenants	Agricultural land, properties and businesses may be receptors to visual, noise, geological and surface water effects from the A30 scheme. The direct impact of the scheme on surface water and geological features of the farmland may affect the same receptors as the noise and visual effects of the scheme. The loss of agricultural land is also a direct impact of the scheme. This therefore means there is potential for agricultural receptors to receive in-combination effects. When specific receptors have been identified within the topic chapters, suitable mitigation measure have been fed into the scheme design.
Ecology	Air Quality Nature Conservation Geology and Soils Road Drainage and the Water Environment	Habitats including semi-natural woodland (broadleaved, coniferous and mixed), semi-improved grassland, marshy grassland and acid dry dwarf shrub heath.	The effects related to noise and air quality as well as the scheme resulting in changing landscape and water quantities may combine to effect ecological habitats. Cross topic references have been made within chapters and mitigation measures incorporated into the design to reduce the resultant in-combination impact.

		Hedgerows	
Historic Environment	Cultural Heritage Landscape and Visual	Scheduled monuments – impact on Bronze Age barrows within the study area	The visual amenity of people enjoying views is considered in both the Cultural Heritage and Landscape and Visual chapters. The assessment of the impact of the scheme upon affected Bronze Age barrows within the Cultural Heritage assessment incorporates impacts related to changing landscape and views caused by the scheme.
Surface/ Groundwater features	Air Quality Nature Conservation Geology and Soils Road Drainage and the Water Environment	Streams crossing the scheme which eventually merge with River Allen, River Gannel and Zelah Brook. Groundwater in the Secondary A Aquifer, Surface water features near or passing beneath the scheme.	Surface and groundwater features affected by the scheme through changing water quantities at specific sites and interrupting the continuity of the hydrogeological features will interact with air quality to affect ecology and water quality.  The assessments within the respective chapters incorporate these potential interactions and necessary mitigations have been incorporated into the design of the scheme.
Economy	Air Quality Cultural Heritage Landscape and Visual Noise and Vibration People and Communities	Individuals employed to construct the proposed development and those benefitting from skills/training for the longer term	The beneficial effects of the scheme on the local economy through increasing short term and potentially long-term employment would impact upon the local residents. Chapter 12 considers the conclusions drawn from the Landscape, Noise and Vibration and Air Quality assessments which in themselves provide an in-combination assessment for the impacts upon the local residents.

15.6.5 It is considered that the scheme has been sufficiently well designed and mitigated to minimise in-combination effects. The results of this assessment do not indicate that any additional mitigation measures are required.

### **In-combination Climate Change (ICCI) Assessment**

15.6.6 An in-combination climate change impact (ICCI) assessment has been undertaken which considers the combined effect of the scheme and potential climate change impacts on the receiving environment during construction and operation<sup>3</sup>.

15.6.7 Potential climate change impacts relevant to the scheme were considered for all environmental topics; this formed the basis for **In-combination climate change impacts** (Volume 6 Document Ref 6.4 ES Appendix 15.2).

15.6.8 Following the initial ICCI assessment presented in the PEIR4 three environmental topics were scoped in for a detailed ICCI assessment:

- Air quality, in relation to dust production during construction;
- Geology and soils, in relation to the unknown presence of mining features that could affect the scheme and the potential ICC impacts on the assessment; and
- People and communities, in relation to the effect of the scheme in combination with climate change on the quality and capability of agricultural land.

15.6.9 The effect of dust production during construction on air quality are assessed as not significant. Due to the short-term nature of construction, climate change is not expected to affect the significance of this effect and no further mitigation is required.

15.6.10 Geotechnical design for the scheme follows Eurocode 7, which is considered to provide sufficient mitigation for slope stability in current as well as future climate conditions. There is insufficient knowledge to justify a departure from this standard to explicitly account for climate change. There is no evidence of features that would indicate the presence of shallow mining voids within the vicinity of the alignment, except for two shafts (moderate adverse effect). Further studies are required to investigate the stability around shafts, as described in the Geology and soils chapter.

15.6.11 With respect to agricultural land temporarily used for construction compounds, following a detailed ICCI assessment the in-combination climate change impacts are deemed to be not significant. Only limited amount of land would be taken for construction compounds; this has been selected in such a way that they are of low value to the land owner. Land would be returned to land owners with soil of the same grade as pre-construction, which is deemed to be sufficient mitigation and no further mitigation is needed to account for climate change.

15.6.12 The ICCI assessment results are presented in **In-combination climate change impacts** (Volume 6 Document Ref 6.4 ES Appendix 15.2)

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<sup>3</sup> The term 'in-combination climate change impacts' refers to the combined effect of the impacts of the scheme and potential climate change impacts on the receiving environment. It is not to be confused with the EIA terms 'combined effects' or 'cumulative effects'. The term 'potential climate change impacts' is not to be confused with the EIA term 'future predicted baseline'.

<sup>4</sup> A30 Chiverton to Carland Cross Improvement Scheme Preliminary Environmental Information Report. Available online at: [https://highwaysengland.citizenspace.com/he/a30-chiverton-cross-to-carland-cross-statutory-con/supporting\\_documents/Preliminary%20Environmental%20Information%20Report.pdf](https://highwaysengland.citizenspace.com/he/a30-chiverton-cross-to-carland-cross-statutory-con/supporting_documents/Preliminary%20Environmental%20Information%20Report.pdf)

15.6.13 Following the ICCI assessment, all impacts relating to all topics were concluded with no significant in-combination climate change effects. This is due to current mitigation measures embedded within scheme design or monitoring procedures.

## **15.7 Mitigation and Potential for Enhancements**

15.7.1 The assessment of cumulative effects and in-combination effects confirms that it is considered that no mitigation above that proposed within the individual ES chapters is necessary.

15.7.2 Employment opportunities could be maximised across identified developments through collaboration between colleges, Cornwall Council and the employers within the local market. Should skills shortages exist in the housing sector for example, the A30 could provide an opportunity to provide training in these skills areas for local people, seeking to leave a legacy benefit.

## **15.8 Monitoring**

15.8.1 There are no adverse cumulative residual effects identified therefore monitoring is not deemed to be required, over and above that specified within each assessment chapter and the relevant Management Plans.

## **15.9 Conclusion**

15.9.1 From the above assessment, there are no significant cumulative effects anticipated from any of the reasonably foreseeable schemes identified. No mitigation measures further to those set out in the individual chapters and management plans have been identified as required.

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