CAMBORNE POOL REDRUTH MAJOR SCHEME

PUBLIC INQUIRY

THE CORNWALL COUNCIL (CAMBORNE POOL REDRUTH) (HIGHWAY IMPROVEMENTS) COMPULSORY PURCHASE ORDER 2011

and

THE CORNWALL COUNCIL (CAMBORNE POOL REDRUTH) (HIGHWAY IMPROVEMENTS) (CLASSIFIED ROAD) (SIDE ROADS) ORDER 2011

Proof of Evidence

ENGINEERING DESIGN

VOLUME 2 – TEXT

by

John A Foskett BSc BA CEng MICE

Parsons Brinckerhoff

June 2012
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1 INTRODUCTION

1.1 Qualifications and experience

My name is John Foskett. I am a Chartered Engineer and a Member of the Institution of Civil Engineers. I have a Bachelor of Science Honours Degree in Civil Engineering from Southampton University and some forty years experience in highway engineering projects. I am a Regional Associate with Parsons Brinckerhoff Ltd, based in their Truro office at 11 High Cross.

Through my career I have worked on all stages of transportation scheme development from programme entry through feasibility studies, surveys, consultations and design to statutory procedures and construction supervision. My experience has mainly been on major trunk road and motorway schemes for the Highways Agency, including the M60 Manchester Outer Ring Road (Junctions 5 to 8), M56 Junctions 4 to 6, M6 Thelwell Viaduct and various urban relief roads and bypasses in Cheshire.

1.2 Involvement with the scheme

I have been Cornwall Council’s consultant Project Manager for this scheme since July 2006, having overall, day-to-day responsibility for the scheme preparation, assessment, design and the management of the multi-disciplinary team. The integrated team comprises specialist consultancy staff and Council staff. I report to a Council Client Manager and Steering Group Board.

1.3 Scope of the evidence

My evidence covers the whole spectrum of highway engineering design which has been required to prepare the scheme. It includes sections which refer to elements undertaken by specialists; their reports are contained in my Volume 3 Appendices. It also contains sections which refer to construction which have been advised by the Council’s Contractor.

1.4 Content of the evidence

Section 2 describes the existing road network and the A3047

Section 3 gives a brief history of the scheme and its evolution

Section 4 outlines the design process from preliminary design through consultation to planning, orders publication and final design for the construction contract.
Section 5 refers to the design standards used in the highway design and how they were selected.

Section 6 describes the proposed scheme and landscaping

Section 7 gives background to the proposed use of landscaping to reduce the visual impact of the new road and its traffic.

Section 8 discusses the earthworks required for the proposed road, considering the geology along the route and contamination, earthworks design and ground strengthening.

Section 9 describes the drainage assessment and the design considering flood risk and the need to attenuate water run-off before discharge.

Section 10 considers other features such as surfacing and pavement, barriers, signing lighting accommodation works structures and utilities’ diversions.

Section 11 looks at the environmental impacts and mitigation measures, considering air quality, noise and ecology.

Section 12 describes the provisions which the scheme includes for equestrians, cyclists and pedestrian.

Section 13 describes the construction phase and the Construction Management Plan, giving the strategy and details of how the works will be regulated and controlled in order to minimise adverse effects.

Section 14 provides the scheme’s cost estimate

Section 15 describes changes to the scheme which have been made since Orders publication.

Section 16 lists the objections to the Made Orders and gives a detailed response to each matter and issue raised.

Section 17 gives a conclusion.

Supporting Appendices are contained in Volume 3 (CC/3/3)
1.5 The Made and published Orders

1.5.1 The Compulsory Purchase Order Land – its nature and condition

The land required for the highway improvements generally includes:

- Light industrial, Business Park property along the short length of Wilson Way and portions of Dudnance Lane and Station Road; the majority of this land is frontage space or car parking;
- Land owned by Western United Mines (WUM) – mostly across derelict and / or disused sections of the South Crofty Mine complex;
- Grazing farmland (for cattle) from Dolcoath to the Red River valley;
- Scrubland within the Red River valley;
- Private properties and gardens (on Wilson Way and Station Road).

Most excavated ground will be contaminated with mining waste products to some degree. This material will be handled safely during construction and most will be reused within the earthworks for the Scheme.

1.5.2 The Compulsory Purchase Order

The Compulsory Purchase Order Land is an area of approximately 16 hectares. The four Order Plans shows the extent, which is composed of 78 individual plots. The available statutory powers enable the Council to seek to obtain necessary land and Rights to construct and maintain the Scheme. Plots that need to be purchased are coloured pink on the CPO plans and plots over which a Right only is required are coloured blue. No more land is being taken than is required for the scheme.

The Order Land is required to carry out the construction and maintenance of the Camborne Pool Redruth Highway Improvement Scheme (the Scheme) together with associated works, including mitigation measures such as landscaping and planting.

Confirmation of this Order will enable Cornwall Council to acquire compulsorily land required for the Scheme in order to construct new highways, improve highways, stop up highways and private means of access to premises, and to provide new means of access to premises. It will also enable the Council to acquire compulsorily land required for the mitigation of adverse effects and for the acquisition of rights for construction and maintenance of the Scheme. All land shown in the Schedule is required for the Scheme.
The Council recognises that a compulsory purchase order can only be made if there is a compelling case in the public interest which justifies the overriding of private rights in the land sought to be acquired. It is considered that a compelling case exists here.

The Council has given careful consideration to the reasons why it is necessary to include the land and new rights shown on the Order Plans. All freehold owners, lessees and occupiers affected by the Order have been invited to enter into discussions with the Council with a view to agreeing appropriate terms for acquisition of the land and new rights required and, where appropriate, to discuss options for relocation.

The Council has consequently made the Order to secure the outstanding interests and rights required to enable implementation of the Scheme necessary to achieve the Council’s objectives for the area. Discussions will, however, continue with owners of relevant interests in an endeavour to secure the required land and Rights by agreement wherever possible, with a view to limiting the number of interests which need to be acquired compulsorily. The approach adopted by the Council is in accordance with the policy advice and recognised good practice.

On confirmation of the Order, the Council intends to serve a Notice (or Notices) to Treat and Enter in order to commence construction of the Scheme.

### 1.5.3 Land to be Acquired

The land included in the Compulsory Purchase Order (CPO) is the land required to construct the scheme. It includes land which will become highway land and will be required as title; it also includes land over which permanent Rights are required (for continuing access such as future maintenance and inspection) and land which will be required temporarily under Essential Licence only for the period of construction. **It is expected that title may not be acquired over land which is only required temporarily during the construction period. For this land, an Essential Licence may be negotiated by agreement.**

This land, required temporarily for construction, is shown as title in the Order in case the Council is unable to negotiate an Essential Licence in time. This ensures that there is certainty of acquisition for the construction contract.
Land is included to enable construction of the road (with its drainage outfalls) and for essential landscaping. Areas are also required for various future maintenance functions.

Land has been included for the contractor to establish temporary site offices, compounds, welfare facilities and storage areas for plant and materials at various locations for occupational use during the works.

Following consultations, the impact of the loss of land has been minimised as far as possible.

1.5.4 Compensation

Compensation for the loss of land resulting from this CPO and other losses will be considered under statutory provisions for compulsory purchase by the Council.

Land owners have been invited to enter into discussions with the Council with a view to agreeing appropriate terms to compensate for any material operational impact of the proposed changes.

1.5.5 Special Considerations affecting the Order Land

There are no ancient monuments or listed buildings in the Order site. There are no buildings in a conservation area that would be demolished. The Scheme does not require any land owned by the National Trust or any land with special designation (such as SSSI). The scheme is, however, adjacent to the area designated as a World Heritage Site for its “mining landscape”.

1.5.6 Property Demolition

Across the Western United Mines land at South Crofty there will be a need to demolish a number of derelict buildings and structures. Along the length of the highway improvements one residence will require demolition: the house Sylmar and its outbuildings on Station Road at Pool. Additionally, active commercial property will be demolished along the West side of Dudnance Lane (Coastline buildings) and a small industrial unit within the Old Station Yard, on Station Road at Pool.
1.5.7 The Side Roads Order (SRO)

The SRO will, subject to confirmation by the Secretary of State for Transport, empower the Council to stop up existing side roads and private means of access affected by the Scheme, to improve existing side roads and to create new side roads and private means of access as a consequence of the main works.

1.5.8 The Need for Side Roads Alterations

The proposed alterations to existing highways and private means of access that would be affected by the Scheme are detailed in the Schedule attached to the Side Roads Order, and shown diagrammatically on the Side Roads Order plans.

The Scheme would require alteration of side roads and accesses and the Order made under Sections 14 and 125 of the Highways Act 1980 implements these alterations. The Scheme requires the stopping up of highways at various points. Some sections of existing highways would be extinguished and then recreated as part of the proposals for the Scheme. Other sections of existing highways would be closed permanently; however convenient alternative routes are or would be available.

The Council recognises that a side roads order to close and amend private accesses can only be made if there is a compelling case in the public interest which justifies the overriding of private rights in the land. It is considered that a compelling case exists here.

The Council has given careful consideration to the reasons as to why it is necessary to modify access and side roads as shown on the Order Plans. All freehold owners, lessees and occupiers affected by the side roads order have been consulted as the detailed design of the scheme has been developed.

1.5.9 Highway modifications proposed in the SRO

**East Hill to Station Road**

From East Hill southwards along Dudnance Lane a number of private accesses to adjacent land or commercial interests will be stopped up, to maintain the free flow of traffic and create a new cycleway / footway on the West side of the lane, and some will be reopened, or new private means of access created.

The access into Heartlands Park will be created as a new highway to enable construction of a signal controlled junction.
Where the existing road runs alongside the Penzance to Paddington railway line, other private accesses, to residences, businesses and properties off Dudnance Lane and Station Road, will be stopped up, amended, relocated, created or recreated as required in order to enable the widening of the road to take place.

Existing side roads such as Penhallick Road and Station Road are to be tied into the new road and improved as required.

The residential property, Sylmar, will be demolished to allow the road to be widened. The existing access to its land will be stopped up.

Tesco’s private access off Station Road will be stopped up and a replacement access provided 45 metres eastwards, (as shown on Site Plan 2). The new access will enable the operational manoeuvring of HGV deliveries by the necessary inclusion of a turning area, and will remove the need for vehicles to reverse in from the highway.

The previous Carter’s Packaging access will be modified to improve highway safety.

The existing private means of access to the West of the Network Rail’s depot, (the triangular area in front of depot’s gates), will be stopped up. It is the Council’s intention to relocate the depot by agreement with Network Rail to another suitable site.

**Station Road to Wilson Way**

Footpath No.4 (Carn Brea) will be stopped up for a short section of its length where it is to be crossed by the new road. New highway will be created to link the severed footpath to the new road at its North and South ends.

A new private access will be provided into the Tesco Industrial area from the new section of road to replace existing private accesses which are to be stopped up. This access will served by a centre, right-turn lane in the new road.

The access to 78 Carn Brea Lane will be stopped up in part to enable the road to be widened. An alternative will be provided to give access to a new garage.

Access to Western Power Distribution apparatus and land will be maintained – from the new road; a layby will be provided

**Wilson Way roundabout**
A new roundabout will be constructed on Wilson Way at Carn Brea Lane. For a short length eastwards along Wilson Way a number of private accesses to adjacent land or commercial interests will be stopped up to enable the road to be widened and the roundabout approach lanes constructed. Some will be reopened, relocated or have new replacement private means of access created.

The eastern access to Bookers will be stopped up and a replacement access, to the delivery area, will be provided via Agar Way to the rear of Booker’s premises. A new length of road will be created to provide this access from Agar Way.

**Dudnance Lane to Dolcoath**

Westwards from Dudnance Lane, the new road will cross South Crofty mining land and new private means of access are provided to give access to land severed by the new road.

The new road crosses the Red River valley and two arches will be constructed (square to the new road) for Chapel Road, the Red River and adjacent amenity trail to pass under the road. The river, the amenity trail and Chapel Road will be diverted to pass through the arches.

Existing sections of Chapel Road, the amenity trail and the Red River will be stopped up and created on new alignments. A new bridleway will be established to link the new road over the valley with the amenity trail and highway in the valley. These details are shown on Site Plan 3 and on the inserts.

The new road will sever land which is planned for development at Tuckingmill. Two new private means of access will be provided (on the North and South sides of the new road) to give access to this severed land.

The new road will cross farm land in the holding of Church View Farm. The southern access provided for the Tuckingmill development (above) will also provide access to the southern fields of this severed farm land. Existing accesses to the farm from Church View Road and Dolcoath Road will be stopped up. New access to the farm and to land which will be on the North and Northwest side of the new road will be provided by the creation of a new replacement private means of access from Church View Road. These details are shown on Site Plan 4 and on Inset C.

**Dolcoath**
The new road, at its western end, will tie into the proposed spine road of the Dolcoath Development ("Main Street) and will necessitate alterations to the adjacent side roads: Dolcoath Road, Dolcoath Avenue, Church View Road and Lower Pengegon (shown as highways to be improved on Site Plan 4).

Sections of these roads will be stopped up where the new road will pass over them and the new road will reinstate them as highway within its footprint.

A length of Lower Pengegon will be stopped up and reopened for cyclists and pedestrians only (between Dolcoath Road and Dolcoath Avenue) as shown on Site Plan 4, Inset A.

A length of Dolcoath Avenue will be stopped up and reopened for cyclists and pedestrians only (to make a connection between Dolcoath Avenue and the footway/cycleway on the new road)) as shown on Site Plan 4, Inset B.
2 EXISTING ROAD NETWORK

2.1 The A30 trunk Road

The region is served by the A30 Trunk Road which connects to the motorway network at Exeter.

The A30 Tolvaddon Junction is some 500m from the A3047 at East Hill and is the main link from the Pool area to the national road network.

The road network is shown in Appendix 1 (CC/3/3)

2.2 A3047 from Wesley Street to East Hill

Westwards on the A3047 from the East Hill junction to the Wesley Street roundabout there are many side roads and mixed ribbon development on both sides. Development alongside the road is both private and commercial, with most having accesses directly onto the road. Residential housing, amenities, retail, schools and municipal buildings either front the road or are close by.

Conditions are difficult for pedestrians and cyclists at many locations. Junctions are under pressure during peak periods and congestion and significant queues occur regularly.

2.2.1 Local minor roads

There are thirteen side roads which join the A3047 between East Hill and the Wesley Street roundabout which are uncontrolled, priority, T-junctions, and one traffic signal controlled junction at North Roskear Road on the North side of Tuckingmill Hill.

Most of the side road junctions are priority T-junctions where right turning traffic from the A3047, waiting for a gap, holds up the through-traffic

North Roskear Road, South Roskear Terrace and Roskear Road (all joining on the North side of the A3047) carry substantial volumes of traffic at peak periods and add to delays and congestion on the main road.

2.2.2 Existing problems

Mixed, ribbon development
The roadside development comprises mainly residential houses and flats.

From East Hill to North Roskear Road there are some 48 dwellings on the North side and 18 on the South side; from Nrh Roskear Road to South Roskear Terrace there are some 39 dwellings on the North side and 29 on the South side; from South Roskear Terrace to Roskear Road fork there are some 15 dwellings on the North side and 13 on the South side, and from Roskear Road fork to the Wesley Street roundabout there are a further 14 dwellings on the North side and 6 on the South side.

There are a number of retail properties (3 no. shops) and some 12 no. offices. There are also civic buildings, a church and a school.

Pedestrians and cyclists
Although some provisions have been introduced to assist crossing, conditions are unpleasant for those users at some times of the day. Some footways are narrower than the standard minimum width (1.8m). The road alignment, wide lanes and good visibility encourages high vehicle speeds at some locations. On Tuckingmill Hill traffic management measures have been introduced to slow traffic.

Cyclists impede the free flow of, and are sometimes in conflict with, motorised traffic in peak periods. Tidal pedestrian flows to schools find their own way across the road where crossing facilities are not provided.

Accesses
There are many private accesses along the A3047 and at each the turning movements disrupt the A3047 to some degree.

From East Hill to North Roskear Road there are some 5 accesses on the North side and 8 on the South side; from North Roskear Road to South Roskear Terrace there are some 2 accesses on the South side; from South Roskear Terrace to Roskear Road fork there are some 10 accesses on the North side and 14 on the South side, and from Roskear Road fork to the Wesley Street roundabout there are a further 12 accesses on the North side and 7 on the South side.

Public transport
The A3047 is the main East – West corridor for public transport and it is an essential service for the local communities.
The congestion on the road during peak periods makes timekeeping difficult. Parking, turning traffic, cyclists in the carriageway and high volumes of traffic make the provision of a reliable bus services difficult during some periods of the day.

2.3 A3047 from East Hill to Barncoose

The character of the A3047 is similar eastwards from the East Hill junction to Barncoose, again with many side roads and mixed ribbon development on both sides. Development alongside the road again comprises public, private residential and commercial, with most having accesses directly onto the road.

The A3047 is, on average, wider on this section, but the traffic issues are similar.

2.4 Future problems

The existing road cannot accommodate any further accesses or cope with much additional traffic. Natural growth of traffic over time will increase flows and make existing problems, carriageway constrictions, access entry and egress, and congested junctions worse. East Hill junction will reach capacity and queues will lengthen.

The environment and conditions for residents, pedestrians and cyclist will continue to deteriorate.
3 EVOLUTION OF THE SCHEME

3.1 Conception

The A3047 is a relatively highly trafficked East-West transport corridor linking the Camborne, Pool and Redruth (CPR) communities together. It serves a mix of residential, retail, business, and industrial areas and suffers frequent congestion.

Any redevelopment of the CPR area will be constrained unless the existing highway network is relieved and additional highway capacity provided to serve growth and development. In the first instance, better use of the existing highway infrastructure is the preferred way forward but this can only deliver limited increases in capacity. Sustainable development and transport initiatives have a role to play but there are limitations to what can be achieved by these means alone.

Transport studies carried out for the area focussed on the existing problems on the road network and led to a Transport Strategy being developed in 2003 which identified the needs for the area and proposed solutions. This included both making better use of the existing highway infrastructure and providing some new capacity by way of new routes.

The Barncoose Link Road, which was opened in 2008, provided much improved access to the Barncoose Industrial estate. It has precipitated significant growth, of itself and has elevated developer confidence in the area.

A key constraint on development within the Pool area was the A3047 East Hill double mini roundabout, which functioned acceptably at off-peak times but was overloaded during peak periods causing long queues and delays. Interim improvements at the junction were completed in January 2010, which included traffic signals, the widening of the approach from the A30 trunk road and the provision of additional lanes.

Both these schemes were advance elements of the originally conceived CPR East – West relief road. They were funded using a combination of EU Grants, Local funding, and Government Agency support.

These improvements provided capacity for the early development proposals in the area, and have been successful in allowing these to be realised. Despite this, however, capacity at East Hill is likely to be exhausted by 2015 and will then severely constrains further development.
Delays and queues, caused by continuing traffic growth, will increase to unacceptable levels along the length of the A3047 from Wesley Street to Barncoose. This will in time not only affect commuters, business, and leisure users, but will also impact on bus services, increasing journey times and contributing to unreliability.

The Council’s Transport Strategy, by the development of a new East to West route, has sought to address these critical infrastructure weaknesses.

3.2 Major scheme Business Case – the Council’s submission to the Department for Transport

Mott MacDonald (MM), in association with Social Research Associates (SRA), was appointed on 16 September 2005 by Cornwall County Council (CCC) to prepare a Local Transport Plan Major Scheme Business Case (MSBC) for the Camborne Pool Redruth (CPR) Transport Strategy. An inception report outlining MM’s approach to the project was published in November 2005. A purely public transport solution was not considered to be sufficient to address the transport needs of the area.

Viable options were assessed and the Preferred Route was further appraised at consultations and workshops. The MSBC was based on this, finally agreed Preferred, Route which was then developed into the Major Scheme Business Case submission to the Department for Transport.

This MSBC was submitted to the Department for Transport in August 2006. A decision by the Transport Minister on 20 June 2008 approved a £34.51 million Government contribution towards the £45million cost of “this major new scheme in the region”.

Thus the scheme gained National Programme Entry Status and was included in the Regional Assembly’s approved programme of major transport schemes to be funded and implemented in the period 2006-2016 subject to the completion of all the required planning and statutory procedures.

The primary objectives of the scheme to meet the needs of the CPR area were and are:

- To create a new East to West route to relieve the existing A3047 thereby reducing congestion;
- to provide the necessary transport infrastructure to enable planned, sustainable, economic growth to take place in the Camborne, Pool, Redruth corridor;
encouraging private sector investment and facilitating the creation of jobs and new homes in the CPR area.

- to facilitate future improvements to public transport and the urban environment on the existing A3047.

### 3.3 Scheme development and consultation

#### 3.3.1 Stakeholders

The key stakeholders included Cornwall Council and the then Kerrier District Council, the SW Regional Development Agency and the Urban Regeneration Company and the Homes and Communities Agency, the Environment Agency, English Heritage and Natural England.

A number of all-day workshops were held to debate and evolve the options for various key design aspects of the scheme. The topics for these workshops included:

- The scheme cross-section and standards – and the road’s integration with future, adjacent development
- The Northern Route options
- The type and form of the of structure to cross the Red River and its valley
- Finishes and materials
- Environmental planning, enhancements and mitigation
- Value Engineering with the Council’s contractor to reduce the scope of the scheme and its costs to meet the Government’s spending review objectives.

The service diversions, necessitated by the scheme, have been discussed in ongoing liaison with Statutory Undertakers since the announcement of the Preferred Route.

#### 3.3.2 Public

Extensive consultation has been held with the public, their elected representatives in County, District, Town and Parish Councils and interest groups both local and national.

The main Public Consultations and Exhibitions were:
Liaison was continuous with those residents and businesses which would be directly affected by the scheme and by those who sought information or wished to make comment. Meetings were held to discuss and agree potential accommodation works.

The Council believes that a better scheme has emerged following this extensive consultation process, commanding more local support and with less impact.

3.4 Separation of the scheme into two Phases

3.4.1 Feasibility Study – the northern route alternative

The original scheme (the MSBC Preferred Route), promoted in the MSBC submission, featured a route from Dolcoath, passing across the Red River valley on a five-span, 20m high viaduct, through the southern edge of the South Crofty mine complex, to meet Dudnance Lane at the Forth Kegyn junction.

Following further investigations, geotechnical studies and scheme development, the viability of this southern route was challenged due to:

- its impact on the investment plans for the South Crofty Mine and its future operations;
- poor ground conditions due to extensive near surface mining voids which would have required costly ground treatment works of unknown extent, and
- the relatively high cost of the five span viaduct which was needed to cross the Red River valley at high level – due West of Forth Kegyn.

A Feasibility Study into viable options for a route further to the North, past South Crofty mine, was therefore undertaken and the best of those routes shown to the public and
stakeholders. Although the northern route was a slightly longer route for East – West traffic than the southern option, it still satisfied the previously identified scheme objectives.

The Executive of Cornwall Council confirmed that this alternative northern route should be adopted in the CPR Transport Strategy. The original, MSBC southern, route then became a “rejected alternative”.

3.4.2 Phase 1 Planning consent

In order to maintain progress in the scheme preparation process the Council decided, during the development of the Northern Route Feasibility Study, to split the planning procedures for the scheme into two, free-standing, planning applications.

This enabled the unchanged elements of the scheme (the dualling of Dudnance Lane, the new link from Station Road to Wilson Way and the improvement of Wilson Way) to be submitted to the Planning Authority for planning approval as Phase 1 – while work on the Feasibility Study was still being undertaken.

3.4.3 Phase 2 Planning consent

Following the adoption of the new northern route, by the Council it was submitted to the Planning Authority as Phase 2 (the link from Dolcoath to Dudnance Lane).

3.4.4 Each application included its own full Environmental Impact Assessment and Environmental Statement in addition to the highway design submissions. The applications were considered by the Planning Authority and consents for both were granted. An extension of time to implement the Phase 1 consent was given in September 2011.

These two consents, Phase 1 and 2 thus covered the whole, original, MSBC scheme.

3.5 The Government’s Comprehensive spending Review

3.5.1 Cornwall Council’s response to the review

The Council’s scheme, presented in the Major Scheme Business Case, had been accepted for Programme Entry in June 2008. The two planning consents (for Phases 1 and 2) had been granted but, in June 2010, the government announced its comprehensive spending review and tasked all Local Authorities with identifying cost savings to their submitted Major Scheme proposals.
A reduced scope major scheme was developed by the Council’s design team and contractor, and consultations were again held with the public and stakeholders. Although this smaller scheme would only deliver part of the original scheme it would, however, create the critical new East to West route from Camborne to Pool, to a minimum acceptable standard, and would thus still provide traffic relief to one section of the A3047 and its junctions. It would still create a continuous new route from Barncoose to Dolcoath.

It would continue to give improved accessibility to, and highway capacity for, the planned economic growth development areas. It would still encourage private sector investment confidence in the area and enable most of the planned developments to be delivered. It would still provide adequate access for the ultimate, planned future development.

3.5.2 A reduced scope scheme – Stage 1

It was concluded that this “reduced scope” and lower cost scheme, being the CPR Transport Strategy, Stage 1, would still contribute enormously to meeting the critical objectives outlined in Section 3.2. It was submitted in the Council’s Best and Final Funding Bid, to the Department for Transport in September 2011 and approved for entry into the government’s new programme for Local Authority road schemes in December 2011. (It is shown on the overall plan CD 1.6)

This is the scheme for which the Orders have now been made (shown on the plan in Appendix 2, CC/3/3).

The key benefits of the scheme are shown diagrammatically in Volume 3, Appendix 3, (CC/3/3).

The Council has stated its intention to complete the original scheme, with the construction of a Stage 2, when funds become available.

3.5.3 Land acquisition

The Council is satisfied that the scheme, which is the subject of the made Orders, is in the public interest and that a compelling case has been made to acquire the required land. The Council is taking no more land than is required to construct the scheme; all of the land being taken is required for the scheme and the Compulsory Purchase Order is needed to ensure certainty of delivery of title.
The scheme has been designed to the appropriate standards and includes effective mitigation measures to reduce its impact to acceptable levels.

The Council believes that any negative impacts of the scheme are outweighed by the substantial benefits which it will bring to local communities, residents, visitors and businesses and the economic regeneration and growth which will be facilitated.
THE DESIGN PROCESS

4.1 Stages in the design process

There are six fundamental stages in the design process:

1. Route option, appraisal, viability testing and preliminary design
2. Public consultation and route selection
3. Development of selected route and surveys
4. Planning application
5. Making of Orders and statutory procedures
6. Detailed design.

The first of these stages was completed in 2006. The second stage took place over the period from 2007 to 2009; modifications to the selected route were made in Stage 3. The scheme then progressed to Stage 4 and the submission of planning applications in 2008 and 2009. The Planning Authority granted consent and the Compulsory Purchase and Side Roads Orders were prepared and Made, leading to Stage 5 – presently underway. If the Secretary of State decides to confirm the Orders then Stage 6 will entail the final design and contract document preparation before the work starts on site.

4.2 The results of Public Consultation

The consultation and feedback processes, outlined in Section 3.3.2 and in CD 2.21., involved the local communities, their elected representatives and the various stakeholders. The outcomes from the consultations proved essential to optimise the scheme through the preparation process. These processes are described in the Planning Application supporting documents.

4.3 Safety considerations

The designer plays a key role in ensuring that the safety of those who are to use, construct, maintain or repair elements of the Scheme is considered during the design process. Risks have been avoided or reduced as far as reasonably practicable. Procedures have been followed to remove, reduce or manage risks through the design
process according to the Construction Design and Management Regulations (CDM 2007)

An Interim Road Safety Audit Stage 2 was conducted, independently from the design team. It identified no serious weaknesses or issues in the scheme with regard to scheme users or future maintenance activities. A pedestrian and cyclist crossing island was added, minor amendments were made to the highway alignment (to widen islands) and entry curve radii were altered at some junctions to address issues raised in the safety audit.

4.4 Early involvement of the contractor

The Council engaged Carillion Construction Ltd (then Alfred McAlpine) in 2007 to enable early contractor involvement as the design developed and options were tested and assessed. Having the contractor involved at an early stage has led to more, and better, scrutiny of construction issues, programming, and the selection of materials.

The Early Contractor Involvement (ECI) commission offered distinct advantages over the conventional methods of scheme procurement. The Contractor’s team responsible for eventual road construction has been actively involved in the design process, which means an integrated team approach has already been developed. Early opportunities have been available to develop the best solutions regarding buildability, traffic management, materials, finishes and construction types. The contractor has also been central in the continuing search for economic solutions through Value Engineering and Value Management.

4.5 Geotechnical and mining investigations

The planning applications for the scheme were in two Phases. Therefore the Ground and Mining Investigations were also undertaken in Phases:

- Phase 1 Stage 1 – to provide ground and mining data for design before route option appraisal, consultation and before the planning application;
- Phase 2 Stage 1 – to provide ground and mining data for design before public consultation and before the planning application;
- Phase 2 Stage 2 – to provide ground and mining data for more detailed design before Orders publication;
• Phases 1 & 2 Supplementary Stage 2 and additional geophysical surveys – also to provide ground and mining data for design before Orders publication;

• Current Scheme Stage 3 - to provide ground and mining data for the final design before contract document preparation

4.6 Final design and the contract documents

This stage will follow a successful outcome of the Public Inquiry, a favourable recommendation in the Inspector’s Report and the confirmation of the Made Orders by the Secretary of State.
5 DESIGN STANDARDS

5.1 General

Guidance on the requirements for the geometric layout of new trunk road schemes is set out in Department of Transport standards and advice notes contained in the Design Manual for Roads and Bridges (DMRB, Section 1, Links, and Section 2, Junctions). The standards set out the desirable requirements for unconstrained sites but allow for lower parameters, or ‘relaxations and departures’, to be used in some circumstances. Such circumstances include where the adoption of departures would lead to environmental benefits or cost savings in locations where there would be no overriding safety implications.

As this proposed road is not a Trunk Road, the Cornwall Design Guide (CD 3.18), other local design standards and practices, and the Manual for Streets (CD 4.89 and CD 4.90) have been used where appropriate, in conjunction with DMRB, to introduce suitable standards at particular locations where constraints, conditions or future needs so dictate.

5.2 The new road type – position in the hierarchy

According to the DMRB standards, the scheme was deemed to be an urban, all-purpose road within a built up area (Vol 6, Section 1, TD 9/93 Highway Link Design - CD 4.24). This is the basis of its design. It is intended to be an urban distributor with a low speed limit.

It was recognised that the function of the road may change over time as it becomes assimilated into the adjacent regeneration developments in the area.

Within the Manual for Streets 2’s hierarchy of roads this scheme would be IIB or IIC on the basis of its high “link status” – its need to cater for significant traffic volumes in future as the area develops. The character of the land use adjacent to the road may change, however, and the new road could evolve to have a higher “place status”.

5.3 Carriageway standards

There is considerable flexibility in the various highway design standards to enable schemes to be designed to meet highway forecast capacity and safety requirements whilst also meeting local needs and minimising impact on, the environment.
Carriageway standards have been selected to accommodate the forecast traffic flows. These flows required only a single carriageway, two lane road.

5.4 Cross section

Current cross section requirements for new roads are set out in the DMRB (Vol 6, Section 1, TD 27/06 – CD 4.25). Following a design workshop it was judged that the appropriate cross section for the new sections of road should be two 3.4m wide traffic lanes with 3.0m wide shared cycleway /footways on each, or on one side. The cycleway / footways would be separated from the carriageway by 0.5m wide buffer strips.

The cross-section would be widened at some locations to provide centre-standing right turn lanes. Lane widths would be narrowed at these facilities and at traffic signal controlled junctions and crossing islands.

Verges form part of the overall cross-section and will either be 0.5m or 1.0m wide, from the back of the cycleway / footway. They provide an area in which to locate highway feature such as signs, safety barriers and drainage, services and communications ducting. They also provide a flat area at the foot of cuttings or top of embankments to allow the earthworks to be shaped to meet the cycleway / footway.

Verges have been widened at some locations to provide drivers with adequate stopping sight distance (on the insides of bends). They have been narrowed at some locations to reduce the land required.

On the sections of existing road where the footway is being widened, and additional lanes constructed to improve junction performance, the land-take has been minimised by having no verge. At these locations (where the existing road is generally neither in cutting nor on embankments) the highway boundary will be at the back of the cycleway/footway, delineated by a fence or wall.

5.5 Junction design standards

The design of new junctions has been carried out in accordance with the appropriate DMRB, Vol. 6, Section 2 standards and advice notes: Part 3, TD 50/04 for traffic signal controlled junctions; Part 3, TD 16/07 for roundabouts and Part 6, TD 42/95 for major/minor priority junctions. (CD 4.27, CD 4.26 and CD 4.28)
The selection of junction type and layout depends on the predicted main road and side road traffic flows and the anticipated traffic turning movements, together with the junction's operational and economic performance and overall environmental impact.

The junctions designs have been based on forecast traffic turning movements and flows in the design year of 2030 (15 years after the assumed scheme opening year). The forecasts have been produced by using a SATURN, wide area traffic model as described in the Traffic and Economics Evidence. Three computer programs have been used to test the capacity of junctions and, through iterative design, to ensure that the design will function satisfactorily in the design year. These programs were: PICADY, for major/minor priority junctions; ARCADY for roundabouts and LinSig for traffic signal controlled junctions.

Options for junction type at particular locations have been assessed to determine the optimum solution. Sufficient highway capacity for the forecast turning movements has been achieved at each junction on the scheme, up to 2030, whilst land-take and adverse effects on adjacent businesses have been minimised.

5.6 Road alignment

The alignment of a modern road is designed to ensure that geometric standards such as curvature, visibility and crossfall are consistent with the anticipated vehicle speeds on the road. Vehicle speeds vary according to the impression of constraint imparted to drivers by the road layout, its alignment and its surroundings. In particular, vehicle speeds will depend upon such factors as the severity and frequency of bends, the width of the carriageway and verges, the frequency and nature of junctions and accesses, the visibility for stopping and overtaking, the visibility at junctions, the presence of pedestrians and cyclists, the nature of adjoining development or its absence and the presence of a mandatory speed limit.

Alignment design standards for new roads are set out in DMRB, Volume 6, Section 1, TD 9/93: Highway Link Design. Table 3 identifies the desirable minimum standards for horizontal and vertical curvature and stopping sight distance for new roads for design speed bands of 120, 100, 85, 70, and 60 kph (these are taken to be equivalent to 70, 60, 50, 40 and 30 mph speed limits). Values that are safe and comfortable for the road user for each design speed are the benchmark for normal design.

For a 60kph design speed, the follow parameters are stated in the DMRB as the desirable minima:
- Horizontal stopping sight distance 90m
- Vertical stopping sight distance (for single carriageway) 70m
- Minimum horizontal curvature with 2.5% crossfall 510m
- Minimum horizontal curvature with 5% crossfall 255m
- One step below minimum horizontal curvature with 5% crossfall 180m

Crossfall is the slope across the width of a road to reduce the sideways forces on passengers to comfortable and safe levels.

The maximum longitudinal grade on the proposed scheme is 7%, which was considered acceptable considering the nature of the road, topography and the need to minimise the embankment height and reduce impact in the Red River valley.

### 5.7 Design speeds

According to the DMRB the design speed for the road is determined by consideration of the bendiness of the alignment (total change of direction per kilometre), the nature of the cross section and the adjacent speed limit requirements.

The road will connect roads which have existing or proposed 30 mph speed limits, and will in time be bounded by mixed development. It was concluded that the road would require a speed limit of 30mph. Therefore the Design Speed that has been used is 60kph (37mph).

### 5.8 Departures from Standards

The DMRB allows some flexibility by permitting the designer to reduce the desirable minimum values in certain circumstances. The level of permitted reductions, or relaxations, depends on the type of road, the location and the design speed. There are various conditions governing the use of relaxations, particularly where their use might have implications on safety.

If a designer wishes to reduce these parameters still further, for example to reduce impacts on the environment, this is termed a ‘Departure from Standards’. The approval of the Technical Approval Authority, in this case Cornwall Council, is required for the use of Departures from the DMRB in highway proposals.
Three relaxations from standard have been use in the scheme to avoid constraints, reduce impact and minimise land take. The relaxations in horizontal curvature, road geometry, are:

- the use of a 50m long, 127m radius horizontal curve around the Carn Brea sports ground
- the use of a 51m long, 180m radius horizontal curve around the Carn Brea sports ground (adjacent to the above 127m radius curve), and
- the use of a 118m long, 180m radius horizontal curve from the Dolcoath roundabout to the Tuckingmill Urban Village area.

The Desirable Minimum radius for these curves is 255m. Acceptable, full standard visibility has been provided for drivers at these locations, however, by widening the verges to take account of the tighter curve radii used.

The geometrical design of the road and the relaxations used were appraised in the Safety Audit and considered to be acceptable. These relaxations can be implemented without compromising highway safety and have been accepted by the Council. The Scheme layout is appropriate and safe.

5.9 Facilities

5.9.1 Laybys

There will be three maintenance lay-bys included in the scheme, South of the Dolcoath Roundabout (chainage 100), West of the Heartlands Junction (chainage 1050) and South of the Wilson Way roundabout (chainage 2655). These will be surfaced with grasscrete and, when the grass grows through, will have the appearance of the grass verges. They are provided as parking bays for occasional maintenance and service vehicles.

5.9.2 Seating

25 no. seats have been provided throughout the scheme at regular intervals, located immediately adjacent to the cycleway / footways and footways, with adequate access areas around them.
5.9.3 *Key Benefits of the Scheme*

The key benefits of the scheme are shown diagrammatically in Appendix 3 *(CC/3/3).*
6 SCHEME DESCRIPTION

6.1 Summary

The Scheme which is the subject of the Made Orders, will deliver:

- a new road from Dolcoath to Dudnance Lane across the Red River valley and the old South Crofty mine site;
- a new traffic signal controlled junction opposite Heartlands Park on Dudnance Lane;
- Layout revisions at East Hill junction with Dudnance Lane and Trevenson Road;
- improvements to Dudnance Lane and Station Road at the new junctions;
- a new traffic signal controlled junction at the Penhallick Road / Station Road / Dudnance Lane junction
- a new road from Station Road to Wilson Way, around the Carn Brea sports ground with new side road junctions;
- a new roundabout junction with Wilson Way;
- minor improvements to the unwidened sections of Dudnance Lane and Station Road (e.g. new footway / cycleways, closure of private access and new lighting)

The scheme is shown on the Overall Plan WHV285300BP-0100-0002 rev A (CD 1.6), on the General Layouts WHV285300BP-0300-001 to 010 Rev Bs (CD 1.7) and on the Long Sections WHV285300BP-0700-151 to 160 Rev Bs (CD 1.8) – plus the General Layout WHV285300BP-0300-006 rev D (CD 1.9) which shows the change to the proposed Wilson Way roundabout.

The scheme has been given the status of “Classified” road, A3047, by the Department for transport, which will come into effect on its opening to traffic.
6.2 Summary of scheme sections

6.2.1 East Hill to Wilson Way

The widening of a short length (50m) of Dudnance Lane, South of East Hill, to accommodate a longer, northbound, left-turn lane into the signal controlled junction with East Hill (to the West) and Trevenson Road (to the East).

A new signal controlled junction at the intersection of Dudnance Lane, the new road (to the West) and Heartlands Park access (to the East), with flared carriageways to accommodate turning traffic lanes. The widening will extend some 75m north and south of the junction. Controlled pedestrian and cyclist crossing facilities will be included in the junction.

A shared cycleway / footway (3.0m wide), to be provided on the West side of Dudnance Lane and the retention of the existing footway, on the East side, as far as the access to Pool Market. At this location the cycleway / footway will cross to the East side of Dudnance Lane, via a signal controlled crossing point, and continue past the Tesco access.

A new shared footway/cycleway, 3.0m wide, on the North side of Dudnance Lane from the Tesco junction continuing eastwards to Wilson Way. The existing footway will be retained on the South side (approximately 2.0m wide).

A new traffic signal controlled junction, with flares for turning lanes, will be provided at Penhallick Road. Controlled crossing provision will be included at the junction on the eastern arm.

A new section of road will connect Station Road to Wilson Way; this road will run parallel to the London / Penzance railway line for approximately 300m before bearing North to a new roundabout on Wilson Way near Carn Brea Lane. This new link will include a shared footway/cycleway, 3.0m wide, on the North side and 2.0m wide footway on the South side.

Potential maintenance works

It may be an option to combine the construction works for the proposed scheme with routine, periodic maintenance required on roads in the Dolcoath area, Dudnance Lane and Wilson Way (from Carn Brea Lane to Barncoose). The condition of the road
pavements and surfacing, traffic and construction programming issues and economic advantages will determine whether this would be beneficial.

6.2.2 Dolcoath to Dudnance Lane

At Dolcoath, a tie-in to the ongoing Dolcoath Development spine road will entail the closure of the East end of Dolcoath Avenue. This tie-in, connection will lead into a new roundabout at Dolcoath Road.

From this roundabout the scheme will traverse farmland in a northerly then easterly direction. It will then cross the Red River valley, and the South Crofty mine site to the new traffic signal controlled junction at Dudnance Lane (opposite the proposed access into Heartlands Park). This will be a new, single carriageway road 6.8m wide. Pedestrians and cyclists will use a 3.0m wide shared facility (with a 0.5m wide buffer strip) on each side of the new road. The new road will cross the Red River valley on embankment with two 12m arch structures to accommodate the river, Chapel Road, and multi-user trails.

Throughout the scheme landscaping and planting will be included where required to mitigate the visual impact of the road and its traffic and to provide replacement habitats for flora and fauna.

Noise reduction and screen fencing will be provided at various locations to reduce the impact of the scheme and its traffic.

Diversion of the Red River, open channel drainage, and the attenuation pond, will provide opportunities to extend and increase the wetland habitats.

Road drainage will be, where possible, carried by open channels – in accordance with the CPR Surface Water Management Plan’s preferred design – as accepted by the Environment Agency. Water storage will be provided (in pond and tanks) to attenuate the run-off flows before discharge to water courses and outfalls.

Various existing side roads will need to be connected to the classified road. This will entail the creation and connection of new side roads, re-grading of the tie-in lengths and a unification or replacement of the existing highway boundary treatments. Various private accesses and roads serving residential properties, business premises and land adjacent to the existing roads will be modified as part of the scheme. Access will be maintained to land which will be severed by the scheme.
Private access connections will be provided for future development at the site of the proposed Tuckingmill Urban Village, with a centre right turn lane. Private accesses will also be provided to maintain entry and egress to severed land at South Crofty and to facilitate future development.

6.3 Detailed description of the scheme

6.3.1 Western tie-in to the Dolcoath Roundabout

Highway

At the south western end of the Scheme a short length of new road will tie into the spine road of the Dolcoath Development. This development is under construction and is being undertaken by Linden Homes for the Homes and Communities Agency. The proposed Dolcoath Roundabout will give a clear continuity break between the CPR Major scheme and the lower standard, spine road of the Dolcoath residential development. The roundabout will give sufficient capacity for access to, and egress from, Dolcoath Road and the development.

Dolcoath Avenue will be closed where the new road crosses it at its present junction with Lower Pengegon (some 70m from the new roundabout).

A length of Lower Pengegon will be closed to vehicular traffic (from the stopped up end of Dolcoath Avenue to Dolcoath Road) and changed into a cyclist and pedestrian thoroughfare on the edge of a proposed new green space.

The closure of Dolcoath Avenue and removal of through-traffic will bring considerable environmental benefits to residents living along the road. At its eastern end, access will be maintained to properties and a turning head provided. Access to Dolcoath Avenue by vehicles from the new link road will be prevented by the use of guard railing and bollards. Facilities will be provided, however, to allow pedestrians and cyclists from Dolcoath Avenue to join the new footway/cycleway alongside the new road.

At the tie in to the Dolcoath Development spine road there will be side road modification works to divert Lower Pengegon into a new, priority junction with the proposed road. An uncontrolled crossing facility, with a centre island, will be provided immediately adjacent to this new junction to enable pedestrians and cyclists to cross to used the new cycleway/footway on the length of Lower Pengegon closed to vehicular traffic - northwards to Dolcoath Road. As developments are completed, and its use increases, this crossing may require traffic signal control.
Footway and cycleway continuity is maintained across the new side road junction north-westwards to Dolcoath Road, and across the arms of the new roundabout with tactile paving, drop kerbs and signing.

A lay-by facility (surfaced with grasscrete) will be provided on the tie-in, westbound lane, for maintenance vehicles managing the landscaped areas.

The cycleway/footway, provided on both sides of the road, is a shared facility 3.0m wide which will be separated from the carriageway by a kerb and 0.5m buffer strip (a buff coloured surface treatment).

The junction of Dolcoath Road with Church View Road will be remodelled and a centre right turn lane added for northbound traffic. The existing private access track from Church View Road to Church View Farm will be relocated and designed to cater for farm vehicles.

The centre island of the Dolcoath roundabout will be seeded to grass and wild flowers.

The roundabout will have splayed, single lane entries and there will be high friction surfacing on the approaches of all four arms.

**Landscaping**

The environmental impact appraisal of this section, undertaken for the planning application, is contained in the Core Documents, Phase 2 Supporting Statement, **CD 2.14** and the Environmental Statement, Volumes 1, 2 and 3, **CD 2.16 to 2.19**.

At the Dolcoath tie in the opportunity has been taken to soften the aspect of the new road by integrating planting along the new highway and through landscaping isolated pockets of land adjacent to the road. The planting will be made up of trees and shrub planting (up to 2m high) and groups of extra heavy standard trees within a grassland setting. It was considered essential to use these areas of land to create effective screening – mitigating the visual impact of the new road and its traffic on the residential properties in Dolcoath.

It is proposed that lost Cornish hedges will be replaced between the points where the line of the new road severs them. They will be replaced by new Cornish hedges built alongside the road to connect the severed ends of existing hedges.
The inclusion of Cornish Hedges in the Scheme is considered an important aspect of minimising the potential impact of this part of the scheme on the landscape character of the open fields and hedgerows of the local farmland landscape.

The area of land in the SW quadrant of the roundabout junction is intended to provide both screening, with mounding and vegetation planting, and replacement public space for the land lost to the scheme at Wheal Harriet; this existing feature is located where the tie-in to the Dolcoath development runs through the corner of Lower Pengegon and Dolcoath Avenue. The seats from Wheal Harriet would be relocated in this proposed new green space (in the SW quadrant of the roundabout junction, between the new road and the closed section of Lower Pengegon). The area of land in the NW quadrant of the roundabout junction would be landscaped with a mound which would be planted to provide screening for the properties in Dolcoath on and near the southern end of Church View Road. These two areas will give a green “gateway” into Dolcoath.

Landscaping details are described on the General Layout drawings. (**CD 1.7**)

There is an existing capped mine shaft in this area which will be made safe.

**6.3.2 Dolcoath Roundabout to Tuckingmill Urban Village**

**Highway**

Travelling north eastwards from the Dolcoath Roundabout the highway alignment includes (from chainage 290) a 118m long, 180m radius bend with verge widening on the south side to provide adequate forward visibility. This geometry is a relaxation of standard geometry referred to in Section 5.8.

The road will be a new, single carriageway road 6.8m wide. Pedestrians and cyclists will use a 3.0m wide shared facility (with a 0.5m wide buffer strip) on each side of the new road.

The highway boundary on the North side will be on the outside of the open drainage channel. The positively drained road gulleys will discharge into the open channel on the northwest side of the road. The open channel inverts will be 1.0m wide and the channels will be 1.0m deep with 1:1 side slopes which will be hydromulched with a suitable grass mix to assist in stabilising the slopes. It is expected that the channels will be colonised by wetland flora in time – without compromising their drainage/water carrying capability. Periodic maintenance/clearing may be required. Maintenance
access to the channel will be between the bottom of the road embankment and the channel.

The carriageway then starts to widen again to accommodate the centre turning lanes for the Tuckingmill Urban Village (TUV) staggered priority junctions. The drainage channel would be taken in culvert under the northern TUV side road.

**Landscaping**

The environmental impact appraisal of this section, undertaken for the planning application, is contained in the Core Documents, Phase 2 Supporting Statement, **CD 2.14** and the Environmental Statement, Volumes 1, 2 and 3, **CD 2.16** to **2.19**.

The width of the strip of land around the outside of the bend (travelling north eastwards) is sufficiently wide for the planned, tree and shrub, planting to screen the road and its traffic from the properties on Church View Road and Church View Farm which will back onto the new road. Existing vegetation will be retained where possible.

Landscaping details are described on the General Layout drawings. **(CD 1.7)**

A noise reduction fence will be erected along the boundary of these houses on Church View Road to help reduce the potential traffic noise impacts in the gardens. The fence will be along their southern boundaries outside the access track to Church View Farm and will be undertaken as accommodation works.

The farm access track will have a revised entry off Church View Road and will be retained as existing – having sufficient width for farm vehicles. Church View Farm will have a short length of fencing to give some shielding for those working in the yard.

The proximity of the road to residential properties dictates that the planting in this wide highway landscape area should be dense. The planting within highway will create a diverse wooded habitat with shrub understorey.

The substantial areas of mixed planting within this strip will, in time, provide valuable habitats for flora and fauna which, being within highway boundaries and not subject to regular intrusion, have the potential to become diverse, self contained ecosystems.

Existing trees, shrubs and earth bank formations will be retained as far as practicable. Existing banks along the line of the old leat will be preserved and the existing vegetation will be retained and reinforced with native species.
The open channel drainage, as described, continues around the outside of the bend.

6.3.3  

*Tuckingmill Urban Village to the Red River valley*

**Highway**

The existing topography between Church View Farm and the Red River slopes downwards from South to North and there is a substantial, existing earth bank adjacent to the Old Teagle Factory building on the North side of the road. It is expected that this ground will be reprofiled when the proposed Tuckingmill Urban Village (TUV) is developed. Two side road junctions have been included in the scheme to accommodate the proposed TUV developments to the North and South of the road.

The South side of the road is cut into the rising ground, which gives a measure of screening to the road and its traffic. Angular and severe side slopes will be avoided by “rounding” the edges in order to reflect existing topography.

The carriageway has been widened to accommodate a right turn centre lane for the two, staggered side road accesses into TUV. Crossing facilities will be developed further when the final TUV development plans are produced.

The road drainage is piped over this length on the North side of the road, through the centre of the TUV development area. It continues in pipe across the valley on the road embankment, to the east side where it is then piped down into the attenuation pond.

From the TUV junction the road continues eastwards dropping into the valley with a maximum grade of 7.2%.

**Landscaping**

The environmental impact appraisal of this section, undertaken for the planning application, is contained in the Core Documents, Phase 2 Supporting Statement, **CD 2.14** and the Environmental Statement, Volumes 1, 2 and 3, **CD 2.16 to 2.19**.

Landscaping details are described on the General Layout drawings. **(CD 1.7)**

Following liaison with stakeholders, the fencing and planting along this section will be designed primarily to delineate the highway boundary since it may be altered and subsumed within the future development proposals.
The road scheme will include irregularly spaced trees which could be retained when the future developments occur. In these areas standard (2500-3000mm) or heavy standard (3500mm+) trees will be planted in order to facilitate an immediate screening effect and provide options for future retention. Generally, trees will be under-planted with shrubs. On embankments and cutting slopes native grasses will be sown to integrate with the ecological objectives of the scheme and provide slope stability.

6.3.4 The Red River valley crossing

Highway

The road crosses the Red River valley on embankment with a vehicle restraint system on the approaches to, and exits from, the structure’s parapet walls.

A bridleway (and shared path for pedestrians and cyclists) will be included to link the road scheme’s southern footway / cycleway to the Mineral Tramway and then to Chapel Road. This path will traverse the road embankment slopes and have a maximum 5% grade (1 in 20) with wide corners; it will be surfaced and will have three, level resting places with seats.

The road drainage on the East side of the valley is piped over this length, joins the flow from the West before discharge by pipe into the proposed attenuation pond.

From the valley, across South Crofty to Dudnance Lane, run-off water will be captured in gulleys and piped to flow westwards to the valley shoulder where it will be discharged into an open channel which cascades, in a series of channel runs and stilling basins, down the valley side and flows into the attenuation pond. This pond will attenuate the flow rates of the surface water run-off from the road, allowing it to outfall at an acceptable rate into the Red River

Travelling eastwards, the road climbs out of the valley with a maximum grade of 7% (for a length of about 70m) before flattening out approaching the south Crofty mine complex.

Landscaping

The environmental impact appraisal of this section, undertaken for the planning application, is contained in the Core Documents, Phase 2 Supporting Statement, CD 2.14 and the Environmental Statement, Volumes 1, 2 and 3, CD 2.16 to 2.19.
A major benefit of the selected alignment is that it has been designed to follow the existing ground where possible, dropping down into the Red River valley to minimise the scale and visual impact of required structures. The slight skew to the alignment at this location will reduce the visual impact as the road breaks the valley shoulders. Suitable, excavated material from the scheme will be used locally to form the embankments in the valley and associated bunding.

The road crosses the Red River valley on embankments with side-slopes flattened to 1:3 to merge with the sides of the valley. This will reduce the visual impact of the road embankment to some extent although the long views southwards will be lost.

Landscaping, habitat creation and planting are described on the General Layout drawings. (CD 1.7). In the valley the vegetation on highway land would reflect the existing mining landscape – whilst augmenting local species of trees and shrubs.

Opportunity will be taken to establish areas with a soil / mine-waste mix suitable for bryophytes and lichens to mitigate for the local loss of these habitats by the road construction.

In order to retain water, maintain wetland and create new habitats the scheme will include river bed treatments and wetland enhancements in the Red River valley, designed to improve and expand the ecology of the river. These enhancements will include “scrapes” and “riffles” and will rationalise existing small ponds, increasing their size and reshaping them with weirs, to retain water and maintain wetland areas to encourage flora and fauna.

The proposed attenuation pond in the valley, adjacent to the Red River, will be lined with concrete and will have a shallow area around the outside and sloped edges, landscaped and planted with vegetation to develop a diverse wetland ecology. The upper banks will be planted and the overall vegetation will be designed to ensure that the pond’s drainage function will not be impaired. Periodic maintenance will be required to clear the channels and ponds to maintain water flow.

The highway drainage attenuation pond has the potential to become a valuable feature in the local landscape – creating habitats and benefiting the ecology.

6.3.5 The Red River valley to Dudnance Lane across South Crofty

Highway
From the Red River valley to Dudnance Lane the scheme will cross South Crofty mine complex. The scheme has been designed so that it will not impair or prejudice future mining operations.

The expansion and relocation of mining activity southwards has been accommodated by the road scheme. A land exchange agreement has been made between Western United Mines (WUM) and the Council which allows for the land required for the road to be released by WUM and land required for the new mine areas and processing plant, to the South, to be released by the Council.

The new road would pass through the present South Crofty, operational, mine site and requires the demolition of the derelict ore processing building. It avoids the Winding house but impinges on the protected space (150m radius) around Cook’s Shaft headgear. The road does, however, allow enough space around the Cook’s Shaft headgear for future mining needs to be protected.

The demolition required for the road will assist in the proposed re-development of the site, as mining operations are relocated southwards. The whole of the existing site, including the road corridor, would then be cleared and remediated in readiness for regeneration development.

The demolition of the derelict and disused mine buildings and structures will produce rubble which will be crushed and reused in the scheme, and other material such as steel which will be reclaimed where possible. The resultant excavations will require substantial regrading of the ground adjacent to the road hence the drainage across South Crofty site, is in pipe.

The road layout includes private accesses to give entry to severed South Crofty land on either side of the road, and these can be amended and utilised as the land is brought forward for development.

**Landscaping**

A thorough assessment of the effect of the scheme on the World Heritage site is included in the environmental impact appraisal of this section, undertaken for the planning application. It is contained in the Core Documents, Phase 2, Supporting Statement, **CD 2.14** and the Environmental Statement, Volumes 1, 2 and 3, **CD 2.16** to **2.19**.

Landscaping details are described on the General Layout drawings. **(CD 1.7)**
As the road passes out of the valley on the eastern side it will be in cutting. Embankment slopes are 1:3 to give opportunities to plant wildflower mixes and grass. On the shoulder of the valley the planting within highway has been thickened to create a diverse wooded habitat with shrub under-storey in order to help screen the new road and its traffic from the long views from existing residential communities.

The proposed demolition of some of the redundant mine structures (those that are not iconic or historically valuable) will improve the character of the area and will bring about positive improvements to local views.

Given the likelihood of future developments in this area, the aim has been to include highway landscaping and planting within the road scheme which could potentially be retained and incorporated into the developments. Hedgerow type planting along this section will delineate the highway boundary.

6.3.6 Heartlands Junction

Highway

The junction between the new road link from the west, Dudnance Lane and the Heartlands Park access will be traffic signal controlled which will provide suitable capacity for predicted traffic and facilitate safe crossing for pedestrians and cyclists.

Traffic signal operation will be managed by a computerised controller which will optimise the signal timings throughout the day to cope with varying traffic arrival profiles. The timing of the phases on the lights will be designed to reduce congestion and delays as far as possible, for all flow levels.

The geometry of the junction has been designed in accordance with DMRB standards.

Pedestrian and cyclist crossing facilities are particularly important at this junction because Heartlands Park access will be served by the Eastern arm. This access to the Park will cater for all vehicular arrivals – including coaches – and the park is expected to generate relatively large seasonal and weekend flows (but low am and pm peak period flows).

The existing Dudnance Lane carriageway will be retained and widened to create a 3.0m wide shared cycleway / footway, constructed on the west side. It is expected that future cyclist and pedestrian flows in the North-South corridor will be substantial at some times of day (eg college, amenity and other peak period traffic).
There will be occasional, but regular, events taking place in Heartlands Park which are forecast to attract large tidal flows on entry and egress. The highway network capacity is adequate to bring traffic inward from the A30 utilising the signal controlled junctions to cope with the traffic management of these events efficiently.

A layby facility (surfaced with grasscrete) has been proposed in the NW quadrant of the junction for maintenance vehicles – servicing the traffic signals and maintaining the landscaping.

**Landscaping**

The landscaping proposed around the junction will be mainly grass, with shrub areas, since it will need to accord with the edge of the parkland and future adjacent development at South Crofty (North and South of the road) and the Mayne’s site in the SW quadrant of the East Hill junction.

6.3.7 **Dudnance Lane from East Hill to Station Road**

**Highway**

From the East Hill junction southwards, Dudnance Lane will follow the existing single carriageway alignment, widened where necessary. The continuity of the cycleways and footways will be maintained and extended, giving connections between East Hill and the new links.

In general the scheme layout will include a new 3.0m wide shared cycleway / footway on one side and a 2.0m wide footway on the other.

The 3.0m wide shared cycleway / footway, with a 0.5m buffer strip at the carriageway edge, will be constructed on the West side of Dudnance Lane from East Hill, heading South across the Heartlands Junction and crossing to the East side just North of the SITA waste site access adjacent to the Pool Market access.

At this point, a signal controlled pedestrian crossing point will be installed. The cycleway / footway will then be established to continue on the East and North side of Dudnance Lane, to Station Road where it will connect with the new link to Wilson Way.

The alignments of the improved sections of Dudnance Lane, through to Station Road, have been designed to minimise and balance the effects of the required widening on adjacent properties having regard to their operational needs. Vehicular and pedestrian
accesses to property, namely Atlantic Windows, Stones Haulage, Varcurn Marble, South Crofty Tyres, Richfords Fire & Flood and the Old Station Yard will be maintained.

The alignment has been designed to give standard forward visibility which improves the existing situation. It will also maximise the use of the existing carriageway to ensure the new levels match or are above the existing, preventing the need for full carriageway reconstruction throughout.

A proposed chainlink fence re-establishes the highway boundary across the frontage to Atlantic Windows. A chain link fence and small wall will re-establish the highway boundary across the frontage to ‘Varnurn’. ‘Richfords’ and South Crofty Tyres will have security fences reinstated (without a replacement wall) in order to maximise internal operational areas.

Where the road is to be widened, the highway boundary across the frontages to existing commercial properties in the Old Station Yard on the South side of Dudnance Lane up to Penhallick road will be re-established by replacement stone walls. The existing access locations will be maintained. One Old Station Yard property building will require demolition (owned by DMT Property) to enable the highway to be widened.

Landscape

Dudnance Lane enters a World Heritage Site area approximately 90m South of Forth Kegyn. The northern boundary of this designation coincides with the northern boundary of the existing Dudnance Lane, crossing Station Road to run close to the northern boundary of the London to Penzance rail line.

The impact of the proposed road on the World Heritage Site was assessed in depth in the environmental impact appraisal documents supporting the Phase 1 Planning Application contained in the Core Documents, Phase 1, Supporting Statement, CD 2.1 and the Environmental Statement, Volumes 1, 2 and 3, CD 2.3 to 2.8.

6.3.8 Penhallick Road Junction

Highway

A new signal controlled junction is proposed at Penhallick Road. Dudnance Lane and Station Road will have two-lane approaches and a controlled pedestrian / cyclist crossing facility will be incorporated into the signal sequence on Station Road (East side). An uncontrolled crossing island will be provided on Dudnance Lane (West side).
Kerb radii will be increased to improve Penhallick Road’s alignment into the new junction. The proposed scheme ties into the existing Penhallick Road railway bridge which was a constraint on the proposed improvement designs.

A new access and egress to Richfords will be integrated into the new signal controlled junction. Richfords traffic will have its own phase on the signals activated by underground loops.

A 100m length of Station Road will be realigned, from Penhallick Road to the start of the new link road connecting to Wilson Way. The residential property and outbuildings of ‘Sylmar’ will require demolition.

Station Road will join the new road via a priority T-junction adjacent to the commercial property previously occupied by ‘Carters Packaging’. Access to this property from Station Road will be maintained.

The existing access from Station Road to ‘Chynoweth’ and ‘Treveor House’ will be revised and they will have a wider drive to assist turning manoeuvres. A noise reduction fence will be erected on their boundary adjacent to the proposed Tesco HGV operation bay.

6.3.9 Station Road to Wilson Way

Highway

From Station Road, the route will pass through the existing railway maintenance compound. Subject to approval by Network Rail, a 2m high anti dazzle fence and an N2 vehicle restraint system will be installed where the new carriageway runs parallel to the railway line. These fences are in addition to the existing Network Rail palisade, security fencing which will be replaced or extended as required.

The new carriageway will run parallel with the London to Penzance railway for approximately 300m before bearing North with a 50m long, 127m radius curve followed by a 51m long, 180m radius curve to a new roundabout on Wilson Way. The alignment includes these two radii, which are required relaxations below desirable minimum, in order to minimise land-take. These radii are acceptable relaxations from standard (as described in Section 5.8) being sufficiently removed from the junctions.

The verge will be widened to provide full standard visibility across the inside of the bend.
The single carriageway will incorporate a 2m wide footway to the South side and a 3m wide shared footway/cycleway (with a 0.5m wide buffer strip next to the carriageway) to the North. A 1.5m high bund, with 1 in 2 side slopes with a 1m wide plateau, will screen the carriageway from land to the North; land outside the bund will be regraded as required.

Sub-surface drainage attenuation cells, to store run-off water from this section of new road, are to be installed to the SE of the Carn Brea Leisure Centre’s sports ground. It will outfall via an oil interceptor, north westwards to an existing South West Water combined sewer. The attenuation area will be encompassed by a post and rail fence. Access to the attenuation feature and oil separator will be gained via the new road.

Landscaping

The environmental impact appraisal of this section, undertaken for the planning application, is contained in the Core Documents, Phase 1, Supporting Statement, CD 2.1 and the Environmental Statement, Volumes 1, 2 and 3, CD 2.3 to 2.8.

Landscaping details are described on the General Layout drawings. (CD 1.7 and CD 1.9)

Landscaping will receive planting which will include wildflowers, grass, trees and shrubs. The bunding terminates as it approaches the southern boundary of the Carn Brea Leisure Centre sports ground and a visual screen fence will be erected at the back of the cycleway / footway.

As the new alignment diverges from the railway line, existing earth mounding around the sports stadium is to be incorporated into further bunding on the north and northwest side of the new road, 1.5m high, with a nominal overall width of 12m. This bund, on the northwest side of the new link road, will be planted with trees and shrubs to provide increased screening of the road traffic for the running track and in order to minimise potential impacts from lights.

Whips and feathered trees can reasonably be expected to achieve heights of up to 5m within 10-15 years. Fast growing ‘nurse’ species will be mixed with slower growing hardwoods in order that rapid screening is achieved, with continuity of growth maintained in the long term.

Fenced attenuation cell areas will be planted with amenity grass.
Between the proposed carriageway and the railway line, small pockets of land will be regraded and landscaped. An existing earth mound will be severed and regraded. A chain link fence will form the highway boundary to Pool Industrial Park.

Footpath No.4 (Carn Brea) will be severed by the new carriageway approximately 100m North of the pedestrian overbridge crossing the railway. The carriageway widens to 10m to accommodate a pedestrian crossing point, with kerbed central refuge, for the users of the footpath. The footpath then joins the new carriageway and users cross to the shared footway/cycleway on the West side of the new road, continuing northwards some 95m to rejoin the existing footpath route.

Each end of the severed footpath will have staggered barriers as a safety feature to prevent straight line access onto the carriageway.

The widening for the pedestrian crossing refuge continues northwards to provide carriageway widening for a replacement access into TESCAN (Pool Industrial Park). The existing vehicular access off Wilson Way into this site, will be closed and this new provision, from the East side of the new road, will enable the existing operations to continue, giving vehicular access to the internal operational hard standing areas.

Continuing northwards the carriageway resumes its two lane width before widening on the approach to a new roundabout close to the Carn Brea Lane/Wilson Way junction.

Sub-surface attenuation cells to store run-off water are to be installed in the area immediately south of 78 Carn Brea Lane. Stored water will outfall via an oil interceptor, northwards to an existing South West Water combined sewer on Carn Brea Lane.

A lay-by facility (surfaced with grasscrete) will be provided on the northeast bound lane approaching Wilson Way roundabout for maintenance vehicles – servicing the Western Power Distribution (WPD) sub-station and for maintaining the landscaping and highway.

Landscaping along this section of the route will include planting top-soiled areas with wildflowers, grass, trees and shrubs. The bunding to the northwest side of the road, terminates as it approaches 78 Carn Brea Lane and the new roundabout on Wilson Way.

A noise reduction fence will be established for a distance of 75m approaching the Wilson Way Roundabout, on the West side which will act as a highway boundary screen to the new road. This will mitigate the effects of noise and visual intrusion on the
residents of 78 Carn Brea Lane. The garage to this property is rendered inaccessible by the new road and an alternative garage is proposed to be erected at the rear of the property, served by an existing track.

6.3.10 Wilson Way roundabout

Highway

This roundabout has been subject to redesign since the Orders were made. The reasons for the change, and the details, are given in section 15.1.2. The change was the removal of the left turn filter lane.

The new link joins Wilson Way at a new roundabout with a 12m diameter radius central island. The roundabout is located approximately 30m East of the existing priority junction with Carn Brea Lane. The existing Carn Brea Lane junction will remain with a realigned bell-mouth.

The 3.0m wide footway/cycleway from the link road will cross Wilson Way to the west of the roundabout and, via a splitter island, to join the facility on the North side of Wilson Way. A short length of 3.0m wide footway/cycleway will be provided around the southeast side of the roundabout to provide continuity between the crossing splitter islands.

A new access to the Philip Whear commercial buildings, on the North side of Wilson Way, will be provided to the east of the Carn Brea Lane junction. The current access will be retained for all movements.

The East arm of the new roundabout junction ties into Wilson Way approximately 140m East of the existing Carn Brea Lane junction.

One of the accesses to ‘Bookers’, on the North side of Wilson Way, will be closed and replaced by a new access for HGVs, to the rear of the premises, off Agar Way.
7 LANDSCAPE IMPACT AND MITIGATION

7.1 Landscape Resource

The Phase 1 and 2 Planning Applications contained detailed assessments of the original scheme's visual impact. (CD 2.1, 2.3 to 2.8 and 2.14, 2.16 to 2.19). A Review of these assessments was undertaken to compare the present, reduced scope, scheme with the original (Volume 3, Appendix 5, (CC/3/3)). The same policy and guidance frameworks were used (CD 4.91, CD 5.4 and CD 5.5).

The general study area for the landscape and visual impact assessments, carried out for the two planning applications, covered a 1km area either side of the centreline of the scheme. In order to focus the assessment on more localised effects, a Development Corridor was also defined at 250m each side of the centreline within which potential receptors were identified. These receptors include landscape elements and localised landscape and townscape character areas. The landscape and visual context of the area in and around the development corridor has two key elements: landform and built form.

The landform is defined by the high ground of the granite uplands which form an elevated spine running through the centre of Cornwall and the river systems that flow from these upland areas to the coast. Within the study area Carn Brea Hill with its rocky outcrops, monument and castle is a prominent local landmark in views from both east and west along the A30 and mainline London to Penzance railway.

The Red River Valley and its tributaries also cut across the study area creating narrow wooded valleys through an otherwise pastoral lowland plateau.

The study area contains a number of tree and shrub species and in particular, the Red River Valley contains some dense vegetation where the steep slopes allow the low scrub to grow largely undisturbed. Further south west, the trees and shrubs are concentrated around grazing fields and private properties in unmanaged hedgerows and Cornish Hedges.

Built form in the study area is concentrated around the three towns of Camborne, Pool and Redruth. These settlements have been defined by their relationship to the mining
industry having expanded as a result of the mines that dominated the area in the 18th and 19th centuries.

The area contains numerous remnant mine buildings and structures such as South Crofty, Dolcoath Engine House, Carn Brea Stamps and several chimneys and smaller work buildings. More recent developments have changed this built landscape bringing modern industrial estates (e.g. Pool Industrial Estate) and large scale retail parks, interspersed with derelict land and residential properties.

The Environmental Statements included in the planning applications for the Scheme identified a number of local landscape character areas through which the proposed route will pass. These character areas and their potential sensitivity to change, is as follows:

**Former Mining Landscape** - A landscape of high quality due to its value as a rich cultural resource, providing a significant historical record of the mining industry and associated historical developments. It is part of the Cornwall and West Devon Mining Landscape World Heritage Site and therefore has the potential to be sensitive to change.

**Pool Industrial Park/ South Crofty Mine** - A landscape of low quality due to the existence of the South Crofty Tin Mine and associated active mine structures and nearby industrial park. Although some of the mine structures have recently been listed, the majority of the area is unlikely to be sensitive to change as it represents a typical working industrial landscape.

**Red River Valley** - A landscape of high quality and local amenity. It runs South to North and its steep sided and narrow, bringing a rural character close in to the town and dividing Pool from Camborne. The valley is traversed by the railway line passing over on a high embankment and the mining landscape, both historic and modern features are clearly visible. There will be some degree of sensitivity to change as a result of the natural and historic features within the valley.

**Tuckingmill Urban Fringe** - A landscape of moderate quality varying between typical urban fringe landscape and more rural areas of pastoral fields or well vegetated areas. Depending on which part of the character area is potentially affected, the area has a low to medium sensitivity to change.
Although the western end of the scheme links to a residential area, it passes through open countryside with fields and has a more agricultural character (Tuckingmill Urban Fringe/ Red River Valley).

One Footpath (Public Right of Way) will be affected by the scheme - Footpath No 4 (Carn Brea) – which crosses over the Penzance to London railway line.

There is also a frequently used permissive path (Mineral Tramways bridleway) situated on the eastern slope of the Red River Valley.

7.2 **Visual Amenity**

The landform and topography of the Red River Valley defines the area’s visual character and views. The range of key visual receptors from which the proposed scheme would be visible and which may be affected were identified on Figure 750244-R-PA0004-8.2 Phase 2 Planning Application, Environmental Statement

7.2.1 **Visual receptors**

Visual receptors that were considered in the Landscape and Visual Impact Assessment include:

i. Residents of properties within the development corridor, grouped where possible into those with similar views

ii. Residents of properties on southern slopes of Carn Brae outside the development corridor but within the visual envelope

iii. Recreational users of PRoW and visitors to local destinations

iv. Employees of businesses along the route

7.2.2 **Potentially significant effects**

The consideration of potential effects covers both the construction (temporary) and operational (permanent) periods. Potential temporary effects during construction include the introduction of:

- site compounds, parking, welfare facilities and storage of excavated materials with direct landscape impacts and effects on visual amenity,
- construction traffic, plant, and workers with associated noise and activity.
Permanent direct effects include the removal of some of the landscape elements that currently contribute to the character of the area, such as the loss of farmland, the changing topography in the Red River Valley and the severance of the land behind the Carn Brea Leisure Centre. Other landscape elements such as existing footpaths/cyclepaths and roadside vegetation will be reinstated or enhanced following the completion of the scheme.

It is assumed that as landscaping for the scheme matures, the scale of the effects will be reduced through the benefits of screening and enhancement of the landscape resource.

Receptors likely to experience significant impact as a result of the scheme were assessed in the planning submission EIAs and appropriate mitigation measures were considered. Section 11 will give a more detailed account.

7.3 Approach to Mitigation

The proposals seek to achieve the integration of the road within the local landscape and the mitigation measures included in the scheme minimise physical and visual impacts.

Wherever possible the route has been kept at grade, or within cutting to avoid visual exposure of the earthworks on embankments. The scheme design follows the existing topography, dipping down into the Red River valley, and generally follows field boundaries and existing cultural land use patterns including preservation of existing hedgerows.

Earth mounds have been created which reduce visual intrusion particularly to residential property. These mounds will be planted to increase their screening capability and integrate the scheme into the surrounding landscape. Angular and severe side slopes will be avoided in order to reflect existing topography.

Older/specimen trees and hedgerow features have been retained where possible. The planting proposals are integrated with the ecological objectives of the scheme and include:

1) dense tree and shrub mix planting to enable screening of the scheme is proposed,

2) individual/scattered tree, shrub and groundcover planting in specific locations,
3) open views retained through the provision of indigenous grasses on selected embankments and cutting slopes,

The Landscape Report on the published scheme is included in Volume 3, Appendix 5 (CC/3/3) to update and validate the EIAs submitted with the two planning applications.
8 EARTHWORKS

8.1 Earthworks design process

The earthworks design process has involved the following sequence of work:

1. Establishment of the physical parameters of existing soils from ground investigation data.

2. Mining investigations using historic documentation to identify features from past mining activities (such as shafts, stopes and adits).

3. Confirmation of the viability of the route considering the ground and mining investigation results.


5. Determination of strengthening measures, where necessary.


8.2 Ground investigations

Ground investigation and mining surveys have been undertaken as the scheme has developed to provide data on ground conditions to a level appropriate for the stage reached.

Each stage of the geotechnical investigations built on the previous knowledge and gained additional detailed information as the scheme progressed.

The ground investigations were undertaken for each Phase (1 and 2) of the scheme as it progressed through the planning process. An outline of the investigations is given below and a more comprehensive list is in Appendix 4 (CC/3/3).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Pre-feasibility studies, public consultations and planning application</td>
</tr>
<tr>
<td></td>
<td>Desk-top studies, ground investigation – bore holes and trial pits, contamination sampling, lab testing, mining investigation, geophysical.</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Pre – Orders publication</td>
</tr>
<tr>
<td></td>
<td>Ground investigation – bore holes and trial pits, contamination sampling, lab testing, mining investigation.</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Pre- final construction contract design</td>
</tr>
<tr>
<td></td>
<td>Ground investigation – bore holes and trial pits, contamination sampling, lab testing. (leading to the production of the Final Geotechnical Design Report)</td>
</tr>
</tbody>
</table>
8.3 Geology

8.3.1 Regional Geology

In a regional geological setting, the site is located in an area that comprises largely Carboniferous and Devonian strata that have been subjected to intense igneous activity and subsequent mineralisation. To the north and west of the site, bands of Meta-basaltic igneous rocks are recorded, with a large area of medium and coarse grained granite recorded to the south. Meta-mudstone and meta-sandstone of the Porthtowan formation are recorded to the northeast of the site.

8.3.2 Drift Geology

Typically alluvium present at the base of the Red River valley comprised fine grained unconsolidated and saturated sediment.

Alluvial deposits were recorded underlying made ground, in and either side of the valley, generally at depths of between 2m and 3m below ground level. Deeper alluvial deposits were recorded immediately to the east of the Red River.

Alluvium was recorded to comprise layers of clay, silt, sand and gravel.

8.3.3 Solid Geology

The majority of the site is underlain by the Mylor Slate Foundation of Devonian age comprising principally mudstones, siltstones, and fine grained sandstone. The Carn Brea Granite underlies these metamorphic rocks.

Weathered bedrock was recorded at the eastern end of the scheme. Depth to weathered bedrock was recorded to be deeper closer to the valley. Weathered bedrock was recorded immediately below shallow fill in some areas 0.5m below ground level.

8.3.4 Red River Valley Bedrock

Bedrock recorded as Mylor Slate in the published information was recorded to underlie made ground and alluvial deposits, at depths of 4m – 5m below ground level in the valley, and at 0.5m – 1.7m below ground level to the eastern extent of the scheme.

Bedrock was encountered at depths of 3.2m – 4.7m below ground level in other areas
8.3.5 The Great Cross Fault

The Great Cross Fault runs parallel to the Red River valley on its eastern side. To the West of this fault the competent slate bedrock lies under alluvial deposits. To the East ground comprises heavily fragmented slate overlain deeply with made ground.

8.4 Mining investigations and made ground

8.4.1 Former Mining

The area has been subject to intense shallow and deep copper and tin mining activity over several hundred years. Over two hundred shafts have been identified within 100m of the proposed centreline of the road. Of these, 49 are recorded within 20 metres. Thirty six mineral lodes and twelve adits have been shown to pass beneath or close to the planned road. Given this legacy of mining activity, mine spoil is expected to occur along the whole corridor area.

South Crofty site to the Red River valley

Significant made ground deposits were revealed as the main result of the area’s industrial heritage. The intrusive investigation confirmed the published data, with natural ground consistently comprising weathered slate. Made ground was recorded in all exploratory holes, with significant thicknesses across the South Crofty mine site predominantly composed of reworked natural material. Alluvial deposits were recorded to underlie made ground and overlie Mylor Slate within the valley.

Made ground was recorded in many ground investigation exploratory holes and varied between different areas of the road site.

It generally comprises layers of fine sand (‘tailings’ sand), silts, gravels and cobbles. Within the valley area, large volumes of man made inclusions are contained within the made ground - such as silty sandy gravel with cobbles reworked with man made inclusions of material such as ash, clinker, concrete, brick, wood, glass and pottery. Broken foundations, reinforced concrete and concrete blocks have been revealed and also large amounts of mixed building material. Uniformly graded gravel and silt mixed with the inclusions was recorded in most ground investigations; this constitutes typical mining spoil.
On the eastern side of the mine site towards Dudnance Lane made ground deposits were recorded to be thinner, with slightly deeper made ground adjacent to an historical foundry building.

**Western section – Red River to Dolcoath**

Around 220 linear metres of trenches into bedrock were excavated in the ground investigation operations across open farmland in the area South and East of Church View Farm. The trenches were dry throughout with no water ingress and the excavated material proved to be sandy clays and gravels overlying weathered, fragmented or competent slate and mudstone.

These extensive ground investigation and the laboratory testing of samples and engineering interpretation has concluded that the ground will provide sufficient bearing strength to carry the road sub-base, possibly with the use of geo-membranes at some locations. Some expected mining features were not revealed.

### 8.5 Contaminated land

Concentrations of a range of heavy metals, associated with mine spoil from mineral extraction and processing, are elevated across the site - notably within the South Crofty mine site.

All excavation within the road corridor is expected to be contaminated to some degree.

**The Quarry**

Very deep made ground deposits (more than 6m below ground level)) were recorded within the footprint of a backfilled quarry (chainage 850) which will be under and to the North of the road. Trial trench excavation at the eastern end of the backfilled quarry showed the shallow made ground to comprise gravel of metabasite, clinker with large quantities of wood, metal, plastic and layers of ‘tailings’ sand also recorded. This deep quarry, filled with contaminated mine waste, including very high levels of arsenic, is a significant hazard which will be managed and made safe.

Material outside the backfilled quarry footprint was recorded to be generally reworked natural material with large quantities of metabasite gravel and cobbles. Within the footprint of the quarry, greater quantities of wooden planks and man made inclusions such as plastic, metal and breezeblocks were observed. The excavation was also observed to be less stable within the quarry backfill.
The Contractor’s Construction Environmental Management Plan (CEMP), Method Statements for working and the Council’s Conditions of Contract will ensure that the contaminated material is managed and handled safely within the site and capped and vegetated where it is used on site (in embankments and bunds). Safe working practices will avoid pollutants leaching out from the disturbed ground into water courses or groundwater. The quarry material will be safely contained under the new road.

8.6 Earthworks design and slopes

8.6.1 Modelling

The road is designed using computer modelling. The geometrical design is then overlaid on a ‘ground model’, which contains digitised topographical features and contours of the terrain over which the Scheme passes. This model of the existing ground was produced from a topographical site survey.

These models have enabled the Scheme to be designed to tie in accurately to features on the ground. They have enabled the calculation of earthworks quantities (where the road will be in “cutting”, gaining excavated material, and on “embankment”, using excavated and imported material) and the design of the drainage systems.

Judgements have been made based on the ground investigations (which will be validated on site) regarding the suitability of excavated material to be used in embankments and landscaping bunds.

The Geotechnical Design Reports have interpreted the factual data from the ground investigations and laboratory testing to provide the parameters necessary to design the road and its embankments. These include limits to the loading which can be applied to the ground at various locations - which has given the data to design strengthening measures and the road’s sub-base and composition. The parameters also give data on slope stability which has determines the designed steepness of the embankments.

8.6.2 Ground strengthening and replacement

The Red River valley structures

The main structures are the arches over the Red River and Chapel Road in the valley. Their design is to be pre-cast concrete, pinned arches, each with a 12m span, with a
reinforced soil spandrel wall and wing walls. The structure will be categorised as Category 3 for checking in accordance with Eurocodes.

The foundations to the arches will be conventional spread, reinforced concrete slabs. Preliminary analysis of the near-surface deposits indicate that the material is variable, both laterally and vertically, with some soft alluvial layers, but with competent rock or fragmented rock at depth.

**Ground strengthening**

The backfill over the arches and the adjacent embankment forming the arch wing walls will be constructed on reinforced earth.

**Ground replacement**

With spread foundations under the arches, it will be necessary to excavate the near-surface, made ground, deposits and replace them with graded granular material which will provide an adequate bearing capacity.

The arch foundation dimensions, and the depth of ground replacement have yet to be determined and will follow completion of the final Geotechnical Design Report. The results and interpretations from this report will provide the parameters for the road and structure design.

**Ground Improvement**

It is the intention to disturb the backfilled quarry on the South Crofty site as little as possible and to use geo-membranes to strengthen the overlying ground to support the road on a small embankment which will reduce the loading pressure.

In some other locations, particularly at the Dolcoath end of the scheme and around the Carn Brea sports ground, it may be necessary either to reduce the possibility of settlement due to the compressibility of underlying materials, or reduce its impact. The most likely method will be a geo-membrane laid under the road sub-base.

Methods of ground improvement such as excavation and replacement, vibro-compaction or vibro stone replacement may be considered if required in other areas.
8.7 Excavation, classification and movement of material

The majority of the road is at grade, on shallow embankment or in shallow cutting. There are no significant earthworks other than those associated with the Red River Valley crossing approach embankments.

The approach embankments will be founded on made ground and alluvial soils. The proposed structural embankment will have side slope of 1:2 but this will be flattened and overlain with landscape fill material to form the final slopes at 1:3 in order to merge the new road’s earthworks better with the valley sides.

A quantitative slope stability analysis will be carried out at the detailed design stage, using the final Geotechnical Design Report but it is considered that there will be no slope stability problems provided that suitable as-dug material is used for embankment construction and any local soft spots in the formation are removed. Shallow benches on the upper slopes of the valley will be required to provide a level platform to place and construct the fill and inspect the formation.

The only significant cutting is shallow at the western end of the scheme where the carriageway and will be cut into made ground and weathered bedrock. There may be a small amount of excavation at the toe of the cutting in competent bedrock, but this should only be minor.

For preliminary design purposes, based on the Phase 1 Ground Investigation surveys, all other earthwork slopes have been designed at a gradient of 1:2, or less. Given the likely end use as general fill, and the fact that it will be covered by the road construction, excavated material is unlikely to be classed as “contaminated” to a level which requires its removal from site to a licensed waste site.

The results of natural moisture content tests and compaction tests indicate that the majority of the material on site will be suitable for use as general fill. A body of excavated material (wet silts and clays from the alluvial deposits) may need to be treated to remove the water before it will be suitable for use as fill.

The variable nature of the made ground is not unusual considering the mining history of the site. It does however mean that if the material is to be re-used on site as engineering fill a high frequency of acceptability testing will be required to classify the material when it is excavated.
9 DRAINAGE

9.1 Introduction

The drainage design has been carried out according to the required design guides and good practice. An assessment of the effects of the Scheme on surface water and ground water, flooding and drainage patterns has been undertaken using the methodologies described in DMRB, Volume 11, Section 3, Part 10, HA 45/09 Road Drainage and the Water Environment (CD 4.54) and Volume 4 (detailed design CD. 4.67 to CD 72 and CD3.23).

9.2 Consent to Discharge to Water Bodies

The Water Resources Act 1991 and The Environment Act 1995 establish Environment Agency (EA) powers and duties for protection of water resources and flood defence. Highway authorities are exempt from the need to apply for discharge consents for road runoff under The Water Resources Act 1991, although, if pollution is occurring, the EA can serve a prohibition notice (an offence under the Water Resources Act 1991 occurs if the highway authority knowingly pollutes a controlled waterbody).

Consent is required from the EA if any work is proposed that would physically affect a watercourse, where the watercourse is classed as ‘main river’. The EA is consulted where the watercourse is classed as a ‘critical ordinary watercourse’, (the Red River) where ‘critical’ is related to the number of properties at risk of flooding and ‘ordinary’ means a watercourse not classed as main river and therefore not subject to the terms of the Water Resources Act. (For watercourses to be classified as ‘critical” they have to pose a risk of flooding to the equivalent of 25 properties in any one-kilometre stretch.)


9.3 Assessment of flood risk

9.3.1 Modelling including Climate Change

A site-specific flood risk assessment was prepared and submitted to the Environment Agency in support of the Planning Application. The flood risk assessment took account
of the advice on climate change and, accordingly, included for an increase of 20% in the rainfall intensity. (CD 4.97)

9.3.2 Conclusion

The scheme will discharge the majority of its surface run-off water into the Red River and the drainage design will ensure that it can be accommodated by holding back the delivery of the water to the river in the storage pond and underground cells.

The flood modelling has shown that the scheme will not adversely affect the future flood conditions in the Red River valley. The embankment across the valley will not impede the flow since the two arches will enable flood waters to pass. The attenuation pond will not significantly erode the flood volume capacity of the valley or exacerbate future flood conditions.

9.4 Surface Water Management Plan for CPR

9.4.1 The road as an exemplar of good practice

A Surface Water Management Plan (SWMP) has been developed, over the last six years, for the CPR Regeneration Area by stakeholders, including South West Water, Cornwall Council, the then Urban Regeneration Company, the then South West Regional Development Agency (SWRDA) and the Environment Agency. (CD 5.28)

The SWMP was guided by the principles and objectives of Sustainable Urban Drainage (CD 4.73). The SWMP sought to ensure that the drainage techniques adopted within the area are suitable for coping with the anticipated surface water run-off from the long term proposed developments. It is intended to ensure that water run-off can be accommodated and that flooding is controlled and managed.

The scheme drainage details have been designed to ensure that a sustainable network is provided which can be replicated consistently for further regeneration developments within the local area. The proposed CPR scheme highway drainage will be constructed in advance of the majority of the planned regeneration developments and the design has adopted the essential features of the SWMP in order to give a clear example of the required standards.

9.4.2 Open channel drainage and water storage for future developments

The road cross-section and its drainage design incorporating open channels has provided for the needs of the road whilst also considering the potential for future
development. The drainage network has been designed to give maximum flexibility and capacity for future developments adjacent to the proposed highway and, importantly, the surface features can be evolved to suit changing needs and the wider establishment of amenity, landscape and habitat areas.

All flows from these future developments will be attenuated, within the individual development sites, to specified rates prior to discharging to the proposed highway drainage system. The developments at present accommodated by the road’s drainage system include Dolcoath (eastern section) and South Crofty (North).

It is envisaged that the road’s open channels may actually be incorporated into these adjacent developments; they may be modified and widened; they may be included within extensive green corridors. As mentioned, they offer opportunities for the creation of wetland habitat.

9.5 Drainage design

9.5.1 Detailed design

Between Dolcoath and Dudnance Lane the proposed carriageway will have kerbed edges and will discharge run-off to a series of interconnected highway drains and open channels (located adjacent to the carriageway) via a series of highway gullies. The open channel located to the West of the Red River valley (from Dolcoath roundabout) will contain a number of check weirs which will facilitate the attenuation / storage of high intensity rainfall events prior to discharging into the receiving storage pond. The spacing of the check weirs within the channels is dependent upon the existing topography and the longitudinal gradient of the proposed channel. The open channel inverts will be concrete lined, 300mm up the sides; the inverts will be 1.0m wide and the channels will be 1.0m deep with 1:1 side slopes which will be hydro-seeded with a suitable grass mix to assist in stabilising the slopes.

An analysis to establish the existing Greenfield surface water run-off rates from the existing site, and from adjacent development sites, has been undertaken which has enabled the determination of the maximum allowable future discharge rate (litre/sec) from the sites into the Red River. This is the “Greenfield run-off rate” for a 1 in 100 year storm deemed to be 7.5litres / second / Hectare.
9.5.2 Water attenuation storage pond in the Red River valley

Due to the fact that the anticipated water run-off flow rates from the proposed carriageway (plus the already attenuated flows from selected adjacent developments) will be greater than the allowable (Greenfield) discharge rate, an attenuation pond will be provided to the North of the new road in the Red River valley. The attenuation pond will be designed to store run-off water during peak flow periods and then release it into the Red River at the agreed discharge rate which, as explained, is directly related to the Greenfield run-off rate for the existing sites.

Prior to discharging to the attenuation pond, the surface water run-off from the new road to the East of the Red River (from Dudnance Lane) will cascade down the East side of the valley in a series of channel runs and stilling basins.

The surface water from the new road West of the Red River (from Dolcoath) will be collected in the open channels, as described, and then piped across the valley and down the embankment into the attenuation pond.

9.5.3 Water attenuation storage cells

Other sections of the road (between Dudnance lane and Wilson Way) will be positively drained by the provision of a series of highway gullies which will discharge to new, dedicated highway drains. The resultant flow from rainfall events will discharge to attenuation features (drainage water storage cells or tanks) before discharging to the existing, South West Water, combined sewer / watercourses and surface water drainage network.

These attenuation features will be located underground within the adoptable highway or under licence on adjacent private land. They will include oil interceptors.

Provisions will be made to ensure that there is adequate access for any maintenance works which will be required in the future – such as the removal of oil waste or highway spillages.

One group of attenuation storage cells would be sited to the East of Station Road with another south of the Wilson Way roundabout.
9.6 Enhancements to the Red River valley

9.6.1 River diversion

The Red River will need to be diverted through the new, eastern arch structure. Flood Risk Assessments have been undertaken to demonstrate that the road’s drainage system will not cause flooding and that the proposals do not increase the risk of flooding in the valley. The preliminary design of the Red River diversion has been approved by the EA.

9.6.2 River bed re-profiling and wetland creation and improvement

In order to retain water, maintain wetland and create new habitats the scheme will include river bed treatments and wetland enhancements in the valley, designed to improve and expand the ecology of the river. These enhancements will include “scrapes” and “riffles” and will rationalise existing small ponds, increasing their size and reshaping them with weirs, to retain water and maintain wetland areas to encourage flora and fauna.

The attenuation pond in the valley, adjacent to the Red River, will be lined with concrete and will have a shallow area around the outside and sloped edges, landscaped and planted with vegetation to develop a wetland ecology. The upper banks will be planted and the overall vegetation will be designed to ensure that the pond’s drainage function will not be impaired. Periodic maintenance will be required to clear the channels and ponds to maintain water flow.

Highway drainage ponds can become valuable features in the local landscape – creating habitats and benefiting the ecology.

9.7 Effects of the scheme on land drainage

9.7.1 During Construction

Impacts on both surface and groundwater quality can occur during the construction of new roads and from the day to day operation of the highway including accidental spillages. The main contaminants likely to affect the water quality during construction are mud (suspended solids), fuel oil and concrete liquors.

Potential pollution effects can be classified into two groups: those which directly and indirectly affect water quality, such as metals and hydrocarbons; and those which affect the aquatic habitat quality such as sediments which smother feeding grounds.
Implementation of the Construction Environmental Management Plan (detailed in Section 13.3) will ensure that the pollution impact of construction activities on the surface water and ground water is minimal. (CD 5.8, CD 4.95 and CD 4.96)

9.7.2 With the road completed

The proposed highway drainage infrastructure for the new link road will discharge into the Red River without adverse impact. The risk from the proposed scheme to existing surface waters from accidental spillage is considered to be negligible.

During road operation, causes of pollution include traffic, maintenance works, accidental spillage and other sources such as atmospheric deposition during the operational life.

All attenuation features will include oil interceptors on their outfalls and the pond in the Red River valley will catch any major spillage on this section of the new road – allowing it to be pumped out before any discharge to the river.

As described in Section 9.3.1, Flood Risk Assessments have been undertaken which demonstrate that the scheme will not increase Flood Risk.

9.7.3 Ground water

The impact on existing groundwater quality from routine runoff has been assessed to be negligible even though the increase in impermeable area will lead to a small reduction in potential infiltration of rainwater. The extensive, underground mining features make this an unusual area; soakaways are not acceptable for run-off water and the water table is often deep due to local shafts and adits.

There is no water abstraction in the area of the scheme (commercial or utilities) but further assessment will be undertaken prior to final design to the satisfaction of the Environment Agency and the Council.

The Mylor Slate underlying the site is classified as a minor aquifer but there are no groundwater Source Protection Zones or recorded potable water abstractions points in the vicinity of the site. There are no potable water abstractions recorded within or down hydraulic gradient of the site.

Boreholes in close proximity to the mine site recorded groundwater to be greater than ten metres below ground level across the site, within the Mylor Slate.
Groundwater was encountered within made ground deposits within the Red River Valley with slow to very fast ingress into trial pits observed. Within rotary core holes, deeper groundwater was recorded within the mudstone bedrock at depths of between 3.7m and 10.2m below ground level.

The presence of shallow groundwater adjacent to the Red River indicates hydraulic continuity with groundwater. Mine adits discharge directly into the Red River.

Groundwater within made deposits are likely to be perched. The absence of groundwater in most exploratory holes across the site confirmed that groundwater levels are depressed across the study area. The presence of shallow groundwater adjacent to the Red River indicates hydraulic continuity with groundwater.

Groundwater was recorded within the Tuckingmill Valley and in close proximity to the Red River. Other than perched water, ground water was not generally encountered across the site. This confirms the natural geology to be very porous with groundwater located only at depth across the site.
10 OTHER HIGHWAY FEATURES

10.1 Surfacing and road pavement

The design of the surfacing and the pavement layers beneath the carriageway will be in accordance with the appropriate design standards. New pavements are designed to have a minimum life of 40 years before major maintenance is required.

The type of surfacing to be provided would be stone mastic asphalt, which has been developed to provide benefits such as low noise, reduced spray and improved skid resistance in comparison with conventional hot rolled asphalt. This surfacing would be a “quiet road surface” giving a reduction in source noise of at least 2.5dB in comparison with the performance of hot rolled asphalt.

“High friction” surfacing, giving improved skidding resistance, will be included in the scheme on the approaches to traffic signals and roundabouts.

Side roads connections would be surfaced with a bituminous material in compliance with the Highway Authority’s specification.

The new road will be a ‘fully flexible’ pavement, which consists of bituminous (and hence relatively flexible) material in its upper layers. The layer thickness would vary depending upon the traffic loading and the type of material selected.

The pavement design and the thickness of layers would be subject to further consideration at detailed design stage.

10.2 Road restraint system

Road restraint systems include vehicle safety barriers, parapets and pedestrian guardrails.

A road safety barrier would be provided on the outside of the bend, East of Penhallick Road, along the full length of the new road adjacent to the Penzance to Paddington railway line: a distance of some 400m (from Chainage 2025 to 2425).

Barriers will also be provided on the embankment across the Red River valley on each side of the road. The arch parapets will provide restraint over the structure.

Pedestrian guardrails will be included in the design of the controlled pedestrian facilities at the Heartlands and Penhallick Road traffic signal junctions.
The design and location of these systems would be subject to further consideration at the detailed design stage.

10.3 **Signing**

The signing strategy for the CPR regeneration area will be that through traffic will be directed to their primary destinations via the new road in preference to the existing A3047. At construction the road will sign existing destinations similar to the current signing.

Detailed signing schemes will evolve as the planned developments are completed. Specific destinations will be incorporated in the signing in due course but the overall philosophy will be to reduce “clutter”, consistent with safety, and to adopt a minimalist signing strategy.

10.4 **Road lighting**

Although the scheme traverses existing open countryside at present between Dolcaoth and Dudnance Lane it will in time be surrounded by mixed development. It is appropriate for these sections of road to be lit which will eventually be through future developments.

It was concluded, following liaison with Stakeholders and interested bodies, that the whole route should be lit - including the section across the Red River valley – in the interests of safety and consistency.

The lighting has been designed to BS5489 and takes account of future development requirements. The design requires the columns to be generally spaced at between 30m and 40m intervals - closer at junctions and roundabouts - with standard layouts to maintain the require light intensity. (*CD 3.22*)

Columns will be 10m high, and will have lanterns with low profiled glass and controlled (“cut off”) optics to direct the illumination down onto the road surface and minimise upward light spillage pollution. The lantern will contain a “Cosmopolis” white light lamp, or similar, providing a significant reduction in energy consumption as well as giving added safety for all road users.

The lighting may utilise rear louvre baffles to reduce light spill into the adjacent bat feeding or commuting areas if final habitat surveys demonstrate the need.
10.5 Structures

The road will cross the Red River and Chapel Road on two arch structures. These will be pre-cast, reinforced concrete arches (assembled on site). The spandrel walls and wing walls will be constructed of reinforced earth, faced with masonry.

The masonry would be local mudstone, laid randomly with roughly horizontal coursing.

Granite would be used in features to define the arch ring and a string course at the base of the parapet. It would also be used in the dressed parapet coping stones.

The Red River will be diverted through the eastern arch allowing space for the Mineral Tramways bridleway to run alongside. Chapel Road will be diverted to pass through the western arch allowing space alongside for footways and cycleways.

These features will ensure that the amenity of the valley is retained and avoid any severance being caused by the new East-West link’s embankment.

A pedestrian / cycle link from the new road over the valley will be established, down the embankment, to link with the amenities in the valley. This will have wide turns, will include seating / resting places and be fenced.

10.6 Accommodation Works

Liaison and discussions have continued with all those affected by the scheme and best endeavours have been made to meet the concerns and needs of landowners, residents, businesses and tenants.

Accommodation works have been proposed and discussed at site meetings and plans have been prepared and issued. Boundary treatments (fencing, walls and gates) have been agreed with most parties.

The scheme detailed design has been modified in some areas and features of, for example, landscaping, noise fences and highway details, have been amended to reduce impact. In some instances this liaison has led to objections being removed (See Section 15, and Volume 3, Section 5).

Sets of detailed accommodation works drawings will be included in the contract documents and the works will be undertaken as part of the scheme.
10.7 Statutory Undertakers

10.7.1 Diversion of existing services

There will be a need to undertake service diversion and protection for the four major Statutory Undertakers (SUs): Western Power Division (Electrical); South West Water; Wales and West (Gas) and British Telecom.

The Council has been in liaison with these service providers for four years and the details of the required diversions have been agreed. Some diversions may be completed before the main construction works start; some can only be undertaken when the new works are in place.

The new and diverted services will be routed along the new and existing highway. Ducts may be installed under the footway and in the verges at some locations to make provision for the needs of future developments.

New electricity supplies will be required, from the existing electricity network, for the lighting and signs on the scheme and a communications network would be required for the new traffic signal controlled junctions.

In addition to the works within highway, there will be a need to divert and reconnect private supplies alongside the road.

The road has been designed to facilitate these diversions at some locations (eg Dolcoath tie-ins) and the vertical alignment in most areas has been designed to be at, or slightly above existing levels to minimise impact with existing services.

The construction program will integrate the SUs’ diversions with the road construction sequence efficiently in order to minimise delays and disruption and avoid extensions to the contract duration.
11 ENVIRONMENTAL IMPACT AND MITIGATION

11.1 Environmental Impact Assessment

Detailed Environmental Impact Assessments (EIAs) were undertaken for the planning applications for both Phase 1 and Phase 2 – the two elements of the original MSBC scheme. The findings of the EIAs were reported in Environmental Statements (ES) which formed part of the supporting documents for the planning submissions. A non-technical summary for each provided a summary of the principal findings reported in the ES. (CD2.1, 2.3 to 2.9 and 2.14, 2.16 to 2.20)

The EIAs were undertaken in accordance with guidance detailed in Volume 11 of the Design Manual for Roads and Bridges (DMRB) published by the Highways Agency. Volume 11 comprises a structured approach to the assessment of major road proposals. It provides guidance related to the nature of environmental impacts typically associated with such projects and appropriate levels of assessment during the planning and design stages. It is a “live” document, in which the advice and design notes are subject to regular updates and augmentation as new methods of assessment are developed and improved.

11.2 Reviews

Environmental reviews were undertaken on critical aspects of the proposed scheme to update the EIAs which had been completed for the larger, original scheme. It was considered essential to assess the present, reduced scope, scheme to confirm that the previous EIA assessments, results and conclusions were still sound. There have been some changes to the legislative framework and the smaller scheme might have given rise to specific new issues and impacts.

The reviews were completed for Landscape, Air Quality, Noise and Ecology. They are contained in Volume 3, Appendices 6, 7, 8 & 9, and do confirm that the original EIAs contained in the planning applications gave a thorough and detailed assessment of the environmental impacts of the scheme. The reviews, in general, fully endorse the original assessments.

The smaller scheme does not create significantly greater or additional environmental impact when compared with the original scheme for which the EIA’s were undertaken.
11.3 Noise and Vibration

11.3.1 Scope of Study

The results of full noise and vibration assessments were previously reported in the Noise Chapters of the Environmental Statements for the Scheme. However, a further noise and vibration review study (in Volume 3, Appendix 7, CC/3/3) has been undertaken to address the noise and vibration issues that may have changed since the amendments to the scheme, or have been raised by objectors to the scheme.

Noise and vibration impacts have been recalculated to reflect the current Scheme, and the revised traffic modelling. The reporting and assessment also reflect the latest guidance in the November 2011 version of DMRB (CD4.51) and other Codes of Practice, Planning & Noise (CD4.15), methods of assessment, calculations and legislation (CD 4.75 to CD 4.79).

11.3.2 Study Area

The study area consists of corridors centred on the Scheme, and extends up to 2km from the Scheme in rural areas, and 1km in urban areas. Within the study area there is a calculation area, within which noise predictions are made at individual receptors within 600m of the Scheme or an affected road.

The study area is a mixture of rural and residential, with a scattering of industrial estates, commercial receptors and community facility receptors (such as churches, schools, and recreational areas). The main focus of the assessment is on residential dwellings, with noise changes at other noise sensitive locations considered separately with a “simple” assessment.

11.3.3 Noise Mitigation

The design of the Scheme has included noise and vibration mitigation measures wherever possible. This includes the vertical and horizontal alignment of the Scheme, the choice of road surface, false cuttings, retaining walls, and environmental barriers to provide screening between the road and nearby receptors. Application of these measures includes:

- An optimum route alignment maximising the distance from as many receptors as possible, subject to constraints provided by other disciplines;
• A 1.8m high noise barrier between the Scheme and No 78 Carn Brae Lane as shown in Volume 3 Appendix 5 (CC/3/3);

• A 1.8m high barrier between the Scheme and the Carn Brae Sports Ground as shown in Volume 3 Appendix 5 (CC/3/3);

• A 1.8m high barrier along the railway boundary running east from the Penhallick Rd junction to the footbridge, and then from the footbridge until the road diverges from the railway as shown in Volume 3 Appendix 5 (CC/3/3);

• A 2.0m barrier to the North and West sides of the Tesco HGV bay at Chynoweth, following the conclusion of a separate Appraisal Report in Appendix 7 (CC/3/3) – (CD 4.77 was referenced in the modelling work);

• A 1.8m high barrier between the Scheme and Church View Farm as shown in Volume 3 Appendix 5 (CC/3/3);

• A 2.0m high barrier between the Scheme and the back of properties on Church View Road as shown on the scheme General Layout drawings.

• Cuttings and false cuttings / Cornish Hedges along the new route.

The use of a low noise asphalt road surface where new roads or amendments to existing roads are proposed allows at least a 2.5 dB reduction in calculated noise levels when compared to conventional hot rolled asphalt. It is assumed that unless the works necessitate the resurfacing of existing roads then the current surfaces will remain.

11.3.4 Construction Noise

Prior to the start of construction, limits on construction noise levels and hours of working would be established in consultation with Cornwall County Council and would be written into the construction specification.

In order to keep noise impacts from the construction phase to a minimum, a number of mitigation measures would be implemented through the CEMP. Such measures would include, for example, the fitting of effective exhaust silencers on mechanical plant.

Once construction commences, the contractor would be required to comply with the recommendations for practical measures to reduce noise as set out in BS 5228: Parts 1 and 2.
11.3.5 Ambient Noise

The detailed data obtained during the noise level survey undertaken for the Phase 2 Environmental Statement shows that road traffic and light industrial noise are the dominant sources in the study area. The railway represents an infrequent but significant source, as well as contributions from aircraft flyover and vehicle horns.

It also reported that “the measured noise levels indicate that the noise level at some locations in the vicinity of the study area exceed the 68 dB(A) criterion contained within the regulations. Noise levels also exceed the World Health Organisation (WHO) guideline values of 55 dB L Aeq (16hour) for an outdoor living area. WHO suggests that daytime and evening noise levels above this value cause serious annoyance to people.

No major sources of vibration in the vicinity of the proposed Scheme were subjectively noted during the site survey, which led to baseline vibration monitoring and detailed assessment of vibration from road traffic being removed from the scope of work.

11.3.6 Summary of Effects

The Existing Situation

The study area is currently affected by high levels of traffic noise. Whilst most dwellings are exposed to moderate levels of traffic noise, a few are already exposed to traffic noise levels in excess of 68 dB(A) L_{A10}.

Traffic Noise Effects of Do Minimum

If the Scheme were not to proceed, the majority of dwellings will experience a negligible increase in traffic noise levels by 2030 as a result of new developments in the area, and natural traffic growth.

Traffic Noise Effects of the Scheme

If the Scheme were to proceed, by 2030, 85 dwellings would experience a minor increase and 21 dwellings a moderate increase in traffic noise levels. At the same time, 3108 dwellings would experience no discernible change, 57 dwellings a minor decrease, and 69 dwellings a moderate decrease in traffic noise level as a result of the Scheme.
Whilst some dwellings would experience adverse noise impacts, the majority would experience either no change or a reduction in traffic noise levels. It can therefore be concluded that on balance, the Scheme would be neutral in terms of noise impact.

Eligibility for Road Traffic Noise Insulation

No Facades at dwellings have been identified as likely to be entitled to road traffic noise insulation under the terms of the Noise Insulation Regulations 1975 (as amended 1988) (CD4.8). A further assessment will be made once detailed design is finalised in order that entitlement can be confirmed before an offer of insulation is made.

Construction Noise Effects

Construction noise impacts have been identified for a variety of activities which left unmitigated could give rise to significant temporary impacts, with those closest to the Scheme being worst affected. A full mitigation scheme will be required by the Local Authority for the contractor to ensure impacts are kept to a minimum.

Vibration due to Road Traffic

The change in nuisance from airborne road traffic vibration would be very similar irrespective of whether the Scheme were built or not, although some individual dwellings will see modest increases or decreases depending on their proximity to the Scheme.

Construction Vibration Effects

Construction vibration impacts have been predicted at various locations along the Scheme where piling activities are predicted. The contractor will ensure vibration impacts are kept to a minimum.

11.4 Air Quality

The results of air quality impact assessments, covering both construction and operational phases, of the scheme were previously reported in the Air Quality Chapters of the Environmental Statements for the scheme.

The operational air quality impacts of the Scheme result from traffic changes and the consequent changes in vehicle emissions. Since the publication of the Environmental
Statements, the scope of the Scheme has been reduced and revised transport assessments issued.

Accordingly, a review of the original air quality assessments was undertaken to update the existing air quality assessments, based on the revised scheme details. This review, Air Quality Report is included in Volume 3, Appendix 6 (CC/3/3). It had regard to National policy, strategy and regulations, guidance and advice including CD 4.80 to CD 4.88 and CD 5.10

11.4.1 Air quality policy, regulation and legislation

Local Air Quality

The UK’s Air Quality Strategy (AQS) sets health and ecosystem based objectives for ten pollutants. UK Air Quality Regulations are in place to ensure that ambient air quality meets these objectives. The objectives apply at locations where members of the public are likely to be exposed over the averaging periods of the objectives, which vary from 15 minutes to annual for different pollutants.

Local Authorities have a statutory duty to review air quality within their area and to develop Action Plans to improve air quality where the AQS objectives are not met. Local Authorities also have regulatory powers, under the Environmental Protection Act, to control Statutory Nuisance which can include emissions of dust from construction activities.

Greenhouse Gas Emissions and Regional Impacts

The UK Climate Change Act has set legally binding targets for reducing greenhouse gas emissions. However, there are no standards or objectives set for the control of trans-boundary pollution at the local level.

11.4.2 Methodology

Overview

The methodology used to assess the air quality impacts of the scheme follows that set out in detail in the DMRB. In summary, the methodology seeks to compare current air quality or emissions levels with those anticipated in the future if the scheme is not built and those anticipated if the scheme is built.
Modelling of impacts was undertaken using the ADMS-Roads detailed dispersion model. Detailed modelling, verified against local monitoring data, was undertaken for nitrogen oxides emissions only, since this is the only pollutant at risk of exceeding a relevant air quality standard.

The total pollutant concentration experienced at any receptor has two components: a local contribution from nearby sources (in this case individual roads) and a background contribution resulting from the transport of pollutants from more distant sources. Background concentrations of pollutants have been derived from the mapped data provided by Defra.

The regional impacts assessment was based on the regional application of the DMRB Screening Method spreadsheet.

Construction Phase

The potential for the scheme construction to cause a dust nuisance has been assessed qualitatively. The methodology involved the identification of those construction activities which have the potential to generate dust and the location of sensitive receptors. Construction traffic was assessed quantitatively.

11.4.3 Baseline air quality

Local Air Quality Management Areas (AQMAs)

Within the study area, baseline pollutant concentrations are well within the air quality objectives for all pollutants except nitrogen dioxide. Cornwall Council have declared two AQMAs for nitrogen dioxide within their district, of which, the Camborne-Pool-Redruth AQMA is directly impacted by the Scheme.

Local Air Quality

Road transport is the dominant local source of pollutants and roadside concentrations of nitrogen dioxide are elevated, most notably along the A3047 through Camborne and Pool. However, concentrations fall rapidly away from the roadside, and background concentrations of nitrogen dioxide are less than 10µg/m³ whereas the objective for annual mean nitrogen dioxide is less than 40µg/m³.

Concentrations currently exceed the air quality objective for annual mean nitrogen dioxide on Wesley Street and are at risk of exceeding the objective at the East Hill Junction.
Roadside concentrations of nitrogen dioxide have shown no consistent trend over time since 2004, although concentrations at some sites in the area appear to have decreased slightly.

### 11.4.4 Effects of the scheme

#### Construction Impacts

The construction of the Scheme is considered to be a significant risk in relation to the generation of nuisance dust effects. This is a result of the requirement for large scale earthworks and construction activities along the length of the Scheme, the proximity of receptors and the duration of the Construction phase.

However, it is concluded that, with the application of best practice mitigation methods, as described in the CEMP, significant adverse impacts are unlikely to occur. Construction traffic impacts are predicted to be negligible overall although temporary increases in roadside pollution levels may occur.

#### Local Air Quality

The local air quality assessments presented in the Environmental Statement and updated in the April 2012 report demonstrate that no significant adverse impacts on air quality in relation to human health are expected as a result of the implementation of the Scheme. Pollutant concentrations are predicted to remain within air quality objectives in the future whether or not the Scheme is in operation.

Non-negligible impacts are predicted for nitrogen dioxide only.

Whilst an overall increase in exposure of the local population to air pollution is predicted with the operation of the Scheme and dependent developments, the vast majority of receptors experience an insignificant impact i.e. a change of <1% of the air quality objective.

The Scheme is predicted to result in an improvement in air quality at more than 650 properties within the study area, primarily along the A3047 between East Hill Junction, where existing nitrogen dioxide levels exceed the air quality objective at properties close to the roadside, and the Wesley Street Roundabout, and also alongside Station Road.
Ambient pollutant concentrations are predicted to increase at receptors close to the route of the new link road and where the link road feeds into the existing network. However, total concentrations remain well within the relevant air quality objectives for all pollutants and, consequently no significant health effects are anticipated.

Sensitivity testing of the modelling of the operational impacts demonstrated that these conclusions remain robust in the light of recent evidence on the failure of vehicle emissions of nitrogen oxides to decrease as rapidly as expected by national forecasts.

**Greenhouse Gases**

Emissions of greenhouse gases and regional air pollutants are predicted to increase with the operation of the Scheme in the opening year, but then to decrease slightly relative to the Do Minimum scenario. This is due to an increase in vehicle-kilometres travelled. However, the increase is insignificant in relation to emissions from Cornwall and the UK as a whole.

### 11.4.5 Mitigation

**Construction**

Best practice measures relating to site planning and activities, construction traffic, demolition works and monitoring will be required on site. Further details of mitigation measures are provided in the Environmental Statement and their further development and implementation will be the responsibility of the contractor in the Construction Management Plan.

**Operation**

Given the limited scale of the predicted operational impacts, mitigation measures are not considered necessary.

Indeed, the Scheme itself is designed to provide mitigation of the effects of vehicle emissions on air quality alongside the A4037 and roadside pollutant concentrations are reduced with the Scheme between East Hill and Wesley Street Junction. Furthermore, the Scheme includes improvements to cycle lanes and facilities designed to encourage the use of less polluting forms of transport than private vehicles. In the medium term, the Scheme will facilitate improvements to public transport provision along the A3047.

Additional ‘soft’ mitigation measures, many of which are already included in the Air Quality Action Plan for the Camborne-Pool-Redruth AQMA can be implemented.
alongside the scheme including increased public awareness of air quality issues and encouraging local businesses to set up car-share schemes.

11.4.6 Conclusions

Construction

It is concluded that with the application of best practice mitigation measures, significant adverse impacts due to construction dust or nuisance are unlikely to occur.

Operational Impacts

The Scheme is consistent with UK national strategies for ambient air quality and planning policies in that:

- it will not, in itself, result in new or worsen existing exceedences of air quality objectives within the study area
- it implements hard measures and facilitates soft measures set out in Cornwall’s Air Quality Action Plan for the CPR area

The Air Quality Report is included in Volume 3, Appendix 6 (CC/3/3).

11.5 Ecology

11.5.1 Environmental Impact Assessment

The Environmental Statements (ES), which summarised the Environmental Impact Assessments, noted that there are no locally designated (i.e. non-statutory) or nationally protected sites of nature conservation importance affected by the Scheme.

Although there are no designated areas of ecological importance within the existing or proposed road corridor, the scheme passes through an area of importance for Lichens and Bryophytes. The ecological assessments in the ES concluded that there are likely to be impacts on reptiles and bats.

The update review of the work undertaken in the previous planning applications continued to refer to the relevant parts of the DMRB, Volume 10, section 4 (CD 4.30 to CD 4.36). It also had particular regard to current guidelines for assessment (CD 5.1), legislation (CD 4.7), Conservation Regulations (CD 4.10), EC Directives on conservation (CD 5.7 and CD 5.8), Cornwall’s Biodiversity Action Plans (CD 5.14 and
the UK **CD 4.13**), the Handbook for Phase 1 Habitat Surveys 2004 (**CD 5.15**) and the Hedgerow Regulations 1997 (**CD 4.64**)

11.5.2 **Mitigation**

Mitigation will follow two main approaches:

- careful working methodologies to avoid destroying or injury to vulnerable protected species;
- habitat creation to provide alternative and better habitats.

Areas have been identified for the re-creation of bryophyte habitats. The assessment has concluded that with these measures in place there would be no significant residual effects on the environment as a result of the scheme.

Significant enhancements to the wetland habitats in the Red River valley will be undertaken with the road construction works. These will include landscaping and wetland planting around the proposed attenuation pond and extensive re-profiling of the river bed to produce flood shelves, scrapes and transient pools.

The scheme’s open channel drainage, and the cascade for water run-off down the eastern side of the valley, will also provide opportunities for wetland planting and wetland habitat creation.

These proposals have been developed in liaison with The Environment Agency.

11.5.3 **Legislative Framework**

There have been some changes to the legislative and policy framework since the original planning applications were made. No substantive changes to survey and Ecological Impact Assessment guidelines have been made, although there will be changes for both bat and reptile survey guidelines in the near future.

Opportunities will be taken, in the final landscaping design, to support and contribute to local ecological initiatives.

Consultation and liaison will be undertaken with regard to the landscaping and habitat re-creation to be implemented on development sites adjacent to the Council’s scheme. There may be scope to enhance the net ecological benefits by co-ordinating the efforts
of the developers and the Council and unifying their approaches to landscape and wetland planting.

11.5.4 Update Surveys

Updates surveys will take full regard of the legislative and policy changes and local initiatives and the implications for the Council’s scheme.

Updated survey work will be undertaken this year to ensure that all required mitigation is designed with up-to-date information, and any licences are applied for, and in place, prior to construction (ie before building demolition/site clearance).

It is recognised that there may be bats or barn owls in the South Crofty buildings which are to be demolished for the scheme.

An update to the extended Phase 1 Habitat Survey (which will be combined with a badger survey to reduce costs), will be undertaken in the first instance. This will provide important information for mitigation design and construction.

The Ecology Report is included in Volume 3, Appendix 8 (CC/3/3).

11.5.5 Land Use and Agriculture

The impact on the original holding of Church View Farm would have been severe but the scheme will have only a minor impact on the land now used by the farm. Access to the farm and its residual land has been retained in the scheme design.

11.5.6 Cultural Heritage

The EIA undertaken for the planning applications, Having regard to legislation (CD 4.65) National policy, best practice and guidance, concluded that there is the potential for impacts on features and sites of cultural heritage value that could be exposed as areas are excavated during construction. The review of this work concurs with the earlier conclusions. The assessments concluded there would be the potential for further significant impacts on the cultural heritage of the area should these be discovered. (CD 5.16)

A programme of further investigation will be agreed with Cornwall Council (in the form of a Written Scheme of Investigation) to ensure that any interests that may be affected are logged and recorded. There will be an archaeologist on site with a watching brief
during the early top soil stripping and excavation works. Should finds of interest be identified, further appropriate mitigation would be agreed with the Council (CD 5.17).

Areas of World Heritage Site Landscape lie close to the scheme, at Tuckingmill, Chapple’s Shaft (Cook’s Kitchen), and Carn Brea. The impact of the proposed road on the World Heritage Site was assessed in depth in the environmental impact appraisal documents supporting the Phase 1 Planning Application contained in the Core Documents, Phase 1, Supporting Statement, CD 2.1 and the Environmental Statement, Volumes 1, 2 and 3, CD 2.3 to 2.8.

The Planning Authority concluded, in giving consent for the proposed road scheme, that the direct residual impact of the scheme on the heritage landscape will be justified by the benefits which the scheme will deliver.

11.5.7 Property Demolition

One residential dwelling and a number of non residential buildings will need to be demolished.

The residential property, known as “Sylmar” would need to be demolished for construction of the scheme together with a partially converted barn in its grounds. These properties are located on the corner of Station Road opposite the railway line footbridge.

Old, derelict, mining operational buildings, within “South Crofty” would need to be demolished. The buildings are steel portal framed with tin sheet and asbestos-cement cladding. The buildings are currently in a state of disrepair (and represent a safety hazard) and are no longer required for Western United Mines’ mining operations on the site. A number of smaller buildings within the site, associated with mining, will also be demolished. Service supplies will be maintained and the scheme will not affect any essential buildings or equipment.

The Council owned property known as “Coastline”, on Dudnance Lane has a number of outbuildings which will need to be demolished in order to create the new cycleway / footway on the West side of Dudnance Lane. The main office building will not be demolished.

A small industrial unit within the Old Station Yard, Station Road will need to be demolished in order to widen the footway and reconstruct the existing stone wall.
12 PEDESTRIANS, CYCLISTS, EQUESTRIANS AND COMMUNITY EFFECTS

12.1 Introduction

Provisions for non-vehicular highway users were always an integral part of the road scheme because the planned regeneration developments, and the expected economic growth, are expected to generate high cyclist and pedestrian flows. The Master Plans for the programmed developments adjacent to the road corridor include facilities to enable people to access amenities, retail areas and their work without using a car. The new road needed to acknowledge these aspirations and deliver new links and connections between them and to the existing highway network.

12.2 Community severance

The scheme will not result in significant community severance. In future, however, when the planned regeneration and economic growth has been realised, the new road will form a movement corridor through communities.

The proposed junctions have been designed to enable safe, controlled crossing by cyclists and pedestrians.

12.3 Existing conditions

There are few cycleways within the corridor. Cyclists have to make their way within the road space which discourages riders who are not confident.

Footways tend to be relatively narrow and, although crossing points have been improved, the traffic flow volumes and (sometimes) the speed of vehicles can be intimidating for more vulnerable groups of pedestrians.

12.4 Equestrians, Cyclists and Pedestrians

By the construction of new infrastructure links, which include new bridleways, cycleways and footways, the scheme will deliver significant benefits for pedestrians, cyclists and equestrians. It will enhance existing routes.

The Mineral Tramways Leisure Trail, along the Red River valley, will be accommodated within one of the proposed arch structures.
The network for non-motorised road users will be extended with new, contiguous provision between Dolcoath and Dudnance Lane and eastwards to Wilson Way and the industrial areas by way of footways and shared cycleway/footways alongside the new, and improved existing, road carriageways.

These provisions will help meet the Council’s objective to reduce the reliance on motor vehicles – particularly short journeys.

One of the scheme’s objectives is to make provision for the economic growth in the area and future needs. The scheme’s cross-section gives a versatile layout which is capable of being modified to suit a range of options as developments adjacent to the new road come to fruition.

12.5 The Disability Discrimination Act 2010

The needs of the disabled have been considered in the design of the scheme through a number of public consultations at key stages resulting in detailed comments in accordance with the requirements of the Act. An independent audit by a local Disability Group will be undertaken prior to the contract designs being finalised.

Tactile paving has been used at crossings and seating has been provided at regular intervals (up to 25 no seats) with adequate surrounding space. The scheme gives safe, new provisions for pedestrians.

Advantageous scheme outcomes include:

- Traffic relief along the A3047 from East Hill to Camborne (Wesley St roundabout)
- Increased capacity in the junctions on the A3047 to accommodate economic growth
- Reduced highway network congestion for users in the surrounding area and reduction in the use of unsuitable routes
- Better options for those without cars; potential for improved public transport
- Reduced delays for users wishing to access facilities in the area
- Improved access to residential, industrial and commercial properties
• Improvements to cycling and pedestrian infrastructure – including new facilities and links to existing networks; the scheme will create safer pedestrian and cycle routes, strengthening the links between the existing residential areas and industrial estates.

• Traffic signal controlled crossing points at key junctions and other crossing points

The scheme is part of an integrated transport package for the area. All public highway users should be able to benefit from the new roads and improvements which form part of this scheme.

There are no isolated concentrations of deprivation in the CPR corridor which will be adversely affected by the scheme; there is no reason why any groups should be disadvantaged or be excluded from the scheme benefits.

The Council is satisfied that there is no conflict with the requirements of the Act.
13 CONSTRUCTION

13.1 Introduction

Start of Works

The construction programme has been developed by the contractor as the scheme design has progressed. It assumes a favourable completion of the statutory process and commencement of works on site in January 2013. The programme and construction sequence is a best estimate based on the present situation; the construction activities and programme could be subject to change after the Public Inquiry and during the detailed design and construction phases.

Overall Duration

It is anticipated that construction of the Scheme would take between 82 and 90 weeks to complete. The construction programme will be developed further as the contract documents are prepared.

Construction strategy

An efficient and economic construction strategy will be developed for the main construction activities associated with delivery of the Scheme. These include: Advance Works; Site Clearance and Accommodation Works; Statutory Undertakers Works; Earthworks; Roadworks; Structures; Drainage; Demolition and Temporary Diversions.

These activities have been assessed by the contractor and designers to develop an outline of the construction strategy and programme of works for the Scheme. A full programme of works will be produced by the contractor prior to construction and will be included in the tender documents. This will minimise disruption on the local highway network and ensure that environmental impact during the construction process is managed according to the methods agreed in the Construction Environmental Management Plan. It will also ensure that the Scheme is constructed safely.

Key construction operations

Several key elements of the construction process have determined the programme duration. These include:
• Site clearance to be completed outside of the bird nesting season and other ecological seasonal constraints.
• Excavation of the cut material throughout the site and its movement to areas of fill and landscape bunding
• Earthworks movement from main cuttings to embankments
• Excavation of the "ground replacement “material in the Red River valley
• Erection of the precast concrete arch structures
• Import and placement of the required graded fill material to construct the embankment across the Red River valley and the associated reinforced earth spandrel walls and wing walls for the arches
• Diversion of the statutory undertakers’ apparatus.
• Demolition of existing buildings (and the structures within South Crofty)
• Drainage throughout the site including the attenuation pond, and installation of water run-off holding tanks
• Construction of the new single carriageway road with cycleway/footways and the creation of new junctions
• The realignment and improvement of existing highways and junctions and the associated traffic management.

13.2 The Contract Management Plan

The contractor’s Contract Management Plan will cover all areas of the works and within it will be the Construction Environmental Management Plan (CEMP). An early draft of this evolving document was included in the Phase 2 planning application (Environmental Statement, Vol. 3, Appendix A2, CC/3/3).

The Contract Management Plan (CMP) is a key document which describes how the construction works will be carried out. The plan defines the contractor’s system for managing Health, Safety, Sustainability and Quality. It will be maintained and used for:

  o providing staff with instructions and guidance on the specific arrangements for managing and monitoring quality, safety and environment related activities;

  o issuing to the Council, designers, sub-contractors and 3rd parties active on site for their information and use;

  o induction and awareness training;
demonstrating and monitoring compliance with statutory and contractual requirements.

It describes the proscribed measures which will need to be implemented and methods of working to be followed. The Plan will become part of the construction contract and will be binding on the contractor.

Implementation of the CMP obligations and requirements will be a high level, individual, responsibility within the contractor’s site staff. Compliance will be monitored by the Council’s site supervisory team and immediate action will be taken should the requirements of the CMP not be met.

13.3 The Construction Environmental Management Plan

13.3.1 Environmental Management Strategy

A Construction Environmental Management Plan (CEMP) will be prepared by the contractor prior to works commencing on site. The CEMP, produced with the assistance of the contractor’s environmental team, will detail how environmental management would be undertaken during construction of the Scheme in order to minimise the effect of construction activities on the environment. The CEMP will provide a means of collecting together the contractual requirements, any commitments arising from the Public Inquiry, if applicable, and the associated legal requirements, standards and guidelines in a manner that can be used by the construction team.

The CEMP will continue to be developed during the pre-contract, detailed design phase and it will be subject to further agreement with the Council and other statutory bodies responsible for aspects of the environment. It will be continuously reviewed during construction.

13.3.2 Roles and responsibilities

The CEMP will also define the roles and responsibilities of key staff such as the contractor’s Project Manager, Environmental Coordinator, Environmental Manager, Environmental Clerk of Works, Public Liaison Officer and other Environmental Specialists such as archaeologists and ecologists. The Environmental Specialists will be appointed prior to construction starting and will be responsible for advising and monitoring the construction team on environmental issues. The project specific
requirements for environmental site inspections and monitoring, auditing and reporting performance would be set out in the CEMP.

13.3.3 Mitigation measures

Environmental mitigation and control measures will be discussed and agreed with Natural England, English Heritage, the Environment Agency and Cornwall Council prior to any activities on site. All agreed measures will be implemented throughout the construction process to reduce the impact of the works upon the local community, air quality, water quality, the natural environment and cultural heritage.

A wide range of construction-related mitigation measures were identified during the Environmental Impact Appraisals for planning, and will be included in the form of environmental commitments, formalised within the CMP and CEMP. These measures included statutory obligations, best practices and site-specific measures, and included constraints applying to the works, such as noise levels, emissions, hours of working, vehicle washing, control of polluted material; and constraints pertaining to the environment such as nesting birds, habitats and the need for surveys and heritage protection measures.

The contractor will be required to integrate these requirements and safeguards into site working practices and detailed method statements for the principal construction activities.

13.4 Construction works sequence

13.4.1 Advance works

To avoid delays some construction activities may be undertaken in advance of the main works start. The may include:

- Demolition of derelict and redundant buildings within South Crofty
- Ecological monitoring and translocation of habitats and species as required
- Some accommodation works
- Key Statutory Undertakers’ service diversions
- Some areas of site clearance – following the necessary ecological re-surveys
13.4.2 Activity sequence

If the Secretary of State confirms the Orders then Notices to Treat and Enter will be served on all landowners and the contractor will take control of, and secure, the whole site.

Construction will begin in various areas according to the construction programme. The contractor will establish site compounds for site administration offices, plant and materials storage and welfare facilities.

Much of the works will be “off-line” – ie. away from existing roads, where new carriageways can be constructed without impinging on existing roads. These sections of new road will be across fields at Church View Farm, the disused South Crofty mine, and land adjacent to the Carn Brea Leisure Centre.

Disruption and delays to traffic will mainly occur when these new sections of road are tied-into the existing road network and where on-line improvements will be undertaken. There will be a number of discrete areas of works, on which the contractor may work simultaneously:

There may be additional resurfacing maintenance works on Wilson Way and Dudnance Lane undertaken concurrently with the scheme works to minimise impact.

New, off-line, sections of road

- Dolcoath Road to Chapel Road
- The Red River valley embankment and structures
- The Red River to Dudnance Lane (across South Crofty), and
- Station Road to Wilson Way (at Carn Brea Lane)

On-line improvements (diversions and creation of new cycleway/footways)

- Dudnance Lane
- Chapel Road (diversion)
- Station Road, and
- Wilson Way
Tie-ins to the existing road network

- Dolcoath Road (roundabout)
- Dolcoath Avenue and Lower Pengegon
- East Hill junction
- Dudnance Lane (traffic signal controlled junction)
- Penhallick Road / Dudnance Lane / Station Road (traffic signal controlled junction, and
- Wilson Way (roundabout) and
- Church View Road

The main construction activities will revolve around the earth moving operations needed to construct the embankment across the Red River valley, the two arch structures and the associated, reinforced earth, spandrel and wing walls.

Whilst these operations are underway, the off-line sections of road and drainage will be progressed. The tie-in areas will be developed in sequence to keep traffic flowing and maintain the existing network as far as possible.

Drainage channels, the attenuation storage pond, and underground cells will be constructed early as the works proceed to capture water run-off from the site.

Completion of the earthworks and bunding in some areas will provide shielding for the works from residential properties. The addition of topsoil will enable some areas to be planted early giving an extra season’s growth and establishment.

Carriageway surfacing will be undertaken as the various sections of the road are completed. Junction construction at the tie-ins, traffic signal installation and roundabout construction will be phased in with the completion of the new sections of carriageway. Lighting, signing, seating and carriageway markings will mark the completion of sections.

The contractor will liaise closely with those commercial interests affected by the scheme to ensure that the works will be programmed to minimise disruption. Private
accesses will be kept open, as far as possible, at all times; any necessary temporary closures will be co-ordinated and agreed with those affected.

13.4.3 Site clearance

An early site activity would be land surveying and the setting out of the boundaries of the highway. Either permanent or temporary fencing would then be erected to secure the working area and provide for the safety of residents and livestock whilst maintaining access and Rights of Way.

Site clearance would be carried out in accordance with the Construction Environmental Management Plan. Where protected species or their habitats would be affected, a licence would be obtained from the appropriate regulatory body in advance of the work taking place.

13.4.4 Statutory Undertakers’ diversions

The main utility services are all affected to some degree by the road. The main impact will be where the new road ties into or crosses the existing roads at Dolcoath, Chapel Road, Dudnance Lane, Station Road and Wilson Way. These services will require either diversion or protection as a result of the construction of the Scheme.

Discussions have been held with the statutory undertakers and diversion routes have been developed. The Statutory Undertakers’ apparatus affected belongs to:

- Wales and West
- South West Water
- Western Power Distribution
- British Telecom

Diversions would generally be routed along the line of the new and existing road and footpath network and some diversions will be routed across the Scheme.

A new electricity supply from the existing network would be required for the road lighting, signing and traffic signals. No other permanent services are envisaged to be required for the scheme.
13.4.5 Earthworks

The earthworks operations will be a significant part of the construction across South Crofty and the Red River valley. The Red River valley embankment will require the importation of additional material which is described in Paragraph 13.6.3. In order to minimise the environmental effects associated with earthworks activities, the movement of excavated material on some roads in the local road network would be prevented by explicit restrictions in the contract documents.

Following site clearance, topsoil would be excavated and transported to temporary stockpiles. An archaeological watching brief would monitor the entire site when the excavations and topsoil stripping operations are underway. The topsoil stockpiles would be constructed to ensure that the soil would not wash away and that soil fertility would be maintained. Upon completion of areas of earthworks, topsoil would be removed from the stockpiles and placed to the required thickness ready for landscape planting.

Completion of the earthworks and bunding in some areas will provide shielding for the works from residential properties. The addition of topsoil will enable some areas to be planted early giving an extra season’s growth and establishment.

13.4.6 Road works

The outline design for the new road construction comprises two layers. The lower layer, the ‘sub-base’, would be laid onto the existing ground or on prepared ground, depending upon the strength of the natural materials. At some locations it will be laid on a geo-membrane to provide additional bearing strength.

The sub-base would be a quarried granular stone delivered to the site in road haulage lorries.

The upper layer would comprise bituminous materials approximately 300mm thick. The bituminous materials would also be brought to site in road haulage lorries.

Management of the construction works at tie-ins with the existing roads would be designed to minimise disruption to the road network. Tie-in works to existing carriageways would generally be undertaken under single lane running conditions controlled by traffic signals. Final surfacing and lane marking may be carried out at night time, subject to noise restrictions.
Where the existing road surface is to be removed, road planers would be used and, where possible, the road planings would be re-used as construction materials. Any contaminated material that cannot be treated and used on site would be removed and disposed of at an appropriately licensed waste disposal facility.

Traffic management schemes including temporary reduced speed limits would be implemented to allow the works to be constructed safely and efficiently.

13.4.7 Structures

The two arches will be constructed from pre-cast reinforced concrete units, each of which will be one half of a section of the arch semi-circle. Two units at a time will be placed and joined at their crown to form a stable, semi-circle section. Each arch will consist of some 14 no. such sections connected to each other.

The units will arrive in pairs on heavy goods vehicles at off-peak periods.

This operation will require two cranes – each of which will require a stable, flat platform to be formed adjacent to the structures.

The two arches will be backfilled in a regulated sequence to ensure that the increasing load is applied steadily and evenly. Once covered they will be fully stable. The backfill material will be material reinforced with geo-fabric or other means.

The spandrel walls, above the arches, and the wing walls at each side on the arches will be clad in mudstone. A string course at the base of the arch parapets, the arch semi-circular capping stones and the parapet coping stones will be of granite.

13.4.8 Drainage

The installation of new highway drainage would take place prior to the construction of the new road surfacing. Materials for the drainage works would be delivered to site by road lorry and installed by mechanical excavator and dump trucks.

The excavated material in some areas may give rise to contaminated leachate which it will be essential to isolate and control. Regular monitoring will be undertaken to ensure that any such pollution is identified and collected.

Specific measures may be needed to deal with existing ground and surface water arising adjacent to and within the works. Temporary ditches and settlement facilities may need to be constructed to ensure that water arising from the works would be
acceptably clean prior to discharge into the existing drainage systems and watercourses. The need for these works, and the control and monitoring of contamination levels, would be discussed and agreed with the Environment Agency and any necessary discharge consents obtained prior to construction.

Installation of drainage works would be carried out in accordance with the construction programme to facilitate adequate drainage of completed surfaces. Permanent settlement facilities and outfalls would be constructed in accordance with details and methods agreed with the Environment Agency.

13.4.9 Road closures and temporary diversions

There will be disruption to flows on the road network in particular during reconfiguration of Station Road, Wilson Way, Chapel Road and during the construction of the roundabout at Dolcoath Road.

Appropriate diversion routes will be in place prior to roads being closed, as agreed with Cornwall Council; the diversion routes would be clearly signed. Some closures will be of long duration.

Initially Chapel Road will have a lane closure under traffic lights for a duration of around 4 weeks followed by a temporary road closure to allow for construction of the Red River bridge sub structure and Chapel Road’s new alignment. Chapel Road will then be opened using the new alignment.

A series of lane closures under traffic light control on Dolcoath Road will be required to construct the new roundabout and Dolcoath Road re-alignment.

Following completion of the Dolcoath roundabout a temporary road closure will be required at Lower Pengegon, to construct the western tie-in of the CPR road with the Dolcoath development.

Once the tie in is complete and the road reopened Chapel Road will be closed again, for a duration around 13 weeks, to enable construction of the Red River Valley bridge superstructure.

A temporary road closure will also be required between Penhallick Road and Station road as the road level is raised, and the new access to Tesco established. This will be followed by lane closures, under traffic lights, to construct the works around Penhallick.
Road. A night closure will be required to complete the surfacing and road markings at the junction.

During these closures, essential access to businesses for deliveries and customers will be maintained by the use of temporary alternative means.

Alternative routes for vehicles would be available and signed for all the proposed closures.

Pedestrians and cyclists would still be able to pass on the closed roads for most of the time, except on Chapel Road where major earth moving plant will be required to cross the valley.

13.5 **Temporary facilities**

13.5.1 **General**

Temporary site compounds would be established to support the construction operations. It is likely that there would be one main compound area, within the existing South Crofty mine site with access off Dudnance Lane, and a number of satellite compounds.

It is possible that the contractor would make use of the area of land owned by Cornwall Council in the South west quadrant of the East Hill junction.

On completion of the Scheme, all compound areas would be restored to their previous condition and use.

13.5.2 **Main site compound**

The main compound area, would comprise a series of temporary ‘Portacabin’ offices, welfare facilities, secure container stores, material storage areas and parking places. It would be fenced to ensure that it would be a secure area. Topsoil over the area of the proposed compound would be stripped using a tracked excavator. An archaeological ‘watching brief’ would monitor topsoil stripping operations. The topsoil would be stored in a suitably located bund adjacent to the compound for reinstatement of the compound area at a later date. A layer of clean hardcore would be placed over the compound area.

The use of existing hard standing areas would be used for car parking. The compound would be lit for safety and security reasons, but the lighting would be restricted to
provide the minimum levels necessary. Site security would be provided during the night and 24-hour cover provided during the weekends. Service requirements for the compound would include telephone, water and electricity.

Access to the compound would be off an existing highway at a location to be agreed with the planning and highway authority in order to provide a safe means of access and egress.

**Satellite compounds**

In addition to the main site compound there would be a need for satellite compounds, which are likely to be located at the site of the other work areas.

These will be adjacent to Chapel Road and to the East of the Carn Brea sports ground. There may be a need for another adjacent to the Heartlands access for welfare or materials storage.

Satellite compounds would be of a smaller scale than the main site compound, comprising a secure fenced area with ‘Portacabins’, stores container and welfare facilities with associated parking areas. They would be lit for safety and security reasons with the lighting shielded to provide the minimum levels necessary.

### 13.6 Site traffic

#### 13.6.1 Plant Types

Noise from construction plant or machinery may affect local residents, therefore consultation with Cornwall Council’s Environmental Health Officer would be undertaken to agree and establish noise limits and monitoring methods. Where appropriate, noise suppression measures may be implemented including silencers fitted to plant or machinery. All motorised plant would also have a regular programme of planned maintenance. During non-work times such as break times, all plant and machinery would be switched off where it would be practical and safe to do so. During the construction phase, further discussions with Cornwall Council, and local residents would be undertaken in order to ensure continued liaison over potential noise impacts and mitigation measures.

#### 13.6.2 Working Days and Hours

Core site working hours would be Monday to Friday 0730-1800 hours and Saturday 0730 to 1300 hours. It would be necessary to work outside these core hours
for certain activities but this would only be undertaken with the prior agreement of the Environmental Health Officer from Cornwall Council.

Occasional night time working would be required and specific method statements and risk assessments would be prepared. The programme for such work would be agreed in advance with the Council’s Environmental Health Officer; methods of work, lighting proposals and noise limits would also be agreed and prescribed. Advance notice of night working would be given and consultation with affected residents undertaken.

13.6.3 Vehicle Movements

Quantities of goods and materials would need to be brought to the site for the construction of the Scheme, including: concrete, quarried aggregates, drainage materials and bituminous materials.

The routeing of most deliveries would be along “A” roads where possible to avoid impacts on unsuitable roads. The majority of incoming materials will arrive via the A30 Trunk Road, passing through East Hill to access the site off Dudnance Lane into the South Crofty compound.

The busiest periods of the construction process will entail movement of substantial volumes of material on the road network into and around the area.

Earthworks phase

During the earthworks phase, excavated material will be moved from the Carn Brea sports ground area (on the Station Road to Wilson Way section) to the South Crofty area via Dudnance Lane; a total quantity of 6100 cu. m. will be moved over a 20 day period which equates to 38 HGV movements / day on a return trip.

Import of dry stone

Graded, suitable, importation of dry stone will be needed for the construction, which will arrive at the South Crofty area via the A30 and Dudnance Lane over different time periods:

- some will be for ground replacement at the bridge site – around 6500 cu. m. over 13 days which equates to 62 HGV / day;
• some will be used to construct the reinforced earth walls – around 6500 cu. m. over 20 days which equates to 40 HGV / day;
• some will be used to form capping (to the embankments and sub-base, under the road surface – around 13700m3, over 205 days which would average 9 HGV / day with peak flows up to 40 HGV / day

**Drainage**

Excavation for the drainage channels and carrier drains would remove some 10600cu. m. over 185 days which would average 7 HGV / day with peak flows up to 15 HGV / day. This activity would be after the major earthworks.

**Surfacing**

Surfacing material for the new road would be brought to the site over an extended period with a peak flow of some 30 HGV /day

These flows represent a small fraction of the daily traffic flow from the A30 on Dudnance Lane through East Hill.

13.6.4 Plant crossings

Some material for the construction of embankments would be obtained from the cuttings. Excavated material would also be used as required to form the proposed areas of essential landscaping.

Plant crossings would allow site vehicles to transport excavated material, and imported material, along the site and would be controlled by traffic signals where their movements cross roads.

13.6.5 Waste and Re-cycling

A **Waste Management Plan** would be prepared by the contractor. The plan would include appropriate procedures for documentation and record keeping in relation to the identification and transfer of wastes from the works and would include a record of the sources of disposed materials.

Where possible, site generated waste would be segregated into various categories such as steel, plastic, wood and paper so that opportunities for re-cycling would be maximised. The re-use or re-cycling of surplus materials generated during the
construction works such as soils and aggregates, road planings and concrete would be incorporated within the permanent works where possible.

Most contaminated excavated material will be reused on site in the construction of road embankments and landscaping bunds. Residual contaminated material will be sent off site to a licensed waste site.

13.7 Public Liaison

Contact will be made with those who will be affected by temporary disruption. News bulletins will be issued regularly through various media – including flyers, e-mails and in the press.

13.7.1 Public Liaison Procedure

A Public Liaison Procedure would be developed by the contractor to cover contact with all stakeholders, including landowners, commercial interests, vehicle travellers and members of the public. This will detail how contacts are to be dealt with and recorded. Any complaints would be dealt with in accordance with this procedure and appropriately recorded.

13.7.2 Public Information

A Pre-construction Exhibition would be held to inform members of the public of the programme for the construction works, their impact on the area and measures to be taken to mitigate that impact.

Information would continue to be propagated during construction by newsletters, notice boards, articles in the local media (bulletins, newspapers, magazines and local radio), and on the Council’s web sites to keep the public informed of the progress of the works and any significant impacts.

Those directly affected by the works programme would receive updates on progress, advance programmes, letters, e-mails and visits from site staff to discuss how impact could be minimised.

13.7.3 Liaison responsibility

There will be a single contact point for members of the communities and their elected representatives to seek information, comment on, or complain about, aspects of the construction. These communications will be logged and responses made swiftly; further
contact with the member may be made to ensure that the issue has been fully resolved. The issues raised will be monitored to ensure that they are closed out and that lessons are learnt for ongoing work activities.

13.8 Conclusions

13.8.1 Construction Programme

Assuming a favourable outcome from the statutory procedures, construction could start in January 2013. The programme is realistic and achievable. The site works would last approximately 20 months, reaching completion in the Autumn of 2014.

The sequencing of operations has been planned, and a programme developed, to minimise the impact on the local community whilst keeping the construction efficient, cost effective and as short as practicable.

13.8.2 Construction Strategy

The construction methods and programme would be selected with due consideration for the environment and the impact of the works on the local residents, road users and recreational activities.

The temporary road diversions would ensure continuity of traffic flows minimising the duration of road closures at minimum cost and effect on programme.

Environmental mitigation and control measures would be implemented throughout the construction process to reduce the impact of the works.

13.8.3 Temporary Works and Facilities

The areas required for essential construction purposes have been calculated and included within the Orders.

Traffic management schemes including temporary, reduced speed limits and road closures would be implemented to allow the works to be constructed safely and efficiently.

The assessments to date have concluded that, with the management measures described above in place, and due to the temporary nature of the works, there would be no significant residual effects on the environment as a result of the construction works.
In response to the government’s Comprehensive Spending Review, Cornwall Council submitted its Best and Final Funding Bid on 9 September 2011 for a “reduced scope” scheme: which is now the Council’s Major scheme and the subject of the Made Orders.

The Department for Transport (DfT) formally advised the Council that the bid had been accepted, (December 2011) subject to conditions, and that the Scheme was in the National Programme for local authority schemes.

The accepted funding breakdown was based on the following cost breakdown:

<table>
<thead>
<tr>
<th>Costs and Funding</th>
<th>£m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outturn construction cost</td>
<td>19.25</td>
</tr>
<tr>
<td>Outturn land cost</td>
<td>3.67</td>
</tr>
<tr>
<td>Other costs</td>
<td>3.89</td>
</tr>
<tr>
<td><strong>Total outturn scheme cost</strong></td>
<td><strong>26.81</strong></td>
</tr>
<tr>
<td>Grant, developer and local authority contributions</td>
<td>10.73</td>
</tr>
<tr>
<td><strong>Outturn scheme cost approved DfT funding</strong></td>
<td><strong>16.08</strong></td>
</tr>
</tbody>
</table>

Once the DfT approval and Programme Entry status had been secured, the Council gave the approval to make the Orders as the availability of funding was reasonably assured.
15 CHANGES TO THE SCHEME

15.1 Proposed amendments to the CPO

15.1.1 Reduced land acquisition from Sunlight Services Ltd (Cornish Linen Services)

CLS has been in negotiations with the adjacent landowner (Homes and Communities Agency) to purchase a strip of land along their southern boundary. This was required to enable CLS to develop better circulation flows of vehicles around their site.

The Council’s CPO identified this HCA land as being required for a temporary construction compound area. CLS asked if the strip in which they were interested could be excluded from the CPO to allow negotiations on purchase to continue.

The Council confirmed that the small strip would not adversely affect the usefulness of the land identified for temporary construction proposes and agreed to exclude it from the CPO.

Appendix 10.2 (CC/3/3) contains:

1. a revised land interest plot plan showing the reduced area

At the Public Inquiry other documents pertaining to this change may be submitted to the Inspector, including:

2. a revised CPO Site Plan 2

3. a revised CPO Schedule (extract page)
15.1.2 Reduced land acquisition from TESCAN – Mr Moore

The proposed new roundabout junction at Wilson Way had included a dedicated left turn lane, in order to cope with high turning flows from the North.

This facility required a substantial area of TESCAN operational land in the CPO.

The slowing economy, and the Department for Transport’s requirements for lower economic growth assumptions, led to a reappraisal and remodelling of the forecast traffic flows. This produced lower forecast flows and, at some junctions, reduced turning flows.

The most significant change in flows was at the proposed Wilson Way roundabout where the traffic flows forecast to be joining the new road from the North were much lower.

Revised junction capacity assessments, based on the new forecasts, showed that the left turn filter lane was no longer required, therefore the junction was redesigned.

A revised plan has been produced showing a smaller roundabout design (with no filter lane).

This design change creates no additional impacts on third parties and reduces the land required in the CPO.

Appendix 10.1 (CC/3/3) contains:

1. the revised scheme plan: WHV285300-0300-006 REV D.
2. a revised land interest plot plan showing the reduced area

At the Public Inquiry other documents pertaining to this change may be submitted to the Inspector, including:

3. a revised CPO Site Plan 2
4. a revised CPO Schedule (extract page)
15.2 Proposed amendments to the SRO

15.2.1 Diagram error on Site Plan 3

The Ramblers association made a representation on the Side Roads Order pointing out a minor drafting error on one of the Site Plans. It related to the creation of a new section of Mineral Tramways bridleway route in the Red River valley.

On Site Plan 3, the south end of new highway (bridleway) B has incorrectly been shown as having a taper at its southern end so that it does not fully connect to new highway C (the existing bridleway). It joins with a “point”.

The new bridleway B should be carried through at its full width. The taper of the new bridleway B should have ended with its side against the new highway C.

In terms of the Order, however, the intention is clear and there is no ambiguity. The widths are indicative since it is diagrammatic. Even though the widths are not consistent, the sections of new bridleway do join up to make a complete new route – as intended.

At the Public Inquiry other documents pertaining to this change will be submitted to the Inspector, including:

1. A new Site Plan 3
16 OBJECTIONS TO THE ORDERS

16.1 The acquisition of land

The Council is taking no more land than is required to construct the scheme. The land being taken is required for the scheme and the use of Compulsory Purchase statutory powers is necessary to ensure certainty of delivery.

There is a compelling case in the public interest for the scheme; the highway element of that case has been explained in previous sections.

Small reductions have been made in the area of land identified in the Compulsory Purchase Order (CPO) as being required for the scheme. These are detailed in Section 15.

The land included in Compulsory Purchase Order (CPO) is the land required to construct the scheme. It includes land which will be required as title; it also includes land over which Rights may be required and land which, it is expected, will only be required temporarily for the period of construction or maintenance.

The highway land within the new road corridor will be acquired as title, to be in the permanent ownership of the Council; the other land identified in the CPO is required temporarily for construction or maintenance and the Council expects to be able to negotiate temporary licences for these areas.

Land is included to enable construction of the road (with its drainage outfalls) and for various future maintenance. Land has been included for the contractor to establish temporary site offices, compound, welfare facilities and storage areas for plant and materials at various locations.

16.2 Liaison since Orders publication

There have been a number of objections to the published orders, from individuals and commercial interests, and the Council has endeavoured to engage with those who have objected in orders to investigate their concerns, make alterations to scheme details, provide suitable accommodation works where possible and mitigate impacts.
16.3 Compensation issues

The Council will enter into discussions and negotiations with land owners and tenants to agree valuations and appropriate compensation for the loss of land temporarily (under Licence) or permanently and for other impacts such as operational and financial business losses.

It is anticipate that these negotiations will continue as the statutory procedures progress. The statutory framework which enables Highway Authorities to acquire land is in place to ensure that those affected are not disadvantaged financially.
### 16.4 Summary list of Objectors and grounds of objection

<table>
<thead>
<tr>
<th>Objector reference</th>
<th>OBJECTOR Name / Address</th>
<th>Agent</th>
<th>Grounds of Objection</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBJ01</td>
<td>Network Rail</td>
<td>-</td>
<td>1. Network Rail objects to the adverse effect of the scheme on its operational land.</td>
</tr>
<tr>
<td>OBJ02</td>
<td>Ms S P Wherry</td>
<td>Stags (G Rowe)</td>
<td>2. Environmental impact due to Tesco operations area on Sylmar land - HGV noise, fumes and lights</td>
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<td></td>
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<td>3. Visual impact of Tesco operational area</td>
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<td></td>
<td>4. Loss of turning facility in Sylmar land</td>
</tr>
<tr>
<td>OBJ03</td>
<td>Philip Whear</td>
<td>Business Location Services (R Dodge)</td>
<td>1. The scheme will result in hazardous manoeuvres within the site which are fundamentally unsafe for pedestrians.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>2. Required HGV manoeuvres are possible but not practical.</td>
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<td></td>
<td>3. The operational area will be reduced and the new access will prejudice development aspirations for new office development</td>
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<td></td>
<td>4. Customer parking will be lost and customers will be adversely affected by the HGVs.</td>
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<td></td>
<td>5. Left turn egress considered to be unsafe. Counter-proposals have been suggested:</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• establishing a new access off Agar Way;</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• expanding the frontage into surplus highway land to gain additional operating area</td>
</tr>
<tr>
<td>OBJ04</td>
<td>Dudley Car Sales</td>
<td>Stags (G Rowe)</td>
<td>1. The scheme will make the existing business untenable and uneconomic because the cars for sale will need to be moved within the site;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Customer parking will be severely limited and there will be inadequate space for manoeuvring;</td>
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<td></td>
<td></td>
<td></td>
<td>3. The proposed access is impractical and operationally unacceptable;</td>
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<td>4. The cycleway / footway crossing will close the existing access.</td>
</tr>
<tr>
<td>Objection reference</td>
<td>OBJECTOR Name / Address</td>
<td>Agent</td>
<td>Grounds of Objection</td>
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<tr>
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<tr>
<td>OBJ05</td>
<td>Baseresult Holdings Ltd, Crofty Developments Ltd, Studyhomes No 80 Ltd, WUM</td>
<td>TLT Solicitors</td>
<td>[The objections have been withdrawn]</td>
</tr>
</tbody>
</table>
| OBJ06               | Tesco Stores Ltd | GLHearn (T Olden) | 1. Loss of land from, and closure of, the access to the Station Road delivery bay will compromise operations, rendering the premises unusable for its current use.  
2. There is no compelling case for land acquisition in the public interest  
3. The scheme will increase traffic on Dudnance Lane making the existing Tesco access (and junctions) inadequate. The contention is that the roundabout on Dudnance Lane for Tesco and Forth Kegyn is required as part of this scheme and should not be deferred.  
4. The scheme given planning consent should not be undertaken in part; it should be postponed until funds are available to construct it in whole)  
5. The land subject to permanent acquisition at the entrance is not necessary for the scheme. |
| OBJ07               | Sunlight Services Group Ltd (Cornish Linen Services) | Wragge & Co | 1. The scheme is not fundamental to the economic development and regeneration of the area.  
2. The scheme will not stimulate employment, business, investment or competitiveness.  
3. The scheme will not improve access or contribute to sustainable development.  
4. The land in the CPO for acquisition is not necessary to alter the highway  
5. The Council does not have sufficient funds to pursue the scheme |
| OBJ08               | B&Q Plc | Wragge & Co | [The objections have been withdrawn] |
| OBJ09               | Richford Fire & Flood Ltd |  | 1. The land to be taken for the scheme is excessive and unnecessary  
2. Commercial operations will be severely compromised by the scheme. The business will not be able to continue to function; it will have to be relocated  
3. The proposed entry to, and egress from, the site will not be acceptable – being hazardous, |
<p>| OBJ10               | Mr S M Richford |  |  |</p>
<table>
<thead>
<tr>
<th>Objector reference</th>
<th>OBJECTOR Name / Address</th>
<th>Agent</th>
<th>Grounds of Objection</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBJ11</td>
<td>I C Moore</td>
<td></td>
<td>difficult and impractical with the scheme.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. The loss of land will reduce the turning space in front of the building and inhibit site operations and prevent essential vehicles from entering the site (waste etc).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Land take should be reduced by 2m southwards and the access should be retained in its existing position.</td>
</tr>
<tr>
<td>OBJ12</td>
<td>Tescan Limited</td>
<td></td>
<td>1. The visibility splays shown on the new replacement access do not safeguard the future sight lines. This replacement access should be given dimensions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. The left turn filter lane on the new Wilson Way roundabout is unnecessary and takes an excessive area of operational land.</td>
</tr>
<tr>
<td>OBJ13</td>
<td>Tescan Pension Trust</td>
<td></td>
<td>3. The proposed noise fence on the boundary of 78 Carn Brea Lane is shown to go around the Western Power Distribution owned, electricity sub-station; this will inhibit the future use of the property’s land. (Mr Moore (Tescan) has purchased 78 Carn Brea Lane)</td>
</tr>
<tr>
<td>OBJ14</td>
<td>Western Power Distribution</td>
<td>Babcock International Group (D Cotterill)</td>
<td>1. The existing access to the WPD, Maskell’s Fur Factory electricity sub-station (No. 41/1901) will be closed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Other WPD apparatus will be affected by the scheme.</td>
</tr>
<tr>
<td>OBJ15</td>
<td>Mrs V R Oldfield</td>
<td></td>
<td>1) The published CPO will interfere with a claim being made over land in unknown ownership adjacent to Mrs Oldfield’s property.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2) After 12 years Mrs Oldfield was intending to make a claim to the land in unknown ownership.</td>
</tr>
<tr>
<td>OBJ16</td>
<td>Carn Brea Leisure Centre Trust</td>
<td></td>
<td>1. The lack of mitigation fencing and screen planting</td>
</tr>
<tr>
<td>OBJ17</td>
<td>McDonalds Restaurants Ltd</td>
<td>Montagu Evans</td>
<td>1. Reduction in traffic will cause a loss of passing trade, reduced profitability and loss of jobs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. The economic downturn, with all its implications, is the wrong time to pursue a road scheme – when public finance is limited.</td>
</tr>
<tr>
<td>Objection reference</td>
<td>OBJECTOR Name / Address</td>
<td>Agent</td>
<td>Grounds of Objection [STATUS]</td>
</tr>
<tr>
<td>---------------------</td>
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<td>------------------------------</td>
</tr>
<tr>
<td>OBJ18</td>
<td>Mr Arthur Church View Farm</td>
<td>Mr Eddy</td>
<td>3. The construction of the scheme will be unduly disruptive. [The objections have been withdrawn]</td>
</tr>
<tr>
<td>OBJ 19</td>
<td>South Crofty Tyres (Mr &amp; Mrs Huttel)</td>
<td>Business Location services (R Dodge)</td>
<td>1. The land to be taken for the scheme is excessive and unnecessary 2. The loss of land will reduce the turning space in front of the building, inhibit site operations and prevent essential vehicles movements 3. Current commercial operations will be severely compromised by the scheme. The business will not be able to continue to function in its present form; some parts of the business will not be viable. The business can continue at a reduced level.</td>
</tr>
<tr>
<td>OBJ 20</td>
<td>Tuckingmill Investments Ltd</td>
<td>Business Location services (R Dodge)</td>
<td>[The objections have been withdrawn]</td>
</tr>
<tr>
<td>OBJ 21</td>
<td>Camborne Town Council</td>
<td></td>
<td>[The objections have been withdrawn]</td>
</tr>
</tbody>
</table>
16.5 **Response to the objections**

The following responses to the Objectors’ points are supported by documentation in Volume 3 Appendices, Appendix 5 (CC/3/3).

16.5.1 **Objector 01 Network Rail**

**Ground of Objection**

1. Network Rail objects to the adverse effect of the scheme on its operational land.

**Response**

The route is constrained by the need to keep close to the railway in order to minimise impacts on adjacent properties and businesses. The scheme alignment therefore is constrained to run through the Network Rail (NR) depot off Station Road, Pool (on the north side of the rail line) and severs a portion of the residual land from the rail land.

An access from the new road will be provided to the severed area of NR land on the North side of the road.

Network Rail possesses another depot on the south side of the rail line, off Penhallick Road, which is presently underused and overgrown. It is, however, fenced and gated on its boundary to the highway.

The Council, in discussions with NR, has agreed to meet the cost of refurbishing this existing depot on the South side as a replacement for the currently operational depot on the North side which will be lost to the scheme.

NR’s Maintenance Team has confirmed that this will meet their operational needs. Plans showing this agreed work are in Volume 3, Appendix 5.1 (CC/3/3).

A legal agreement is being prepared between the Council and NR. No fundamental issues or problems have arisen and it is anticipated that NR will withdraw its objection in due course.
16.5.2 Objector 02 Mrs Wherry

Grounds of Objection

1. Environmental impact due to Tesco operations area on Sylmar land - HGV noise, fumes and lights
2. Visual impact of Tesco operational area
3. Loss of turning facility in Sylmar land

Response

Although the residential properties have always been adjacent to Tesco’s operational land the scheme will significantly increase the impact of their delivery HGVs. There will be additional noise, fumes and lights but, with the mitigation measures proposed these will at acceptable levels. Secondary glazing and optional sealed windows may offer enhanced insulation from noise.

The two properties will continue to be habitable and the overall nuisance from HGVs will be acceptable.

The Noise and Vibration Report is included in Volume 3, Appendix 8 (CC/3/3).

Following representations and meeting:

- The Tesco operational bay was reduced in size by moving the northern fence some 1.5m southwards to create a strip of land for additional turning space and planting;
- A noise reduction fence is proposed - to be erected on this northern boundary of the Sylmar land, in its new position, to provide an immediate visual screen and reduce noise. The fence would, however, be high (2.0m) and intrusive – curtailing long views to Carn Brea.
- Accommodation work is proposed within the land of Chynoweth and Treveor to create two turning bays.

Plans of accommodation works showing:

- noise reduction fence with specification details and
- The widened drive and vehicle turning tracks
16.5.3 Objector 03 Philip Whear

Grounds of Objection

1. The scheme will result in Health and Safety (H&S) issues and hazardous manoeuvres within the site which are fundamentally unsafe for pedestrians.
2. Required HGV manoeuvres are possible but not practical.
3. The operational area will be reduced and the new access will prejudice development aspirations for new office development.
4. Customer parking will be lost and customers will be adversely affected by the HGVs.
5. Left turn egress is considered to be unsafe.

Counter-proposals have been suggested:
- Establishment of a new access off Agar Way;

Response

The SRO enables the creation of a new access to assist operations and customers.

The CPO does not require title to any land from the site; land is included in the CPO for the construction of the new access. The scheme does not physically affect the site or its boundary.

The HGV manoeuvres within the site will be acceptable, safe and preferable to the current operations.

The proposed highway design and consequent changes in operating practice will, on balance, be beneficial. The future Health and Safety issues internally are capable of being managed. The existing practice, of reversing into the site across Wilson Way using the whole highway width, is less safe than the manoeuvres which will be required within the site after the proposed scheme is constructed.

The Health & Safety assessment undertaken by Philip Whear had regard to the original scheme proposal to close the existing access. This resulted in the HGVs,
entering from the new access, having insufficient turning area and having to pass too close to the existing customer entrance. That assessment is now not valid since the existing access is to be retained, which will allow HGVs to pull forward as far as the kerb before reversing down the East side of the building.

The present business will be able to continue with the proposed scheme albeit with alterations in practice. Deliveries will be able to be made but may require planning. The number and frequency of materials deliveries, and the average customer numbers and parking, will determine the magnitude of any H&S issues and will be considered by the Council’s Valuer in his negotiations regarding compensation.

There will be some loss of customer parking and the need for clear delineation of public areas to avoid any conflicts with, and hazard from, manoeuvring HGVs. Some parking may need to be closed when HGV deliveries arrive. There may be potential to move the main customer access to the western side of the building.

The HGVs can enter the site using the existing entrance off the new roundabout if this would provide safer and less disruptive internal manoeuvres. HGVs can satisfactorily undertake the turning manoeuvres.

Additional accommodation works have been proposed:

- that the existing access could be widened (on its East side) to facilitate easier entry and egress by your HGV deliveries;
- the bank on the East side of the operational area could be cut back to enable wider turns and
- the parking could be rearranged to make best use of the areas not affected by turning HGVs;
- white/yellow lining could be added to help segregate pedestrians and new signage erected.
- A Banksman should be used on all reversing manoeuvres.

The potential does exist for a new access to be created, for entry into the site from Agar Way, across land owned by the business. This would result in a one-way system for HGVs which would be a far superior solution for managing delivery vehicles.
The Council’s Valuer, however, has assessed the cost of this new access, and modifications to an industrial unit building (plus the compensation payments to the tenant occupier) and has concluded that it would not be financially viable when compared to the cost of compensation.

Financial impact on the business arising from the scheme, and the required changes in operational practice, are matters of compensation for consideration by the Council’s Valuer in due course.

The roundabout in the scheme is the optimum design having regard for the adjacent properties and businesses. It will cope with future traffic flow forecasts and allows all movements by HGVs. It accommodates cyclists and pedestrians and is a safe design.

Accommodation works plans showing:

- Plan of accommodation works showing new access
- HGV turning tracks in internal manoeuvres – using both accesses – showing potential for car parking spaces

are included in Volume 3, Appendices, 5.3. It is considered that the impact of the scheme on the business operations and the land value will be slight.

16.5.4 Objector 04 Dudley Car Sales

**Grounds of Objection**

1. The scheme will make the existing business untenable and uneconomic because the cars for sale will need to be moved within the site;

2. Customer parking will be severely limited and there will be inadequate space for manoeuvring;

3. The proposed access is impractical and operationally unacceptable;

4. The cycleway / footway crossing will close the existing access.
Response

Financial impact on the business arising from the scheme, and the required changes in operational practice, are matters of compensation for consideration by the Council's Valuer in due course.

Mr Dudley has acknowledged that the business will be able to continue, albeit at a reduced scale, if the scheme is in place.

The cycleway / footway crossing is in the optimum position relative to other highway side roads and accesses close by. It cannot be moved without being in conflict with side roads and accesses.

The cycleway / footway needs to be on the West side of Dudnance Lane from East Hill southwards to avoid it having to cross the B & Q and Cornish Linen accesses and because, on the West side, it will run next to future development which will generate cyclist and pedestrian movements. There is no land in the CPO to locate it on the East side.

A plan of accommodation works showing:

- new access road and
- details of fencing along Dudnance Lane and pedestrian gate.

are included in Volume 3 Appendices, 5.4

16.5.5 Objector 06 Tesco Stores Ltd

Grounds of Objection

1. The loss of land from the service yard and access closure (off Station Road) would render the premises unviable for its current use.

2. Acquisition of land from the Dudnance Lane access

3. No improvement of the Dudnance Lane access is provided.

4. No demonstration of a compelling case for acquisition of land has been made.
Response

The Scheme makes provision for an alternative access from Station Road to avoid HGV needing to reverse across the highway into the Tesco site. It provides a turning area which will allow HGVs to enter without impeding the traffic flow on Station Road and then reverse up to the loading bay. The area would be leased to the Tesco by the Council.

The Council has submitted to Tesco a Construction Phasing Plan (Volume 3 Appendix 5.5, CC/3/3) to show that this alternative access, and the new road scheme, can be constructed whilst keeping an access open to the loading bay throughout the work period.

The Council does not intend to seek title to the land off Dudnance Lane at Tesco’s main access. A temporary licence would be negotiated to enable the Contractor to use the land as a temporary compound during the construction period (subject to contamination testing). The land is included as “title” in the CPO to give the Council certainty before the contract starts.

The Council is not implementing any improvements to Tesco’s access because the forecast traffic turning flows do not justify it at this time. Tesco’s Consultant has confirmed this conclusion and conceded that the existing access will continue to function satisfactorily with the proposed scheme in place.

The Council’s other witnesses have made the case for acquisition and have robustly concluded that it is in the public interest.

16.5.6 Objector 07 Sunlight Services Group Ltd

Grounds of Objection

1. The scheme will not stimulate employment, business, investment or competitiveness.

2. The scheme will not improve access or contribute to sustainable development.
3. The land in the CPO for acquisition from Sunlight Services Group is not necessary to alter the highway

4. The Council does not have sufficient funds to pursue the scheme

5. The scheme is not fundamental to the economic development and regeneration of the area.

Response

The Council’s other witnesses have made the case for the scheme in the context of economic development and regeneration. They have emphasised and explained its crucial importance

The Council does not intend to seek title to the land off Dudnance Lane in the existing accesses. A temporary essential licence would be negotiated to enable the Contractor to tie the new road levels into Cornish Linen services internal land should be need arise. The land is included as “title” in the CPO to give the Council certainty of acquisition before the contract works starts. The land Interest Plan is in Volume 3, Appendix 5.7 (CC/3/3).

Details of the funding are given in Section 14

The Council has agreed, without prejudice and on the expectation that the objection will be withdrawn, to reduce the area of the adjacent plot of land to be acquired temporarily from HCA. This will enable Sunlight Services to continue their negotiations to purchase it in order to facilitate improvements to their internal operations. Details of this are given in Section 15.1.1.

16.5.7 Objector 09 & 10 Richford Fire and Flood

Grounds of Objection

1. The land to be taken for the scheme is excessive and unnecessary

2. Land take should be reduced by 2m southwards and the access should be retained in its existing position.
3. Commercial operations will be severely compromised by the scheme. The business will not be able to continue to function; it will have to be relocated.

4. The proposed entry to, and egress from, the site will not be acceptable – being hazardous, difficult and impractical with the scheme.

5. The loss of land will reduce the turning space in front of the building, inhibit site operations and prevent essential vehicles from entering the site (waste etc).

Response

The Penhallick Road Junction needs to be improved to increase its capacity to cope with the forecast traffic flows. The forecast turning flows require this junction to be signal controlled and have dedicated right and left turn lanes to maintain the free flow of traffic on Dudnance Lane and Station Road. The loss of land from this site results from the unavoidable widening for this junction and the physical constraints imposed on the existing road corridor due to its proximity to the railway line.

Planning consent for the scheme was granted by Cornwall Council in November 2008 and its period extended on 27 September 2011.

It is acknowledged that the business will be significantly affected by the proposed scheme but the present operations will be able to continue with the scheme albeit with alterations in practice. Operations and parking arrangements will need to be revised and reconfigured to maintain current levels of vehicle movements.

Access to the site will be regulated by a traffic signal control, having its own individual phase within the new Penhallick Road junction. This signal will be activated by a ground loop with an additional, manual “call” button within the Richford site. The existing private access will be relocated in order to tie in with the new Penhallick Road junction – the private arm of the junction must be opposite Penhallick Road.

The access will be kerbed with tactile paving on the cycleway/footway. The Council has confirmed its willingness to install a sliding gate system, remotely controlled from vehicles, as part of the scheme.

A sliding gate will be safe, since the gates will be triggered remotely and, if the vehicle needs to stop in the entrance it can do so skewed, clear of passing traffic.
The traffic signals will regulate traffic flows past the access and the gate opening/closing operation will be apparent to other drivers if one of your vehicles does have to stop in the access.

There will be some loss of operational parking and the need for clear delineation of areas to avoid any conflicts with, and hazard from, manoeuvring operational vehicles.

As part of the accommodation works the Council will also undertake works within the site to maximise space for parking, storage and manoeuvring. These will include clearing vegetation, extending the operational hard-standing areas, removing the canopy (on the East corner of the building) and remarking parking bays.

Financial impact on the business arising from the scheme and compensation are matters for consideration by the Council’s Valuer in due course, possibly leading to relocation if necessary. A suitable building would need to be found if the business needed to be moved.

Plans of the proposed accommodation works:

- showing fencing, new access, sliding gate and traffic signal control
- showing HGV turning tracks in internal manoeuvres

are included in Volume 3 Appendices, 5.6

16.5.8 Objector 11 Mr Moore, Obj 12 Tescan Ltd & Obj 13 Tescan Pension Fund

Grounds of Objection

1. The visibility splays shown on the new replacement access do not safeguard the future sight lines. This replacement access should be given dimensions.

2. The left turn filter lane on the new Wilson Way roundabout is unnecessary and takes an excessive area of operational land.

3. The proposed noise fence on the boundary of 78 Carn Brea Lane is shown to go around the Western Power Distribution owned, electricity sub-station; this
will inhibit the future use of the property’s land. (Mr Moore (Tescan) has purchased 78 Carn Brea Lane)

Response

The plan of the new access has been modified to show a set back fence line to ensure that the required visibility splay is within clear highway land. The purpose of the access is to connect with existing hard standing. It has been designed to acceptable standards to facilitate existing use of the site; the plans shows its dimensions and the HGV tracks to link the Council’s new road with the Tescan hard standing areas..

Following revised traffic modelling, the forecast turning traffic flows at this roundabout have reduced, removing the need for the left turn filter lane. A scheme plan has been issued showing the design modification without the filter lane. This change reduces the area of land required from Tescan. The modification does not affect any other land or interests nor does it take additional land.

The modified scheme boundary allows HGVs to pass the Tescan industrial units.

Plans of the proposed accommodation works:

- Plan of new access - showing standards, visibility splay and fences
- Plan of revised Wilson Way roundabout – without the left turn filter lane
- Plan showing revised noise fence around 78 Carn Brea Lane
- Plan showing HGV turning tracks

are included in Volume 3 Appendices, 5.7.

16.5.9 Objector 14 Western Power Distribution

Grounds of Objection

1. The existing access to the WPD, Maskell’s Fur Factory electricity sub-station (No. 41/1901) will be closed.
2. Other WPD apparatus will be affected by the scheme.

**Response**

The scheme will result in the closure of the existing access across private land to the sub-station and provision has been made for a new access directly from the proposed new road. The fencing and lockable gate to the sub-station will be reinstated. A layby has been included at this location for maintenance vehicles.

The Council has been in discussions with WPD regarding the scheme design and the impact on WDP apparatus. There will be a need for the diversion of WPD at various locations and these have been agreed in principle and provisionally priced. The Council will enter into the usual agreement with WPD (under the NRSWA) to have the necessary diversions undertaken at the Council’s cost. Current liaison is continuing in order to optimise the required diversions and minimise costs. A survey to excavate trial trenches to locate apparatus more exactly will be undertaken (to reduce the risks during construction).

A legal agreement is being prepared between the Council and WPD. No fundamental issues or problems have arisen and it is anticipated that WPD will withdraw its objection in due course.

16.5.10 **Objector 15 Mrs Oldfield**

**Grounds of Objection**

1. The published CPO will interfere with a claim being made over land in unknown ownership adjacent to Mrs Oldfield’s property.

2. After 12 years Mrs Oldfield was intending to make a claim to the land in unknown ownership.

**Response**

The CPO identifies this land as being required for essential landscaping.

The publication has interrupted any ongoing occupation of the land in unknown ownership adjacent to her property.
Once the Council has acquired the land it will landscaped and densely planted to give screening and provide habitat recreation. The Council will be responsible for this land and will maintain the new vegetation. It is hoped by the Council that Mrs Oldfield may derive significant benefit from the proposed works on this land without having ownership of it.

Mrs Oldfield has been sent a detailed plan showing:

- The proposed landscape area and accommodation works fence on her property boundary

which is included in Volume 3 Appendices, 5.8.

16.5.11 Objector 16 Carn Brea Leisure Centre

Grounds of Objection

1. The lack of mitigation measures and shielding between the road and the sports ground.

Response

Following discussions on the Leisure Centre’s requirements, the Council has agreed to implement the additional works, and has sent a detailed plan showing:

- The extent of the proposed screen fence, associated landscape area, property boundary and planting

which is included in Volume 3, appendices, 5.9

16.5.12 Objector 17 MacDonalds Restaurants Ltd

Grounds of Objection

1. Reduction in traffic will cause a loss of passing trade, reduced profitability and loss of jobs.
2. The economic downturn, with all its implications, is the wrong time to pursue a road scheme – when public finance is limited.

3. The construction of the scheme will be unduly disruptive.

Response

The scheme is an integral part of the economic development and regeneration plans which will increase the prosperity of the area. Customer numbers are most likely to increase in numbers as developments come to completion.

Public expenditure on infrastructure schemes is exactly the expenditure which governments should make in periods of economic downturn: bringing forward essential projects which need to be done to stimulate private investment and confidence.

The Council’s other witnesses have made the case for the scheme in the context of economic development and regeneration. They have emphasised and explained its crucial importance. They have explained why it is important to proceed now with the scheme which can be afforded.

The Council’s scheme will now entail only minor kerbing works at East Hill. The work on Dudnance Lane is simply the addition of a cycleway/footway on the West side. The dual carriageway extension of Dudnance Lane southwards (which was discussed with MacDonald’s representatives some years ago) is not being constructed in the present scheme.

The impact of construction is very unlikely to disrupt MacDonald’s businesses. Access will be maintained off Trevenson road at all times and visibility will not be impaired. The construction was described in some detail in the Statement of Case and is further expanded in Section 13.

Details of the construction programme will be communicated regularly to the local communities and those directly affected nearer to the start of works date and at regular times through the works period.
16.5.13 Objector 18 Mr Arthur, Church View Farm

Grounds of objection

1. The highway boundary is unclear, the fence line is not defined and important existing hedgerows are not shown; the proposed landscaping suggests that all existing vegetation will be removed.

2. The proposed new access has a tight and steep turn into it from Church View Road (from the North). The surfacing should have rolled bitumen material in crushed stone to stop it being washed out.

3. The access track is not shown clearly on the proposed scheme drawings as being fully retained and operational.

4. The houses to the South have a noise fence on their boundary and the farm would benefit from a similar provision.

Response

Following a meeting and discussions with Mr Arthur’s agent, Mr Eddy, it was agreed by the Council’s representatives that the criticisms of the scheme drawings were valid. Revised, more detailed drawings would be produced and issued to show the additional details raised by Mr Eddy.

The access track would be shown clearly as being fully operational.

The new access from Church View Road would be shown on the drawings as having a specification including rolled stone with bituminous material in the first 5m.

It is accepted that the radius is too tight. Vehicles which can traverse Church View Road will be able to turn. If they cannot, however, then they can continue past the access, turn left onto Dolcoath Road, and proceed around the roundabout to approach the new access from the other direction – from which the turn into the new access is easier with a larger radius.
The noise levels have been modelled for the farmhouse and they are predicted to be substantially lower than the levels at the adjacent houses. This is mainly due to the fact that the farm is some 70m away from the road with an intervening barn building.

Notwithstanding this the Council is willing to include in the scheme a 50m length of screening/noise fence (1.8m high) on the highway boundary, across the gap between the barns, to provide a measure of noise attenuation in the farm yard.

A plan of the scheme and accommodation works has been sent to Mr Arthur showing:

- existing vegetation and hedgerows to be retained and new planting and landscaping added; new Cornish hedge being moved to widen the existing track past the electricity pole.
- The new relocated access off Church View Road – with specification to include first 5 m of track as rolled stone and bituminous material
- A plan showing clearly the existing boundaries, the track and the proposed highway post and 4-rail fences in relation to the farm buildings;
- The plan also to show the proposed and agreed additional noise fencing (approximately 50m in length) along the highway boundary adjacent to the gap between the farm buildings

is included in Volume 3 Appendices, 5.10

Mr Arthurs present land holding in relation to the future road scheme boundary will be shown on drawing in more detail in due course for continuing discussions with the Council’s Valuer if required.

16.5.14 Objector 19 South Crofty Tyres

Grounds of Objection

1. The land to be taken for the scheme is excessive and unnecessary

2. The loss of land will reduce the turning space in front of the building, inhibit site operations and prevent essential vehicles movements
3. Current commercial operations will be severely compromised by the scheme. The business will not be able to continue to function in its present form; some parts of the business will not be viable. The business can continue at a reduced level.

Response

The Council acknowledges that there will be a significant impact on the current business operations due to the loss of frontage area and the consequent difficulties in manoeuvring vehicles within the site. This may result in a need to modify the present business operations.

The Council’s Valuer will consider the financial losses, injurious affection and compensation to the business should the scheme be constructed; he will also consider the purchase of the business.

A plan of the accommodation works showing:

- The new security fencing to replace the existing wall and the new gate(s),

is included in Volume 3 Appendices, 5.11

16.5.15 Objector 21 Camborne Town Council

The Town Council has withdrawn its objection

Their concern, that the scheme will cause the air quality on Wesley Street to deteriorate, is addressed in Volume 3, Appendices, Appendix 7 (CC/3/3).
17 CONCLUSIONS

The Council is convinced that the scheme, which is the subject of the made Orders:

- is viable and good value for money;
- is in the public interest and a compelling case has been made to acquire the required land;
- meets the primary objectives; and
- is in accord with national, regional and local policy.

The Council is taking no more land than is required to construct the scheme; the land being taken is required for the scheme and the Compulsory Purchase Order is needed to ensure certainty of delivery of title.

The scheme has been designed to the appropriate standards and includes effective mitigation measures to reduce its impact to acceptable levels.

Moreover the Council believes that any negative impacts of the scheme are outweighed by the substantial benefits which it will bring to local communities, residents, visitors and businesses and the economic regeneration and growth which will be facilitated.