A30 Temple to Higher Carblake Improvement
Environmental Impact Assessment
Preliminary Environmental Information

285300FW-HLV

CORMAC Consultancy
Engineering Design Group
Murdoch Building, Radnor Road, Scorrier, Cornwall, TR16 5EH
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1 INTRODUCTION

1.1 Introduction to the Proposed Scheme

1.1.1 Parsons Brinckerhoff Ltd. (PB) has been appointed by Cornwall Council (CC) to undertake an Environmental Impact Assessment (EIA) of proposals for the dualling of a 4.5km section of the A30 between Temple and Higher Carblake (Figure 1.1). This report presents the environmental information collected to date for the EIA, in addition to the potential environmental effects and measures to avoid, reduce or offset effects.

Figure 1.1: Scheme Context
1.1.2 CC, in partnership with the Highways Agency (HA) and Department for Transport (DfT), has considered a number of options for dualling the section of road, based on the current highway corridor. The objective of the proposed improvement is to remove queues, congestion, delays and collisions relating to this section of the A30. In addressing these longstanding issues the scheme will help to support economic growth in Cornwall.

1.1.3 Following an extensive review of the different options, the preferred route alignment is known as the ‘Value Engineered Dual Carriageway (VEDC) Option’ (Figure 1.2). This option is hereafter referred to as the ‘proposed scheme’. The route closely follows that of the existing A30 and is essentially a widening of the existing carriageways which is achieved largely within the existing road corridor boundaries.
Figure 1.2: Value Engineered Dual Carriageway Option
1.2 The Location of the Proposed Scheme

1.2.1 The proposed scheme encompasses the single carriageway section of the A30 in Cornwall situated between Higher Carblake and Temple Tor. The A30 between Exeter and A39 Carland Cross is of dual carriageway standard with the exception of this 4.5km section.

1.3 The Overseeing Organisation

1.3.1 If the project receives consent, the scheme design and construction will be managed by CC, in partnership with the HA.

1.4 The Designer

1.4.1 The principal designer engaged by CC for this scheme is CORMAC Consultancy’s Engineering Design Group. Within this team sits the project manager, technical staff and environmental team.

1.4.2 Other specialists from within CC and CORMAC have been commissioned to develop designs for specific elements such as lighting, structures and landscape design. PB has been appointed by CC to carry out environmental assessments and traffic modelling.

1.5 Legislation, Guidance and Process

1.5.1 The proposed scheme qualifies as a Nationally Significant Infrastructure Project (NSIP) and therefore the consenting process requires CC to submit an application for a Development Consent Order (DCO) for the scheme, under the Planning Act 2008. DCO applications are determined by the Planning Inspectorate on behalf of the SoS.

1.5.2 An EIA is being undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 as amended (the ‘EIA Regulations’) which implement Council Directive 2011/92/EU.
Figure 1.3 - Environmental Constraints Plan
1.6 Purpose of the Preliminary Environmental Information

1.6.1 This Report is based on the information contained in the Scoping Report, which captures an early stage of the EIA process, and is intended for distribution to all consultees, including landowners and members of the public. It will be used to inform the public about the EIA process during public consultation on the scheme in early 2013. It is a requirement of the DCO process.

2 THE PROJECT

2.1 Background to the Project

2.1.1 The A30 is Cornwall’s most important traffic connection with the rest of the UK. For 90 miles (140km) between the M5 at Exeter and the roundabout at Carland Cross (the A39 Truro junction) the A30 is of dual carriageway standard with the exception of 3 miles (4.5km) of single carriageway between Temple and Higher Carblake. Because of its function as the main trunk road into mid and West Cornwall, and to major tourist towns, particularly Newquay, at times the capacity of the single carriageway section forms a serious constraint on traffic flows on the A30. This has a detrimental effect on the Cornish economy and the often severe congestion (queues of over 10 miles (17km) and delays of up to an hour) leads to poor journey time reliability, driver frustration, conflict and collisions. The poor network resilience also leads to inappropriate levels of traffic diverting off the A30 onto unsuitable minor roads, bringing intrusion to small settlements and villages along with associated environmental and safety concerns. Over the expected periods of congestion (e.g. the summer months) many people in Cornwall avoid the A30 and the surrounding road network thereby affecting business and community activity in several surrounding villages and towns.

2.1.2 Recent improvements elsewhere on the A30, particularly those between Bodmin and Indian Queens, have led to a higher than normal growth in vehicle numbers (17% at Bodmin between 2004 and 2007 according to an HA study). The A30 route currently carries a 2-way average of 19,673 vehicles per day which rises to 2-way averages of 23,651 on summer weekdays (Monday to Thursday) and 34,965 on summer Fridays and Saturdays (2011 figures from automatic traffic counters on the single carriageway section of the A30 at Temple). Those numbers are rising, as summer Sundays and some Thursdays are now also being significantly affected and furthermore the tourist season is expanding beyond the traditional six weeks’ summer holidays, half terms etc. The figure quoted in DMRB for acceptable traffic volume on a single carriageway road, such as the section of A30 in question, is ‘up to 13,000 vehicles per day’ (one-way movements).

2.2 Project History

2.2.1 A scheme to upgrade the A30 at Temple was included in the Government’s White Paper ‘Roads for Prosperity’ in 1989. It was developed by CC for the HA in the early 1990s but was subsequently removed from the HA Roads Programme. The South West Area Multi-Modal Study (SWARMMMS) recommended in May 2002 ‘a long term strategy to address passenger and freight transport on the main rail and road corridors between London and the South West’. One of the key recommendations was that ‘the A30 be upgraded to dual carriageway standard’. In November 2003, the Secretary of State for Transport announced the addition of this scheme to the Targeted Programme of Improvements. The scheme was again entered into the
Highways Agency Programme and Hyder Consulting Limited (HCL) was commissioned to review the earlier scheme identified by the SWARMMS study. HCL assessed several routes before consulting, in 2004, on a single option.

2.2.2 This received a high level of public support (95%) and in 2005 was approved by the Secretary of State for Transport as ‘the Preferred Route’.

2.2.3 In 2006, the ‘preferred route’ scheme’s priority on the HA’s programme slipped in favour of other regional schemes. In 2008, the scheme received prioritised funding from the Regional Funding Allocation (RFA) in recognition of the benefits that it would bring to Cornwall. The Department for Transport (DfT) funding contribution was capped at £60M and the scheme’s construction was scheduled for 2019. Given this date, the HA scheduled its preparatory work to commence in 2016. However, the change of government in May 2010, and the subsequent Comprehensive Spending Review (CSR) in October 2010, saw the scheme removed from active programmes.

2.2.4 Prior to the October 2010 CSR announcement a transport and economics report was developed by CC to support the case for the A30 scheme. Council Officers presented this report to the DfT and sought the Minister for Transport’s agreement to CC working in partnership with the HA to deliver a solution for Temple as early as possible. As a result, CC was invited to develop designs, a business case and a programme for the reduction of congestion by 2015. The Minister stated that this could be by conventional road building (e.g. a dual carriageway scheme such as the 2005 preferred route) or innovative means and should be carried out using a pioneering, co-operative, positive partnership approach between CC, the HA, the DfT, Statutory Consultees, the A30 Action Group and the public.

2.2.5 Work started at the end of 2010 with a review of the 2005 preferred route proposal and identification and assessment of a range of traditional and innovative solutions. This identified that through value engineering and local delivery of the project a dual carriageway solution could be delivered at a cost of £60m with construction starting in 2015.

2.2.6 CC cabinet approval was secured to continue design of this option in March 2011 and in 2011, study work was commissioned by the Council to identify and review the options for project funding.

2.2.7 Since then work has progressed. All necessary surveys and investigations have been commissioned and are underway and the design proposals refined following feedback received during the early engagement sessions with Statutory Consultees, Parish Councils and local residents. In addition emerging environmental information has been considered and the design refined to reduce potential environmental impacts where possible and develop suitable enhancement and mitigation proposals.

2.2.8 In July 2012, CC presented a scheme update to the Minister for Transport and Treasury officials. The proposals were very well received and working in close liaison with the DfT and HA, CC were tasked to update the business case support the scheme. This business case has been submitted to the DfT for their consideration.

2.2.9 In the Chancellor’s Autumn Statement, it was announced that funding support from Central Government would be made available for the dualling of the A30 in Cornwall.
2.3 Project Objectives

2.3.1 The objective of the proposed scheme is to upgrade the A30 between Temple and Higher Carblake to dual carriageway standard in order to reduce congestion, delays, collisions, conflict and driver frustration – and to facilitate a positive effect on the Cornish economy by improving passenger and freight links with London and the South West.

2.3.2 The project will be subject to a CEEQUAL award application, which considers environmental performance during construction, and sustainable design and delivery will be considered at all stages of the project development.

2.4 Project Design

Scheme Proposals

2.4.1 Cornwall Council proposes to improve the existing single carriageway section of the A30 trunk road between Temple and Higher Carblake; bringing it up to dual carriageway standard.

2.4.2 The council has worked closely with the Highways Agency, many of the Statutory Bodies and local residents during the development of these proposals. Feedback received during the early informal engagement sessions has informed the design process to reach an optimised solution. This has resulted in a design which minimises the overall footprint of the improvement, where possible remaining within the existing highway corridor. The approach has allowed the design to provide the necessary capacity and safety improvements, whilst still:

- Reducing landtake requirements
- Minimising potential environmental impacts
- Maximising economic benefits for Cornwall
- Lowering scheme costs

Main Route Alignment

2.4.3 The scheme begins west of Higher Carblake and closely follows the existing road alignment to Temple Tor, which will dual 4.5km (2.8 miles) of single carriageway road, linking to the existing dual carriageway sections of the A30 at either end. The main route alignment will widen the existing highway corridor by almost 13m, making it approximately 26m wide in total. The new section of road will have a standard cross section with carriageways of 7.3m (each with two lanes of 3.65m), 1m hard strips either side, verges of 2.5m and a hard central reserve which is 2.5m wide. This will result in approximately 10ha of land take. Safety barrier will be introduced to the central reserves, physically segregating the opposing vehicle flows. Vertically the proposed alignment closely matches the existing levels and topography of the existing A30 in this vicinity. Further detail can be found by referring to the Scheme drawings TRXCP311-EC-001 to 010 and TXCP311_EX-001, which form part of the consultation document pack.
Junction and Side Road Arrangements

2.4.4 To improve safety and accommodate the revised route alignment the scheme seeks to rationalise the existing junction arrangements and private accesses, whilst still providing for all required vehicle movements. It proposes three new compact grade separated junctions, located at Cardinham Downs, Preeze Cross and Temple Tor. These replace the existing at grade crossings with three new overpass bridge structures and associated side roads.

2.4.5 At Cardinham Downs the new side roads will be on embankment on the north side of the junction and in cutting on the south. This coupled with carefully designed landscaping will minimise visual intrusion.

2.4.6 Preeze Cross junction takes advantage of the existing topography of the surrounding landscape and the fact that the existing A30 is in cutting at this location enabling the introduction of the bridge without the need for large embankments.

2.4.7 Temple Tor junction is developed by creating embankments shaped to fit in with the surrounding landscape.

2.4.8 The three bridges have been designed to have carriageways of 6.8m wide and hard verges of 1.5m wide. This is in keeping with the surrounding side road network into which they connect. The bridge abutments will be faced with local stone to blend the new structures into the surrounding landscape. Full details of the structures proposed can be found in the Structures Notes and General Arrangement Drawings TRXCP311/ST/01.

2.4.9 Connecting the new junction arrangements to the existing side road network and the improved A30 trunk road are a limited number of new side roads. These vary in width between 4.5m and 6.8m wide and in some cases include passing bays to facilitate traffic movements. In some instances the new side roads also connect individual properties or small groups of houses located along the route safely to the junction facilities.

Private Accesses

2.4.10 The scheme will also improve, or redirect, existing private accesses which connect directly onto the A30. At Higher Carblake and Higher Colvannick this is achieved by the introduction or improvement of new compact junction improvements. Through negotiation, private accesses to specific properties in the vicinity of Preeze Cross and at Greenbarrow have been redirected onto the side road network to enhance safety for users of these facilities.

2.4.11 Access to both service stations located adjacent to the existing eastbound carriageway of the A30 will be improved through minor adjustments of alignment and level to ensure safe access and egress is provided.

2.4.12 As a result of the new junctions, side road arrangements and alterations to private accesses it is acknowledged that there will be some increase to the length of trips for some individuals. However, this is offset by the enhanced safety of these accesses onto the network provided by the new arrangements.
Public Rights Of Way

2.4.13 Where existing Public Rights of Way abut or cross the existing A30 trunk road within the length of the scheme, it is proposed that these will be adjusted to suit the new arrangements. The three routes which do not currently cross the A30 will be shortened slightly in accordance with the widening of the main route alignment and new gates and signs will be installed to maintain easy access. The two routes that meet and cross the A30 in the vicinity of Pounds Conce will be redirected to connect into the new side roads and Freeze Cross overbridge. The additional diversionary length involved in this adjustment is approximately 480m. However, this is offset by the enhanced safety and ease of north south movement created by the new arrangements.

Signage

2.4.14 Retroreflective traffic signage will be installed throughout the improvement in accordance with HA standards and national regulations to provide sufficient directional information to the travelling public.

Lighting

2.4.15 Due to the location and nature of the improvement and the surrounding network into which it connects, it is not necessary to introduce any highway lighting as part of these proposals. This also avoids any potential impact from light pollution being introduced to this environmentally sensitive area.

Drainage

2.4.16 The existing drainage arrangements along this stretch of the A30 trunk road are currently quite limited as there is no existing attenuation of flows and no pollution control. Our strategy is to introduce a sustainable drainage system (SuDS) which will cater for the increased hard surface being introduced, manage rainwater runoff and provide opportunities for enhancement of water quality and biodiversity over and above the existing situation. To achieve this, the scheme proposes to collect rainwater runoff through traditional methods such as gullies, filter drains, ditches and carrier drains. These will lead into attenuation basins before connecting into existing outfalls at three positions in the vicinity of Higher Carblake, Pounds Conce and Temple Tor. The attenuation basins will provide storage capacity enabling outfall rates to be controlled to a greenfield runoff rate agreed by the Environment Agency. The basins will be landscaped and planted to create new wetland habitats and provide opportunities for water quality treatment.

Landscape

2.4.17 A landscape strategy (TRXCP311/2012/LS) has been developed in liaison with Statutory Bodies including the Area of Outstanding Natural Beauty Officer. This seeks to assist the proposals to merge into the existing landscape of the area, mitigating potential impacts and, where possible, enhancing the existing roadside landscape. Throughout the scheme the overriding principle is to retain existing vegetation or where this cannot be achieved to retain topsoil to create a seed bank from which natural regeneration can be encouraged. Due to the sensitive nature of the environment the focus will be on the natural regeneration of existing species rather than introducing new ones. To provide larger specimens seed will be harvested for pre planting off site to grow on particular species from the locality. In the eastern half of the scheme trees are not a regular feature of the landscape and so tree planting
will be isolated to the replanting of trees lost. The western half of the scheme will have an increase in the number of trees planted to reflect the changing landscape.

Construction and Operation

2.4.18 It is anticipated that the construction of the scheme will start in January 2015 and take approximately 18 months to complete. It has a design life of 60 years and on completion, the operation and maintenance of the improvement will be handed back to the Highways Agency for onward management.

2.5 Project Programme

2.5.1 The ‘baseline’ year for the purposes of the assessment is 2011. Construction is due to commence in January 2015 and continue until summer 2016. 2017 will therefore be the ‘opening’ year for the purposes of the assessment. The ‘design’ year (usually 15 years after opening) will therefore be 2032.

3 ALTERNATIVES CONSIDERED

3.1 Design Options that have been Examined

3.1.1 In 2003, in accordance with the HA’s ‘Value for Money Manual’, the proposed scheme was subject to an initial environmental review of seven route options which are shown in Figure 3.1.

3.1.2 The seven route options consisted of three off-line routes north of the A30 (1, 2 and 3), three off-line routes south of the A30 (4a, 5 and 6) and an on-line route (7).
Figure 3.1: 2005 Route Options and Proposed Route
3.1.3 The review included workshops attended by environmental specialists, engineers and consultees. The first workshop concluded that the offline routes were not viable due to the likely impact on the environment and that further consideration of the proposed junctions should be undertaken. Two of the seven options (4a and 7) were taken forward in a second workshop. The key issues were discussed at a third workshop and were subject to detailed environmental assessment. In 2005, a preferred route was identified (see red route shown in Figure 3.1).

3.1.4 Subsequent to the scheme being presented to the Minister for Transport in 2011 a number of workshop sessions and discussions have led to the investigation and comparison of the following main options:

- 2005 Preferred Route dual carriageway
- Value Engineered Dual Carriageway (VEDC)
- Three Lane arrangement
- Peak Time alternative routeing (A39 and A38)
- Dynamic Flow and Merge Management
- Do Minimum option

3.1.5 A Design Option Feasibility Report was subsequently produced to assess the above options against set criteria. All the options were assessed using a matrix that enabled them to be compared considering the following key factors:

- Technical (capacity, standards, land, durability etc)
- Environmental (noise, air, landscape, heritage, water quality, etc)
- Cost (works cost, cost in use, risk)
- Safety (collisions, security)
- Economy (value, efficiency, journey time reliability, wider economic benefits)
- Accessibility (to the transport system)
- Integration (interchanges, land use & other policies)

3.1.6 The assessment showed that, out of the options explored, the VEDC offers the best overall scheme when comparing cost with benefits and other major assessment factors. This dual carriageway option provides a design that has been value engineered to significantly reduce the cost, when compared with the 2005 preferred route scheme, whilst still providing a fully functional dual carriageway arrangement.

3.1.7 Liaison with the HA is on-going and CC continues to work closely with them to ensure the proposals gain full approval for all relaxations and departures from standard.

3.2 Detailed Design

3.2.1 CC are now undertaking detailed design. This includes the following issues:

- Revised junction strategy: this includes looking at closing, moving and realigning existing junctions to ensure safety standards and minimise impacts on road users.

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1 A30 Temple to Higher Carblake Design Option Feasibility Report; CC Highway Design Group; February 2011.
• Footprint: looking at ways to design the road so that the footprint of the proposed scheme has been reduced. This limits land take and keeps potential environmental impacts to a minimum.

• Drainage: A SuDS (Sustainable Drainage System) design has been developed to reduce / remove flood risk and fit into the existing landscape through pond location and design.

• Enhancement: opportunities to provide enhancement to existing habitats or provide for existing species are being developed, including planting schemes which will provide additional species specific habitat (e.g. Dormice) and promote the existing flora (via seed collection and propagation or translocation).

3.2.2 Any further proposed changes emerging from the consultation will also be considered as part of the EIA.

4 AIR QUALITY

4.1 Study Area

4.1.1 The study area for the air quality assessment will comprise a 400m corridor from the centre of the proposed scheme, or series of corridors, along roads potentially affected by changes in traffic associated with the proposed scheme (see Figure 5.1).

4.1.2 Based on the available traffic information, the study area is currently proposed to be limited to the 200m corridor along the proposed scheme itself. Any subsequent revisions to the traffic data may necessitate a re-evaluation of the extent of the study area.
Figure 5.1: Air Quality Study Area

December 2012

Prepared by Parsons Brinckerhoff
for Cornwall Council
4.2 Existing Baseline Knowledge

4.2.1 The assessment of existing air quality will use a combination of information contained within the reports prepared for CC under the Local Air Quality Management (LAQM) regime\(^2\) e.g. the Cornwall Air Quality Strategy (2004) and the background air quality maps provided by Defra and information upon the sensitivity of habitats within the study area to changes in air pollution provided within the Air Pollution Information System (www.apis.ac.uk).

4.2.2 Air quality within Cornwall is generally good. However, road transport is the dominant local source of pollutants and roadside concentrations of nitrogen dioxide can be elevated. CC has declared two Air Quality Management Areas (AQMAs) and is in the process of declaring a third\(^3\). These are areas in which one or more of the objectives for ambient air quality set out in the UK’s Air Quality Strategy\(^4\) are not being met. In Cornwall, all AQMAs have been declared as a result of the exceedence of the objective for annual mean nitrogen dioxide concentrations and are in built up areas.

4.2.3 The closest AQMA to the proposed scheme is the Bodmin AQMA, in which monitored roadside concentrations of nitrogen dioxide exceed the objective (40µg/m\(^3\)) by some margin and show no strong trend over time. However, this lies 5km to the south-west of the scheme and will be unaffected by the proposal. CC’s Air Quality Officer has confirmed that there is no justification for including the AQMA within the air quality assessment.

4.2.4 A number of habitats have been identified within the SSSI located to the north of the scheme (Fig. 5.1) which are sensitive to both nitrogen deposition and oxides of nitrogen. Site-specific critical loads have been identified for habitats have been identified from the Air Pollution Information Service (APSIS, www.apis.ac.uk)\(^5\).

4.2.5 There is no existing air quality monitoring data for the A30 at this location. Defra provides mapped background pollutant concentrations at 1km resolution for the UK. Background pollutant concentrations in the study area, obtained from the Defra LAQM website\(^6\), are low and well within their respective standards for the protection of human health and/or ecosystems.

4.2.6 The resources and receptors potentially affected by the air quality impacts arising from the proposed scheme include both ecological resources and receptors at locations relevant to the assessment of impacts on human health.

4.2.7 The air quality receptors in the study area are limited to residential properties (commercial properties are not considered as members of the public are not exposed outside for one hour or more). Table 4.1 shows the numbers of residential properties within 50m bands along the proposed scheme.

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\(^2\) Report on nitrogen dioxide concentrations in Cornwall, January – December 2010, Prepared for Cornwall Council by The Air Quality Unit, Cornwall College.

\(^3\) 2010 Air Quality Progress Report, December 2010, Cornwall Council

\(^4\) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007, Defra in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland

\(^5\) Development of site relevant critical loads for APIS, 2011, Scotland and Northern Ireland Forum for Environmental Research, report prepared by Centre for Ecology and Hydrology

\(^6\) laqm.defra.gov.uk, accessed 21\(^{st}\) June 2011, Local Air Quality Management Support Pages
Table 4.1: Residential properties in study area for the proposed scheme, identified as a function of distance from the road centreline.

<table>
<thead>
<tr>
<th>Distance from Road Centreline</th>
<th>Number of Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 50m</td>
<td>7</td>
</tr>
<tr>
<td>50m – 100m</td>
<td>2</td>
</tr>
<tr>
<td>100m – 150m</td>
<td>3</td>
</tr>
<tr>
<td>150m – 200m</td>
<td>5</td>
</tr>
</tbody>
</table>

4.2.10 Nature conservation designations that are relevant for air quality impact assessment are Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and SSSIs. Within the study area, the only relevant resource is the Bodmin Moor North SSSI (Table 4.2).

Table 4.2: Sensitive Designated Habitat Receptors within the vicinity of the proposed scheme

<table>
<thead>
<tr>
<th>Name</th>
<th>Easting</th>
<th>Northing</th>
<th>Distance (metres) from proposed development</th>
<th>Direction from proposed development</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bodmin Moor North</td>
<td>73712</td>
<td>213640</td>
<td>50</td>
<td>NEN</td>
<td>SSSI</td>
</tr>
</tbody>
</table>

4.2.11 This SSSI has been declared due to the presence of a range of upland plant communities including wet heath, dry grassland, valley bogs, blanket bogs and crags, and associated fauna. The SSSI, shown in Figure 1.3, lies immediately adjacent to the highway boundary for more than 1km of the existing A30 and the proposed scheme. The habitats are sensitive to both nitrogen deposition and ambient nitrogen oxides.

Table 4.3: Critical Loads and Critical levels of Sensitive Habitat Receptors within the Bodmin Moor North SSSI

<table>
<thead>
<tr>
<th>Name</th>
<th>Critical Loads N Deposition/ kg N/ha/ year</th>
<th>Critical Levels Nitrogen Oxides (as NO2) µg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet Heath</td>
<td>10 - 20</td>
<td>30</td>
</tr>
<tr>
<td>Dry Grassland</td>
<td>20 – 30</td>
<td>30</td>
</tr>
<tr>
<td>Valley Bogs</td>
<td>5 – 10</td>
<td>30</td>
</tr>
<tr>
<td>Crags</td>
<td>5 - 10</td>
<td>30</td>
</tr>
</tbody>
</table>

4.3 Potential Effects

4.3.1 In the absence of significant realignment of the route of the A30 under the proposed scheme, the air quality impacts from the operation of the scheme will be primarily a result of changes in traffic flow and/or composition.
4.3.2 The following sections set out the preliminary results from the assessment for local air quality, including initial findings on property receptors and ecosystems.

4.3.3 Previous studies of A30 dualling at the location (Hyder 2004) indicated that the significant change in traffic flow will be an increase in mean speed on the route from around 80kph to 113kph, with no change in traffic volume. Based on this an initial assessment of nitrogen dioxide (annual mean) was undertaken. This is the pollutant of most concern.

4.3.4 Based on this assessment, it is considered unlikely that any air quality objectives will be exceeded in the future, whether or not the scheme proceeds. The impact of the scheme is a slight worsening of air quality at the roadside. With predicted concentrations well below the air quality objective, the potential impact of the scheme is unlikely to be significant, but will require further assessment given the scale of impacts at the roadside.

4.3.5 An initial assessment of likely impacts on nitrogen oxides concentrations over the Bodmin Moor SSSI was also undertaken. The results suggest that the air quality objective for nitrogen oxides for the protection of vegetation is currently exceeded at the roadside and will continue to be so for some time in the future. The impact of the scheme will be to worsen this exceedence. However, nitrogen oxide concentrations fall rapidly with distance from the roadside, and in future years exceedence of the objective is not expected to extend further than 20m from the road centreline.

4.3.6 Given the limited spatial extent of the exceedence of the objective and predicted improvement in pollution levels in the future, whether or not the scheme proceeds, impacts on the ecosystem as a whole are unlikely to be significant.

4.3.7 Any increases in traffic volume with the proposed scheme, particularly if the vehicles are Heavy Duty Vehicles, will worsen the predicted impacts. Further assessment will be undertaken for the EIA using updated traffic information.

4.3.8 In addition to these local air quality impacts, an overall increase in the speed of vehicles on the A30 will increase the total release of pollutants on the route. This has the potential to increase the regional contribution to total pollution emissions from the UK. The increase is, however, likely to be insignificant on a regional or national scale.

4.3.9 Impacts during construction could also occur, including an increase in dust emissions from construction activities (earthworks), pollutant emissions from construction plant and vehicles, and possibly, temporary changes in vehicle emissions due to traffic redistribution or congestion during works.

4.4 Further Work for the EIA

4.4.1 The scope of the EIA will cover:

- Baseline air quality assessment;
- Local air quality impacts during operation;
  - On human health; and
  - On sites designated for nature conservation, including nitrogen deposition;
- Regional air quality impacts during operation; and
- Construction impacts.
4.4.2 For local air quality, pollutant concentrations at specific worst and typical case receptors will be modelled together with mean concentrations within the 50m bands from the roadside. The predicted pollutant concentrations will be assessed in relation to the objectives for ambient air quality set out in the UK's Air Quality Strategy and EU Air Quality Directives. Pollutant concentrations in the 50m bands will be used to assess the overall change in the population's exposure to pollution.

4.4.3 This will require verification against monitored pollutant concentrations and, with no monitoring currently available, a diffusion tube survey of pollutant concentrations has been undertaken across the scheme site. Ambient air nitrogen dioxide concentrations were monitored between April 2012 and October 2012 at 20 locations along the route. In addition, concentration of nitrogen oxides were collected at a subset of 6 sites across the study area, including a transect of the SSSI site, a transect across an adjacent habitat to the north of the A30 and to the south of the site, and a transect of a habitat site directly to the south of the SSSI and the A30.

Figure 5.2 to 5.4: Air Quality Monitoring Locations

4.4.4 The impacts on the SSSI will be assessed, by assessing the potential impacts upon a transect of receptors from the roadside, through the SSSI, to a maximum distance of 200m. Both pollutant concentrations and deposition will be considered and will be assessed against compliance with objectives and relevant critical loads for the site habitats respectively.

4.4.5 The change in total vehicular emissions with the proposed scheme, the Regional Assessment, will be assessed in relation to the percentage change in local emissions and in relation to UK emissions.
4.4.6 Impacts during construction will be assessed qualitatively and will take into account the nature of construction activities, the proximity of receptors to these activities and their duration. Where appropriate, mitigation measures will be proposed. It is not considered necessary at this stage to undertake any quantitative assessment of traffic impacts during construction. This requirement will be kept under review throughout the next stage as more traffic data becomes available.

4.5 Possible Mitigation

4.5.1 Given the potential dust impacts during construction from the scheme, a site specific Dust Management Plan (DMP) could assist in avoiding and controlling excessive dust emissions during the construction period. This would include on-site dust mitigation measures; a DMP; spatial planning of site activities; constraints on construction traffic and specific control measures on potentially dusty site activities.

4.5.2 No anticipated operational phase mitigation is considered necessary at this stage.

5 CULTURAL HERITAGE

5.1 Introduction

5.1.1 In 2012, an archaeological assessment of the scheme was carried by CC. This included review of a number of desk-based sources of information and non-intrusive field surveys.
Figure 6.1 - Gascoyne’s county map of 1699, showing the early highway, re-used for the 18th century turnpike road and the present A30 from the Blisland junction on the left as far as Temple parish (between the forking streams to the right), where the route was diverted north later in the turnpike era.
5.2 Existing Baseline Knowledge

The Historic Landscape Character (HLC) of the Temple to Higher Carblake area is a mosaic of units of landscape all attributed to one of a set of recurring HLC ‘Types’; This is shown on Figure 6.2, an extract from Cornwall’s county-wide mapping of HLC Types.
Figure 6.2 - Map showing Historic Landscape Character of the proposed A30 dualling area
Communications

5.2.1 The A30 is one of the major communication routes in Cornwall. These reflect historical, tenurial and topographical factors as well as local and long-distance transport needs, as shown by features such as boundstones associated with the A30. The Bodmin-Launceston highway, now forming the A30 has, in the section proposed for dualling, a 12th century type wayside cross beside it and sites of other crosses, and is probably early medieval (pre-Norman) in origin.

5.2.2 Along the A30 within the study area are substantial sections of the road as it was developed in the turnpike era from the 18th century, left aside during more recent alterations, with associated features; and possible traces of the earlier highway from which the turnpike originated, as well as the cross sites already mentioned. Other related remains dating from medieval times to the 19th century can be expected to survive below ground.

‘Medieval Farmland’ (mid green on Figure 6.2)

5.2.3 Medieval Farmland (a Type of ‘Anciently Enclosed Land’) extends over almost all the ground on the west half of the scheme, flanking the A30. A smaller unit of this Type lies towards the east end of the scheme at Greenbarrow. This is part of Cornwall’s agricultural heartland, mostly worked in later prehistory, re-organised in the medieval period into extensive ‘strip’ systems associated with co-operating farmsteads grouped in hamlets. These systems are now largely modified, as in much of Cornwall, but have gently curving field patterns distinct from the generally straight-sided fields of later enclosure. Buried archaeological features from the prehistoric, medieval and post-medieval periods, including settlements, fields, ceremonial and ritual monuments and industrial remains can be expected virtually anywhere in the Type.

Upland Rough Ground (yellow on Figure 6.2)

5.2.4 This Type predominates over the east half of the scheme. A variety of archaeological sites and landscapes, including rare features, survive well here, because land-use has become increasingly extensive (as opposed to intensive) through time. They include Bronze Age ritual or ceremonial monuments such as the round barrows and stone rows either side of the proposed dualling. Features of the historic era include pasture boundaries, the bounds of commons of medieval origin being well represented in the study area. Among more recent components here are remains of traditional turf gathering for fuel, and china clay works to the south of the scheme. Upland Rough Ground has great potential for historical and archaeological research, and palaeoenvironmental work particularly investigation of ancient pollen preserved in bogs, and this may be seen from the ground surface of the Type in the study area with its earthworks and several marshes (Figure 6.3).
Figure 6.3 - Wet rough ground, one of several such areas with potential for waterlogged remains and palaeoenvironmental evidence, north of Temple clay works; the road beyond it is the A30, here following the line of the ‘new’ section of turnpike of c1823 skirting the marshy parish of Temple

5.2.5 In terms of individual archaeological features and wider complexes, the 2012 assessment records 118 known or possible sites within the study area extending 20m either side of the existing A30 (Figure 6.4), and 19 more found by the geophysical survey.
Figure 6.4 – Archaeological Sites
5.2.6 North Cornwall District Council Local Plan (1999) includes, east of Pounds Conce, taking in the eastern two thirds of the scheme, an Area of Great Historic Value (AGHV), no.29, Bodmin Moor.

5.2.7 Of the 118 sites along the scheme recorded in the 2012 study, it is considered that 110 are of Local or Regional Importance; most being post-medieval sites associated with the turnpike now the A30, outlying elements of clay works or other industrial earthworks, features reflecting aspects of the traditional farm economy, or parts of wider field systems or roads of medieval origin, modified in more recent times.

5.2.8 Three of the 118 sites are designated Nationally Important; the medieval Peverell's Cross (a Scheduled Monument (SM), SM reference CO 203), and two separate milestones of the turnpike era (both LBs at Grade II - references 507022 and 67312).

5.2.9 Five more of the 118 sites may be regarded at the present state of knowledge as of equivalent value to those of designated National Importance, or potentially so, because they have upstanding remains with evidence for high significance and rarity. These include a low earthwork which may be a barrow at Higher Carblake, not, however, visible on the geophysical survey; a potential later prehistoric to Roman period enclosure above Preeze Cross; possible remains of a medieval cross, and a wheelwrights stone, at Preeze Cross; and the former coaching inn at Pounds Conce.

5.2.10 Beyond the 20m study corridor, but in or around 1km of the scheme and which must therefore be considered with regard to their settings, are nine sites with structures or earthworks of designated National Importance (Figure 6.5). Five of these sites have Schedulings and five have Listings (one being both Scheduled and Listed). The SMs are the Council Barrow by the south west end of the scheme (SM CO 340); stone crosses at Trewardale (SM CO 915); the barrow group on Greenbarrow Downs (SM CO 916); St Bellarmin's Chapel (SM CO 453); and Temple 'Old' [turnpike era] Bridge with ford and causeway (SM 15575). The Listings are at Trewardale (house, LB Grade II*, 67323, with associated carriage house and stables, gateway, and ha-ha LB Grade II); Praze (house, LB Grade II, 67509); Trethorne (house, LB Grade II, 67322), Temple (Church of St Catherine, LB Grade II*, 67370) and Merrifield (house and adjoining barn, LB Grade II, UID 67372).
Figure 6.5 - Designated heritage assets of National Importance up to c1km from the dualling scheme
5.2.11 Two additional sites (one an extensive complex), in or around 1km from the scheme, are demonstrably of equivalent value to designated sites of National Importance; the Colvannick stone row (HER ref 18481), and Colvannick Tor multi-phase field systems and settlement (HER refs 19179, 19180, 20720, 20721, 20866).

5.2.12 Further than 1km, but less than 8km from the scheme, and so relevant to the initial assessment of visual and other impact on surrounding sites and landscape, are numerous SMs and LBs including the following nearby and/or prominently sited SMs (Figure 6.6): Trippet Stones stone circle on Manor Common (CO 126); Stripple Stones henge with stone circle (CO 124); the Blacktor Downs roundhouse settlement, field system, enclosure and cairns (SMs 15028-15035); the medieval Four Hole Cross (SM 29230); prehistoric and medieval settlements, fields, enclosures, with Bronze Age cairns and medieval streamwork at Garrow Tor (SM 36059); and the earlier prehistoric hillfort with cairns and medieval chapel on Rough Tor (SM 15238).
Figure 6.6 - Map of scheme viewshed, marked with sites of high importance lying within 8km of the scheme and assessed for impact on their settings (NB Viewshed analysis involves mapping the theoretical 'viewshed', that is the areas intervisible with the scheme, using computer modelling based on contours. The computer-generated viewshed mapping is then tested in the field by observing views to the area which would be affected by the proposed scheme at selected locations within 8 km of the scheme).
5.2.13 Between 1km and 8km, and considered equivalent in value to SMs, are sites at Brockabarrow, comprising the summit barrow, roundhouses of the Bronze Age, and remains of medieval transhumance (HER refs 4206, 18935, 18936; numerous other individual records).

5.2.14 The geophysical survey carried out in 2012 indicates several further, buried features of potentially high importance, notably those recorded as 1C and 2C, these being a possible barrow at Higher Carblake south of the A30 at the west end of the scheme, and a roundhouse north east of Preeze Cross near its centre.

5.2.15 In addition, the assessment process has shown that of the 75 built field boundaries (hedge banks) in the study corridor, 58 are considered important under the historic criteria of Hedgerow Regulations.

5.3 Potential Effects

5.3.1 The significance of the main potential effects (on key sites, on the settings of these and of surrounding heritage assets and on historic landscape character) is outlined below.

5.3.2 The planned road widening and grading, new junctions and feeder road, and other working areas and compounds, would entail permanent removal, truncation, disturbance, or obscuring of the non-renewable resource of upstanding and buried sites considered Locally or Regionally Important. It is considered that a satisfactory programme of mitigation measures can be developed for this effect.

5.3.3 In the 20m corridor, the scheme would avoid the medieval cross, one of two milestones designated Nationally Important (SM CO 203 and LB 507022), and the five sites considered equivalent in value or potentially so. It would involve land take on the site of one of the Listed milestones (LB 67312). Re-location of the affected LB is proposed. This would require agreement with EH and Listed Building Consent within the overall DCO. Mitigating measures such as full recording and control of re-siting by a historic environment specialist might be agreed; should these be carried out there would be a residual impact on the setting of the LB.

5.3.4 The settings of the Scheduled cross and Listed milestones would be adversely affected since the scheme would obscure the historic origin of the road to which they relate. Three of the five sites of equivalent value or potentially so would have a similar adverse impact; these being a coaching inn, wheelwright’s stone (Figure 6.7), and possible wayside cross, and so again relating to the historic use of the A30 route. Whilst a full mitigation programme has yet to be developed, it is currently envisaged that the effect might be partly mitigated by including provision of publicly accessible material presenting and interpreting the history of these sites.
The remaining two potential sites of equivalent value to Schedulings are a low mound, possibly a barrow, and a curving hedge which may mark a round. If these are indeed upstanding prehistoric features, their settings would be adversely affected by new road links forming part of the scheme which run around or past them. It is likely that this could be mitigated by appropriate monitoring and recording.

5.3.6 Of the two buried sites potentially of high importance found by geophysical survey, one, the possible barrow Feature 1C at Higher Carblake, lies just east of a planned link road and so should not be affected. The other, roundhouse-type Feature 2C found by the geophysical survey north east of Preeze Cross lies outside the footprint of the scheme; a proposed new link road runs in the general vicinity, but it should be possible to agree in advance of ground disturbance here a satisfactory strategy for mitigating any impact on associated buried settlement-related remains.

5.3.7 The geophysical survey found no evidence of a round indicated by field names by Preeze Cross and so no major adverse effect is predictable there.

5.3.8 For structures or earthworks of designated National or equivalent importance beyond the 20m corridor but within or around 1km of the scheme, highly significant adverse effect on settings - primarily visual impact detracting from experiences and understanding of the monuments - is expected on the moors west of Temple (Figure 6.8). Here the proposed new road bridge at the Manor Common junction with associated banked and looped roads would lie with its centre within 1km of, and in full view from, the summit cairn on Greenbarrow (SM CO 916). This barrow with others in the same SM also overlook from less than 0.5km the A30 in the scheme to their south, where physical expansion of the road with greater speed and any large increase of traffic noise would adversely affect their setting and effectively increase their existing separation by the road from another major element of the prehistoric
ritual or ceremonial landscape, the Colvannick stone row south of the road (HER ref 18481).

**Figure 6.8** - Clear view from the Scheduled summit cairn of Greenbarrow over the proposed site of a new bridge with associated banked and looped roads in the downs (left of the A30) and marsh (right)

5.3.9 Further from the scheme, between 1km and 8km from the A30, the viewshed analysis and ground checking indicates that the planned new road bridge over the A30 at the Manor Common junction, standing on part of the most elevated area of ground in the scheme, would have a significant adverse effect on the settings of several heritage assets. It would be a skyline feature in the view from the Trippet Stones (CO 126) at 1.4km, visible from the Stripple Stones at 1.6km (CO 124) and Brockabarrow (MCO 4206) at 2km, and discernible from Rough Tor (CO 15238) at 7km.

5.3.10 The dualling would also have a significant adverse effect in both construction and operational phases on the HLC of the two extensive Units of Upland Rough Ground Type lying either side of it east of centre. The open, undeveloped upland historic landscape here would also be vulnerable to any large increase in traffic noise, speed and volume resulting from the scheme. Regarding physical impact, in general, the scheme is not expected to significantly increase the footprint of the A30 in this area since road widening has already taken place in the later 20th century. However with its open, undeveloped historic character, elevation, and shallow landform the landscape here would be particularly sensitive to the planned new bridge at Manor Common. This would be one of very few large raised modern structures currently visible from this large tract of heathland. ‘Double counting’ of this effect, which is already noted in the context of settings, is to be avoided; but it should be noted that the two associated loops of new embanked road, one either side of the A30, though not requiring a very large land take, would detract from the heath’s historic character as semi-natural grassland in a marginal, undeveloped environment, its relationships to patterns of settlement and farming, and aspects of its own traditional exploitation, all currently legible (Figure 6.9). The south eastern loop would alter a substantial area of the low-lying, open, wet ground of an extensive marshland forming part of the Upland Rough...
Ground obscuring the historic relationship between this and the ancient farmland running down to it from Temple Tor on its north east.

**Figure 6.9** - Manor Common, where the planned bridge over the A30 would detract from the Upland Rough Ground, due to its prominence in this high open landscape, and associated loss of components such as the turf stead with distinctive vegetation in the foreground, and the open road to St Breward, the ‘Badway’ recorded in 1699

5.3.11 The scheme would also reinforce the existing physical barrier between the HLC Units of Upland Rough Ground on the east caused by the cumulative effect of previous modern road schemes, the section of the A30 here being the only surviving section of single carriageway on the trunk road on Bodmin Moor, a historic upland landscape with outstanding evident time depth and complexity. This effect must be considered in the context of the present seasonally high barrier effect of the A30 traffic and it should also be noted that the proposed scheme’s altered road crossing at the Manor Common junction would effectively provide a link facilitating movement between the areas of Upland Rough Ground, highly beneficial in itself, though the form of crossing proposed, in this position, would have a widely experienced adverse effect on HLC as on the landscape settings and context of heritage assets.

5.3.12 The effect of a monument being included on the Schedule (SM CO 203) is that consent from the SoS is required before undertaking virtually all works to a SM, including to the ground included in the protective margin of a monument.

5.3.13 Development affecting LBs and their curtilages (if any) including any object or structure within the curtilage normally requires both planning permission and Listed Building consent (LBs Grade II, 507022 and 67312), which will be addressed in the DCO.

5.3.14 For settings of SMs, LBs and heritage assets of equivalent value, the National Planning Policy Framework (NPPF), states:

> In determining planning applications, local planning authorities should take account of: the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; the positive contribution that conservation of heritage assets can make to the sustainable communities
including their economic viability; and the desirability of new development making a positive contribution to local character and distinctiveness.’

5.3.15 EH and DCMS (Department for Culture, Media and Sport) provide guidance on the application of the NPPF policy on settings as follows (Para.113 and 114):

‘Setting is the surroundings in which an asset is experienced. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral.

The extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration; by spatial associations; and, by our understanding of the historic relationship between places. For example, buildings that are in close proximity but not visible from each other may have a historic or aesthetic connection that amplifies the experience of the significance of each. They would be considered to be within one another’s setting.’

5.3.16 The Hedgerow Regulations 1997 state that, should it be intended to partially or totally remove a hedgerow considered significant under historic criteria (i.e. incorporating an archaeological feature and/or recorded on mapping of the mid 19th century or earlier), the Local Planning Authority (LPA) must be notified, and may issue a ‘hedgerow retention notice’ prohibiting removal if it is judged to be important.

5.3.17 The assessment will consider the effect of the proposal on these policies, as well as the relevant saved policies in the North Cornwall Local Plan (1999) where in compliance with the NPPF.

5.4 Further Work for the EIA

5.4.1 More detailed archaeological assessment will be undertaken to inform the EIA, if required. This will provide scoring of potential impacts for all sites, including those considered locally important, and full recommendations for avoiding, reducing, or mitigating adverse impacts on the archaeological resource, through development of an agreed programme of recording set out in a Written Scheme of Investigation (WSI) in advance of any development works. Measures proposed may include archaeological watching brief, controlled soil strip, sampling or excavation, restoration with archaeological guidance of features contributing to HLC such as any traditional stone gateposts directly affected by works, and historical work and publication.

5.5 Possible Mitigation

5.5.1 Geophysical (magnetometer) survey has been undertaken and fully reported by specialist contractors and its results incorporated into the assessment report (Parkes 2012).

5.5.2 Inspection and recording as appropriate by a qualified archaeologist of any related test works such as geotechnical pits or drilling is also being implemented through a watching brief. No archaeological remains have been encountered.

5.5.3 Full recording by a historic buildings specialist with further work as appropriate is also proposed for the forge and associated wheelwrights stone at Four Winds, Preeze.
Cross, and for the former coaching inn and brew house at Pounds Conce, should the final design for the dualling including access roads and other associated works entail any direct impact on the fabric of these structures. The proposed scheme avoids direct impact on the structures.

5.5.4 Additional measures currently agreed in advance of the above include further assessment and if possible repair and restoration, with archaeological recording and guidance as appropriate, of a boundary stone lying broken on the verge of the existing A30; section recording for hedges directly affected by the scheme to be selected on the basis of their potential cultural interest; and archaeological consultation during selection of access routes and other working areas as required.

5.5.5 In addition to the stages of further archaeological work outlined above, modification of the scheme to avoid or reduce adverse archaeological impact and the survey of potential impact on the settings of surrounding heritage assets will be considered.

6 NATURE CONSERVATION

6.1 Existing Baseline Knowledge

6.1.1 An initial desk-based study has been undertaken, which has drawn on the findings of a combination of desk study, consultation and field survey undertaken by Hyder Consulting Ltd. for the 2004 design option appraisal process. Further studies undertaken for this assessment are covered in Section 7.7.

6.1.2 In addition, to address the requirements of guidance published since the Hyder study was completed, an updated desk study has been completed to identify the presence of European designated sites within the scheme’s zone of influence.

European Designated Sites

6.1.3 No Special Protection Areas (SPAs) or Ramsar sites occur within 2 km of the proposed scheme and no Special Areas of Conservation (SACs) where bats are the qualifying interest occur within 30 km of the scheme. However, the River Camel SAC lies approximately 1,950 m to the east of the scheme (refer to Figure 1.3).

Other Designated Sites

6.1.4 The proposed scheme passes through several sites designated for their nature conservation interest, specifically the Bodmin Moor (North) Site of Special Scientific Interest (SSSI) and the South West Moor County Wildlife Site (CWS). In addition, Helligan Woods CWS and Blacktor Downs CWS occur within 200 m of the scheme (refer to Figure 3.1). An Important Bird Area overlaps with both of these designations, triggered by the presence of Eurasian Golden Plover and a small population of Common Stonechat.

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7 Information has been gained from a walkover survey undertaken by Cornwall Environmental Consultants (CEC) in October 2002 following an informal inspection of the road verges in June 2002. A further Protected Species Assessment was undertaken by Richard Tofts Ecology in March 2003. A Phase 1 habitat survey of land within Temple Fishery was undertaken in March 2003. Dormice surveys were undertaken in March, May and June 2003 and Marsh Fritillary surveys were undertaken in March, May and June 2003 also. Inspection of a bat roost and wider bat activity near Outer Colvannick Farm was undertaken in May 2003.
Figure 7.1: Ecology Designations
6.1.5 Where potential impacts on these designated sites may arise as a result of the scheme, detailed consultation will be required regarding appropriate mitigation and/or compensation measures.

6.1.6 Consultation to avoid impacts on Helligan Woods CWS has already commenced with CWT and Cornwall Ecologist.

**Notable Habitats**

6.1.7 The ecological information obtained for the option appraisal process highlights the presence of a number of notable habitats within the scheme footprint and 150 m surrounding area (in cases qualifying as a UK BAP priority habitat). Habitats present include dry dwarf shrub heath and upland heath; Cornish hedgebanks; dense and continuous scrub; hedgerows; blanket bog; and unimproved acid grassland.

**Protected/Notable Species**

6.1.8 The ecological information obtained for the option appraisal process (with reference to the Cornwall Biodiversity Action Plan 2010-2015) highlights the potential presence of several protected species, as follows.

**Badgers**

6.1.9 Detailed studies undertaken in 2004 as part of the options appraisal process have identified 27 badger (*Meles meles*) setts, including three main setts and 24 outlying setts.

![Figure 7.2: Badger Pawprint](image)

![Figure 7.3: Badger Sett](image)

6.1.10 The location of main setts is unlikely to have changed during the years that have followed. However, the level of activity and distribution of associated outlying setts may have altered.

6.1.11 Badgers are listed as priority species on the HA Biodiversity Action Plan (HABAP) and receive protection under the Protection of Badgers Act 1992 on animal welfare grounds.

**Dormice**

6.1.12 Dormice (*Muscardinus avellanarius*) are known to be present on the east-bound and west-bound carriageways as well as within the central reservation in the vicinity of Darcroft Garage at the western end of the scheme. These Dormice are well studied and are known to cross the carriageway.
6.1.13 It is not known outside of the road corridor whether dormice exist more widely but clearly there is the potential for habitats to support dormice where there is connectivity.

6.1.14 Dormice are listed as priority species on the UK Biodiversity Action Plan (UK BAP) and receive full protection under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations (2010) as amended, referred to as Habitats Regulations hereafter.

Otters

6.1.15 Due to the proximity of tributaries and connecting habitat between the River Camel and River Fowey on either site of the scheme corridor, otters are considered likely to be present in areas of suitable habitat within the study area. This is particularly the case in the vicinity of Pounds Conce and Preeze Cross where historic road kill data is available. An existing culvert is known to be in place in order to mitigate these effects.

6.1.16 Otters are listed as priority species on the UK BAP and the HABAP and receive full protection under the WCA and the Habitats Regulations.

Bats

6.1.17 A number of bat species have been recorded within the study area. Of particular note are Greater Horseshoe (Rhinolophus ferrumequinum) and Lesser Horseshoe (R.hipposideros) bats, associated with Cabilla Manor Wood SSSI, which is situated approximately 3km south-east of the scheme.

6.1.18 A number of bat roosts were identified during surveys undertaken to inform the 2004 options appraisal process. In the interim period, the nature of these roosts may have altered and/or new roost sites may have established.

6.1.19 The scheme site and surrounding habitats are considered particularly suitable for bats within the vicinity of Temple Fishery, Pound’s Conce and Helligan Woods, with Pounds Conce being most noteworthy due to the reported varied habitat structure and good connectivity.
6.1.20 Bats are listed as priority species on the UK BAP and the HABAP and receive full protection under the WCA and the Habitats Regulations.

**Birds**

6.1.21 There are records of notable and protected bird species within the search area for the scheme. Of particular note is golden plover (*Pluvialis apricaria*) and lapwing (*Vanellus vanellus*), which were observed during 2003 and 2004 feeding in Preeze Cross.

6.1.22 All birds are protected under the WCA. Some species receive special protection under Schedule 1 of the WCA and are listed as priority species on the UK BAP and the HABAP.

**Reptiles**

6.1.23 Reptiles have been historically recorded within the study area. Targeted surveys carried out to inform the options appraisal process identified the presence of all four common reptile species. Of particular note was the presence of significant adder (*Vipera berus*) hibernacula within a Cornish hedgebank.

![Female Adder](image1.png)  ![Slow Worm](image2.png)  ![Male Common Lizard](image3.png)

**Figure 7.6:** Female Adder (top left)  **Figure 7.7:** Slow Worm (right)

**Figure 7.8:** Male Common Lizard (bottom left)

6.1.24 A variety of habitat types associated with the scheme are considered likely to support these species.

6.1.25 Common reptile species receive partial protection under the WCA and are listed as priority species under the UK BAP and HABAP.
**Invertebrates (terrestrial)**

6.1.26 Surveys carried out for the 2004 options appraisal process recorded the presence of a Marsh Fritillary (*Euphydryas aurinia*) colony within marshy grassland north of Pound’s Conche. In addition, the presence of potentially suitable habitat south of Pound’s Conche and at Cardinham Moor was established.

6.1.27 No specific surveys for invertebrates have been undertaken within the survey area to date.

**Flora**

6.1.28 There are historical records of Cornish moneywort (*Sibthorpiopsis europaea*) within 1 km of the scheme. This species can be associated with marshy grassland, such as that present in the vicinity of Pounds Conche. Cornish moneywort is listed as a priority species on the UK BAP.

**Figure 7.9:** Gorse and Moorland

**Invasive Species**

6.1.29 Japanese knotweed (*Fallopia japonica*) has been recorded in the study area (notably near Pound’s Conche; west of Penland Garage; and on the road to Trethorne House). This species readily occurs within the soft estate and is well monitored by the HA.

6.1.30 Under the WCA it is an offence to plant or otherwise cause the spread into the wild of Japanese knotweed.
6.2 Potential Effects

6.2.1 The proposed scheme will potentially result in land take, land severance and fragmentation of habitats and designated sites and potentially exacerbate fragmentation effects (barrier effects) through loss of habitat. Land take is required from the Bodmin Moor AGLV, the Bodmin Moor (North) SSSI and the South West Moor CWS.

6.2.2 The scheme is likely to impact upon a number of protected species and mitigation measures are likely to be required for both the construction and operational phases.

6.2.3 The scheme is likely to directly and/or indirectly impact upon a number of notable habitats within the scheme footprint and surrounding area.

6.2.4 Noise and vibration during the construction period has the potential to disturb species within adjacent habitats. Levels of disturbance may be particularly significant when works are taking place adjacent to designated sites. Mitigation measures are likely to be required in relation to disturbance during construction works.

6.2.5 Dust generated during construction may be deposited upon adjacent habitats potentially leading to habitat degradation. Dust deposition can smother ground flora and in the worst cases can lead to a decrease in biodiversity value.

6.2.6 During operation, the scheme may lead to changes in nutrient loading of the roadside verges and surrounding land, run off and noise disturbances. Incidents of road traffic related mortality is also likely to increase. This may be particularly significant for species such as badgers, bats and otters.

6.2.7 There are potential opportunities for positive impacts to occur through ecological enhancement and increased connectivity. A number of notable species are potentially present on site and any enhancement measures implemented should recognise their presence.

6.2.8 In addition to the potential impacts envisaged as described above, the construction and operation of the other development in the local and wider area may result in cumulative impacts which will require consideration in the assessment once further details are available.

6.3 Further Work for the EIA

Surveys

6.3.1 An Extended Phase One Habitat Survey was undertaken in May and June 2012. Further protected species surveys have been carried out in 2012 and will continue into 2013 as identified below.

6.3.2 The ecological information obtained for the option appraisal process (with reference to the Cornwall Biodiversity Action Plan 2010-2015) highlights the potential presence of several protected species where further surveys are required as follows.

**Badgers**

6.3.1 Sett building and foraging activity should be considered as likely within suitable habitat throughout the scheme's footprint and its surrounding area and as such,
A30 Temple to Higher Carblake Improvement

A30 Dualling Temple to Higher Carblake:
Preliminary Environmental Information

December 2012 Prepared by Parsons Brinckerhoff
for Cornwall Council

Further investigation was deemed necessary. Badger surveys will be undertaken in November and December 2012.

**Dormice**

Woodland and scrub habitat throughout the scheme corridor should be considered for its potential to support dormice and further investigation was therefore deemed necessary. Dormouse tubes were deployed in June 2012 and were checked in July, August, September and October/November 2012.

**Otters**

Further investigation was deemed necessary in order to update the current baseline. Otter surveys will be undertaken in November and December 2012.

**Bats**

Bat commuting route surveys and bat activity surveys have been carried out throughout summer 2012. A Pipistrelle (Pipistrellus pipistrellus) maternity roost was discovered in one of the farm buildings 250m from the proposed route. This was subject to a dusk and dawn survey in August and September 2012.

**Birds**

The presence of breeding and overwintering bird species has required further investigation in order to update the existing baseline. A breeding bird survey will be undertaken in spring and summer 2013. Overwintering bird surveys were not deemed necessary as the records were distant from the zone of influence of the road.

**Reptiles**

A variety of habitat types associated with the scheme are considered likely to support the common reptile species. Further investigation through habitat suitability assessments and detailed surveys has been deemed necessary. Reptile tins were deployed in September 2012 and will be checked periodically during the optimal reptile survey seasons, the September 2012, and March to June 2013.

No specific surveys were undertaken for amphibians as there are not likely to be protected species in the area (e.g. great crested newts).

**Invertebrates (terrestrial and aquatic)**

No specific surveys for invertebrates have been undertaken within the survey area to date and as such, further investigation was deemed to be required in order to update the existing baseline for both aquatic invertebrates in adjacent water courses and of Marsh Fritillary, for which surveys were completed in August and September 2012.

**Flora**

A National Vegetation Classification (NVC) survey was carried out in July 2012 during the optimal period for recording of flora.

**Invasive Species**

Japanese knotweed (Fallopia japonica) has been recorded in the study area (notably near Pound’s Connce and west of Penland Garage). This species readily occurs within
the soft estate and is well monitored by the HA. As such, further investigations, including consultation will be necessary.

6.4 Possible Mitigation

6.4.1 A hierarchy of mitigation measures (avoid, minimise and where this is not possible compensate) will be applied to Valued Ecological Receptors where significant impacts have been identified through the EIA process. This will minimise adverse effects and ensure compliance with legislation both UK and European legislation, as well as identify opportunities to bring about a net benefit for biodiversity.

6.4.2 Early involvement of Ecologists in the design process, by working with engineers and other environmental disciplines, and consulting statutory bodies where appropriate will ensure that the detailed design incorporates mitigation measures as necessary. The Design Manual for Roads and Bridges will be considered, such that the broad principles and standards to the design of the road are applied as necessary. Where appropriate, species specific mitigation to mitigate the effects of the road for example minimising severance and maintaining landscape permeability will be implemented using the standards set out within the DMRB where necessary relevant research on the impacts of roads on species will be referred to.

6.4.3 The EIA will document the generic and specific mitigation measures in the Environmental Statement, this will include some generic mitigation measures to be included in The Construction Environmental Management Plan (CEMP). The CEMP will be implemented by the appointed Contractor by incorporation into Works Method Statements to illustrate how impacts on ecology would be managed throughout the construction process.

6.4.4 Where impacts and mitigation measures have been implemented monitoring should be completed post development to ensure effectiveness of measures and implement improvements as necessary.

7 LANDSCAPE

7.1 Existing Baseline Knowledge

7.1.1 A desk-based study has been undertaken in June 2011 which has drawn on the findings from a combination of desk study, consultation and field survey undertaken by Hyder Consulting Ltd for the design option appraisal process. These were reported in the ‘A30 Temple to Higher Carblake Stage 2 Environmental Scoping Report’. Supplementary landscape baseline knowledge has been gained through involvement in the landscape management of the A30 in this area during PB’s appointment as managing agents for the HA Area 1, 2002-2006.

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8 A30 Temple to Higher Carblake Stage 2 Environmental Scoping Report, April 2003, Hyder Consulting for the HA
Figure 8.1: Landscape Designations
Landscape

Cornwall Area of Outstanding Natural Beauty (AONB) Bodmin Moor

7.1.2 At Preeze Cross the scheme enters the Bodmin Moor section of the Cornwall AONB which is a landscape of national importance for its landscape quality. The sweeping landforms of the granite moorland plateau give an impression of bleak, endless vastness and huge scale compared with the more intimate surrounding lower valleys. Cattle, sheep and ponies grazing the moorland control scrub and thus maintain the openness of the landscape.

7.1.3 This is a somewhat remote and hostile landscape that is generally open moorland with scattered settlements. It has considerable scenic quality. The AONB also includes enclosed farmland containing improved pasture that is characteristic of the landscape to the west of Colvannick Tor.

7.1.4 The Cornwall AONB Management Plan 2011-2016, Cornwall AONB Partnership, notes;

‘Some aspects of the A30 are visually intrusive on their moorland setting, for example in the use of coloured road marking, signage and detailing’.

7.1.5 Guiding principle GP12.7 states:

‘Support measures to better integrate the A30 with its wider moorland setting for example, vegetation consistent with moorland habitats…..and the reduction to the minimum necessary of highway signage, lighting and markings’.

Area of Great Landscape Value (AGLV)

7.1.6 Between the Bodmin Airfield junction and Preeze Cross the scheme is within an area designated as an AGLV by CC (North Cornwall Local Plan April 1999 and Caradon Local Plan August 2007 Proposals Maps). The Camel and Allen valleys to the north west of Bodmin, between the coastal section of the AONB and the Bodmin Moor section of the AONB, have AGLV status. It is an attractive rolling pastoral landscape enclosed by traditional Cornish hedgebanks, which is drained by streams within a number of steeply incised valleys.

7.1.7 There are no Tree Preservation Orders (TPOs) in the vicinity of the site.

Landscape character

7.1.8 At the national/regional level the landscape character of the study area is described in Natural England’s Countryside Character Volume 8: South West as the Bodmin Moor character area (Area No. 153). Its key characteristics are described as follows:

- Exposed, windswept, granite uplands rising to tors and clitter slopes (slopes with exposed rocks).
- Extensive treeless heathland and wet moorland.
- Sheltered wooded valleys with fast-flowing streams.
- A high concentration of prehistoric monuments of international interest.
- Dispersed settlement pattern of hamlets and farmsteads with villages mainly of recent, industrial origin on moorland fringes and valleys.
7.1.9 At the local level the landscape character is described in the Cornwall and Isles of Scilly Character Study. From the western end of the study area to Pounds Conce the study area falls within Local Character Area (LCA) Camel and Allen Valleys. Key relevant characteristics are:

- Undulating plateau with valleys.
- On the plateau, exposed higher land with medium scale fields and straight Cornish hedge boundaries with few trees.

7.1.10 Key relevant Planning and Land Management Guidelines for this LCA listed in the study are;

- Manage the broadleaved woodland to maintain landscape character.
- Conserve and enhance the Cornish hedges and hedgerows encouraging trees.

7.1.11 From Pounds Conce eastwards the study area falls within LCA Bodmin Moor. Key characteristics are:

- Exposed large scale unenclosed moorland with gorse, bracken and heather.
- Several dominant tors and cairns visible over large areas.
- Areas of recently enclosed moorland intake on moorland edge enclosed and subdivided, mainly with wire fencing and some drystone walls.

7.1.12 The LCA description states that the moorland landscape character is reduced by impacts from the A30.

7.1.13 One of the Planning and Land Management Guidelines for this LCA listed in the study is;

Conserve local landscape character by ensuring that infrastructure projects such as......transport corridors, are assessed for their potential impact on landscape character and, where approved, designed to be in scale with local landscape pattern and scale’.

7.1.14 The HA ‘A30 Penzance to Exeter Landscape Route Strategy’ is a regional framework to guide the development of the more detailed and local Landscape Management Plans. This section of the trunk road falls within the Bodmin Moor character zone. The strategy states;

‘The soft estate should be managed to maintain the open character and conserve its habitat, particularly the mixed heathland and unimproved grassland…’

Historic Landscape Character

7.1.15 A historic landscape character assessment will be undertaken, in accordance with ‘Assessing the Effect of Road Schemes on Historic Landscape Character’ (HA, March 2007) as part of the assessment of impact to the cultural heritage resource.

Landcover

7.1.16 In the western part of the study area the pasture and arable landscape is enclosed by traditional Cornish hedgebanks. The trunk road itself is bounded by Cornish
hedgebanks, improved grassland verges and scrub, mainly gorse, covered cuttings. A number of mature sycamore trees occur at the junction with the lane to Trethorne Farm.

7.1.17 From Pounds Conce to the eastern extremity of the study area the landscape comprises the open acid grassland of Cardinham Moor, to the south of the road, and Trehudreth Downs, to the north. These are grazed moorlands with occasional gorse (Ulex europaeus) and wetlands such as those at Temple Pools. Rock outcrops, such as those on Colvannick Tor, are characteristic of the moorland landscape.

7.1.18 The HA ‘A30 Landscape and Biodiversity Management Plan, Higher Carblake to Launceston’ contains information ranging from the detail of describing existing habitats within the road corridor to general landscape designations that extend beyond the boundaries of the strategy into the immediate surrounding area. The strategy provides guidance to managers on the rationale and objectives for future management.

7.1.19 One of the aims of the Management Plan for this section of the route is the encouragement of heather colonisation within the verges to help integrate the road and verges into the moorland landscape. Heather colonisation in the Temple area includes ling and bell heather and cross-leaved heath. Recent enhancement and enrichment planting in the soft estate of the A30 within the study area has included heather translocation and planting, for example around the Menacrin Downs layby and picnic area. Along some sections gorse, rushes, grasses and associated scrub species form a marked contrast to the heavily grazed pasture of the adjoining moorland.

Visual

7.1.20 Visual receptors, and their sensitivity to change, will be identified through definition of the ZVI within which views of the proposed scheme are likely. The principal potential visual receptors to consider will be: local residents, users of Public Rights of Way, walkers in areas of Open Access Land and users of the trunk road and local roads.

7.1.21 The existing A30 is visible from a number of residential properties at varying distances from, and orientations to, the road. Whilst the widening of the road to create a dual carriageway is achieved mostly within the existing road corridor boundaries, visual impacts of the proposed grade separated junctions at Cardinham Downs, Preeze Cross and Temple Tor are likely to have impacts beyond the ZVI of the existing road. Impacts on visual amenity are most likely to be on properties at Higher Carblake, Preeze Cross, and those near the minor road to the north west of Preeze Cross including Pennant, Pennant Farm, Pengelly Farm and Barlendew, Pounds Conce and Greenbarrow. Other properties including Higher Colvannick, and Trethorne could also be potentially affected.

Views from open moorland with unrestricted access are likely to be affected, particularly from Colvannick Tor. Views from Grebarrow Downs and Cardinham Moor (part military training ground) are also likely to be affected, as will views from a number of local public footpaths and bridleways. Views from a number of minor roads are likely to be affected also.
The degree of landscape and visual effects will be influenced by the following:

- The sensitivity of the receptor (the landscape or person experiencing the change). The sensitivity of a landscape to change depends on its quality (or value) and capacity.
- The magnitude of change that will occur or be experienced (such as loss/damage to character/features/elements and/or introduction of uncharacteristic features/elements).

### 7.2 Potential Effects

#### 7.2.1

There could be potential adverse effects on landscape character and elements. The Cardinham Downs grade separated junction could have adverse effects on the local character of the Camel and Allen Valleys landscape, within the AGLV, and the setting of the Bodmin Moor AONB. The Preeze Cross elevated junction could have local adverse effects on the character of the farmland where there are few trees. The Temple Tor elevated junction could have adverse effects on the open character of the moor, where mitigation through planting would not be easily integrated into the surrounding moorland landscape and would therefore result in a potential impact itself.

#### 7.2.2

The proposed road widening and new cutting slopes could have adverse effects on the heather communities that have successfully colonised areas of the verges. Other landscape features that could be adversely affected are roadside and field boundary Cornish hedges and mature trees near the junction with the lane to Trethorne Farm lane.

#### 7.2.3

The elevated junctions could have potential adverse visual effects on some local residents, walkers on the moor and public rights of way and on users of the trunk and local roads.

#### 7.2.4

A detailed assessment is therefore required and this has been agreed with the AONB Officer.

### 7.3 Further Work for the EIA

#### 7.3.1

CC’s Landscape Officers will be consulted to identify any new designations relating to landscape, views or prospects pertaining at the time of the assessment.
7.3.2 The Cornwall AONB officer has been consulted on the iterative process of assessment and mitigation particularly with regard to the aims of the Cornwall AONB Management Plan 2011-2016 and on potential impact on the setting of the AONB as well as the AONB itself. Close liaison continues throughout the design and assessment process to ensure that mitigation is inherent in the overall scheme design.

7.3.3 An Arboricultural (tree) Survey of the route has been completed. A winter landscape assessment survey will be completed in January 2013.

7.3.4 In summary the assessment will follow the following process;

Landscape

- Baseline; including an assessment of the value of the landscape, both of character areas and features and elements.
- Assess sensitivity of landscape with reference to its capacity to accommodate change arising from the project.
- Assess magnitude of impacts on landscape; features, elements and character, with reference to scheme design, including bridges, approach roads, cuttings and embankments, scale of change, nature of change.
- Develop mitigation to reduce potential adverse effects.
- Evaluate significance of landscape effects.
- Report residual landscape effects.

Visual

- Baseline; identification of visual receptors and their sensitivity to change.
- Assess magnitude of visual impacts with reference to scheme design, including bridges, approach roads, cuttings and embankments, scale of change, nature of change.
- Develop mitigation to reduce potential adverse effects.
- Evaluate significance of visual effects.
- Report residual visual effects for each receptor.

7.3.5 Landscape and visual impacts will be considered both in terms of day-time and night-time effects; in addition to both summertime and wintertime effects.

7.4 Possible Mitigation

7.4.1 Mitigation required as an outcome of the iterative assessment and design process could include planting for visual screening. Any planting would utilise native plant species and seek to bring biodiversity benefits. Cornish hedgebanks could be used as a boundary treatment for integration with the surrounding landscape. Stone of an appropriate size and finish to match local character would be selected for structures and associated abutments.

7.4.2 Soils containing local seed bank will be retained on site for re-use locally to enable re-establishment of local vegetation, including heath species.
8 COMMUNITY AND PRIVATE ASSETS

8.1 Existing Baseline Knowledge

8.1.1 This section will cover the following:

- Private property
- Assets used by the community
- Development land
- Agricultural land

8.1.2 Private Property is considered to be that land outside of the existing highways boundary that does not accommodate public open space or any other community facility or asset. For the purpose of the assessment, the category of private property will be split into residential and commercial/industrial land.

8.1.3 The 2003 Scoping and 2004 Environmental Assessment Report baseline information identified that the route is bordered on either side by a limited number of residential dwellings and two fuel stations. Some of these properties lie in very close proximity to the existing A30 and thus to the proposed route.

Land Used by the Community

8.1.4 Community Land is assessed as any area of public open space and other facilities such as schools, hospitals, libraries and recreation facilities relied upon for the health and well being of the community.

8.1.5 There are no allotments or areas of public space within the study area.

8.1.6 Approximately 50% of the land within the boundaries of the study area is Common Land. Common Land is usually in private ownership, with rights of common over it, which may include grazing animals, taking of wood/peat/turf or minerals. Within the study area the common land is split into 3 distinct areas.

- To the north of the A30 centred around Greenbarrow Downs and Trehudreth Downs.
- To the south of the A30 centred around Cardinham Moor.
- West of the study area centred around Cardinham Downs.

8.1.7 As part of the A30 Temple to Higher Carblake Stage 2 Environmental Scoping Report, (2004) assessment; the names size and number of people with rights of common for each of the common land parcels that occur within the study area and which will be affected by the proposal were identified as set out in Table 8.1 below;
Table 8.1 Common Land Parcels that will be affected within the study area

<table>
<thead>
<tr>
<th>Common Land Parcel</th>
<th>Total Size (acres)</th>
<th>Number of Commoners</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL 137 Cardinham Moor</td>
<td>1235</td>
<td>20</td>
</tr>
<tr>
<td>CL 138 Cardinham Downs</td>
<td>425</td>
<td>18</td>
</tr>
<tr>
<td>CL 140 Racecourse Downs</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>CL 144 Greenbarrow Downs</td>
<td>110</td>
<td>12</td>
</tr>
<tr>
<td>CL 145 Mencacrin Down</td>
<td>180</td>
<td>21</td>
</tr>
<tr>
<td>CL 183 Manor Common</td>
<td>360</td>
<td>36</td>
</tr>
</tbody>
</table>

Note: 1 Total size of Common Land Parcels includes land outside the study area.

8.1.8 Some of the Common Land will be required during construction and to implement the proposed scheme. Land at Greenbarrow Downs is only required during construction. No more than 5,225 m² is likely to be taken from any one Common and in most cases will be much less.

8.1.9 Within the study area there is an area of open country south of the A30, between the village of Temple and the A30. There is also another area of open country to the north west of Cardinham Moor, of which part is located within the study area.

8.1.10 A short description of existing conditions for community facilities is given below. The features described are all potential receptors that could be impacted by the scheme.

8.1.11 Various community groups may be affected by the route set out in the proposed scheme. These are likely to include:

- Cyclists;
- Pedestrians and Ramblers;
- Equestrians;
- Horse and Trap users;
- Disabled Persons;
- Elderly people;
- Children;
- Local Vehicle Traffic;
- Persons with ‘Rights of Common’ on Common Land; and
- Local residents.

8.1.12 Within the study area there are a number of facilities used by the community that are potentially accessed by non-motorised road-users, listed in Table 8.2 below. The effects on such users will be considered in the assessment of effects on all travellers.
### Table 8.2 Community Facilities within 100m of the Proposed Route (at 2004)

<table>
<thead>
<tr>
<th>Facility</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millpool Methodist Church</td>
<td>Millpool</td>
</tr>
<tr>
<td>St Catherine’s Church</td>
<td>Temple</td>
</tr>
<tr>
<td>Temple Angling Ponds</td>
<td>Temple</td>
</tr>
<tr>
<td>Bodmin Airfield</td>
<td>Treswithick</td>
</tr>
<tr>
<td>Darcroft Garage</td>
<td>Blisland</td>
</tr>
<tr>
<td>Penlan Eating House and Garage</td>
<td>Blisland</td>
</tr>
</tbody>
</table>

8.1.13 There are no schools located within the study area. Table 8.3 below shows the primary schools for which catchments extend into the study area. None of these are considered to be located close enough for children living in the study area to walk to school.

### Table 8.3 Junior School Catchments within the Study Area

<table>
<thead>
<tr>
<th>Junior School</th>
<th>Catchment boundaries within Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blisland Junior School</td>
<td>A30 is Southern boundary of catchment</td>
</tr>
<tr>
<td></td>
<td>Eastern boundary of catchment located west of Temple</td>
</tr>
<tr>
<td>Cardinham Junior School</td>
<td>A30 is Northern boundary of catchment</td>
</tr>
<tr>
<td></td>
<td>Eastern boundary of catchment located west of Temple</td>
</tr>
<tr>
<td>Altarnun Junior School</td>
<td>West of Temple to the east of the Study Area</td>
</tr>
</tbody>
</table>

### Development Land

8.1.14 Properties falling into the development land category are those that have been designated for certain development purposes within relevant local planning documents or for which planning permission has been granted or is pending. Planning application registers a will be reviewed and any ‘major’ committed developments identified (although these are not expected at this location). Committed developments will be considered relevant if they have been granted planning permission within the preceding 5 years. Undetermined applications, or pending applications, will also be considered to be committed developments for the purpose of the assessment.

8.1.15 The saved policies of the North Cornwall Local Plan and Cornwall Structure Plan will be consulted to identify areas within the study area that have been identified for, or which might be suitable for, future development. The emerging Cornwall Local Plan will also be reviewed.

### Agricultural Land

8.1.16 Agricultural land has been classified by the Ministry for Agriculture, Fisheries and Food (MAFF, now Defra) by grade according to the extent to which its chemical and physical characteristics impose long term limitations on agricultural use for food production. In accordance with DMRB guidance only land potentially falling within Agricultural Land Classification (ALC) grades 1, 2 and 3a, and therefore considered to
be “best and most versatile”, will be considered by the assessment. It is not expected that any such land will be found at this location.

8.1.17 As part of the Hyder Stage 2 Environmental Appraisal Report, (2004) assessment, the following baseline conditions were identified. These are detailed below and will be subject to review and updating at the time of the revised assessment.

8.1.18 In terms of agricultural utility the scheme crosses three distinct forms of agricultural land. To the west of the scheme, the route passes through two areas of common land (Cardinham Downs to the south, and Racecourse Common to the north) which appear to be of good quality and have historically been farmed in an intensive, commercial manner.

8.1.19 To the east of the proposed scheme, are Cardinham Moor (south of the A30) and to the north various named moors including Tredhudreth, Greenbarrow Newton and Manor Moors. These eastern moors have a more conventional, non-commercial appearance with outbreaks of granite and gorse and other woody perennials. The grass is of relatively poor quality and provides grazing for sheep, cattle and moorland ponies. Between the two areas of moorland lies conventionally owned and managed farmland.

8.1.20 It is noted that the moorlands provide an important agricultural resource for the farms that lie adjacent to them, with the owners of those farms having the grazing rights to the moor.

8.2 Potential Effects

8.2.1 The following potential effects will be examined as part of the assessment of impacts on Land Use:

- Business and community severance effects
- Direct land take effects
- Disturbance effects to existing farms and businesses in construction and operation such as noise and dust pollution.
- Impacts arising to drainage and water supply provision.

8.3 Further Work for the EIA

Land Used by the Community

8.3.2 The assessment will identify the location, status and importance of land used by the public which could be lost as a result of the proposed scheme.

Development Land

8.3.3 The assessment will identify areas of land that fall within LPA designations and that might be affected by the proposed scheme.

Agricultural Land

8.3.4 The assessment will identify the agricultural holdings affected by the proposed works and determine the potential effects of the proposed scheme on those holdings.
8.4 **Possible Mitigation**

8.4.1 Businesses and the local community will hopefully benefit from the scheme through the alleviation of congestion and better access on to the A30. Therefore, mitigation will not be required.

8.4.2 A significant amount of the land required for the proposed scheme falls within the existing road corridor; however, land take outside this is also needed. Any additional land required will be acquired through either negotiation or compulsorily acquired. Common land will be replaced with an equal amount of land elsewhere in the vicinity.

8.4.3 The effects of noise and dust pollution, and drainage and water supply will be addressed through measures outlined in the relevant Chapters of this report.

9 **NOISE**

9.1 **Existing Baseline Knowledge**

9.1.1 A review and data search for existing baseline information has been completed. Studies undertaken in 2002 and 2004 as part of the earlier stages of project confirmed that ‘As the study area is rural and sparsely populated, the ambient noise climate is dominated by the existing A30’.

9.1.2 Roadside noise levels were measured during these assessments and were found to be in the range of 74, 67 and 72 dB $L_{A10.18\text{ h}}$ at/adjacent to the properties known as Greenbarrow, Higher Carblake and Pounds Conce respectively. These locations will be subject to noise monitoring in 2013 (see Figure 10.1).
Figure 10.1: Noise Monitoring Locations
9.2 Potential Effects

9.2.1 The main issues arising from the dualling of a 4.5km section of the A30 between Temple and Higher Carblake are noise and vibration from the proposed route during its construction and road traffic noise from the proposed route. It is anticipated that road traffic volumes will not increase significantly, rather that road traffic speeds will increase and congestion will reduce.

9.2.2 Construction work involves various activities undertaken by different types of plant at different locations and at different times. Therefore construction noise and vibration levels at different properties vary with time as construction noise sources move progressively closer or further away from a given property, and also as the activities on site change. The main activity is likely to be ground or ‘civils’ works. There will also be a degree of haul movements to, from and within the construction site.

9.2.3 During construction, there is the potential for short term elevated noise and vibration levels for those properties closest to the proposed route.

9.3 Further Work for the EIA

9.3.1 A noise and vibration assessment would be undertaken to estimate the effects of the operation of the route on the local noise environment. The assessment would also consider the impact of potentially noisy construction works on noise receptors, as well as appropriate mitigation measures.

9.3.2 The quantification and assessment of the potential noise and vibration impacts of the proposed scheme would be assessed by a combination of site surveys, desktop studies, consultations and predictions.

9.3.3 The noise modelling package would be used to evaluate noise levels arising from the dualling of the A30. Results from the impact assessment will be reported and if required, suitable mitigation measures for the scheme’s operational impacts would be provided.

9.3.4 Noise and vibration from construction activities at nearby sensitive receptors would be calculated using the procedures contained within British Standard BS5228, Code of Practice for the Assessment of Noise and Vibration from Construction and Open Sites, and where necessary, suitable construction noise mitigation measures recommended.

9.4 Possible Mitigation

9.4.1 In the event that road traffic noise levels require mitigation, a number of potential options could be considered. The following techniques will help to mitigate any noise and vibration impacts:

- keeping the route low within the natural topography to exploit the natural screening provided; or in exceptional circumstances, the use of surface and sub-surface tunnels;

- environmental barriers in the form of earth mounds or acoustic screening can be used to effectively reduce noise levels, but conventional acoustic screens are not effective at reducing levels of vibration;

- low noise road surfaces are effective at reducing the mid to higher noise
frequencies generated by tyres at speeds in excess of 75km/h by creating a relatively smooth road surface; and

- controlling the speed of road traffic on the route. The speed of road traffic has a direct influence on noise levels. By reducing the speed of road traffic, noise levels can be reduced.

10 EFFECTS ON ALL TRAVELLERS

10.1 Existing Baseline Knowledge

10.1.1 Travellers include pedestrians, equestrians and cyclists (referred to as Non Motorised Users (NMUs)) and people using motor vehicles to travel on the A30 and surrounding roads. The assessment of NMUs will consider the impact of the scheme on local journeys made by people on the local public rights of way network.

10.1.2 There are two elements to the assessment of vehicle travellers; view from the road and driver stress.

Non Motorised Users

10.1.3 Within the study area there are a number of Public Rights of Way (PRoW) and byways that include footpaths and bridleways. A number of footpaths and bridleways converge on the village of Millpool, with one footpath running adjacent to the Methodist Chapel. Another footpath runs alongside part of the Bodmin airfield at Treswithick. The angling ponds at Temple Tor are not directly adjacent to any PRoW, although one footpath begins a short distance south of this site.

10.1.4 There are a number of PRoWs that directly adjoin the A30. Some of these are directly connected to existing settlements e.g. one PRoW connects the A30 with the villages of Waterloo and Blisland, and a number of PRoWs connect the A30 to the villages of Millpool and Cardinham and the parish of St Allen. The remaining PRoWs appear to serve principally as ‘short-cuts’ reducing the need for pedestrians to travel along the trunk road system. Since there are no facilities for pedestrians along the existing trunk roads, the PRoWs may contribute to pedestrian safety. However, it should be noted that some of the PRoWs connect directly to the existing A30. In order for a pedestrian or equestrian to access another PRoW, they would have to travel along the grass verge and/or cross the road. The lack of pedestrian facilities and the speed of traffic along this road potentially make this a dangerous exercise, which might discourage the use of PRoWs by pedestrians and equestrians. This might explain the absence of signposts and overgrown nature of some the PRoW accesses onto the A30.

Motorised Transport

10.1.5 The potential receptors that could be impacted by the scheme would be all motorised vehicle travellers using the scheme, whether local or visitor.

View from the Road

10.1.6 The baseline conditions relating to the vehicle travellers environment will be those described in the Landscape Chapter (based on the visual envelope surrounding the route options).
10.1.7 In the landscape surrounding the A30 there are a number of interest features such as lakes, distant tors and historical features. These create a strong visual identity for Bodmin Moor, and present a visually appealing landscape that maintains interest for vehicle travellers.

10.1.8 Views from the A30, to the south, between Temple Tor towards Trehudreth Downs are open with isolated visual obstructions along the road, and strong views of the open moorland and surrounding tors. This area of road lies on high ground and overlooks vast areas of landscape, Cairns lakes, and the general attractive character of this location add to the view. Views become reduced further west towards Trehudreth Downs, as the landform undulates with the road, creating and blocking views.

10.1.9 Views from the A30 to the south between Colvannick Tor to Pounds Conce are enclosed by Colvannick Tor and enclosed field patterns and mature vegetation towards Higher Penstroda and are hence intermittent. The barren appearance and landform of Colvannick Tor provides an attractive contrast to the green hedgerows and mature vegetation, enhancing the overall scenic enjoyment of the landscape. The mature vegetation within Character Area 5 can be partially seen around this area. The properties of the landscape focus attention ahead towards the undulating slope at Pounds Conce.

10.1.10 Between Pounds Conce and Cardinham Downs the A30 passes through an area of agricultural land that is mainly enclosed by tall Cornish hedging. The land is undulating in some areas. Most views from the road are restricted and only a few building and hedges along the road are evident. Where the land undulates views become less restricted and sections of the surrounding field patterns and distant tors are visible. The road passes through cutting between Pounds Conce and Freeze Cross in which the view of the landscape is completely restricted. Further towards Cardinham Downs the field pattern becomes less tightly enclosed allowing vehicle travellers views of the surrounding agricultural landscape, some local buildings and also distant tors.

Driver Stress

10.1.11 Junction frequency: At the time of the 2004 Stage 2 reporting there were 24 accesses onto the existing A30. These include minor roads, tracks, and residential and field access. There is at present no restriction on the direction or turning that can be made either from or onto the existing A30 from these existing access points. Junction frequency will be reviewed and updated as part of the next stage of assessment.

10.1.12 Traffic flows: Two-way average daily traffic flows on this section of the A30, measured in 2011, (during a neutral month) were 19,673. Under the do-minimum scenario, traffic flow will be reviewed and updated as part of the next stage of assessment.

10.1.13 It should be noted however, that traffic flows on this section of the A30 significantly increase during the summer months as this road is a major route to holiday destinations in west Cornwall.
10.2 Potential Effects

10.2.1 Potential effects, whilst likely to be most significant for receptors within the local community, would also affect tourists, visiting the area, and also passing through the area to holiday resorts located in West Cornwall.

10.2.2 Consultation undertaken as part of the previous (2003) scoping with North Cornwall District Council indicated that the A30 has already imposed a degree of severance on communities and impacted upon historical rights of access, and that any proposed route options should seek to resolve some of these issues by providing safe thoroughfares to the north and south of the road.

10.2.3 The proposed scheme may cause potential effects to non-motorised users in terms of increased or reduced journey times, increased or alleviated severance effect as a result of the scheme or an improvement or deterioration in access to community facilities.

10.2.4 The purpose of the scheme is to reduce both accidents and congestion. It is therefore likely that the scheme will be beneficial overall in its effects on vehicle travellers. However, potential impacts identified can be summarised as follows:

- The change in the proportion of private vehicle users, public transport users and heavy goods vehicles, using the new road and existing road, local roads. There may be beneficial effects to private vehicle users and heavy good vehicle due to shorter journey time, faster journey speed, but this may have an adverse effect in terms of use of fuel.

- There may also be beneficial effects to public transport users, such as buses using the existing road and local roads, who would benefit due to shorter and more reliable journey times.

- The potential for views on the A30 to change due to differences in the alignment, planting and grading between the existing and proposed schemes exists.

- Reductions in Drivers’ stress levels resulting from reduced congestion, improved connectivity provided by the new junctions and removal of potentially dangerous junction at Cardinham.

10.2.5 The existing single carriageway capacity constraint arising on the A30 between Temple and Higher Carblake has a detrimental effect on the Cornish economy and the often severe congestion (queues of over 10 miles (17km) and delays of up to an hour) leads to poor journey time reliability, driver frustration, stress, conflict and collisions. The poor network resilience also leads to inappropriate levels of traffic diverting off the A30 onto unsuitable minor roads, bringing intrusion to small settlements and villages along the route.

10.2.6 The proposed improvements to this stretch of the A30 will involve the construction of a dual carriageway to replace the single carriageway currently present. The number of junctions will decrease with three grade separated junction, and a limited number of ‘left-on’ ‘left-off’ accesses with traffic, prevented from turning right by the presence of a barrier between the carriageways. This is anticipated to reduce the effects on average journey speed resulting from traffic joining and exiting the road (compared to the existing situation). In addition this measure is anticipated to improve road safety and contribute to a reduction in driver stress. The effects on users of side roads will also be considered.
10.3 Further Work for the EIA

10.3.1 The objective of the assessment of impacts to pedestrians, cyclists and equestrians is to undertake sufficient assessment to identify the routes used by non-motorised users. This will ensure that the effects on these road users and the community can be taken into account when designing the route and any mitigation requirements.

10.3.2 The following assessments will be undertaken as part of the next stage of assessment:

- An assessment of existing use of community facilities that might be affected by the proposed route options. An assessment of changes to the amenity and safety of routes typically used by pedestrians and others (with particular regard to vulnerable groups), that would be potentially affected by proposed route options;
- An assessment of changes to community severance;
- Ongoing consultation with stakeholder groups such as the CC social services departments, CC cycling provision officer and equestrian groups as well as CC’s PROW officer. Care will be taken to ensure that consultation will not result in unnecessary anxiety amongst local people.

10.3.3 The assessment of the view from the road for all users will draw on the scheme landscape assessment. View from the road will be assessed taking into consideration the landscape character and quality and any especially good or bad potential views along the route.

10.3.4 An assessment of driver stress will be carried out for the route, taking into consideration any differences in route design characteristics (for example junction layouts), traffic forecast and any other significant differences.

10.4 Possible Mitigation

10.4.1 The proposed scheme is likely to have an overall beneficial effect on all users and therefore mitigation will not be required. Non-motorised users will be considered, where appropriate, within the scheme design.

11 ROAD DRAINAGE AND THE WATER ENVIRONMENT

11.1 Existing Baseline Knowledge

11.1.1 There are a number of water bodies located within the study area, including ponds, named water courses, and streams, known as tributaries, of named watercourses. These water bodies are described below in relation to chemical and biological water quality, fisheries and fishing, and flood plains. The major rivers in the vicinity of the scheme are the River Camel, situated 3km to the west, and the River Fowey, situated 6km to the south. Tributaries of these rivers rise in proximity to the existing A30, including:

- Cardinham Water – this tributary of the River Fowey rises at Pounds Cone and drains to the south.
- Tributary of Warleggan River - An unnamed tributary of the Warleggan River also lies in the study area, merging with this river, south of Merrifield.
11.1.2 Floodplains are areas that would naturally be affected by flooding if a river rises above its banks, from high tides or stormy seas causing flooding in coastal areas (Environment Agency (EA) website). There are no known floodplains (Flood Zones) within 500 metres of the road. Floodplains were derived from the EA website and GroundSure EnviroInsight by Centremaps (November, 2011) which show areas that could be affected by flood events. These areas are associated with the Warleggan River and Cardinham Waters and are based on the approximate extent of floods with a 1% (1 in 100 or greater) probability of occurrence from rivers under present expectations, or the extent of the highest flood (where this is greater). The study area is also susceptible to groundwater flooding, defined as the likelihood of occurrence as ‘Very High’ based on the underlying geological conditions, where this is likely to be caused from groundwater saturation.

11.1.3 There are no groundwater source protection zones, protected for drinking water, in the study area or surrounding region. The entire route of the carriageway within the is classed as ‘Minor Aquifer’ with variable permeability (EA Groundwater Vulnerability Maps). Between Temple and Higher Colvannick the soil classification is of low leaching potential. Along the remainder of the route the soils have intermediate leaching potential and can possibly transmit a wide range of pollutants (EA Groundwater Vulnerability Maps).

11.1.4 There are no licensed Surface Water abstractions within the study area. There are three licensed Groundwater abstractions within the study area, a borehole located at Outer Colvannick, a Spring at Pennant Farm, Blisland and a Well at Treswithick Deer Farm which serves general farming and domestic supply. In addition, there are three private water supplies within the vicinity of the study area. There is a covered reservoir within the study area.

**Drainage**

11.1.5 The existing highway has three catchments based on site topography and current drainage systems where these exist; these are defined as west, mid and east catchments for the purpose of this report. There is no active drainage system for the collection of highway runoff for the east catchment of the A30. Highway run-off may pass over the soft verge of the road. This drains into a surface watercourse and is collected by a traditional drainage system discharging to Temple Fisheries. Temple Fisheries drains to a tributary of the Warleggan River. Referring to highway drainage records, conventional road gullies collect A30 highway runoff for the mid catchment. The east catchment has no active drainage system for collection and discharge of highway runoff on this section of the A30. Highway runoff passes over the verge of the road, and may drain into surface watercourses or may pass to groundwater depending on ground conditions. It is likely that this process would remove a proportion of particulate pollutants, but may leave groundwater and private water supplies vulnerable to contamination by dissolved pollutants.

**Potential Effects**

11.2.1 The proposed scheme will have the potential to affect the existing surface and ground water environment. The proposed works may result in impacts on water quality, flooding, drainage and the hydrogeology of the site and the wider catchment. Each of these aspects requires review of the existing reporting, updating and further assessment. Specific effects include:

- Increase in paved area leading to increased run-off and risk of surface water flooding;
Disrupt to existing drainage patterns, affecting surface and groundwater;

Potential to improve the quality of water draining from the A30, through introducing ‘Sustainable Drainage Systems’;

11.3 Further Work for the EIA

11.3.1 Review of existing baseline conditions indicates that a number of the scenarios stated above could arise during the construction and operation of the scheme, in particular those associated with affecting floodplains, changing natural land drainage catchments and earthworks in close proximity to watercourses. To this end the following assessments will be undertaken:

- Identification of areas considered to be most sensitive to the changes in water quality arising from accidental spillage and operational pollution;
- Identification of areas considered to be most sensitive to hydrological change, and assessment of potential impacts of route options;
- Identification of waterbodies considered to be most sensitive to physical change, and assessment of potential impacts of route options;
- An assessment to predict downstream operational pollutant build-up, with particular regard to areas sensitive to water quality change;
- An assessment of the potential risk of pollution from accidents occurring on the proposed scheme will be undertaken with particular regard to areas sensitive to water quality change;
- A desk based study including review of the existing data to identify any change to the risk of flooding within any catchments and to undertake a Flood Risk Assessment (FRA) for the scheme as appropriate.

11.3.2 In order to assess the potential impact of the proposed scheme on water quality in existing watercourses it is necessary to establish existing water quality. A water quality sampling programme has been designed in order to ensure that a baseline for measuring future water quality is established. The locations of the sample points are illustrated in Figure 12.1.
Figure 12.1: Water Quality Monitoring – Sampling Points
11.3.3 The samples will be collected between October 2012 and June 2013. These samples will be subject to chemical and biological analysis at a UKAS accredited laboratory.

11.4 Possible Mitigation

11.4.1 The works involved are not considered to cause an increase in flood risk and SuDS drainage will have a positive effect on the scheme.

11.4.2 By utilising SuDS techniques, the proposed route is considered likely to have a beneficial impact on the water environment.

12 GEOLOGY AND SOILS

12.1 Existing Baseline Knowledge

12.1.1 The geology and topography of the area can be divided approximately into two geologically different sections by a line running northwest-southeast through Pounds Conce.

- The south-western section consists primarily of Mid Devonian Slates with intrusions of dykes of quartz-porphyry, known locally as Elvans. Alluvium deposits are also present in the river valley areas. The relief undulates gently, before breaking slope and rising sharply at the slate/granite interface at Pounds Conce.

- The north-eastern section, forming the higher ground on the edge of Bodmin Moor, consists of a coarse grained granite with areas of peat beds formed in the depressions. This area forms the higher moorland region of Bodmin Moor.

12.1.2 The interface between the slate and granite at Pounds Conce has created a spring line, resulting in an area of saturated fields which eventually drain south-east towards Millpool and into the Warleggan River.

12.1.3 There are no Geological SSSIs or Regionally Important Geological Sites (RIGS) within the study area. There are two RIGS (Flat Marsh Cutting and Shallow Water Hill Cutting) located on the A30 to the east of the study area on Brockabarrows Common.

12.1.4 Small abandoned quarries (granite, slate and Elvans) and pits are dotted along the existing A30, though few specific records exist in the literature. A quarry at Temple Tor exposes a 10m wide dyke dipping at 80 degrees to the north.

12.1.5 There is little recorded metalliferous mining activity in the vicinity of the scheme, and a relatively low risk of unrecorded metalliferous mining, as geological sources do not suggest that there are significant mineral resources present. Mining operations and associated spoil tips and backfilled workings could be a potential source of contamination, but the spoil and backfill are anticipated to comprise predominantly excavated natural materials with a low risk of anthropogenic contamination.

12.1.6 EA sources (in 2004) indicated there to be one landfill (non-biodegradable wastes - not construction) site located approximately 1.5 km to the north east of the Temple extent of the road alignment.

12.1.7 There are two sites in the west of the study area at which fuel is/has been stored/sold, Penlan Garage and Darcroft Garage, both located at Higher Carblake. There is the
potential for contaminated runoff from these localities to enter surface watercourses or infiltrate into the ground.

12.1.8 No other specific sources of contamination have been identified in the vicinity of the road alignment.

The soils in the region have been mapped into a number of ‘soil associations’ by the Soil Survey of England and Wales. The distribution of soil types reflects the interplay between the rainfall, bedrock and relief. Heavy rainfall, as is associated with Bodmin Moor, leads to the formation of heavily leached podzolic soils. The lower, slatey country rocks yield better-drained stony granular soils.

12.1.9 The historic ground investigation (GI) reports were obtained from the HA and reviewed as part of the A30 temple to Higher Carblake Design Option Feasibility Study (2011). A GI hazard drawing was compiled from this information and is included below (Figure 13.1). Additional GI has been undertaken recently and this information will also be utilised in the assessment as it becomes available.
Figure 13.1: Ground Investigation Hazards
12.2 Potential Effects

12.2.1 Mining operations and associated spoil tips and backfilled workings could be a potential source of contamination. However, spoil and backfill are anticipated to comprise predominantly excavated natural materials with a low risk of contamination. The use of mining wastes in the construction may be a benefit to the local environment.

12.2.2 The potential impacts on geology and soils which will be considered include: the potential for accelerating the natural rate of collapse of geological strata or the exposure of new geological strata.

12.2.3 In terms of soils, the proposed scheme may result in the loss or destruction of agricultural land and the relocation of soil materials may degrade soil quality, or introduce contaminant pathways. Where land has been previously contaminated by the presence of substances in, on or under the land, it has the potential to pose certain health risks and other effects or constraints.

12.2.4 During the construction of the scheme, various ground engineering works will occur. Such operations have the potential to disturb contaminated ground and / or to create new migratory pathways for contamination. Such disturbance may lead to contaminative effects (e.g. on groundwater and surface waters) outside the main construction area, both during the construction period, and subsequently.

12.2.5 It is possible that arisings from excavations may contain elevated concentrations of contaminants that could require treatment and / or disposal at a suitably licensed facility.

12.2.6 In addition, any post construction impacts due to remobilisation of contamination which may occur within the ground that has been disturbed by the construction process, are most likely to affect surface and groundwater resources. However, they could also affect the integrity of aspects of the built environment (e.g. plastic pipes or concrete structures, which can be damaged by certain contaminating substances).

12.2.7 Treatment, or excavation and removal (where on-site remediation is not possible) of contaminated soils could have a beneficial impact on the local environment in the longer term.

12.3 Further Work for the EIA

12.3.1 The baseline contamination survey methodology will follow a phased approach. The first phase of works will involve a simple desk study including review of the 2003 and 2004 Hyder Stages 1 and 2 assessments and any other subsequent reporting. A preliminary risk assessment (including a desk based Unexploded Ordnance assessment if required following risk assessment, if considered necessary) to determine the potential environmental risks.

12.3.2 The desk based assessment will also address the potential risks associated with potential excavation and disposal of contaminated material and the potential for contaminating water resources.

12.3.3 Information from the desk study will then be used to develop a preliminary conceptual site model (CSM), which will identify any potential contaminants of concern, the potential source – pathway – receptor contaminant linkages, and which contaminant linkages require further assessment.
12.3.4 Based on the recommendations and conclusions of the desk study, further works may be required which will involve a detailed intrusive contaminated land assessment. Following this a generic risk assessment and a detailed risk assessment (if required) will be completed, and the CSM for the site, updated.

12.3.5 The results of the contaminated land assessment will be included in the ES, including the nature of the pollutants, potential contamination pathways and receptors, together with any mitigation required.

12.4 Possible Mitigation

12.4.1 Should the intrusive investigation show the presence of plausible pollutant linkages, it may be necessary for a remediation strategy to be developed. The final stage in the assessment will include the validation of any remedial works and production of a closure report.

12.4.2 The remediation strategy and verification plan will be integrated with the other environmental control documents for the scheme, in particular the CEMP and Site Waste Management Plan (SWMP).

13 MATERIALS

13.1 Existing Baseline Knowledge

13.1.1 The assessment of materials should consider the use of material resources and the generation and management of waste. It does not include the direct energy use associated with operation of the network. Material resources include the materials and construction products required for implementation of the project, both raw materials and manufactured items.

13.1.2 The project will inevitably result in surplus material which will need to be disposed of as waste. This usually arises from two sources as follows:

- Existing site materials e.g. concrete from demolition of an existing structure and excavation of material from earthworks.
- Materials brought on to site but not used for its intended purpose e.g. damaged goods.

13.2 Potential Effects

13.2.1 For projects with an estimated cost greater than £300,000 it is assumed that the potential does exist for impacts and effects to take place. This threshold has been set by the Site Waste Management Plan Regulations 2008, based on a cost benefit analysis undertaken by Defra. The cost of the proposed scheme will be in excess of £300,000.

13.2.2 For material resource use, the potential environmental effects will be mainly associated with the extraction and transport of primary raw materials, such as aggregates and the manufacture and transport of products for use in construction. Road schemes such as that proposed will consume large quantities of materials and will therefore have permanent direct effects on the environment e.g. the depletion of...
natural resources and the embodied energy associated with the manufacture and transport of materials.

13.2.3 The potential environmental effects arising from waste will be associated with production, transport, processing and disposal. The assessment will identify the quantities and types of waste to be produced.

13.2.4 The use of materials and management of waste may give rise to other impacts to be assessed elsewhere in the ES, such as detrimental impacts on air quality and increased noise.

13.3 Further Work for the EIA

13.3.1 For the purpose of assessing the effects associated with materials use and waste, the assessment will aim to identify and quantify the following:

- The types and quantities of materials required for the project;
- Details of the source of materials;
- The cut and fill balance;
- The types and quantities of forecast waste arising from the project, including the identification of any forecast hazardous waste;
- Waste that requires storage on site prior to re-use, recycling or disposal;
- Waste to be pre-treated on site for re-use within the project;
- Waste requiring treatment and/or disposal off site;
- The impacts that will arise from the issues identified in relation to materials and waste;
- A conclusion about the magnitude and nature of the impacts; and
- The identification of measures to mitigate the identified impacts.

13.4 Possible Mitigation

13.4.1 A Site Waste Management Plan will be prepared in order to ensure that all construction waste will be disposed of appropriately and in the most sustainable manner possible.

14 NEXT STEPS

14.1 Proposed Publication Strategy and Timings

14.1.1 The proposed scope of the assessment is set in the context of the individual specialist topics contained in this report. This Preliminary Environmental Information (PEI) Report provides information to stakeholders and local communities to allow them to make an informed response to the consultation process.
14.1.2 An outline programme and engagement strategy is indicated below and is set out in detail in the Statement of Community Consultation (SoCC). The wider programme indicates the following estimated key project milestones:

- Informal Initial Engagement Sessions with Statutory Consultees, Non-statutory Consultees and the Public: 4th January to 1st March 2013.
- Public Consultation: January to February 2013
- Design Freeze: April 2013
- EIA and ES Completion and submission of DCO application: August 2013
- Pre-examination: September and October 2013
- Examination: November 2013 to May 2014
- Construction: January 2015 to October 2016

14.2 Proposed EIA and DCO Consultation

14.2.1 A wide range of interest groups will be consulted in accordance with S42, 47 and 48 of the Planning Act 2008 including the following (this list is not exhaustive):

- English Heritage (EH)
- Environment Agency (EA)
- Natural England (NE)
- Highways Agency (HA)
- Relevant Government departments and agencies including Department for Environment, Food and Rural Affairs (Defra) and The Health and Safety Executive (HSE)
- Relevant CC Departments including Planning, Historic Environment and Environmental Protection
- The National Trust
- Parish and Town Councils
- Cornwall Air Quality Forum
- Local wildlife groups
- Campaign to Protect Rural England (CPRE)
- The Commission for Rural Communities
- Ordnance Survey
- Area of Outstanding Natural Beauty (AONB) Officer
- South West Water
- Homes and Communities Agency
- Civil Aviation Authority
- The Design Council CABE
- Cornwall Development Company (CDC)
- The Equality and Human Rights Commission
Cornwall and Isles of Scilly Primary Care Trust
Leisure groups including Cornwall Ramblers Association
Defence Estates
Community Projects Trust
Cornwall Association of Tourist Attractions
Cornwall Disability Forum
Cambourne, Pool and Redruth Regeneration Company
Local business organisations
Devon and Cornwall emergency services
Action with Communities in Rural England
Road user organisations
Local residents and businesses
Local Community Networks
Local bus operators