A30 Temple to Higher Carblake Improvement Order

Landscape & Ecology Management Plan (LEMP) - Working Draft

Planning Act 2008
Infrastructure Planning
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Author: A30 Temple to Higher Carblake Improvement Team, Cornwall Council

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### Landscape Plans

**TRXCP311_PA_6.02_FIG_0.8.06.00 – 05  Landscape Mitigation Plans**

[When complete, the Series 3000 Landscape Plans will be appended here]
## PROJECT GLOSSARY AND ABBREVIATIONS

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<td><strong>A</strong></td>
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<tr>
<td>AGLV</td>
<td>Area of Great Landscape Value</td>
<td>Landscapes of local importance.</td>
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<tr>
<td>AONB</td>
<td>Area of Outstanding Natural Beauty</td>
<td>Statutory designation which confers the means to protect the most important landscape of England and Wales for the benefit of future generations.</td>
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<td><strong>B</strong></td>
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<td><strong>C</strong></td>
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<tr>
<td>CC</td>
<td>Cornwall Council</td>
<td>The applicant.</td>
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<tr>
<td>CEMP</td>
<td>Construction Environmental Management Plan</td>
<td>A plan prepared by a contractor before the start of construction work, detailing environmental aspects that may be affected by the construction work and management methods to prevent any such effects. The CEMP would include methods and site management practices to be applied to prevent generation of nuisance dust, accidental pollution events and a range of other potential sources of accidental damage to the environment, and response and reporting procedures to minimise the damage in the event of a pollution incident.</td>
</tr>
<tr>
<td>CWS</td>
<td>County Wildlife Site</td>
<td>Non-statutory designations for sites of county significance for wildlife or geology.</td>
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<td><strong>D</strong></td>
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<tr>
<td>DMRB</td>
<td>Design Manual for Roads and Bridges</td>
<td>The ‘Design Manual for Roads and Bridges’ was introduced in 1992 in England and Wales. It provides a comprehensive manual system, which accommodates all current standards, advice notes and other published documents relating to the design, assessment and operation of trunk roads and motorways.</td>
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<tr>
<td>EA</td>
<td>Environment Agency</td>
<td>A non-departmental government body covering England and Wales, responsible for protection of the environment, including the regulation of polluting activities and the control and prevention of Flooding.</td>
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<td>EDG</td>
<td>CORMAC Consultancy’s Engineering Design Group</td>
<td>Client representative.</td>
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<tr>
<td>EnvIS</td>
<td>Environmental Information System</td>
<td>The Geographical Information System currently used to manage the environmental data across the national highway network maintained by the Highways Agency.</td>
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<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
<td>Under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, proposers of certain scheduled developments are required to submit a planning application with an accompanying environmental statement, evaluating the likely...</td>
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environmental impacts of the development, together with an assessment of how the severity of the impacts could be reduced.

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<th>ES</th>
<th>Environmental Statement</th>
<th>The report on the results of an EIA.</th>
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<thead>
<tr>
<th>GIS</th>
<th>Geographic Information System (computer mapping database)</th>
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<tr>
<td></td>
<td>A system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data.</td>
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<tr>
<th>GMP</th>
<th>Grassland Management Programme</th>
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<td></td>
<td>Grassland Management plans provide information about a site, its history and context in the landscape, operations planned for the first five years in detail and 20 years in outline</td>
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**H**

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<thead>
<tr>
<th>HA</th>
<th>Highways Agency</th>
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<td></td>
<td>An Executive Agency of the DfT responsible for operating, maintaining and improving the SRN in England.</td>
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<tr>
<th>HEMP</th>
<th>Handover Environmental Management Plan</th>
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<td>A HEMP is a site-specific plan developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with legislation.</td>
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<thead>
<tr>
<th>HMP</th>
<th>Habitat Management Plans</th>
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<tr>
<td></td>
<td>Habitat Management Plans are designed on a site basis and over a suitable time period for the purpose of creating and conserving habitats.</td>
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**I**

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<thead>
<tr>
<th>IAN</th>
<th>Interim Advice Note</th>
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<tbody>
<tr>
<td></td>
<td>Published by HA to modify/update guidance given within DMRB, in advance of the permanent replacement of the relevant sections of DMRB.</td>
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<tr>
<th>IBA</th>
<th>Important Bird Area</th>
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<td></td>
<td>Key sites for conservation – small enough to be conserved in their entirety and often already part of a protected-area network. Identified by Birdlife International. They do one or more of the following: hold significant numbers of one or more globally threatened species; is one of a set of sites that together hold a suite of restricted-range species or biome-restricted species; and have exceptionally large numbers of migratory or congregatory species.</td>
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<thead>
<tr>
<th>LCA</th>
<th>Landscape Character Area</th>
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<td>A zone or area as perceived by local people or visitors, whose visual features and character are the result of the action of natural and/or cultural (that is, human) factors.</td>
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<thead>
<tr>
<th>LEMP</th>
<th>Landscape and Ecology Management</th>
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<tr>
<td></td>
<td>A plan setting out the management of the landscape and ecological features for a given area.</td>
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<tr>
<td>Plan</td>
<td>Description</td>
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<td>----------</td>
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<tr>
<td>LWS</td>
<td>Local Wildlife Site</td>
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<tr>
<td>M</td>
<td>Sites designated for their local nature conservation value.</td>
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<tr>
<td>NE</td>
<td>Natural England</td>
</tr>
<tr>
<td>N</td>
<td>A public body responsible for the protection of the natural environment and landscape in England and the management of NNRs and SSSIs.</td>
</tr>
<tr>
<td>NVC</td>
<td>National Vegetation Classification</td>
</tr>
<tr>
<td>O</td>
<td>A comprehensive classification and description of the plant communities of Britain.</td>
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<tr>
<td>PB</td>
<td>Parsons Brinckerhoff</td>
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<td>Q</td>
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<tr>
<td>R</td>
<td>Regionally Important Geological Site</td>
</tr>
<tr>
<td>S</td>
<td>Selected by voluntary geoconservation groups for their educational, historic and aesthetic value. Now referred to as Local Geological Sites.</td>
</tr>
<tr>
<td>SAC</td>
<td>Special Area of Conservation</td>
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<tr>
<td>SNC</td>
<td>Strictly protected sites designated under the EU Habitats Directive, representing internationally important, high-quality conservation sites that significantly contribute to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended).</td>
</tr>
<tr>
<td>SPA</td>
<td>Designations used by local authorities in England for sites of substantive local nature conservation and geological value.</td>
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<tr>
<td>SPA</td>
<td>Special Protection Area</td>
</tr>
<tr>
<td>SSSI</td>
<td>Site of European importance for bird conservation, designated under the EC Birds Directive.</td>
</tr>
<tr>
<td>SSSI</td>
<td>A statutory designation under the Wildlife and Countryside Act 1981 (as amended), protecting nationally important wildlife sites, habitats and geological sites.</td>
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<tr>
<td>W</td>
<td>Management plans provide information about a site, its history and context in the landscape, operations planned for the first five years in detail and 20 years in outline.</td>
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<td>WMP</td>
<td>Woodland Management Programme</td>
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1 INTRODUCTION

1.1 Highway Section

1.1.1 The A30 is a major trunk road passing through the centre of Cornwall, around the north of Dartmoor and on towards Exeter. This Landscape and Ecological Management Plan (LEMP) covers a 5.15km length of the A30 road between Temple Tor and Higher Carblake (just north of Bodmin), which is subject to an online widening scheme from single carriageway to dual carriageway.

Figure 1.1: Scheme Context
1.2 Purpose

1.2.1 The LEMP contains information on the management of the landscape and ecology within the road corridor during its operation. The Plan identifies those landscape and ecological mitigation measures set out in the Environmental Statement for the Scheme and provides information on how the measures will be delivered through landscape works and management in the future.

1.2.2 During the construction of the Scheme a Construction Environmental Management Plan (CEMP) will detail specific requirements to be followed in order to protect and manage all identified mitigation measures prior to and during construction. In particular, the CEMP describes how construction activities shall be undertaken and managed in accordance with commitments and requirements identified within the Environmental Statement (ES) and mitigation strategy, as well as the requirements of the DCO, contractual and legislative requirements, and construction industry best practice. An Ecological Management Plan covering the construction period will also form part of the CEMP.

1.2.3 At the end of the five-year aftercare period the management of the soft estate will be handed over to the Highways Agency (HA). The intention is that the draft LEMP will be supplemented with information at the end of construction ('As Built' design) and will form an integral part of the Handover Environmental Management Plan (HEMP). The managers of this section of the trunk road network (Highways Agency Area 1), will continue the management of the soft estate in accordance with the A30 Innis Downs to Dunheved Habitat Management Plan. All relevant landscape and ecological information will be stored on the HA Environmental Information System (EnvIS) which defines the natural assets within and surrounding the Strategic Road Network.

1.2.4 Although the LEMP is concerned with the operational phase of the scheme, it will apply to land permanently acquired to facilitate the construction of the highway scheme (including compensation land) and to land required in the long term to maintain and operate the highway.

1 http://www.highways.gov.uk/about-us/sustainability/envis/
1.3 **Approach**

1.3.1 The methodology for the LEMP is based on the guidance set out in the Design Manual for Roads and Bridges (DMRB) Landscape Management Handbook HA 108/04.

1.3.2 The LEMP provides for the management of the mitigation, compensation and nature conservation measures included in the environmental statement [DCO Requirement 6 Landscape and Ecology]. This early draft of the LEMP has been sent to Natural England and the Highways Agency for an initial view and feedback. More detailed consultation and discussion will continue with NE, HA, the Cornwall AONB Unit and with the Environment Agency.

1.3.3 The Ecological Management Plan to be included with the construction stage CEMP will cover specific details of the protection of any European or nationally protected species from activities associated with the authorised development; repeat surveys undertaken to confirm the presence of any European protected species; measures to mitigate the effects of the activities associated with the authorised development on European protected species and identified in the surveys; and a programme for the implementation and monitoring of the proposed measures [DCO Requirement 6 Landscape and Ecology, (2) (b)(c)(d)(e)(f)].

1.3.4 The detailed landscaping scheme [DCO Requirement 13 Landscaping and Management of Tree and Hedge Planting] is set out in the Series 3000 landscape drawings and planting schedules; the Series 3000 Appendices - Landscape Specification; and the Construction Environmental Management Plan (CEMP) for the Improvement Scheme [Draft at Appendix 17.01 of the Environmental Statement, Document Reference TRXCP311_PA_6.03]. It is intended that this LEMP is read in conjunction with the Series 3000 documents.

{For the purposes of this draft LEMP, the landscape mitigation plans TRXCP311_PA_6.02_FIG_0.8.06.00 – 05 have been appended.}

1.3.5 Part A of the LEMP briefly appraises the road within its landscape context and sets out the key features of the landscape and ecological mitigation and enhancement scheme.
1.3.6 Part B covers the key landscape and ecological management actions and presents the landscape plans that identify the relevant landscape plots for the whole length of the scheme. The plans also identify the relevant Landscape / Biodiversity Elements and Functions that apply to each plot.
2 PART A – SUMMARY APPRAISAL

2.1 Landscape Context

2.1.1 The majority of the scheme runs through the Bodmin Moor section of the Cornwall Area of Outstanding Natural Beauty (AONB) with the remainder of the scheme being visible from it. Beyond the AONB the road runs through two Areas of Great Landscape Value (AGLV); the Camel and Allen Valley AGLV to the north and the Mid Fowey AGLV to the south. Within the AONB the road also runs alongside the Bodmin Moor North Site of Special Scientific Interest (SSSI), Bodmin Moor Important Bird Area (IBA), South Moors County Wildlife Site (CWS) and Helligan Wood CWS.

Bodmin Moor AONB

2.1.2 Covering 21,000 hectares, the Bodmin Moor AONB section is the largest single section of the AONB. The Cornwall AONB Management Plan 2011-2016 (Cornwall Council, February 2011) discusses the A30 in the ‘Bodmin Moor’ Local Chapter Guiding Principle 12.7 (page 170) as follows:

"Support measures to better integrate the A30 with its wider moorland setting for example, vegetation consistent with moorland habitats, native rock exposures, local style Cornish hedges, unenclosed boundaries, appropriate use of local granite, the retention of current positive rural aspects such as unlit sections and the reduction to the minimum necessary of highway signage, lighting and markings."

Figure 2.1: Map showing Bodmin Moor AONB (Scheme extent shown in red)
The Camel and Allen Valley AGLV and Mid Fowey AGLV

2.1.3 The AGLVs cover the areas south and west of the AONB. These river valleys are noticeably different in landscape character to the moor, having an increased level of tree cover and a much more enclosed field pattern with steep vegetated banks, Cornish hedges and hedgelines creating the sense of a much more intimate and managed landscape.

![Figure 2.2: Map showing Camel and Allen Valley AGLV and Mid Fowey AGLV (Scheme extent shown in red)](image)

Landscape Character Areas

2.1.4 The landscape character of the area has been considered with reference to the Cornwall and Isles of Scilly Landscape Character Study Technical Report 2005-2007 (May 2007) produced by Cornwall Council. The document places the proposed scheme within the following Landscape Character Areas: CA32 – Bodmin Moor, CA33 – Camel and Allen Valleys².

Landscape Character Area 32 – Bodmin Moor

²http://mapping.cornwall.gov.uk/website/ccmap/default.asp?layerName=Landscape%20Character%20Areas
2.1.5 In the Landscape Character Description, Character Area 32 Bodmin Moor is described in the study as an, "extensive exposed granite upland of tors, rocky outcrops and heath with pastoral farmland in the more sheltered areas especially in the valleys around the edges of the moorland." (Page 1, June 2008).

2.1.6 The Moor is largely unenclosed and wild and has wide views across open moorland. Most of the area is rough grassland and heather moor with scrubby patches of bracken, gorse and heather. Settlement is dispersed and generally restricted to isolated houses and farms built of local materials. On the edge of the moor the fields are large and regular due to post-medieval enclosure, whereas in river valleys the pattern is more sinuous with small fields. There is evidence of extensive prehistoric field systems across the area, as well as abandoned medieval settlements. Boundaries vary between Cornish hedge, hedgerow and wire fencing on more recently enclosed land. Cornish hedges tend to have turf tops and on the moorland fringes, small trees and scrub.

Landscape Character Area 33 - Camel and Allen Valleys -

2.1.7 At the western end of the Scheme the road passes through Character Area 33 Camel and Allen Valleys. This area is defined by two valleys that cut through the undulating plateau.

http://mapping.cornwall.gov.uk/website/ccmap/default.asp?layerName=Landscape%20Character%20Areas
Both valleys have large areas of broadleaved woodland. The Camel Valley also has conifers in its mixed woodland. The broadleaved woodlands in the valley include some areas of ancient woodland consisting of oak, ash, hazel and some alder. To the south of the Camel the land is more recently enclosed and has a stronger field pattern with many hedgerow trees and settlement is clustered with small farms. Granite and slate are the local building materials and form a strong vernacular identity.

The Bodmin Moor part of the A30 provides dramatic views of the surrounding landscape. The best views are generally found at the high points along the route, which encompass wide panoramic views of the rugged moorland. However, views of the A30 can be obscured even on the highpoints, especially when the road is contained within cuttings. A number of features within the highway have been constructed to provide a sense of place, e.g. the rock cuttings at Temple. On a number of rock cuttings within the moorland section of the road, heather provides diversity of habitat. Many of the apparent changes in landscape character along the route are due to changing topography, for example the change between the open exposed hilltop and the marshy, scrubby valley bottom. Cornish hedges run along the highway boundary for much of the scheme and these act as both a visual screen and a wildlife corridor.

2.2 Landscape Mitigation

Approach
2.2.1 Although the dualling of the road will be predominantly within the existing road corridor, the construction and operation of the A30 Temple to Higher Carblake Scheme (as assessed in the ES) is expected to generate landscape and visual effects. A large proportion of adverse landscape and visual impacts have been mitigated by measures which include the siting and detailed design of the route and junctions, as well as consideration of mitigation planting and the encouragement of natural regeneration to integrate the Scheme as far as possible into the local landscape character. Consultation with Natural England and the AONB team, allowed for refinement of the design and mitigation proposals.

Seeding

2.2.2 Topsoil will be stripped and stored to create a seed bank from which natural regeneration can be encouraged. The different types of topsoil will be stored separately (e.g. moorland topsoil/ general grassland topsoil). In order to minimise handling, movement and compaction, topsoil stores will be sited as close to the area as possible in locations agreed prior to the commencement of work. Regeneration of the native seed bank will be supplemented with standard native mixes for Species Rich Grassland/ Open Grassland/ Heath & Moorland/ and Marsh & Wet Grassland as appropriate to the area. The aim of seeding is to ensure quick establishment of vegetation cover to prevent any potential soil loss and for visual amenity reasons.

Tree & Scrub Planting

2.2.3 Adverse effects on the landscape can, to some degree, be mitigated by the use of tree and scrub planting. After fifteen years significant adverse effects on landscape or visual amenity will be reduced as the planted trees and shrubs will have started to mature. For example, the moderate adverse visual effects resulting from the creation of the new grade separated junction at Cardinham Downs, as seen from Viewpoint 4A (Colvannick Tor Summit) would diminish over time (to slight adverse) as new planting establishes.

2.2.4 Adverse visual effects of the new grade separated junction at Temple Tor on Bodmin Moor will be less easily reduced as trees will not be planted in this location as they are not characteristically found on the open moor. However, adverse
landscape effects would reduce over time as a result of the reestablishment of rough moorland grass and scrub mosaic.

### 2.2.5 A linear belt of native species trees is located alongside the northern side of the carriageway at Preeze Cross. These trees are designed to help screen the residential properties of Penhallow, Four Winds and Lyndhurst. A second linear belt of trees is located around the covered reservoir on the hill adjacent to the Preeze Cross new grade separated junction (between Preeze Cross and Pounds Conce). The trees will screen the reservoir from passing road users [Refer to TRXCP311_PA_6.02 FIG_08.06.02]. All other woodland and scrub planting along the scheme provides integration with the existing character of the landscape and offers valuable wildlife habitat.

#### Boundary Treatments

### 2.2.6 Fence lines alongside the road are predominantly used in the eastern half of the scheme and are a mixture of post and rail and post and wire at varying spaces. Where these lines are broken, replacements will be either to match or improve and, where possible, tie-in to the existing.

### 2.2.7 Cornish hedges and turf banks are to be found throughout the Scheme area and are a characteristic feature of this area. In the easternmost part of the scheme low earth mounds form a significant feature alongside small side roads. These are likely to have been created with the spoil excavated when these roads, which are often only a single vehicle in width, were originally constructed. As a distinct landscape character feature, hedge and bank replacement is a key mitigation objective.

### 2.2.8 Three types of Cornish Hedge are located across the Scheme: a Cornwall County (CC) Standard for Cornish Hedges; a Traditional Cornish Hedge; a Traditional Cornish Hedge with a Hedgerow. {When complete, the design and location of these different types will be shown in the Series 3000 Landscape Drawings}.

- The CC standard is found adjacent to Lyndhurst at Preeze Cross, running under the Preeze Cross new grade separated junction, and alongside the eastbound
carriageway leading up to Temple Tor grade separated junction.

- The Traditional Cornish hedge is located adjacent to the eastbound carriageway on the eastern side of the Cardinham Downs junction (Higher Carblake). It can also be found on both sides of the road from Higher Carblake to Pounds Conce.

- Between Higher Carblake and Pounds Conce the traditional Cornish Hedge with a Hedgerow forms a boundary with adjacent fields and can be found along side roads.

- A section of Cornish Turf Bank is located on the north side of Temple Tor junction to integrate with the existing banks alongside the road over the moor.

2.2.9 The management of these landscape mitigation elements during the operation of the scheme is covered in Section 3.

2.3 Ecological Context

2.3.1 The eastern extent of the Scheme is adjacent to the statutorily designated Bodmin Moor, North Site of Special Scientific Interest (SSSI). The SSSI, which lies to the north of the A30, is mostly comprised of heathland and mire habitat. The South West Moor County Wildlife Site lies to the south of the road (near Temple Tor) and comprises marshy grassland, with areas of standing open water (fisheries), and wet woodland. Helligan Wood County Wildlife site lies to the westernmost part of the scheme at Cardinham Downs. The scheme runs along the ridge of two catchments, one of which, The River Camel, is a Natura 2000 site and is within 2 km of the scheme.

Bodmin Moor, North SSSI

2.3.2 Bodmin Moor, North SSSI extends from Hawkstor through to Peverell’s Cross. For a moorland habitat, it is located at an unusually low altitude, between 230m in valley bogs to 420m at the summit of Brown Willy. The fauna and flora has Atlantic influences and species only found in south-west Britain. Notified features of SSSI include golden plover, small red
damselfly, scarce blue tailed damselfly and a number of butterflies including Marsh Fritillary.

Figure 2.5: Map showing Bodmin Moor North SSSI (Scheme extent shown in red)

2.3.3 Either side of the A30, the land becomes relatively more intensively farmed towards the western end of the scheme (Higher Carblake). The woodland near the Cardinham new grade separated junction, at the western end, is designated as the Helligan Wood County Wildlife Site. The key ecological interest at Pounds Conce (in the middle of the Scheme) is the wet woodland, stream and associated marshy grassland. The eastern end of the Scheme (Temple Tor) comprises dry heath acid grassland mosaics. Field boundaries consist of Cornish hedges, and occasional native hedges. In general, the lowland heath habitat falls within the SSSI and the marshy grassland falls within the County Wildlife Site.

2.3.4 The range of habitats surveyed along the route as part of the assessment of ecological effects includes:

- Broadleaved semi natural woodland
- Marshy grassland
- Non-ruderal vegetation
- Acid, dry dwarf heath
- Dry heath/ acid grassland mosaic
- Mire
- Mesotrophic standing water
2.4 Ecological Mitigation

2.4.1 Throughout the development of the A30 Temple to Higher Carblake Scheme the overriding principle has been to retain the existing habitats where possible. This avoids unnecessary impact and damage to wildlife that has established in the area over many years. Due to the sensitive nature of the environment (existence of wildlife designations), the focus for future management is on the natural regeneration of existing species.

2.4.2 Through the LEMP, operational effects associated with the potential spread of invasive species and deterioration of habitats will be avoided. Mitigation during operation will include [TRXCP311_PA_6.01, Pg. 339, Para. 9.7.9]:

- The maintenance of connectivity via favourable management of existing roadside hedgerows and scrub;
- The removal of non-native invasive species such as Japanese knotweed;
- Control of bracken / scrub encroachment, where appropriate;
- The creation of grassland / scrub mosaic habitats;
- Where appropriate grass verges cut late to allow plants to seed and cuttings collected and removed.

Grassland & Moorland

2.4.3 During construction there will be a small loss of habitat within the Bodmin Moor, North SSSI (permanent loss of 0.39ha and temporary loss of 1ha of semi-improved acid grassland within the SSSI) [TRXCP311_PA_6.01, Pg. 342, Para. 9.9.9]. The scheme will also result in the permanent loss of 0.29ha of South West CWS and the temporary loss of an additional 2.96ha of habitat [TRXCP311_PA_6.01, Pg. 344, Para. 9.9.24]. Areas of the moor are to be returned to an appropriate quality of habitat and will be managed over the long term to ensure that numbers of colonising ruderals are

- Species rich intact hedge
- Native species rich hedge with trees
minimised.

2.4.4 TBC {specific details of proposed landscape works to restore Bodmin Moor, North SSSI to be inserted when agreed with NE [DCO Requirement 6 Landscape and Ecology, (2) (g)] }

2.4.5 Whilst the general principle throughout the scheme will be to strip and re-use the existing soils, an element of locally harvested seed will be sought. Any successful seed collection (grass/ heather) will be used to supplement standard mixes (for Species Rich Grassland/ Open Grassland/ Heath & Moorland/ Marsh & Wet Grassland). The aim being that through the harvesting of local seed and the allowance of natural regeneration, a degree of local provenance will be retained.

Woodland & Scrub

2.4.6 In the eastern half of the Scheme, trees are not a regular feature of the moorland landscape, so the focus will be on the replanting of existing trees that were lost during construction. The western half of the scheme is more wooded and to reflect the changing landscape and the need to provide adequate compensation as well as continuous habitats for dormice, there will be replacement and an overall increase in the number of trees planted.

2.4.7 There will be a permanent loss of 0.21ha of Heligan Wood CWS and the lost tree and shrub habitat will be mitigated for within the adjacent junction footprint [TRXCP311_PA_6.01, Pg. 346, Para. 9.9.36]. To create a natural looking layered edge, groups of trees will have a buffer strip (Woodland Edge) to encourage the colonisation of shade-loving species. Due to the exposed location, trees will be planted as whips, feathered or light standards dependent upon location and species. Larger areas of tree planting (Woodland) will be supplemented with shrubs to provide a habitat-rich environment. Scrub will be introduced along the whole route of the Scheme to provide diversity of habitat and to mitigate the loss of vegetation during construction.

Drainage Features

2.4.8 A series of attenuation basins will be constructed as part of the drainage scheme. The basins also provide the opportunity
for environmental enhancement through the creation of a range of new habitats and planting of moisture-loving species (Marsh & Wet Grassland). To compensate for the permanent loss of 0.29ha of South West Moor CWS required to facilitate the installation of the new road junction, an area of marshy grassland will be created within the attenuation basins [TRXCP311_PA_6.01, Pg. 345, Para. 9.9.27]. To further improve habitats some side slopes of the basins will be shaped to give level shelves at regular intervals to provide access for wildlife. Refer to Marsh fritillary section below.

Boundary Features

2.4.9 On the open moorland, Cornish hedges are generally faced with bare stone and have a turf top. On the smaller, more secluded routes in the steeper river valleys towards the edges of the moor, they are more heavily vegetated. These hedge boundaries form a strong feature within the landscape and are to be replaced where severance has occurred. The scheme will require the loss of species rich hedgerow, much of which will be Cornish Hedge [TRXCP311_PA_6.01, Pg. 351/ 352, Para. 9.9.76/ 9.978]. The Cornish Hedges will be demolished by hand, and then the stones and soil will be retained locally and used as part of the construction of new hedging. The type of hedge will be determined by the adjoining/ adjacent hedges.

2.4.10 At certain points along the route, native hedgerows will be planted where a Cornish hedge is not appropriate. These hedgerows will consist of native species found locally and will be planted as whips. A fence will also be installed to give added protection until the hedge is established and to ensure that the boundary is stockproof.

Badger

2.4.11 The survey area [Refer to Appendix 9.08 of the Environmental Statement (ES), Document Reference TRXCP311_PA_6.03] contains habitats with potential to support this species and a number of latrines and a sett have been identified in close proximity to the Scheme. Further pre-construction checks will be undertaken and Natural England will be consulted as to whether specific mitigation is required. Although, no specific mitigation is currently required for badgers, if works fall within 30m of an active sett, Natural England will be contacted to
consider whether a protected species works licence will be required to facilitate the works.

Otter

2.4.12 The survey area [Refer to Appendix 9.03 of the Environmental Statement (ES), Document Reference TRXCP311_PA_6.03] is located on a ridge between two river catchments where otters are a feature of interest. The area provides suitable commuting habitat, a limited number of waterways that may be used by otters and a number of ponds that may be used for foraging.

2.4.13 To reduce the impact of fragmentation and mortality during operation, a multispecies large box culvert (measuring 1.8m tall by the 2.5m wide) designed to allow otters to cross beneath the A30 will be installed in the Pounds Conce area. A 900mm diameter pipe will be installed beneath the road in the east of the scheme near the Temple Fisheries area with two additional box culverts (measuring 1.2m high by 1.5m wide) installed beneath the junction in this location. Otter fencing will be installed for up to 300m either side of the culverts to guide otters towards the safe crossing locations.

Dormice

2.4.14 There is a known population of dormice at Cardinham Downs, associated with the Helligan Woods CWS, at the westernmost part of the scheme, with further suitable habitat to support dormice between Cardinham and Freeze Cross [Refer to Appendix 9.04 of the Environmental Statement (ES), Document Reference TRXCP311_PA_6.03]. The scheme design has sought to avoid Helligan Woods CWS and adjacent suitable habitat where possible or to minimise the area of habitat to be affected. Compensatory habitat will be provided where habitat supporting dormice is lost, with a net gain in habitat.

2.4.15 The proposed mitigation agreed with NE includes advanced planting by the Highways Agency completed in November/December 2013 which will link the existing fragmented habitats on the Westside of the scheme. The loss of woodland, scrub and hedgerow will be compensated by a net gain in the creation of new comparable habitat (woodland, scrub and hedgerow) in areas used by dormice. In addition to this, one
hundred dormouse boxes will be erected and further survey work carried out at Preeze Cross.

Bats

2.4.16 The survey area identified in the ES [Refer to Appendix 9.05 of the Environmental Statement (ES), Document Reference TRXCP311_PA_6.03] represents potential for roosting, foraging and commuting for bats within the woodlands, hedgerows, residential buildings and barns. The scheme is likely to result in some habitat loss which may impact on the foraging areas of the bats and flight paths used by bats whilst crossing the road.

2.4.17 Mitigation will include a multispecies culvert that is large enough to provide a suitable location for bats to cross under the carriageway. In addition, planting (including construction of Cornish Hedges) is proposed which will connect the new grade separated junctions with the areas of surrounding bat habitat. This is considered to provide a permeable landscape for bats to cross the road safely. A total of sixty bat boxes will be erected on trees either side of the carriageway to provide additional roosting opportunities.

Birds

2.4.18 The survey area [Refer to Appendix 9.06 of the Environmental Statement (ES), Document Reference TRXCP311_PA_6.03] contains suitable habitat for breeding and wintering birds. The nature of the development is unlikely to impact the wintering birds within the area as the overall land take is likely to be negligible within the designated sites. It may however affect breeding birds in the loss of habitat.

2.4.19 TBC {specific reference to Golden Plover to be inserted once agreement is reached with NE Golden Plover Technical Note}.

Reptiles

2.4.20 The survey area [Refer to Appendix 9.07 of the Environmental Statement (ES), Document Reference TRXCP311_PA_6.03] supports reptiles, four common species of reptile have been found including adder (Vipera berus), grass snake (Natrix natrix), common lizard (Zootoca vivipara), slow worm (Anguis
*fragilis*) within the survey area meeting ‘key reptile site’ criteria. A potential adder hibernacula was identified at Temple Tor.

2.4.21 A Precautionary Method of Working will be adopted during construction for vegetation clearance to avoid mortalities. To mitigate the loss of the potential adder hibernacula at Temple Tor, a replacement hibernacula, will be created alongside a Cornish hedge boundary. The hibernacula will be rubble filled with gaps at the base to allow reptiles to access the rubble core.

Marsh Fritillary

2.4.22 Where possible the areas due to be lost [Refer to Appendix 9.01 of the Environmental Statement (ES), Document Reference TRXCP311_PA_6.03] that currently offer potential habitat for marsh fritillaries will be replaced. In particular the area within the South West Moor County Wildlife Site (CWS) will be compensated for on a 1:1 ratio to limit impacts on this species.

2.4.23 To mitigate the loss of suitable Marsh Fritillary habitat, new wet habitat will be created in and around the three drainage attenuation features. These locations will be sown with seed appropriate for wet marsh grassland. Scabious plants are an important food source for the marsh fritillary caterpillars, and so in order to maintain the levels of scabious plants within the wider area, the soil removed from the footprint of the development will be used on the banks of the junctions or in the mitigation areas. The soil will contain a natural seed bank and will therefore replace the plants lost through the development.

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4 Froglife Advice Sheet 10: Reptile Survey. An introduction to planning, conducting and interpreting surveys for snake and lizard conservation.
3 PART B – LANDSCAPE AND ECOLOGICAL MANAGEMENT

3.1 Environmental Functions & Elements

3.1.1 Management of the roadside landscape will have a variety of aims: visual, safety and biodiversity; all underpinned by the principle of sustainability. Landscape managers are part of the wider highway management team, with particular responsibilities for the ‘soft’ components (e.g. plants) and some of ‘hard’ components (e.g. rock embankments) of the highway estate. Their aim is to develop and achieve landscape and ecological objectives that will be set out in Route Strategies and Management Plans.

3.1.2 Volume 10 Chapter 3 of the DMRB sets out the purpose of ‘Functions’ and ‘Elements’ to provide a standard process for defining and achieving environmental objectives, in addition to the physical nature of features of environmental and landscape importance. This has close connections with the requirements of EnvIS, the Geographical Information System currently used by the Highways Agency’s Network Managers to manage the environmental data across the national highway network.

3.1.3 The Series 3000 landscape plans provide detail on the landscape ‘Functions’ and ‘Elements’ and they are identified by plot number on both the plans and on the plant schedules. {When complete, these Series 3000 plans will be appended to later drafts of the LEMP}

3.1.4 ‘Functions’ help to manage the soft estate (e.g. plants/habitats), by assigning a purpose to each environmental element. These functions link back to the mitigation requirements identified in the environmental assessment. They provide information on why an Element is there and what it is intended to achieve. Multiple functions can be assigned to an Element, prioritised in order of importance.

3.1.5 The functions used in this LEMP (shown on the landscape plans and in the planting schedules) are:

- EFA – Environmental Function Amenity (visual amenity benefits)
- EFB – Environmental Function Biodiversity (ecological
3.1.6 Landscape Elements (LE) are split into broad categories such as grassland, tree and shrub planting, which are then subdivided into more specific Elements depending on the design or habitat requirements e.g. LE1 is Grassland, and LE1.3 is a Species Rich Grassland. {These codes will be detailed in the plant schedules to be found on the Series 3000 drawings}

3.2 Management Action By Element

3.2.1 The following management action will seek to preserve and enhance the appropriate Functions and Elements during the operational phase:

**LE1.3 Species Rich Grassland**

- Allow a diversity of grasses and wildflower species that are appropriate to the site, to develop and create greater biodiversity.
- Maintain a variety of wildflower species to provide colour, form, texture, scale and variety.
- Manage in sympathy with adjoining species rich habitats.

**LE1.5.i Heath & Moorland (Seed) and LE1.5.ii Heath & Moorland (Plants)**

- Keep management regimes and species enhancement in line with local grazing and land management, through consultation with adjacent land owners.
- Control succession of inappropriate woody vegetation.
- Minimise visual impact of boundary fencing to allow open views to surrounding vegetation.
- Encourage use of regeneration techniques to extend habitats for flora and fauna.
Manipulate vegetation to provide and conserve habitat opportunities where fauna is to be encouraged.

Encourage heathland and moorland species to provide colour, texture and scale of vegetation.

Ensure awareness of the distinctive landscape character of health and moorland and compliance with conditions relating to its maintenance and rejuvenation.

**LE1.6 Open Grassland**

- Control scrub and noxious weeds to retain an open grassland sward.
- Implement a cutting regime in sympathy with adjacent field areas.
- Reduce fertility of the soil and encourage species diversity.
- Allow areas of longer grass to provide habitat for small mammals.
- Reduce visual intrusion by cutting grass and dead flowering heads where next to managed grassland.

**LE2.1 Woodland**

- Manage in sympathy with adjacent and nearby woods.
- Maintain a mix of species relevant to the local area.
- Manage to achieve a layered structure and diversity of habitat.
- Maintain a variety of edge treatments (scallops/ open areas/ scrub on edge/ ground flora).

**LE2.2 Woodland Edge**

- Maintain dense structure in conjunction with adjoining woodland.
- Retain a mix of shrub and woodland edge trees to provide diversity of habitat.
• Develop ground flora and variety of edge treatments, including some coppicing.

• Retain low tree branches.

**LE2.4 Linear Belts of Trees & Shrubs**

• Retain dense planting with some native evergreen species in the mix.

• Maintain shrub layer for low level screening.

• Keep balance of species, form and alignment of planting to reflect adjoining linear features.

• Retain as continuous features to provide wildlife corridors to other woody plots or linear features (on or off site).

• Provide seasonal colour and variety of plant form.

**LE2.5 Shrubs with Intermittent Trees**

• Manage plots so that species reflect local vegetation characteristics.

• Maintain a variety of shrub species, form and colour in bold block.

• Retain dense planting of shrubs for low level screening.

• Allow trees to grow to a height and form to provide some intermittent high level screening.

• Encourage native species, using fruiting and flowering plants.

**LE2.8 Scrub**

• Maintain structure and composition of scrub as an edge to adjacent woodlands and to link with vegetation off site.

• Encourage growth of desirable and appropriate scrub species through regeneration.

• Retain dense planting of shrubs with native evergreen content for low level screening to soften long distance views and reduce impact of junctions.
Keep dense coverage for low foraging birds and mammals.

Prevent succession to woodland by retaining scrub as scrub habitat.

**LE4.1.i Cornish Hedge (Cornwall Council Standard Detail)**

- No cyclical maintenance required.
- Rebuild any sections that collapse.

**LE4.1.ii Cornish Hedge (Traditional)**

- No cyclical maintenance required.
- Rebuild any sections that collapse.

**LE4.1.iii Cornish Hedge (Traditional with Hedgerow)**

- Use the same form of management as adjoining hedges in order to maintain landscape structure and provide wildlife linkage.
- Rebuild any sections that collapse.

**LE4.1.iv Cornish Turf Bank**

- No cyclical maintenance required.
- Ad hoc grazing allowed by moorland animals.

**LE4.3 Native Species Hedgerow**

- Use the same form of management as adjoining hedges in order to maintain landscape structure and provide wildlife linkage.

**LE6.4 Marsh & Wet Grassland**

- Maintain marsh and wet grassland to increase diversity and to match ground conditions (wet/ dry areas).

### 3.3 Management Action for Specific Mitigation Features

**3.3.1** The Environmental Statement identified specific mitigation measures and these features will need to be maintained as an integral part of the management of the highway soft estate in
order to provide effective mitigation for the effects of the scheme.

Woodland Belts for screening

3.3.2 The linear belt of native species trees located alongside the northern side of the carriageway at Preeze Cross will be managed in the long term so that they maintain their function as a screen for Penhallow, Four Winds and Lyndhurst. The linear belt of trees around the covered reservoir on the hill adjacent to the Preeze Cross bridge will be managed in the long term to retain appropriate screening of the reservoir from passing road users.

Cornish Hedges

3.3.3 Cornish hedges and turf banks are to be managed as a characteristic feature of this area. The diversity of style types will be maintained and although the Cornish Hedges do not need active management, where a hedgerow is located in the wall, it will be managed in harmony with adjacent hedges.

Otter

3.3.4 Culverts installed at Pounds Conce and Temple Tor will be designed to allow otters to cross beneath the A30. These pipes will be kept clear of debris and obstructions. Otter fencing installed on either side of the culverts to guide otters towards the safe crossing locations will be maintained and repaired for a length of 300m either side of the culverts.

Dormice

3.3.5 Compensatory habitat will be provided where habitat supporting dormice is lost, with a net gain in habitat. All woodland, scrub and hedgerow habitat will be maintained to ensure continued viability of dormice habitat, interconnectivity and appropriate range of food sources. Dormice boxes will be retained to provide additional nesting opportunities. No erosion of the lengths/areas of appropriate dormice habitat will be allowed and further opportunities to increase the amount of habitat available will be sought.

Bats
3.3.6 Bat mitigation includes a box culvert providing locations for bats to cross under the carriageway. The culverts will be maintained to ensure that there are no obstructions to bat flight paths. In addition, all planting (including Cornish Hedges) that connect road bridges with the areas of surrounding bat habitat, will be maintained to ensure connectivity and continuity of appropriate bat flight pathways. Bat boxes will be retained on trees either side of the carriageway to provide additional roosting opportunities.

Birds

3.3.7 TBC {specific reference to the management of Golden Plover habitat to be inserted once agreement is reached with NE on how to proceed}

Reptiles and Amphibians

3.3.8 No active management of the hibernacula is required, but its long term survival is to be ensured.

Marsh Fritillary

3.3.9 To mitigate the loss of suitable Marsh Fritillary habitat, new compensatory wet habitat is located in and around the three drainage attenuation features. These areas are to be allowed to set seed and then mown once a year with arisings removed from the site to aid the development of a species rich sward.

3.4 Management Action for Compensatory Habitat

3.4.1 TBC {to be completed once National Vegetation Classification survey of both compensation areas has been completed and a preferred option agreed. Agreement will then be reached with NE on management requirements of compensatory habitat}
4 PLANS

4.1 Landscape Plans Showing Individual Plots

4.1.1 The remaining pages of the LEMP provide plans of the soft estate, showing the location of the landscape plots and key environmental functions and elements [Refer TRXCP311_PA_6.02_FIG_0.8.06.00 - 05 Landscape Mitigation Plans appended].

{When complete, the Series 3000 Landscaping drawings and Planting Schedules will be appended to the LEMP}

4.2 Plans showing Ecological Baseline, Impacts and Mitigation Features

4.2.1 Indicative locations of ecological survey areas, ecological survey results, impacts and mitigation features can be found within the Environmental Statement. The plans and drawings can be found in Chapter 9 Parts 1-3. [Document Ref: TRXCP311/PA/6.02/9]
1. All proposed works will be subject to detail design development. Any changes will be limited to within the Development Consent Order boundary.

2. For cross sections please refer to drawings TRXCP311_PA_6.02_FIG_08.06.06 - 08.
Environmental Functions

EFA Visual Screening

EFD Nature Conservation & Biodiversity

Landscape Elements

LE1.3 Species rich (or conservation) grassland

LE1.5 Heath & moorland

LE1.6 Open grassland

LE2.1 Woodland

LE2.2 Woodland edge

LE2.4 Linear belts of trees & shrubs

LE2.5 Stands with intermittent trees

LE2.6 Shrubs

LE2.7 Scattered trees

LE2.8 Scrubs

LE4.3 Native species hedgerows

LE4.4 Native species hedgerows with trees

LE5.1 Individual trees

LE6.4 Marsh & wet grassland

Development Consent Order (DCO) Boundary

Proposed scheme

EXISTING

PROPOSED

1. All proposed works will be subject to detail design development. Any changes will be limited to within the Development Consent Order boundary.

2. For cross sections please refer to drawings TRXCP311_PA_6.02_FIG_08.06.06 - 08.
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