

A30 Chiverton to Carland Cross TR010026

6.2 ENVIRONMENTAL STATEMENT CHAPTER 2 THE PROJECT

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(Applications: Prescribed Forms and
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**A30 Chiverton to Carland Cross
Development Consent Order 201[x]**

**6.2 ENVIRONMENTAL STATEMENT
CHAPTER 2 THE PROJECT**

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Appendix 2.1 Outline traffic management plan

2 Project Description

2.1 Introduction

- 2.1.1 This chapter of the Environmental Statement (ES) provides an overview of the site location and context together with a detailed description of the scheme and outline details of the incorporated environmental mitigation design measures (Section 2.6), the construction, operation and long term management for the scheme (Section 2.7) and the demolition of the scheme (Section 2.8).
- 2.1.2 Volume 6 Document Ref 6.3 ES Figure 2.1 shows the General Arrangement for the scheme.

2.2 Need for the project

- 2.2.1 This section of the A30 experiences congestion and delays throughout the year, with poor journey time reliability. These problems are exacerbated in summer months, when traffic flows increase due to tourist traffic. The route is in need of improvement to meet Highways England's objectives of maintaining the smooth flow of traffic, making the network safer and supporting economic growth.

Local economic growth and social/community regeneration

- 2.2.2 Current congestion on the existing A30 between Chiverton and Carland Cross forms a bottleneck on the trunk road network in Cornwall, preventing reliable east – west journeys and stifling growth in Cornwall. If not improved, the existing infrastructure will continue to contribute to growing congestion, poor reliability and efficiency, and poor journey times – all of which fail to meet Highways England's business strategy and the Government's strategic vision outlined in the Road Investment Strategy (RIS).

Route performance

- 2.2.3 The issues identified on the current A30 between Chiverton and Carland Cross are:
- sections of narrow carriageways;
 - unsuitable bends and gradients for high speed traffic;
 - locations with poor forward visibility;
 - slow moving agricultural vehicles;
 - limited opportunities for overtaking;
 - increasing traffic levels outgrowing the capacity of the existing road;
 - multiple minor roads and junctions where traffic enters, exits or crosses the A30; and
 - numerous properties have direct access to the A30.
- 2.2.4 The consequences of these issues are:
- congestion and longer journey times, particularly during peak times;
 - unreliable journey times;
 - queuing at the junctions, due to the interaction between local and strategic traffic, particularly at peak times; and
 - queuing when incidents occur with knock on effects to surrounding local routes.

Safety

- 2.2.5 The limited overtaking opportunities, side road, junctions and private accesses have caused numerous accidents on this section of the A30. According to a summary of traffic personal injury accidents between 1 January 2012 and 31 December 2016 there was 1 fatality, 17 serious collisions and 94 slight collisions between Chiverton Cross and Carland Cross.
- 2.2.6 Accidents were more frequent in the vicinity of Chiverton Cross, Carland Cross, Zelah Hill, Chybucca and Callestick / Allet Cross Junction.

Resilience

- 2.2.7 The A30 is the most important route serving the County of Cornwall for both long-distance and local road users. It runs from Exeter along the middle of the peninsula to Penzance and is approximately 104 miles in length. Of this, 78 miles is dual carriageway.
- 2.2.8 The single carriageway A30 between Chiverton and Carland Cross is sensitive to incidents. When they impede or block flow there is no alternative direct route, forcing traffic to queue on the main road or divert to minor roads which are not capable of sustaining substantial traffic flows or movements. This situation is worsened by the at grade junctions, including many minor junctions and direct agricultural and residential accesses; all of which increase the likelihood of incidents.

2.3 Project objectives

- 2.3.1 The objectives for the scheme were developed from consideration of the following:
- National objectives of Department for Transport (DfT) and Highways England;
 - commitments within the Road Investment Strategy (RIS);
 - Highways England delivery plans;
 - Cornwall Council's transport objectives;
 - Highways England Licence; and
 - the constraints on the current A30.
- 2.3.2 The transport objectives for the scheme are:
- to contribute to regeneration and sustainable economic growth;
 - to support employment and residential development opportunities;
 - to improve the safety, operation and efficiency of the transport network;
 - to improve network reliability and reduce journey times;
 - to deliver capacity enhancements to the Strategic Road Network (SRN);
 - to support the use of sustainable modes of transport;
 - to deliver better environmental outcomes; and
 - to improve local and strategic connectivity.

2.4 Project location

Site

- 2.4.1 The A30 is a main route from London to Land's End and is particularly important as one of two trunk roads connecting Devon and Cornwall, past numerous other

settlements including Okehampton, Launceston, Bodmin, Redruth and Hayle. The A30 Chiverton to Carland Cross section lies north west of Truro and provides businesses and residents in this corridor with access to the wider SRN, predominantly the M5 and A38.

- 2.4.2 The location of the A30 Carland Cross to Chiverton is shown in Volume 6 Document Ref 6.3 ES Figure 1.1 Location Plan.

Surrounding area

- 2.4.3 The surrounding landscape is largely agricultural. The existing route is flanked by grass verges, trees, hedgerows, as well as isolated and small groups of residential dwellings, farms, other businesses and renewable energy installations.

Key designations

- 2.4.4 There are no statutory designated sites within the scheme area, but there are a number within 1km which are shown on Volume 6 Document Ref 6.3 ES Figure 1.3 Environmental Constraints Plans and include:

- Cornwall and West Devon Mining Landscape World Heritage Site ¹(adjacent to the scheme);
- Chyverton Park Registered Park and Garden² (adjacent to the scheme);
- Newlyn Downs Special Area of Conservation (SAC)³ and Site of Special Scientific Interest (SSSI) (138 meters to the north of the scheme); and
- Carrick Heaths SSSI (345 meters north of the scheme).

- 2.4.5 There are also a number of Scheduled Monuments (barrows) and listed buildings and other structures (milestones) adjacent to the road which are shown on Volume 6 Document Ref 6.3 ES Figure 1.3 Environmental Constraints Plans.

- 2.4.6 The potential impacts of the scheme on the various environmental resources and receptors within the study area are considered in more detail in Volume 6 Document Reference 6.2 ES Chapters 5 to 15.

Developments in proximity to the scheme

- 2.4.7 A number of developments are present adjacent to the scheme. The developments that have been considered as part of this ES are documented in **Consideration of cumulative effects** (Volume 6 Document Ref 6.2 Chapter 15). A complete list of potential developments is set out in **Consideration of cumulative effects** (Volume 6 Document Ref 6.4 Appendix 15.1)

2.5 Baseline scenario

- 2.5.1 The existing A30 trunk road between the M5 motorway at Exeter and Penzance is predominantly dual carriageway. It serves the towns of Okehampton, Launceston, Bodmin, Camborne, St Austell, Truro and Redruth. The stretch of single carriageway between Temple and Higher Carblake has undergone improvement to dual two lane rural all-purpose road (D2AP) standard and was opened to traffic in summer 2017.

¹ <https://whc.unesco.org/en/list/1215/documents/>

² <https://historicengland.org.uk/listing/the-list/list-entry/1000512>

³ <http://jncc.defra.gov.uk/protectedsites/sacselecion/sac.asp?EUCODE=UK0030065>

- 2.5.2 This section of the existing A30 comprises single carriageway linking the existing Chiverton Cross junction at the south-western extent and the existing Carland Cross junction at its north-eastern extent.
- 2.5.3 At the western extent of the scheme, Chiverton Cross connects the existing A30 trunk road to the A390 from Truro, the A3075 from Newquay and the B3277 from St Agnes. At the eastern extent of the scheme, Carland Cross connects the A39 from Truro to the existing A30 trunk road in addition to the local minor road network. The notable junctions along the scheme are:
- Chybucca, which connects the B3284 from Truro to the south-east and the B3284 from Perranporth to the west on the north coast;
 - Zelah, where the existing A30 connects to the unclassified road between Goonhavern and Shortlanesend by means of a grade separated connector.
 - Boxheater, which connects:
 - the A30 to the B3285 from Perranporth and Goonhavern to the west;
 - the unclassified road which connects towards St Newlyn East, Cubert and Newquay to the north;
 - the unclassified road southward to St. Allen, Trispen and Truro
- 2.5.4 In addition to the above roads, 10 minor roads connect to the A30 at junctions between Chiverton and Carland Cross. These serve communities each side of the A30 and link into the local road network, providing access to villages and towns to the north and south of the A30. These are predominantly single lane width carriageways with high-sided hedges. There are also numerous individual properties served by direct access to the A30.
- 2.5.5 Notable structures on the existing A30, which were constructed in the early 1990s as part of the A30 Zelah Bypass scheme, are:
- The Tolgroggan overbridge carries an agricultural access road over the existing A30 trunk road to the south of Zelah village at Tolgroggan Farm. The structure spans a total of 42.5 metres above the rock cutting.
 - The Twobarrows underbridge carries the A30 over the Zelah to Shortlanesend road to the south of Zelah village. The bridge has a clear span of 9.43 metres.
 - Two existing culverts below the existing A30 carrying local watercourses to the east of Zelah village.

2.6 Project description

- 2.6.1 The scheme comprises the construction of 14km (8.7 miles) of new A30 to dual two lane rural all-purpose road (D2AP) standard between the existing Chiverton Cross roundabout in the west and Carland Cross roundabout in the east. At the western end, the scheme connects to the existing A30 Blackwater Bypass immediately west of the existing Chiverton Cross roundabout, leading on to the Scorrier Junction further west, and at the eastern end, the scheme connects to the existing Mitchell Bypass approximately 500m east of the existing Carland Cross roundabout.
- 2.6.2 The existing Chiverton Cross and Carland Cross roundabouts are to be replaced with new grade separated all-movement gyratory junctions to provide connections to the local major side road network whilst maintaining uninterrupted traffic flow on the mainline A30. Additionally, a grade separated restricted movement dumbbell junction with west facing slip roads only is to be included at Chybucca.

2.6.3 The General Arrangement for the proposed scheme can be found in Volume 6 Document Reference 6.3 ES Figure 2.1. The description of the mainline A30 and associated side roads and junctions is provided, with the scheme developed in accordance with the Design Manual for Roads and Bridges (DMRB) design standards and best practice.

Mainline A30 alignment

2.6.4 The scheme consists of a new section of D2AP, with a typical overall carriageway width of 21.1m, including two 9.3m carriageways (two 3.65m lanes and 1m hard strips) and a 2.5m central reserve, with local widening along the route to accommodate forward visibility requirements. The verge on both sides is proposed as a 4m grassed verge to accommodate the highway drainage, communication ducts and street furniture. This is reduced to 2.5m at pinch points around Chybuca and Zelah. From the back of verge there are earthworks slopes of between 1:2 and 1:2.5 to tie into the existing ground level. The earthworks slope is dependent on the proposed landscaping works with slackened 1:2.5 slopes required where woodland planting is proposed.

2.6.5 The mainline A30 route vertical alignment seeks to follow the existing ground profile where possible whilst also endeavouring to use highway geometry above desirable minimum design standards. The alignment also:

- accommodates side road crossings under and over the mainline A30 with standard clearances;
- considers the interaction with the existing A30 for construction practicality purposes when in close proximity; and
- seeks to achieve as close as possible to an overall earthworks balance to avoid any material having to be imported to site or material being taken off site.

2.6.6 The mainline A30 alignment is measured in distance units called chainage. The scheme can be described from west to east as follows:

- Between Ch0+000 and Ch0+300 the scheme is online.
- Between Ch0+300 and Ch1+000, the road closely follows the existing road level or drops into shallow cut (less than 1m) and proposes a new attenuation pond to the north at Ch0+500 with an outfall to the upstream end of the existing culvert at Ch0+150. There is a multi-species crossing at approximately CH1+000. This section also includes one maintenance lay-by.
- Through the Chiverton Junction, between Ch1+000 and Ch2+000, the route rises onto an approximate 6.4m embankment with a desirable minimum highway geometry crest curve. The new junction passes under the mainline A30 with two underbridge structures. There is also a Walking, Cycling and Horse-riding (WCH) underbridge located at Ch1+200 with a WCH link between the realigned B3277 and A390 and a multi-species culvert at approximate Ch1+900. This section includes three attenuation ponds for the mainline A30 and side roads. This section also includes one maintenance lay-by.
- Between the Chiverton and Chybuca Junctions, between Ch2+000 and Ch4+000, the route closely follows the existing ground level with isolated areas of low level cuttings and embankments (approximately 2-3m). This section also includes an eastbound and westbound public lay-by and three maintenance lay-bys and two multi-species culverts at approximate Ch2+750 and Ch3+750.

- Through the Chybucca junction, between Ch4+000 and Ch5+000, the route continues to closely follow the existing ground level, which will assist the construction of the new mainline A30 through this section where it overlaps with the existing A30 and has a realigned section of the B3284 with associated constraints. The new junction passes over the top of the mainline A30 with an overbridge structure and has one multi-species culvert at approximate Ch4+550. This section also includes two maintenance lay-bys.
- East of the junction, between Ch5+000 and Ch5+900, the route drops into a cutting through the existing ridge with a depth up to approximately 4.5m, with a westbound public lay-by and two maintenance lay-bys. Eastbound and westbound gated emergency access points are located at Ch5+820, linking the new route and the side road network and there is a multi-species culvert at approximate Ch5+550 and a stopped-up Bridleway at Ch5+500 with diversion via the Allet Road to the east.
- Between Ch5+900 and Ch6+300, the route moves onto an embankment of up to approximately 11.5m as it passes over the existing valley and over the realigned Allet Road and includes a watercourse culvert and multi-species culvert. This section is heavily constrained with the adjacent hamlet of Tresawen and the Town and Country Motors business to the north of the existing A30 and the Nanteague Farm Solar Farm to the south. This section includes one maintenance lay-by and a mainline A30 and side road attenuation pond to the south, with outfall to the watercourse.
- To the east of the valley, between Ch6+300 and Ch7+500, the route moves back into cutting up to approximately 5.6m through the ridge and the following valley feature and passes adjacent to the village of Marazanvose to the north of the retained existing A30. There is multi-species culvert at approximate Ch6+500 and multi-species Marazonvose green bridge at Ch7+300 with a mainline A30 attenuation pond to the south, with outfall to the watercourse. This green bridge is primarily for wildlife, but also has WCH access and private vehicle access for Nancarrow Farm (NFH). There is also the Marazanvose side road and the access to a large organic farm, which are stopped-up with alternative access via the Shortlanesend Road, there are eastbound and westbound public lay-bys, two maintenance lay-bys and an emergency crossover point.
- Between Ch7+500 and Ch7+900, the route drops into a cutting of approximate 4.5m through a ridge, passing between two 133kv overhead pylons that are to be retained. The northern pylon is closer to the new back of verge and requires a shallow retaining structure of approximately 4m.
- Between Ch7+900 and Ch8+600, the route approximately follows existing ground level and the parallel existing A30 is maintained by realigning onto the old A30 into Zelah and then returning to run close to the new route. The new mainline A30 passes over the existing Two Barrows underbridge before continuing to follow a very similar alignment to the existing A30, through a very tight crest curve and steep down gradient under the Tolgroggan Farm overbridge. Following a similar level to the existing road will assist the construction of the new mainline A30 alongside the existing and also allow the new Tolgroggan overbridge to be constructed at a similar level to the existing, minimising impact on the adjacent properties. The widened cross-section with the new mainline A30 creates a cutting on up to approximately 4.7m on the south side with a similar depth cutting on the realigned existing A30 to the north through this section. This section also includes two maintenance lay-bys,

a westbound gated emergency access point, a side road attenuation pond and a realigned bridleway to use the new Tolgroggan bridge.

- Between Ch8+600 and Ch11+000, the route runs just to the south of the existing A30, passing the village of Zelah between Ch9+000 and Ch9+500. The route passes over two valley features at Ch8+900 and 9+300, with associated watercourse culverts and then through a ridge with shallow cuttings and embankments of up to 3-4m. There is a mainline A30 attenuation pond to the south at Ch8+900, along with a Walking, Cycling and Horseriding (WCH) underbridge at Ch9+260 for Church Lane. There is a side road underbridge for Trevalso Lane, at Ch9+700, with the side road dropping into cut and the mainline A30 at-grade. There is also a multi-species crossing at this location. From Ch9+900 to Ch10+500, the route drops into cutting up to 5.1m, before approximately returning to ground level at Ch10+500 to accommodate a multi-species culvert. In this section, there is also one eastbound lay-by co-located with a maintenance lay-by, one westbound public lay-by, six maintenance lay-bys and three gated emergency access points.
- From Ch11+000 to Ch12+700, the route passes over the existing valley and over the realigned Pennycomequick side road, on an embankment of up to approximately 10m, with a side road underbridge, a watercourse culvert and a multi-species culvert. From the valley towards the Carland Cross junction, the route runs close to the south of the existing A30, with a cutting of approximately 4.3m and a significant embankment of up to 7.4m and there are two mainline A30 attenuation ponds at Ch11+200 and Ch11+900. The adjacent side road to the south in the section that joins the existing A30 at approximately Ch11+450, is stopped-up from crossing the new mainline A30 and locally realigned to continue to the south. In this section, there are eastbound and westbound public lay-bys co-located with maintenance lay-bys, an emergency crossover point and a multi-species culvert at Ch12+000.
- Between Ch12+700 and Ch13+000, the route passes very close to an existing quarry and pond and cuts through possible made ground from the quarry with a depth of approximately 4.2m. There is also historic round barrow close to the south of the mainline A30 through this section, which requires a shallow retaining structure at Ch12+900 and there is a maintenance lay-by.
- Through the Carland Cross Junction, between Ch13+000 and Ch13+700, the route rises onto two significant embankments of up to approximately 10m and 15m with a desirable minimum highway geometry crest curve. The new junction passes under the mainline A30 with an underbridge structure whilst there is a WCH underbridge at Ch13+000, a watercourse culvert at Ch13+600 and a multi-species culvert at Ch13+600. The existing A30 is realigned from Ch12+700 to join the new northern junction roundabout. The existing road that crosses the new route to the existing junction roundabout to the south is reused as a WCH route. There is one maintenance lay-by in this section and it includes three attenuation ponds for the mainline A30 and side roads.
- From the end of the Carland Cross junction at Ch13+700 to the eastern end of the scheme at approximately Ch14+320, the route ties back into the existing dual carriageway with a cutting to the south of approximately 2.4m. There is a mainline A30 attenuation pond at Ch14+200 and one maintenance lay-by and the existing cycleway to the south is realigned to maintain connection to Mitchell.

2.6.7 Tables 2-1 to 2-3 provide a summary of the proposed cuttings, embankments and structures, with further details in the following sections.

Table 2-1 Summary of proposed cuttings

| Cutting name | Chainage (m) | | Approximate Maximum cutting depth (m) |
|----------------------------|--------------|--------|---------------------------------------|
| | From | To | |
| Chiverton Cutting | 0+500 | 1+000 | 2.6 |
| Four Burrows Earthworks 1 | 2+500 | 3+100 | 3.0 |
| Hillview Cutting | 4+700 | 5+900 | 4.5 |
| Nanteague Cutting | 6+300 | 7+450 | 5.6 |
| Two Barrows Cutting | 7+450 | 7+900 | 4.5 |
| Tolgroggan Earthworks | 8+450 | 8+750 | 4.7 |
| Zelah Earthworks 1 | 8+950 | 9+200 | 3.8 |
| Zelah Earthworks 3 | 9+350 | 9+600 | 3.6 |
| Trevalso Crossing | 9+900 | 10+500 | 5.1 |
| Pennycomequick cut | 10+700 | 10+950 | 2.0 |
| Penglaze Cutting | 11+200 | 11+750 | 4.3 |
| Quarry Retaining Wall | 12+650 | 12+950 | 4.2 |
| Carland Cross Earthworks 3 | 13+850 | 14+300 | 2.4 |

Table 2-2 Summary of proposed embankments

| Embankment name | Chainage (m) | | Approximate Maximum embankment height (m) |
|----------------------------|--------------|--------|---|
| | From | To | |
| Chiverton Embankment | 1+000 | 2+000 | 6.4 |
| Four Burrows Earthworks 2 | 3+100 | 3+500 | 3.1 |
| Tresawsen Embankment | 5+900 | 6+300 | 11.5 |
| Tolgroggan Earthworks 2 | 8+750 | 8+950 | 4.4 |
| Zelah Earthworks 2 | 9+200 | 9+350 | 5.4 |
| Trevalso Underbridge | 9+600 | 9+900 | 2.3 |
| Pennycomequick Embankment | 10+950 | 11+200 | 10.0 |
| Journey's End Embankment | 11+750 | 12+650 | 7.4 |
| Carland Cross Earthworks 1 | 12+950 | 13+400 | 10.0 |
| Carland Cross Earthworks 2 | 13+400 | 13+850 | 15.0 |

Table 2-3 Summary of proposed structures over 1.2m diameter

| Structure Location | Approximate Chainage (m) | Structure type and proposed foundation solution |
|---|--------------------------|---|
| Chiverton Cross – WCH underbridge | 1+200 | Underbridge; precast box culvert |
| Chiverton Cross – grade separated junction, underbridge west | 1+425 | Precast Concrete beams; single span; concrete columns; reinforced soil walls |
| Chiverton Cross – grade separated junction, underbridge east. | 1+560 | Precast Concrete beams; single span; concrete columns; reinforced soil walls |
| Chybucca – grade separated junction | 4+830 | Overbridge; steel/concrete composite bridge Single span, concrete columns; reinforced soil walls |
| Nanteague Farm – side road from existing A30 to Allet, (Tresawen Underbridge) | 5+965 | Underbridge; precast concrete portal frame |
| Culvert needed to manage water flow in this area | 6+050 | Drainage structure – culvert; concrete pipes |
| Separate mammal culvert at this location. | | |
| NFH – Marazanvose Green Bridge for bats and badgers | 7+315 | Three spans; Precast concrete arches |
| Twobarrows area, pylon for overhead transmission lines, adjacent to proposed eastbound carriageway | 7+650 | Retaining wall to pylon foundations; Soil Nails |
| Twobarrows – side road from existing A30 to Shortlanesend | 8+125 | Existing Underbridge to be assessed |
| Zelah Lane Farm / Tolgroggan Farm | 8+595 | Overbridge (accommodation bridge) Steel composite; single span; concrete columns; reinforced soil walls |
| To the south of Zelah, existing watercourse, tributary to River Allen | 8+900 | Drainage structure - precast box culvert |
| Zelah, existing watercourse, tributary to River Allen | 9+250 | Drainage structure - precast box culvert |
| Church Lane underbridge | 9+265 | Underbridge; precast box culvert |
| Trevalso Farm underbridge | 9+720 | Underbridge; precast concrete portal frame |
| Pennycomequick – side road from existing A30 | 11+020 | Underbridge – precast concrete beams; single span; concrete columns; reinforced soil walls |
| Pennycomequick – existing watercourse | 11+040 | Drainage structure - culvert; concrete pipe |
| Journeys End Culvert | 12+000 | Precast 2m box culvert |
| Tumulus adjacent to proposed westbound carriageway to the south of Carland Cross | 12+880 | Retaining wall; Soil Nails |
| Newlyn Downs Underbridge | 13+000 | WCH Underbridge; precast box culvert |
| Carland Cross – grade separated junction | 13+360 | Two Underbridges – precast concrete beams; RC abutments |
| Carland Cross – possible existing culvert that will need to be maintained and increased in size for drainage and ecology purposes | 13+600 | Culvert – drainage and multispecies crossing |

Chiverton Grade Separated Junction

- 2.6.8 Chiverton junction is a grade separated junction at approximate Ch1+500, with the junction gyratory carriageway below the mainline A30 using two separate underbridges. (Width 33m, Span 17.2m and minimum Headroom 5.3m. Single span, prestressed concrete beams connected integrally to reinforced concrete columns with a concrete diaphragm. The columns are isolated from a reinforced soil abutment with concrete sleeves and are supported by strip foundations).
- 2.6.9 This arrangement allows for four mainline A30 slip roads and four side roads (the A390 to Chiverton, the existing de-trunked A30, the B3277 and the A3075 to Newquay) to connect into the gyratory. This new junction replaces the existing Chiverton roundabout at Ch0+750, with the existing junction removed with the new scheme. The new junction moved further east to assist the construction of the junction whilst maintaining live traffic on the existing A30 and to minimise impact on the adjacent landowners and businesses.
- 2.6.10 The slip roads consist of a single lane and a hard shoulder, with an overall width of 7.7m. An auxiliary lane is included on the westbound on-slip to allow traffic to manoeuvre onto the mainline A30. Verge widths on the slip roads will be 2.8m and 2.5m for the inside and outside verge respectively. The width on the gyratory carriageway is 12m (except at the underbridges when it is 8m) with a minimum verge width of 2.5m on both sides with the outside verge including a shared off-carriageway footway/cycleway.
- 2.6.11 The four junction side roads are all single carriageway roads with carriageway widths of 6.8m with 2.5m verges both sides including an off-carriageway footway/cycleway on the realigned B3277, A3075, existing A30 and A390. The design speed for all is 100kph.
- 2.6.12 The junction slip roads consist of shallow cutting (approximately 2-3m) close to and through the junction but then rise onto embankments of up to approximately 6m high as they climb to join the mainline A30. The northern side roads connect to the junction at approximately 2m above existing ground level, rise up onto embankments of up to 6m high through the junction, before tying back into the existing side roads at-grade. The southern side roads connect to the junction at approximately 2-3m below existing ground level and stay in cutting until they tie back into the existing side roads.
- 2.6.13 The earthworks slopes are generally 1:2.5 except for on the realigned B3277 and on the eastbound off-slip slip, where there are adjacent constraints and the slopes steepen to 1:2.

Chybucca Grade Separated Junction

- 2.6.14 Chybucca junction is a grade separated junction with a two roundabout dumbbell arrangement and a connector road and associated overbridge over the mainline A30 at Ch4+800. (Width 14.3m, Span 34.1m and minimum Headroom 5.3m. Single span, prestressed concrete beams connected integrally to reinforced concrete columns with a concrete diaphragm. The columns are isolated from a reinforced soil abutment with concrete sleeves and are supported by strip foundations). The junction has west-facing slips only, needed for the traffic travelling to and from Newquay and surrounding area further north, and comprise a single lane and a hard shoulder with a width of 7.7m. The verge widths on the slip roads will be as per Chiverton junction.

- 2.6.15 The carriageway width on the connector road is 7.3m and the verges on both sides are 3m and include an off-carriageway shared footway/cycleway.
- 2.6.16 The junction also connects to the B3284 and the existing de-trunked A30 with local realignment of these side roads to tie into the new junction. The carriageway widths on all side roads will be 6.8m with 2.5m verges on both sides and the design speed of Chybucca side roads is 100kph. There will be off road walking and cycling provision through the junction along the B3284.
- 2.6.17 With the mainline A30 close to at-grade through the junction, the junction slip roads, connector road and side roads rise onto embankments of up to approximately 8m high as they pass up and over the mainline A30, with earthworks slopes of 1:2.5.

Allet Road

- 2.6.18 The Allet Road is maintained across the new D2AP and is realigned to the east to pass under the new mainline A30 through an underbridge. (Precast concrete portal structure - Width 30.1m, Length span about 9m and minimum Headroom 5.3m) at approximate Ch6+000 and reconnect with the de-trunked existing A30. The side road will maintain an existing substantial hedgerow just to the east and will pass through a separate multi-species culvert to the east of the side road. The carriageway width will be 5.6m with 1.5m verges both sides, with WCHs to continue to use the carriageway as they do currently. The design speed of the road is 50kph.
- 2.6.19 With the mainline A30 rising onto an embankment of approximately 11.5m as it passes over the associated valley feature, the realigned side road is close to at-grade, dropping into shallow cutting (approximately 2m) with earthworks slopes of 1:2.5 as it passes under the mainline A30.

Marazanvose Side Road

- 2.6.20 The Marazanvose side road at Ch7+100 is to be stopped-up with no connection to the de-trunked existing A30 as it does currently. To accommodate the existing properties and farm businesses who currently access onto the existing A30, local widening works are required on the side further south and at the junction with the Shortlanesend Road at its southern end. These widenings and junction improvements to the local road network are based on vehicle specific movements to and from the associated properties and businesses.
- 2.6.21 There is also a direct access for NFH in this area at Ch7+300, that is stopped-up from the existing A30, with alternative access provided to the side road to the west.

Realigned existing A30 at Zelah

- 2.6.22 Where the new D2AP overlaps the existing A30 and passes over the existing Two Barrows underbridge (Existing in-situ reinforced concrete structure with minor modifications - Width 34.4m, Length 9.5m and Headroom 5.3m), west of Zelah between Ch7+500 and CH8+700, the existing de-trunked A30 is realigned to maintain this as a parallel side road route to the new mainline A30, whilst also creating a new staggered priority junction with the Shortlanesend Road, which passes under the new mainline A30 through the existing Two Barrows underbridge.

- 2.6.23 The realigned single carriageway width is 6.8m, with 2.5m verges on both sides including a new off-carriageway footway/cycleway. There will be localised verge narrowing at Two Barrows underbridge to accommodate the 1:2.5 earthworks slopes between the side road and the mainline A30. The design speed of this realigned existing A30 is 100kph.
- 2.6.24 With the mainline A30 passing over the existing Two Barrows underbridge and the realigned existing A30 needing to drop to create the junction with the Shortlanesend Road and then be at-grade with the mainline A30 to pass through Tolgroggan Farm overbridge, the side road drops into a cutting of up to 7m through this section, with earthworks slopes generally of 1:2.5, except for where passing through the pinch point adjacent to Two Barrows underbridge where they steepen to 1:2 in order to minimise land take.

Tolgroggan Farm

- 2.6.25 This is a private farm access that passes over the new D2AP and the existing de-trunked A30 at Ch8+600 using a new overbridge. (Width 4.0m, Span about 47m and minimum Headroom 5.3m. Single span, steel composite girders connected integrally to reinforced concrete columns with a concrete diaphragm. The columns are isolated from a reinforced soil abutment with concrete sleeves and are supported by strip foundations). The adjacent existing bridge is demolished with the new crossing providing a 3m carriageway and 0.5m verges on both sides.
- 2.6.26 This private access is also a public Bridleway.

Trevalso Lane

- 2.6.27 Trevalso Lane is maintained across the new D2AP and passes under the new mainline A30 and the existing de-trunked A30 through an underbridge at approximate Ch9+700 before connecting to the realigned Henvor Lane which itself connects back to the existing A30. The carriageway width is 4m to match existing, with 1.5 verges on both sides. WCHs will continue to use the carriageway as they do currently. The design speed for the side road is 50kph.
- 2.6.28 The realigned side road drops into cutting of approximately 8m with 1:2.5 earthworks slopes as it passes under the mainline A30.

Pennycomequick Side Road

- 2.6.29 Pennycomequick side road at Ch11+000 is realigned to the east into the existing valley, to pass under the new mainline A30 through an underbridge and reconnect with the de-trunked existing A30. (Structure width 30.1m, Span 17.2m and minimum Headroom 5.3m. Single span, prestressed concrete beams connected integrally to reinforced concrete columns with a concrete diaphragm. The columns are isolated from a reinforced soil abutment with concrete sleeves and are supported by strip foundations). The carriageway width is 3.4m with a 1.5m verges on the eastern side and a 8m verge on the western side for visibility through the underbridge. WCHs will continue to use the carriageway as they do currently. The design speed of the side road 50kph.
- 2.6.30 With the mainline A30 rising onto an embankment of approximately 10m as it passes over the associated valley feature, the realigned side road is close to at-grade, dropping into shallow cutting (approximately 1-2m) with earthworks slopes of 1:2.5 as it passes under the mainline A30.

- 2.6.31 The adjacent side road to the south in the section between Pennycomequick and Carland Cross, that joins the existing A30 at approximately Ch11+450, is to be stopped-up from crossing the new mainline A30 and locally realigned to continue to the south.
- 2.6.32 The carriageway width of the realignment is 4m with 1.5m verges both sides to match existing and is close to at-grade with minimal earthworks.

Carland Cross Grade Separated Junction

- 2.6.33 Carland Cross junction is a grade separated junction at approximately Ch13+350, with a two roundabout dumbbell layout and a connector road and an associated underbridge under the mainline A30. (2 underbridges; Widths 30.1m/14.0m, Span about 14.5m and minimum Headroom 5.3m. Single span, prestressed concrete beams connected integrally to full height reinforced concrete abutments). The southern roundabout of the junction re-uses the existing roundabout junction and retains the existing access to the A39 side road.
- 2.6.34 The northern junction roundabout connecting to the new eastbound on-slip and off-slip, utilises a compact junction arrangement to minimise impact on the adjacent Carland Cross Windfarm and associated turbine exclusion zones, whilst the westbound off-slip and merge use the southern existing junction roundabout with a standard full grade separated layout.
- 2.6.35 The slip roads consist of a single lane and a hard shoulder, with an overall carriageway width of 7.7m. Verge widths on the slip roads are 2.8m and 2.5m for the inside and outside verge respectively.
- 2.6.36 The connector road carriageway width is 7.3m and includes a 3m verge on both sides with the outside verge including a shared off-carriageway footway/cycleway, which joins into the existing off road cycle path which runs parallel to the A39.
- 2.6.37 With the mainline A30 rising onto an approximate 15m embankment through the junction, the junction slip roads tie into the roundabouts at grade or in shallow cutting, before rising onto embankments of up to approximately 17m high as they climb to join the mainline A30.
- 2.6.38 Where the new D2AP overlaps the existing A30 west of the junction, the existing single carriageway is realigned to maintain this as a parallel side road route to the new mainline A30 and tie into the new northern roundabout of the junction. The realigned single carriageway width is 6.8m, with 2.5m verges on both sides including a new off-carriageway footway/cycleway. The design speed of the realigned side road is 100kph.
- 2.6.39 The earthworks slopes are generally 1:2 through the junction, including an embankment of approximately 15-17m from the side road. This is due to the adjacent constraints of the windfarm and the fact that planting in this area is heathland rather than woodland, so does not require slacker slopes.

Drainage design

- 2.6.40 The highway drainage will consist of filter drains and surface water channels, with kerb and gully systems where necessary. The highway drainage will be designed to cater for a 1 in 1 year return period event without surcharging and will ensure that there is no surface water flooding for a 1 in 5 year return period event.

- 2.6.41 The highway drainage design follows the hierarchy of discharge, as laid out in DMRB HD33/16. The current GI suggests that infiltration will be possible in places for the scheme, particularly for lower return period events. For the larger return period storms it is recommended that a connection is also made to connect to watercourse at Greenfield Runoff Rate. The design will ensure that the attenuation ponds/ infiltration basins can accommodate the 1 in 100 year event with 40% allowance for climate change, in accordance with Cornwall Council requirements. The design will be in accordance with the requirements of HA103/06.
- 2.6.42 The proposed A30 mainline A30 and junction slip road drainage will be adopted and maintained by Highways England. All other highway drainage will be the responsibility of the local Cornwall Council. Separate drainage networks and attenuation/infiltration ponds have been provided for each statutory body.
- 2.6.43 Several watercourses/streams cross the route of the proposed scheme. Flows in these watercourses are maintained within their catchment through culverts where possible. The proposed cross drainage culverts have been designed to convey the 1 in 100-year storm event plus a 40% allowance for climate change. A freeboard of 300mm has been included, as well as a 150mm embedment allowance for environmental purposes. The culverts have been designed in accordance with the requirements of DMRB HA107/04, CIRIA Report 689 and Cornwall Council Drainage requirements.

Walking, Cycling and Horse-Riding

- 2.6.44 The A30 is a heavily trafficked road and does not generally cater for pedestrians and cyclists. There are bus stops on the A30 at Marazanvose and Zelah, and a narrow footway on one side of the road between Zelah and Mount Pleasant. These are considered the only locations along the A30 where people are likely to be walking alongside the A30 carriageway. Walking, cycling and horse-riding activity is more common on the side roads where communities are severed rather than along the A30 itself. From Chiverton Cross to Carland Cross, there are currently twelve locations where people can cross the line of the proposed A30, including the two terminal junctions. These crossings are a mix of A-, B-, unclassified roads and public rights of way. These are all rural in character.
- 2.6.45 Improving the A30 corridor will not only relieve traffic congestion, but will also provide an opportunity to improve facilities for walking, cycling and horse-riding. The aim is to mitigate any potential adverse impacts and enhance any shortcomings with the existing infrastructure. A key element of the strategy is to grade separate all the existing side road crossings including 'quiet lanes' with either an overbridge or underbridge.
- 2.6.46 Four WCH only crossings are proposed on the route. An underbridge is being provided at Chiverton, Ch1+200, so that WCHs can cross the carriageway without the need to interact with the roundabout. The Marazanvose Green Bridge at Ch7+315 is primarily a wildlife crossing, but will have WCH access over it to retain the existing public right of way connection, as well as farm access. An underbridge is being provided at Church Lane, Ch9+265, for the village of Zelah. An underbridge will be provided at Ch13+000 for Newlyn Downs, which would open up public access to the heathland and adjacent historic landscape, as well as provide a crossing within close proximity to Carland Cross which does not require navigating the junction. The Church Lane and Newlyn Downs

underbridges will be shared with wildlife, so lighting has been designed to accommodate their needs.

- 2.6.47 A Public Right of Way Management Plan is provided in Appendix 16.1 Outline CEMP Annex M.
- 2.6.48 The existing A30 will be noticeably quieter when the new D2AP is open, and will provide a safer and more pleasant route for walking, cycling and horse-riding. Pedestrians, cyclists and horse riders will be prohibited from using the new A30 D2AP and directed to use the existing de-trunked A30 instead.

A30 De-trunking

- 2.6.49 The existing A30 trunk road would be downgraded to county road status (de-trunked) between Chiverton and Carland Cross. Approximately 12.7km (7.9 miles) of the existing A30 route would be downgraded to county road status, with maintenance liability transferred to Cornwall Council. The existing road will connect with a number of realigned sections, at Chybucca, Zelah and Carland Cross, providing a local road connection between Chiverton, Chybucca and Carland Cross and maintaining connections for the local communities and side roads.
- 2.6.50 Details of agreed de-trunking works can be found in the Cornwall Council Statement of Common Ground in **Statement of Commonality** (Volume 7 Document Reference 7.4).

Lighting

- 2.6.51 During operation, there will be no road lighting on the mainline A30 or at the three main side road junctions. Lighting during construction, at underbridges, PRoW and signage are described in subsequent sections of this chapter.
- 2.6.52 For WCHs, low lux, demand sensitive lighting is proposed at the three WCH underbridges at Chiverton, Church Lane and Carland Cross, as well as Trevalso underbridge. To facilitate the use of the underbridges as multi species crossings, the demand sensitive lighting will be available between half an hour after dawn and until half an hour before sunset between 1st April and 31st October. From 1st November – 31st March, the demand sensitive lighting will be available 24-hours a day. The scheme is assessed on this basis.

Vehicular restraint systems

- 2.6.53 Vehicular restraint system (VRS) barriers are proposed in the central reserve between the two carriageways and at the side of the road to protect traffic from potential hazards. In the central reserve, it is currently assumed that a rigid concrete barrier will extend the entire length of the scheme, as assessments have shown significant whole-life cost savings to be made. In the verges, this will be a steel open box beam or tension corrugated barrier system, situated in front of all hazards such as traffic signs and street furniture, significant earthworks, bridge abutments etc.

Fencing

- 2.6.54 The majority of fencing along the scheme will be badger/otter proof fencing. Badger/otter fencing will be timber post and four rail fencing with welded steel

mesh attached that either extends above the rails to prevent climbing over or below the rails into the ground to prevent digging under.

Road signs and markings

- 2.6.55 Large Advanced and Local Direction Signs (ADS/LDS) are proposed in advance of the junctions on the mainline A30 and the associated side roads and within the junctions, and also at isolated locations along the mainline A30 for destination information. Warning signs and regulatory signs are provided within the junctions and the side roads. The large ADS/LDS signs will be unlit but the smaller regulatory and warning signs (speed limit, give way, stop, roundabout ahead etc.) will require lighting.

Kerbing

- 2.6.56 Kerbs will not be used on the mainline A30, to facilitate the over the edge drainage proposals, however kerbs will be used at side roads and junction slip roads and connector roads.
- 2.6.57 Kerbs at side roads are proposed as full-battered (splayed) whilst kerbs at junctions are half battered with adjacent footway/cycleways. The kerbs are either precast solid concrete with Kerbs at junctions will be either solid half-battered kerbs or kerb-drains used to convey surface water to drainage systems. All kerbs will be precast concrete.

Pavement

- 2.6.58 The mainline A30 and side road carriageways are assumed to have a fully flexible or a flexible composite pavement construction of varying depths to suit the traffic volumes. It is proposed that the surface course will be low noise surfacing.
- 2.6.59 Mainline A30 and side road foundations are assumed to be either Foundation Class 2 or Foundation Class 3 which consists of type 1 subbase with an underlying granular capping layer as required.

Technology

- 2.6.60 The scheme includes limited technology to support the maintenance and operation of the new road and has been developed in agreement with the Highways England Maintenance, Operations and Technology teams.
- 2.6.61 There are eight CCTV camera stations along the route to provide full coverage of the route, one new weather station close to the existing station at around Ch7+100, emergency telephones in all public lay-bys and also traffic counters in four of the public lay-bys.
- 2.6.62 No Variable Message Signs (VMS) are proposed with the scheme.

Temporary works

- 2.6.63 Buildability advice on the proposed scheme and the proposed scheme boundary has been provided and has included an earthworks and traffic management strategy.
- 2.6.64 It is currently proposed to include two main compounds located at each end of the scheme, known as the Eastern and Western compounds. The Eastern compound will include with the main office buildings / welfare facilities, car parking / mini bus

parking and the induction centre. Both compounds will provide traffic management / maintenance, material storage, satellite offices, fuel storage, washout pits for concrete and sweepers, waste segregation area and topsoil subsoil storage.

- 2.6.65 Compounds for the junction and side road overbridge and underbridge construction are located at the following locations:
- Chiverton Junction underbridges
 - Chybucca Junction overbridge
 - Allet Road underbridge
 - Green overbridge at Marazanvose
 - Tolgroggan Farm overbridge
 - Trevalso Lane underbridge
 - Pennycomequick underbridge
 - Carland Cross Junction underbridge
- 2.6.66 These will provide welfare facilities, site office, storage for piling, formwork and reinforcement materials, fabrication area for bridge beams, plant lay down area, storage for highway materials and local topsoil / subsoil storage.
- 2.6.67 Areas have also been identified for bulk stone and topsoil stockpiling and storage in addition to the areas within the compounds. These are located at: Ch5+600, Ch6+600 and Ch8+300.
- 2.6.68 All compound locations are shown in General Arrangement drawings in ES Figure 2.1 (Volume 6 Document Ref 6.3).
- 2.6.69 To maximise efficiency and safety for both general traffic and the contractor's staff during construction, localised areas of temporary roads will be required to allow traffic to be temporarily diverted from the area of the permanent works. These include the following areas:
- Chiverton Junction – Between the realigned B3277 and A3075 side roads north of the junction and the existing A30 and A390 south of the junction;
 - Chybucca Junction – between the realigned B3284 side road and the existing A30 north of the junction and alongside the existing B3284 south of the junction;
 - Trevalso Lane – Temporary access to maintain side road access (assumed not able to temporarily stop-up); and
 - Carland Cross - Temporary access for windfarm.

Temporary drainage

- 2.6.70 Where possible, the permanent earthworks drainage will be installed early, with cut-off ditches and filter drains, and these will manage the surface water run-off towards and within the site and discharge it into the existing watercourses via the temporary/permanent ponds as required.
- 2.6.71 Highways England will obtain temporary discharge consents from Cornwall Council and Environment Agency and implement extensive pollution control measures in order to maintain existing water quality and ecological interests within the existing rivers and watercourses (see Annex G and Annex H of **Outline CEMP** (Volume 6 Document Ref 6.4 Appendix 16.1)).

- 2.6.72 Temporary settlement ponds will be created in the same location as the proposed permanent ponds to ensure any site surface water discharge to the adjacent watercourses is of the required quality, with any suspended solids given the opportunity to settle out.
- 2.6.73 To mitigate spills, it is assumed that all generator machinery will be installed with a drip tray and that there will be spill kits located on-site at all discharge points.
- 2.6.74 At watercourse crossings, during the construction of the permanent culverts, it is assumed that multiple temporary smaller pipes (same cross-sectional area as the existing) will be used adjacent to the new crossing with the watercourses locally temporarily realigned to suit.

Diversions of statutory utilities

- 2.6.75 The scheme affects a number of Statutory Utilities that run longitudinally along or transversely across the existing A30 and the associated local side road network.
- 2.6.76 This includes a major high-pressure gas main, two renewable energy windfarms at Chybucca and Carland Cross, strategic transatlantic and local telecommunications, water mains and high, medium and low voltage power.
- 2.6.77 The existing services crossing the new scheme are either diverted under or over the new route or realigned to avoid the need to cross the route.
- 2.6.78 The existing services running along the existing A30 or side roads, that are affected when the new route follows the same line as the existing, are diverted into the realigned existing A30 or side roads to facilitate easier, safer and less disruptive ongoing future maintenance.
- 2.6.79 New power and telecommunications services are also required to serve the new technology and lighting provisions on the scheme, including the CCTV camera stations, weather station, emergency telephones and WCH crossing lighting.
- 2.6.80 For some of the major diversions, with long lead-in times for material procurement and construction, Highways England are considering whether these could be completed in advance of the main construction works, making the main works more efficient and safe during construction.

Permanent and temporary land-take

- 2.6.81 Permanent and Temporary land-take requirements are shown within the proposed scheme boundary line in Volume 6 Document Reference 6.3 ES Figure 2.1 General Arrangement.
- 2.6.82 Permanent land-take is required to construct, operate and maintain the new scheme and includes the footprint of all the proposed highway infrastructure, earthworks and drainage works and also includes the areas for environmental mitigation, such as landscape planting, areas of replacement habitat and drainage ponds. Further details on the essential landscaping areas are shown on the Environmental Masterplan drawings in Volume 6 Document Reference 6.3 ES Figure 7.6.
- 2.6.83 Temporary land-take is required to assist in the construction of the scheme, including site compounds, topsoil storage areas, temporary roads, drainage outfall pipes and utilities diversions. In some instances, land will be required for

the construction of part of the works with a permanent easement right retained for operation and maintenance.

Environmental mitigation design measures

- 2.6.84 Environmental mitigation measures shown on the Environmental Masterplans (Volume 6 Document Reference 6.3 ES Figure 7.6) and described in this ES are considered to be essential. The Environmental Masterplans incorporate mitigation measures identified as part of the environmental assessment process, and would be developed further during the detailed design phase of the scheme.
- 2.6.85 The Environmental Masterplans incorporate habitat replacement for important and notable habitats and species as appropriate. This includes habitat creation for grasslands, heathland, hedgerows and woodlands designed to benefit bats, badgers, otters and reptiles. New road crossing structures for these species have been provided within appropriate locations and associated fencing and hedgerow planting to funnel the animals under or over the road. Bat boxes would also be provided.
- 2.6.86 Lighting specifications have also been designed to be sympathetic to bat species. This includes directional lighting with back plates, LED luminaires and the avoidance of white and blue wavelengths, which are known to attract bats as they attract food sources.
- 2.6.87 The landscape strategy has been prepared to address mitigation requirements for both ecology and landscape assets. The design rationale has focused on replacement of vegetation lost during construction, enhancing natural habitats and providing screening vegetation. Where planting is proposed, it would include native species reflecting those currently on site, and would be of local provenance. This design rationale also sits in line with the requirements of Cornwall Council's Cornwall design Guide (2013) where proposed landscaping should be based on locally sourced species native to Cornwall and appropriate to the specific locality.
- 2.6.88 Local native species would be introduced in areas where vegetation removal is required to accommodate construction. Swathes of native tree and shrub species would be punctuated with more mature standard trees giving instant height and impact, helping to settle the scheme within the surrounding landscape. Over time, this vegetation would mature to offer effective integration and screening whilst also reinforcing the character of the local landscape. Hedgerows would also be incorporated to define new boundaries and tie into the existing field pattern. Cornish hedgerows are used where appropriate to the local character and to provide acoustic mitigation.
- 2.6.89 To avoid significant observed adverse effects from noise and vibration, minimise as far as sustainable other likely significant adverse effects from the scheme and reduce existing and future significant observed adverse effects, noise barriers are proposed between (indicative) Ch0+900 – Ch2+050 and Ch6+850 – Ch7+400 This will be integrated into the landscape and visual mitigation design. Low noise surfaces would also be incorporated as part of the scheme.

2.7 Construction, operation and long term management

Sequence of construction activities

2.7.1 The construction activities for the scheme would be typical of a major road scheme and consist of the following:

- Advance/preparatory works to be undertaken prior to construction including advanced ecology mitigation (moving of badger setts and vegetation clearance etc.) and archaeological investigation;
- Site establishment and any further vegetation clearance;
- Main construction works involved in the scheme drainage and bulk earthworks and where needed statutory utility diversions;
- Junction bridge structure construction at Chiverton, Chybuca and Carland Cross;
- Road works and other associated side road, Non-Motorised User and ecology structures; and
- Final tie-ins and soft landscape works.

Chiverton Junction

2.7.2 This is a large fill operation and would require the material from the cut areas local to this area i.e. Ch2+500 – Ch3+100 and also cut area east of Chybuca at Ch4+800 – Ch5+900 and Ch6+400 – Ch7+900. It is also likely that some import will be required. It is possible that the twin bridges at Chiverton Junction would be built at the same time as the earthworks is ongoing. The early construction of the Chybuca Junction and associated overbridge structure is critical to allow the A30 traffic to be diverted up and over the new structure, creating an uninterrupted haul road from east of Chybuca to Chiverton. It is estimated that only part of the bulk earthworks will be completed at Chiverton in the first earthworks season, whilst the Chybuca crossing is being created, and then the remainder will be completed in the second season when site won material can be brought from east of Chybuca.

Carland Cross Junction

2.7.3 This is another large fill area and there are no large cut areas near-by. The side road is programmed to be constructed in the first earthworks season with material acquired from west of Pennycomequick. The majority of the works are estimated to be completed in the second earthworks season when material can be brought in from Pennycomequick. The Carland Cross junction under bridge would be constructed at the same time as earthworks are ongoing.

Chybuca Junction

2.7.4 The programme would aim to construct the Junction overbridge as early as possible so that the connection road for the two roundabouts can be completed.

2.7.5 The remainder of the scheme construction would have to fit in around these three main junctions with pockets of cut/fill to be completed after the bridges have been completed. i.e. Allet Road underbridge, Tolgroggan Farm overbridge, Trevalso Lane and the Pennycomequick underbridge.

The construction programme would require two earthworks seasons in 2020 and 2021 with an estimated completion 8 months after last earthworks season. The scheme is anticipated to be open for traffic December 2022 and completed 2023.

Programme

- 2.7.6 The start date for the construction phase would depend upon a number of factors including the grant of a development consent order. It is currently anticipated that the construction activities for the scheme would commence in March 2020, as identified in the Road Investment Strategy
- 2.7.7 Projects are planned and designed to meet the future, anticipated needs and characteristics of a certain year. For the purpose of this ES, the scheme opening and design years have been taken as 2022 and 2038 respectively.
- 2.7.8 The construction programme would be finalised in advance of the works. The duration of the works is currently estimated to require a construction period of at least 30 months, including two full earthworks seasons and excluding advance works/vegetation clearance/major utility diversions, archaeological testing and de-trunking of the existing road.
- 2.7.9 Following construction there will be a 24-month environmental aftercare maintenance and monitoring period.

Construction Environmental Management Plan

- 2.7.10 An Outline Construction Environmental Management Plan (CEMP) has been developed and is provided in **Outline CEMP** (Volume 6 Document Reference 6.4 ES Appendix 16.1). The Outline CEMP will summarise scheme specific actions, identified through the EIA process and will be presented in the Register of Environmental Actions and Commitments (REAC). Further details are provided in **Environmental management** (Volume 6 Document Ref 6.2 ES Chapter 16).
- 2.7.11 Prior to the commencement of the construction works, the **Outline CEMP** (Volume 6 Document Reference 6.4 ES Appendix 16.1) will be refined and expand into a Construction Environmental Management Plan (CEMP) which shall include a series of construction method statements covering the full range of construction activities to be carried out during the works including site clearance, bulk earthworks, road works and landscaping.

Hours of working

- 2.7.12 The site workforce could be approximately 50-100 staff at any one time and would consist of management and administration staff, civil and structural engineers/surveyors, machine drivers, ground workers, steel fixers and electricians.
- 2.7.13 The expected site hours are 07:30 to 19:30 Monday to Saturday between 1st March and 31st October and 07:30 to 18:00 for the rest of the year. Where necessary, work will be undertaken on Sundays between 08:00 and 13:00. Limited night time working will be required for traffic management, bridge beam lifts, demolition operations, surfacing works at tie-in locations and imported materials during the peak holiday seasons to minimise traffic impact during the normal daytime hours. The main compound will operate on a 24-hour basis, where services such as traffic management, CCTV and vehicle recovery will be stationed.

Construction access and vehicle movements

- 2.7.14 During the construction of the new scheme, there will be deliveries of new materials to site, movement of materials and earthworks within the site and waste material taken off site.
- 2.7.15 With the combination of earthworks slopes of 1:2 and 1:2.5 and over ten large drainage ponds, the scheme earthworks are estimated to be close to balanced between the excavated and fill material, with only specific structural and drainage fill materials to be imported to site.
- 2.7.16 A bulking factor of 5% has been assumed for the site won material for the purposes of transporting and placement of any site-won material within the site.
- 2.7.17 The earthworks strategy splits the site up into five zones. It is estimated that approximately 1.2 million cubic metres of site won material will be excavated with the works, with a maximum haul distance estimated to be approximately 5km, through internal site haul roads. The movement of site won material can be summarised as follows:
- Surplus from Zone 2 (Ch 3000 to 6500) to Zone 1 (Ch 0 to 3000);
 - Surplus from Zone 3 (Ch 6500 to 9500) to Zones 1 (Ch 0 to 3000), 2 (Ch 3000 to 6500) and 5 (Ch 11940 to 14300); and
 - Surplus from Zone 4 (Ch 9500 to 11940) to Zone 5 (Ch 11940 to 14300).
- 2.7.18 In addition to the structural fill, the scheme is estimated to generate a topsoil volume of approximately 400,000m³, which will need to be stored before being re-used on the new verge and earthworks slopes and within the adjacent essential landscaping areas. This figure has been generated using an average depth of topsoil across the site of 350mm.
- 2.7.19 Construction traffic for any delivery of new materials to site will primarily use the existing A30 but will access the construction site and compounds off the associated side roads including the A390, B3284, A39, Allet Road, Shortlanesend Road and Pennycomequick Road.
- 2.7.20 A haul road will be established through the site, so it is assumed that all the site won material will be moved within the site using the haul road rather than the existing A30, with plant crossings required on some of the side roads.
- 2.7.21 Highways England will ensure that the site is operated safely and kept secure to prevent unauthorised access to members of the public. This will include the site accesses, site haul routes and the protection of scaffolding and open excavations. The haul route would be placed along sections of the scheme which would likely consist of single sized stone on a geotextile membrane. This would generate dust and would need regular watering. Plant, equipment and lighting
- 2.7.22 The bulk earthworks will be constructed with typical earthworks moving plant such as excavators and dump trucks, track loaders and towed rollers.
- 2.7.23 The structures, which include, pre-cast portal frame bridges, composite bridges and pre-stressed concrete beam bridges, will be constructed with plant such as pilling rigs, cranes (crawler/mobile), concrete mixer trucks, disc cutters, scaffolding and forklift trucks.

- 2.7.24 Construction lighting will be limited to the construction compounds and at targeted locations along the site (i.e. at structures) and at periods of limited night-time working.
- 2.7.25 Plant crossings will be provided on all roads as required except on the existing A30.
- 2.7.26 Lighting associated with the construction phase will be designed to minimise light pollution at night, whilst being consistent with the requirements of site safety and security. Luminaires will be directional and minimise up-lighting and sky glow. Details of the measures to be included within temporary construction phase lighting design are included in the **Outline CEMP** (Volume 6 Document Ref 6.4 ES Appendix 16.1).

Footpath and Public Rights of Way

- 2.7.27 It is desired that all footpaths, cycle routes and bridleways proposed to be retained in the scheme will be maintained during construction where possible and diverted with local temporary diversions if required. It may be possible that temporary closures will be required but these will be for short periods and will be agreed with the Local Authority Public Rights of Way (PRoW) Officer.

Site Waste Management Plan

- 2.7.28 The generation and handling of waste materials from the construction phase is an important aspect of the environmental assessment and environmental control and management during construction. To ensure compliance with legislative requirements in relation to the management of waste, and to demonstrate a Duty of Care, the outline Site Waste Management Plan (SWMP) in the **Outline CEMP** (Volume 6 Document Ref 6.4 ES Appendix 16.1) will be expanded

Traffic Management Plan

- 2.7.29 A Traffic Management Plan will be prepared to be agreed with Cornwall Council. The Traffic Management Plan shall ensure minimal disturbance as a result of construction activities, for the existing mainline A30 and local side road network. Road space, road closures and any associated temporary traffic management and signals would need to be authorised and confirmed in advance by either Highways England for the A30 or Cornwall Council for the local side roads, and would include consideration of any other works and any planned events.
- 2.7.30 An outline Traffic Management Plan was prepared during the Preliminary Design as **Draft traffic management plan** (Volume 6 Document Ref 6.4 ES Appendix 2.1).
- 2.7.31 It is assumed that traffic management will be in place on the existing A30 for the full construction period whilst on the local side roads it will be only be required for more targeted shorter durations.
- 2.7.32 The traffic management will reduce the temporary lane widths to at least 3m and temporary speed limits may be implemented to ensure safety of construction operations and road users.
- 2.7.33 The current traffic management phasing at the five critical points of the scheme is as follows:

Chiverton Junction

- Divert A3075 traffic on to northern slip roads. Construct a temporary carriageway at the roundabout to straighten alignment;
- Construct new A30 westbound on slip and off slip. Construct new westbound carriageway between Chybucca and Chiverton;
- Divert A30 east and west bound traffic on to new slip roads. Construct new local road slip roads to the south of the junction;
- Put traffic on the dual section of the A30 into single lane running to allow hardened section of central reservation to be constructed. Construct cross over;
- Open new Chiverton roundabout to provide new north south and east west movements. Put A30 into 1 on 1 contraflow to allow cutting and road construction on eastbound carriageway;
- Switch contraflow on to westbound carriageway; and
- Complete tie-ins and fully open.

Chybucca

- Construct new Perranporth link road and temporary carriageways along the north side of the site. Construct temporary alignment for B3284;
- Switch A30 traffic onto temporary alignment. Switch B3284 traffic onto temporary alignment. Stop up right hand movement at B3284;
- Complete new junction and transfer existing Chybucca traffic movements onto new junction. Construct east bound carriageway; and
- Switch A30 traffic on to new eastbound carriageway. Construct westbound carriageway.

Zelah Realigned Existing A30

- Construct temporary access for Tolgroggan farm. Demolish existing bridge;
- Construct offline section of new local road. Narrow existing A30 eastbound carriageway to 1 lane to provide construction access and working area; and
- Switch A30 traffic onto new local link road – construct new A30 offline, including new bridge at Tolgroggan.

Trevalso Lane

- Construct temporary farm access or use alternative access road from the south; and
- Construct first half of structure offline. Move A30 traffic over completed structure. Construct second half of bridge.

Carland Cross

- Construct temporary access track for wind farm;
- Construct new link road and north roundabout (phased construction to maintain wind farm access);
- Open new link road and roundabout to provide temporary alignment for A30 east and westbound traffic. Stop up old A30;
- Import fill across old A30 to construct fill area to the east of the new junction;
- Open A30 east bound on slip to east and west bound traffic (check design width). Put A30 into contraflow. Construct new A30 westbound off slip; and

- Move traffic into contraflow on new westbound carriageway – complete central reservation and eastbound carriageway.

Maintenance proposals

- 2.7.34 A Maintenance and Repair Strategy Statement has been prepared for the scheme, which identifies the assets to be maintained and how these will be maintained during operation.
- 2.7.35 In summary, the overall operational approach will be that which is normal for a D2AP. Thus maintenance operations will be normal routine activities which need to be performed on a cyclical or regular basis and non-routine activities for repair and renewal which require less predictable access to the highway.
- 2.7.36 Maintenance lay-bys have been located along the route in order to provide safe access to maintain the structures and the drainage network, as well as undertake landscaping works. Access for maintaining the attenuation ponds will be from the local road network.
- 2.7.37 Maintenance operations that will require access to the verge or central reserve only, will be undertaken using temporary traffic management for lane closures. Some verge maintenance activities and inspection visits may be able to be undertaken without lane closures where the work is a sufficient distance from the live carriageway.
- 2.7.38 Where work involves carriageway work and/or where adequate safety zones cannot be achieved, carriageway closures will be implemented. For short duration works this will be off peak, overnight closures. The existing A30 single carriageway will be used as the diversion route.
- 2.7.39 When longer term access to the carriageway is required, i.e. for works that cannot be completed overnight, contraflow arrangements will be required. The existing A30 single carriageway will not be signed as a diversion route during such works, however it will offer some resilience.
- 2.7.40 The maintenance proposals have been developed with engagement with all key stakeholders, including the Highways England's Maintenance and Operation team, Cornwall Council and the Statutory Undertakers.

2.8 Demolition

- 2.8.1 The traffic and economic assessment demonstrates that the proposed scheme would operate adequately for the first 15 years of opening to the Design Year of 2038. Typically, highway schemes are designed to have a material life-span of between 20 and 40 years before major maintenance and upgrading is required dependant on material properties, maintenance and usage. Elements including structural concrete and steelwork have extended design lives of up to 120 years.
- 2.8.2 It is considered highly unlikely that the scheme would be demolished after the various design life listed as the road is likely to have become an integral part of the infrastructure in the area. Demolition would not be either feasible or desirable, and is therefore not considered further within this ES.

If you need help accessing this or any other Highways England information, please call **0300 123 5000** and we will help you.

