

## **INTRODUCTION**

This preliminary environmental appraisal is a high level feasibility study relating to a multiple package of works for the Community Infrastructure Scheme CIF 2 Scheme no. 26 – M5 Segregated Crossing. This report should be read in conjunction with the PB's report entitled Community Infrastructure Scheme no. 26 – M5 Segregated Crossing, Full Business Case, November 2008.

## **ROUTE DESCRIPTIONS**

The CIF bid is made up of 4 works packages, as described below.

### **Work Package 1: A new landmark pedestrian / cycle bridge to reconnect Gipsy Hill Lane and Blackhorse Lane over the M5 motorway cutting.**

The shared use bridge would span the M5 between the ends of Gipsy Hill Lane and Blackhorse Lane, reconnecting a historic Public Right of Way (PROW) that was severed with the construction of the M5 in the 1980's.

The bridge would be in one section, without columns, and the abutments at each end would be at the top of the embankments on each side of the cutting. The bridge would of 112m span, 3.25m (average) deck width, and upwards of 15m above the M5 carriageway.

The likely materials are a mixture of structural steel and glass. A conceptual design exercise will be undertaken to establish a landmark design for users and neighbours of the structure, and preliminary consultation with Sustrans has already taken place.

The scheme requires 850m<sup>2</sup> of permanent landtake from highway's or highways stocked land.

Proposed Construction: May 2010 – January 2011

### **Work Package 2: Improvements to Gipsy Hill Lane and Hollow Lane to facilitate access to the new pedestrian / cycle bridge.**

Gipsy Hill Lane serves as vehicular access to a number of residential properties, a hotel, and a nursery. It is therefore proposed to widen the initial 470m by approx 2-3m on the northern side of the Lane to incorporate a dedicated space for the anticipated increase in pedestrian and cycle traffic expected by completing Works Package no.1. This would require removal or translocation of historic hedgebanks along the northern side of the road.

In addition, some resurfacing of Gipsy Hill Lane and Hollow Lane may be required. Hollow Lane will not be widened.

The scheme requires 690m<sup>2</sup> of permanent land take from private landowners to the north of Gipsy hill Lane.

Proposed Construction: May 2010 – July 2010

**Work Package 3: Strengthening and minor widening works to the existing Tithebarn Lane bridge over the M5 motorway to safeguard local Public Transport routes.**

Due to the proposed increased local public transport traffic over the bridge from the proposed Science Park Scheme, there is a desire to widen the carriageway slightly by 0.25m on both sides, giving a carriageway width increase from 5.5m to 6.0m. This will be achieved by saw-cutting into the concrete behind the existing kerbs, removing the material and then re-setting the existing kerbs in their new position. The works will be done within the existing bridge deck. There will be no permanent land take. The approaches to the bridge will be unaffected.

Proposed Construction: May 2010 – July 2010

**Work Package 4: Early completion of 450m of bus priority link road within the proposed Exeter Science Park site.**

As part of the Proposed Science Park masterplan, a new bus priority link road is proposed from Tithe Barn Lane through to Blackhorse Lane, through existing agricultural fields.

The road will be 6.5m in width, without footways at this stage, and will drain via highway drains to a Soakaway with the Science Park site.

The scheme requires 2,990m<sup>2</sup> of permanent landtake.

Proposed Construction: May 2010 – July 2010 (as part of Phase 1 of the Science Park construction)

## **APPROACH AND METHODOLOGY**

### **Baseline Information**

This environmental appraisal is a high-level desktop study. The following sources of publicly available information were used in determining existing environmental baseline conditions and identifying potential sensitive receptors:

- National Planning Policies:
  - Planning Policy Statement 1 – Delivering Sustainable Development
  - Planning Policy Statement 7 – Sustainable Development in Rural Areas
  - Planning Policy Statement 9 - Biodiversity and Geological Conservation
  - Planning Policy Guidance 13: Transport
  - Planning Policy Guidance 15: Planning and the Historic Environment
  - Planning Policy Guidance 16: Archaeology and Planning
- Regional Planning Strategies:
  - Draft Regional Spatial Strategy for the South West (2006-2026)
- Local Plans and Policies:
  - Adopted Devon County Council Structure Plan (2001-2016)
  - Adopted East Devon Local Plan (1995-2011)
  - Adopted Exeter City Council Local Plan (1995-2011)
  - Provisional Devon Local Transport Plan (2006 – 2011)
  - East Devon District Council University of Exeter Science Park Supplementary Planning Document (2007)
- Engineering plans and liaison with PB Engineers (Tim Obee and Alex Starr);
- Devon County Council / East Devon District Council websites;
- Envirocheck information;
- Environment Agency (EA) website ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk));

- MAgiC website ([www.magic.gov.uk](http://www.magic.gov.uk));
- Google Maps ([www.maps.google.com](http://www.maps.google.com)); and
- Natural England ([www.natural-england.org.uk](http://www.natural-england.org.uk));

This information was supplemented by a site walkover undertaken on Friday 14<sup>th</sup> November 2008.

This report considers the existing baseline conditions, identifies sensitive receptors and highlights the scheme's potential impacts on the following issues:

- Noise;
- Local Air Quality / Greenhouse Gases;
- Landscape / Townscape / Arboriculture;
- Heritage of Historic Resources;
- Biodiversity;
- Water Environment; and
- Planning / Integration.

### **Limitations**

The following environmental appraisal was undertaken using the information provided as described in the Approach and Methodology Section in November 2008. It is a high level appraisal. As such, it is recommended that a detailed environmental assessment of the proposed scheme is undertaken in order to aid with the design and consents required.

For the Biodiversity assessment, the Exeter City Council Local Plan was consulted to identify the locations of non-statutory designated ecological sites. It was revealed by the Records Centre that this is out of date, therefore there are potentially some local sites that have not been identified to date for this report. However, it is considered unlikely that the conclusions of this report are affected.

### **Assumptions**

During the operational phase of the Exeter Science Park Scheme, scheduled for 2011, an additional twelve buses per hour will cross over Tithebarn Lane bridge as an extension of existing routes.

### **ASSESSMENT**

The environmental baseline conditions, sensitive receptors and potential impacts of each of the 4 works packages are described below in turn.

**Work Package 1: A new landmark pedestrian / cycle bridge to reconnect Gipsy Hill Lane and Blackhorse Lane over the M5 motorway cutting.**

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The closest noise sensitive receptors are the Gipsy Hill Hotel on Gipsy Hill Lane and residential properties along Gipsy Hill Lane. The Gipsy Hill Hotel is located approximately 150m from the site.

Construction noise may affect residents at the stated receptors. This is considered likely to have only a moderately adverse affect due to the already high background noise level in the area and the temporary and changing nature of construction noise.

Noise from cyclists and pedestrians using the bridge is unlikely to be noticeable. The operational noise impact of the bridge has therefore been assessed as likely to cause negligible impact.

The possibility that wind noise generated by the bridge structure might have a significant tonal component or cause vibration to be transmitted into the ground should be considered at the design stage. If not mitigated in the design, wind noise from the bridge structure has the potential to cause a slight adverse impact.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring within the vicinity shows that air quality is good with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

The study area is 200m from the proposed works, as specified by WebTAG guidance. There are no receptors within 200m of the proposed works. There will be temporary short-term construction impacts on Blackhorse Lane and Gipsy Hill Lane due to construction traffic and construction dust. There are no long-term impacts as the bridge is only for use by pedestrians and cyclists.

Improved pedestrian and cycle ways may encourage the use of these forms of transport instead of cars, which could lead to a decrease in greenhouse gas emissions from traffic.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone. Characteristic features of this landscape type in the study area are variable field sizes delineated by Devon hedges (wide low hedges on distinctive tall earth banks), winding sunken lanes, and parkland planting. Devon hedges are a characteristic and distinctive feature throughout the county; they are important historically and support a wide range of wildlife. Parts of the field pattern may have been laid out during the middle ages. Some hedgerows within the study area may be classed as 'Important' under the Hedgerows Regulations 1997.

The site crosses the M5 where it is set in deep cutting and there are semi mature native species tree/shrub plantations on the upper slopes. It lies adjacent to the urban fringe of Exeter to the west; to the east attractive open farmland, rolling north and south of a central ridgeline at Redhayes, provides

views of the hills and open countryside to the north and east. Land on either side of the bridge is agricultural, with a small area of mature woodland adjacent to the south east boundary in the grounds of Redhayes. Adjoining sections of the narrow Blackhorse Lane and Gipsy Hill Lane are enclosed by Devon hedges with some hedgerow trees.

#### Potential Impacts / Sensitive Receptors

The illuminated 'bow-string' bridge would be a prominent feature locally in daytime and night time views from nearby roads, public rights of way and residential properties. It would be set in the context of the outermost limit of the existing M5/A30 infrastructure which includes large scale roads, overhead sign gantries and lighting so would not appear incongruous.

However, it would introduce a large scale urban feature into an area of rural landscape that is currently downgraded by existing transport uses. It would be necessary to remove short sections of Devon hedges on either side of Blackhorse Lane and Gipsy Hill Lane and some tree/shrub planting from the highway estate to accommodate the bridge. This would have a localised, minor adverse impact on local distinctiveness and landscape character.

### **HERITAGE OF HISTORIC RESOURCES**

#### Description of Baseline Information

The study area is 300m from the scheme, as specified by DMRB guidelines. There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, or Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (300m of the scheme).

However, there are a number of sites of archaeological importance within the study area, in particular:

- Numerous artefacts dating from activity in the area since the Iron Age
- Blackhorse Lane / Gipsy Hill Lane, an old hollow way now severed by the M5, is believed to have been a Medieval, possibly a Roman Road.
- The Redhayes Estate and associated parkland, an early 20<sup>th</sup> century building since destroyed by fire.

#### Potential Impacts / Sensitive Receptors

Due to known Iron Age and roman activity in the area, there is the potential for undiscovered artefacts to be uncovered during ground excavation works. However, it is likely that remaining artefacts were discovered or destroyed during the construction of the M5.

The scheme footprint will not extend past the existing Blackhorse Lane, Gipsy Hill Lane and the M5 cutting.

A benefit of the scheme is that the bridge will re-connect Blackhorse Lane and Gipsy Hill Lane, which were severed by the M5.

### **BIODIVERSITY**

#### Description of Baseline Information

There are no statutory designated sites of nature conservation importance within 2km of the proposed Scheme.

A number of non-statutory designated sites have been recorded in proximity, the majority of which are however isolated from the proposed Scheme by significant areas of motorway and trunk road.

Part of Exeter's Biodiversity Network is situated alongside the M5 corridor to the west and extending north and south of the proposed Scheme. In this location, the network contributes towards the general connectivity of non-designated habitats and potentially provides a corridor for protected and notable species to and from the area of the proposed Scheme.

A desk study for records of protected and/or notable species has indicated the presence of several species of bats, including lesser horseshoe (*Rhinolophus ferrumequinum*), within 5km of the proposed Scheme location. In addition, dormice (*Muscardinus avellanarius*), badger (*meles meles*), otter (*Lutra lutra*), and several species of birds, reptiles and invertebrates have been recorded within 1km.

#### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist of road side verge grassland (improved and semi-improved), scrub and scattered trees. The surrounding landscape contains arable land with species-rich and species-poor hedgerow boundaries; parkland; scattered trees, woodland copses; and the remains of Redhayes manor house.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Permanent and temporary land-take for the bridge; supporting infrastructure; contractors' compounds and temporary access roads** - May result in negative effects as a result of loss of habitat; fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction and operation** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new bridge may fragment the current M5 corridor and cause displacement to species reliant on the linear feature for dispersal and/or commuting. The bridge may provide opportunities to reconnect habitats previously severed by the M5.

## WATER ENVIRONMENT

#### Description of Baseline Information

The scheme lies within a Flood Zone 1 area, which is described as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%). Table D.1 of Planning Policy Statement 25: Development and Flood Risk (PPS 25) indicates that all uses of land are appropriate in Flood Zone 1 areas.

The scheme is not situated within a groundwater Source Protection Zone (SPZ).

The scheme lies within a groundwater Nitrate Vulnerable Zone (NVZ).

The study area is underlain by a designated Major Aquifer, which consists of highly permeable formations that may support large abstractions for public water supply and other purposes.

Two existing South West Water distribution mains exist within proximity to the Scheme: one aligned north to south along the east side of the M5; and one aligned east to west along the south side of Blackhorse Lane, which appears to intersect with the distribution main along the east side of the M5.

#### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the scheme during the construction and operation phases may include:

- Risk of pollution resulting from accidental spillages;
- Deterioration of groundwater quality from accidental spillages;
- Increased surface water runoff from construction works; and
- Reduction in surface water quality as a result of increased suspended solids.

Potential impacts to the water environment surrounding the scheme during the operation phase may include:

- Increased risk of surface water runoff;

- Reduction in surface water quality due to accidental spillages (e.g. transportation, maintenance);
- Reduction of groundwater recharge resulting from an increase in impermeable area; and
- Ingress of poor quality runoff to groundwater.

Potential impacts to the water environment associated with the construction phase will be temporary, localised, of negligible significance, and relatively easily to mitigate. Provided that best practice measures are implemented, it is assumed that there will be no major adverse residual effects to the water environment associated with the Scheme.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the Scheme:

#### National:

- Planning Policy Statement 1 – Delivering Sustainable Development
- Planning Policy Statement 7 – Sustainable Development in Rural Areas
- Planning Policy Statement 9 - Biodiversity and Geological Conservation
- Planning Policy Guidance 13: Transport
- Planning Policy Guidance 15: Planning and the Historic Environment
- Planning Policy Guidance 16: Archaeology and Planning

#### Regional:

- Draft Regional Spatial Strategy for the South West (2006-2026)

#### Local:

- Adopted Devon County Council Structure Plan (2001-2016)
- Adopted East Devon Local Plan (1995-2011)
- Adopted Exeter City Council Local Plan (1995-2011)
- Provisional Devon Local Transport Plan (2006 – 2011)
- East Devon District Council University of Exeter Science Park Supplementary Planning Document (2007)

There are a number of other proposed developments for the area, including the Science Park, Monkerton Housing Development, Cranbrook Community, Intermodal Freight Facility, Skypark business park, the Exeter Airport Expansion, Clyst Honiton Bypass, and the Junction 29 Improvements.

There are no other current planning applications in the vicinity of the scheme.

### Potential Impacts / Sensitive Receptors

The scheme is generally in keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

However, Gipsy Hill Lane and the western cutting of the M5 are designated as “Sites of Local Interest for Nature Conservation” within Exeter City Council Local Plan. Developments that harm such sites will only be permitted if the need for the development is sufficient to outweigh nature conservation considerations, and if the extent of any damage is kept to a minimum and mitigated for.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

**Work Package 2: Improvements to Gipsy Hill Lane and Hollow Lane to facilitate access to the new pedestrian / cycle bridge.**

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The closest noise sensitive receptors are the Gipsy Hill Hotel on Gipsy Hill Lane and residential receptors along Gipsy Hill Lane.

An increase in local traffic, pedestrians and cyclists resulting from the scheme is unlikely to significantly increase the overall ambient noise level in the area.

Local traffic, pedestrians and cyclists sound very different to a distant motorway. There are currently very few vehicle movements per day on Gipsy Hill Lane, so although the overall level may not increase, there will be a change in the noise climate and therefore a minor adverse impact may still result from the scheme.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring within the vicinity shows that air quality in this area is good with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

There are residential properties at the east end of Gipsy Hill Lane within 200m of the widening scheme; these will be impacted temporarily by construction traffic and dust. The road centreline will be re-aligned further away from receptors which may result in a small positive impact. There are no long-term impacts as the bridge is only for use by pedestrians and cyclists.

Improved pedestrian and cycle ways may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The site, a 470m long section of narrow country lane enclosed by Devon hedges, lies between Cumberland Way in the west and the M5 in the east. It lies adjacent to the urban fringe of Exeter and to the south of residential development at Pinhoe and Monkerton in the west. Land immediately adjacent to this section of Gipsy Lane is used for agriculture, detached residential dwellings and a hotel. The eastern section of Gipsy Hill Lane between Gipsy Hill Lane (track) and the M5 is enclosed by comparatively recently planted Devon hedges with some hedgerow trees. The remaining section lies between fields typical of medieval enclosure dating back to the later middle ages.

### Potential Impacts / Sensitive Receptors

Proposals to widen Gipsy Hill Lane by 2-3m between Pinn Lane and Cumberland Way will result in the loss of a significant length of Devon hedge that forms part of historic field enclosure. It is

recommended that the alignment of the footpath/cycleway is designed to retain the older sections of hedge and mature hedgerow trees and that new Devon hedges are constructed adjacent to the route to reinstate the hedgerow pattern.

There may be views of walkers and cyclists using Gipsy Hill Lane from residential properties on the southern edge of Pinhoe following removal of Devon hedge from the northern side of the lane.

## HERITAGE OF HISTORIC RESOURCES

### Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (within 300m of the scheme).

However, there are a number of sites of archaeological importance within the study area, in particular:

- Gipsy Hill Lane, a hollow way, is believed to be a Medieval, possibly a Roman Road.
- Devon hedges (wide low hedges on distinctive tall earth banks) on either side of Gipsy Hill Lane may pre-date the Enclosure Acts, in which case they would be considered as 'Important' under the Hedgerows Regulations 1997.

### Potential Impacts / Sensitive Receptors

The widening of Gipsy Hill Lane would require the relocation of the Devon hedges along the initial 470m of the north side of the Lane by approximately 2-3m. This would have adverse impacts on the value of the hedges, which are important historically. Indeed, if the hedgebanks are considered 'Important' under the Hedgerows Regulations 1997, East Devon District Council must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

Due to known Iron Age and roman activity in the area, there is the potential for undiscovered artefacts to be uncovered during translocation of the hedgebanks.

Overall, the scheme is likely to have a slight adverse effect on heritage of historic resources due to its potential impact on regionally important Devon hedges.

## BIODIVERSITY

### Description of Baseline Information

The baseline information is as described in Works Package 1.

### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist of road side verge grassland (improved and semi-improved), scrub and scattered trees to the east. Moving west the proposed Scheme is situated predominately on an existing track with scrub and 2-3m hedgerow/arable land within the footprint. A gabion wall to the far east will require removal.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Permanent and temporary land-take for the cycleway; supporting infrastructure; contractors' compounds; and temporary access roads** - May result in negative effects as a result of loss of important habitat (including protected hedgerow); fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction (temporary) and operation (permanent)** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new cycleway may connect previously remote habitats.

## WATER ENVIRONMENT

### Description of Baseline Information

The scheme lies within a Flood Zone 1 area, as described in Works Package 1.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The study area is underlain by a designated Major Aquifer, which consists of highly permeable formations that may support large abstractions for public water supply and other purposes.

Four existing South West Water distribution mains exist within proximity to the scheme, including:

- One aligned east to west along the north side of Gypsy Hill Lane;
- One aligned east to west along the north side of Hollow Lane;
- One aligned north to south along Pinn Lane; and
- One trunk main aligned north to south along Cumberland Way.

Two discharge consents exist in proximity to the scheme, including:

- Devon County Council for the discharge of final/treated effluent from a hotel to an unknown receiving water located 0.2km west of the scheme along Hollow Lane; and
- Mr. Will Gannon for the discharge of final/treated effluent from the Pinhoe House into soakaway, located 0.07km south of Gypsy Hill Lane.

One active water abstraction license is identified 0.6km southwest of the scheme, which is allocated to A C Scoble & Sons for agricultural spray irrigation (summer) purposes at Rock Gardens, Pinhoe. The source of water is a reservoir/pond.

### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the Scheme during the construction and operation phases are similar to those described in Work Package 1.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

### Potential Impacts / Sensitive Receptors

Potential impacts are similar to those described in Works Package 1.

**Work Package 3: Strengthening and minor widening works to the existing Tithebarn Lane bridge over the M5 motorway to safeguard local Public Transport routes.**

**NOISE**

Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

Potential Impacts / Sensitive Receptors

The nearest noise sensitive receptors are residential dwellings on Tithebarn Lane, Tithebarn Copse and Grasslands Drive. The closest of these is approximately 250m from the site.

Construction noise has been assessed as likely to have only a very minor adverse affect due to the large distances to sensitive receptors, the already high background noise level in the area and the temporary and changing nature of construction noise. However, if a large amount of construction traffic is to use Tithebarn lane this could significantly increase the impact during the construction phase.

Any increase in traffic flows along Tithebarn Lane resulting from the improvements would be expected to increase the ambient noise level in the area. A 25% increase in traffic flow is likely to lead to an increase in noise of 1dB over the area. Consideration should also be given to the wider impact of any shifts in the pattern of traffic flow associated with this work package.

**LOCAL AIR QUALITY / GREENHOUSE GASES**

Description of Baseline Information

The study area is not within an air quality management area. Local monitoring in the vicinity shows air quality is good in this area, with no exceedences of the objectives at relevant receptors.

Potential Impacts / Sensitive Receptors

There are no receptors within 200m of the proposed works, however, temporary construction traffic may have a temporary impact on receptors along Tithebarn Lane.

During the operational phase of the Exeter science park, scheduled for 2011, an additional twelve buses per hour will run over the bridge as an extension of existing routes. This has the potential to cause deterioration in air quality for the receptors along the new bus routes, namely Tithebarn Lane and along Pinn lane in southern Pinhoe.

This works package has the potential to increase greenhouse gases due to the increase in vehicle miles travelled by the new bus routes, however improved public transport may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic. The increase in greenhouse gas is potentially off set by the modal shift.

**LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The existing bridge crosses the M5 where it is set in a cutting planted with semi-mature native species tree/shrub plantations. It lies adjacent to the urban fringe of Pinhoe, Exeter in the west and attractive open farmland in the east, from where there are views of the hills and open countryside to the north and east. Land on either side of the bridge is in agricultural use.

Potential Impacts / Sensitive Receptors

The proposals would not change the appearance of the existing bridge, therefore it is not anticipated that they would have an impact on the existing landscape character or views of the bridge.

## HERITAGE OF HISTORIC RESOURCES

Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (within 300m of the scheme).

Artefacts from as early as the Iron Age have been found in the study area.

There are a number of post-medieval Listed Buildings in Monkerton.

Tithebarn Lane is believed to pre-date 1889.

Potential Impacts / Sensitive Receptors

As all works will take place on the existing bridge, no sites of archaeological interest are expected to be affected by the bridge works themselves. If, however, grounds works are required, then further finds during construction are possible due to known Iron Age and roman activity in the area.

Increased bus traffic along Tithebarn Lane may indirectly impact on listed buildings adjacent to the road in Monkerton through increased vibration and particulates.

## BIODIVERSITY

Description of Baseline Information

There are no statutory designated sites of nature conservation importance within 2km of the proposed Scheme.

A number of non-statutory designated sites have been recorded in the surrounding landscape, the closest of which is Beacon Hill County Wildlife Site (CWS) designated for its notable grassland. The majority of other non-statutory designated sites are isolated from the proposed Scheme by significant areas of motorway and trunk road.

Part of Exeter's Biodiversity Network is situated alongside the M5 corridor to passing beneath the proposed Scheme and extending to the north and south. In this location, the network contributes towards the general connectivity of non-designated habitats and potentially provides a corridor for protected and notable species to and from the area of the proposed Scheme.

A desk study for records of protected and/or notable species been carried out, as described in Works Package 1.

Potential Impacts / Sensitive Receptors

The proposed Scheme works will occur entirely within the existing bridge decking.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Works to Existing Bridge** - May result in negative effects as a result of loss of important habitat (including potentially for bats and birds); direct mortality and/or displacement of species during construction.

**Changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction (temporary) and operation (permanent)** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

## WATER ENVIRONMENT

### Description of Baseline Information

One active water abstraction license is identified 0.6km northwest of the scheme, which is allocated for the nurseries in Pinhoe for general agricultural purposes. The source of water is from a borehole.

One pollution incident to controlled water sources occurred in proximity to the scheme, including:

- Category 3 (minor incident) located 0.25km northwest of the scheme involving the discharge of crude sewage into the Clyst catchment (1994) due to a mechanical/electrical plant failure.

The Pin Brook lies north of the scheme and flows west to east to the River Clyst via an open channel. The Pin Brook is classified a "main river" by the Environment Agency.

The scheme lies within a Flood Zone 1 area, as described in Works Package 1.

The scheme lies 0.07km south of a Flood Zone 2 area, and 0.15km south of a Flood Zone 3 area, generated from Pin Brook.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The study area is underlain by a designated Minor Aquifer, which consists of variably permeable formations that are important for local water supplies and supplying base flow to rivers.

Two existing South West Water distribution mains exist within proximity to the scheme: one aligned north to south along the east side of the M5; and one aligned east to west along Tithebarn Lane.

Two discharge consents exist in proximity to the scheme, including:

- Bovis Homes Ltd for the discharge of mine/groundwater to the Clyst catchment as raised from multiple domestic properties located 0.15km northwest of the scheme; and
- South West Water for sewage discharges from a pumping station to the River Exe located 0.2km northwest of the scheme.

### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the scheme during the construction phase may include:

- Risk of pollution resulting from accidental spillages; and
- Deterioration of groundwater quality from accidental spillages.

It is expected that no additional impacts to the water environment will occur during the operation phase.

Potential impacts to the water environment will be temporary, localised, of negligible significance, and relatively easily to mitigate. Provided that best practice measures are implemented, it is assumed that there will be no major adverse residual effects to the water environment associated with the scheme.

A direct discharge to Pin Brook is not acceptable with the exception of an emergency overflow. Surface water discharge should generally be achieved through infiltration techniques.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

### Potential Impacts / Sensitive Receptors

The scheme is in-keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

**Work Package 4: Early completion of 450m of bus priority link road within the Exeter Science Park site.**

Work Package 4 is currently being assessed under the Town and Country Planning (EIA) (England and Wales) Regulations (1999), and an Environmental Statement will be produced in summer 2009, as part of the outline planning application for the proposed Exeter Science Park development.

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5 and the A30. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The nearest sensitive receptors are residential dwellings along Blackhorse Lane.

The early completion of the bus priority link road will have the effect of making the associated noise impact occur earlier than it would otherwise have done. These likely impacts are described as follows:

Construction noise has been assessed as likely to have only a very minor adverse effect due to the large distance to receptors, the already high background noise level in the area and the temporary and changing nature of construction noise. However if a large amount of construction traffic is to use Tithebarn Lane this could significantly increase the impact during the construction phase.

Any increase in traffic flows along Tithebarn Lane resulting from the improvements would be expected to increase the ambient noise level in the area. A 25% increase in traffic flow is likely to lead to an increase in noise of 1dB over the area. Consideration should also be given to the wider impact of any shifts in the pattern of traffic flow associated with this work package.

New sections of road may pass close to residential receptors at the western end of Blackhorse Lane, potentially leading to an impact at these locations.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring in the vicinity shows air quality is good in this area, with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

There is one receptor within 200m of the new link road at the junction between Blackhorse Lane and Langaton Lane. This road will act as a bus route through the Exeter science park. Once the operational phase of the science park has commenced it is expected that twelve buses per hour will use this route as an extension to the existing bus routes, causing potential deterioration in air quality at this receptor.

This work package has the potential to increase greenhouse gases due to the increase in vehicle miles travelled by the new bus routes, however improved public transport may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic. The increase in greenhouse gas is potentially offset by the modal shift.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The site lies to the east of the M5 within undulating arable land from where there are views of the hills and open countryside to the north and east of Exeter, including Killerton and Ashclyst Forest (National Trust property), and residential development at Pinhoe to the west. The field pattern is characterised by relatively large, rectangular enclosures that may have been laid out between C15th – C18th. The fields through which the proposed route passes and Tithebarn and Blackhorse Lanes are enclosed by Devon hedges. The Redhayes estate lies to the south west of the proposed route and is enclosed by mature woodland, over-mature ornamental planting, a formal avenue and Devon hedges. Despite the relatively high ambient noise level there is a sense of remoteness and tranquillity in this rural area away from the M5.

#### Potential Impacts / Sensitive Receptors

The proposed route would introduce a new road and associated traffic into an area of rural and comparatively tranquil landscape. However, it forms part of a north west - south east transport link within the proposed development of Exeter Science Park which would result in a major change to the character of the surrounding landscape. The road would be constructed at an early stage of the development and its greatest impact on local landscape character would be temporary and would occur following construction and prior to development of adjacent phases of the UESP for a period of approximately 5 years.

It would fragment the existing field pattern leaving a narrow strip and triangular area of land adjacent to Langaton Lane that would not be viable for arable farming. It would cut through Devon hedges along Blackhorse Lane and Tithebarn Lane and one field boundary, which would have an adverse impact on the existing vegetation / field pattern. To comply with East Devon District Council Policy D4 (Landscape Requirements) this should be compensated for by new hedgerows incorporated elsewhere on the site so that they would be integrated with the development and landscape framework for the UESP. It is recommended that crossing points are designed to cut through the least valuable sections of Devon hedges and to avoid removal of hedgerow trees. It is also recommended that the alignment of the road along Tithebarn Lane allows for the retention of the Devon hedge on the northern side to provide screening and enclosure to the new route. Exposed end sections of hedgebanks should be made good with turf and appropriate planting.

There would be a loss of tranquillity in the vicinity of Langaton Lane due to increased traffic activity.

### **HERITAGE OF HISTORIC RESOURCES**

#### Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area.

The area is believed to have been used since the Iron Age. Several sites and artefacts of archaeological interest have been identified within 300m of the route, many of which are of Medieval, Roman or Iron Age.

A number of artefacts have been found in the area north of Blackhorse Lane, across which the Link Road would be constructed, and it has a good potential to contain as yet unfound archaeological deposits. However, as this area is mainly arable land, it is likely that several decades of farming have destroyed shallower artefacts, although deeper artefacts may still remain in a good state of preservation due to the lack of previous development in the area.

Blackhorse Lane is a hollow way, believed to date to the medieval period, and potentially to the Roman period.

Devon hedges either side of Blackhorse Lane and in the agricultural land to the north are historic landscape features and may be considered as 'Important' under the Hedgerows Regulations 1997.

### Potential Impacts / Sensitive Receptors

As grounds works are required, further finds of archaeological interest during construction are possible due to known Iron Age and Roman activity in the activity.

The route of the Link Road cuts through Blackhorse Lane. It is possible that artefacts or earlier road surfaces will be unearthed during construction.

Some of the hedgebanks are considered as 'Important' under the Hedgerows Regulations 1997. EDDC must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

Further archaeological investigations would be required prior to construction. An archaeological watching brief would be required. Mitigation would have to be agreed with Devon CC.

## **BIODIVERSITY**

### Description of Baseline Information

The baseline information is as described for Works Package 1.

### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist predominately of arable land with species-rich and species-poor hedgerow boundaries.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the surrounding area.

**Permanent and temporary land-take for the road; supporting infrastructure; contractors' compounds and temporary access roads** - May result in negative effects as a result of loss of habitat; fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction and operation** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new road will fragment arable land and potentially result in increased isolation of habitats and species.

## **WATER ENVIRONMENT**

### Description of Baseline Information

Two existing South West Water distribution mains exist within proximity to the scheme: one aligned north to south along the east side of the M5; and one aligned east to west along the south side of Blackhorse Lane.

Two pollution incidents to controlled water sources occurred in proximity to the scheme, including:

- Category 3 (minor incident) located 0.1km southwest of the intersection of Langaton Lane & Blackhorse Lane involving the discharge of a pollutant into the Clyst catchment (1995); and
- Category 3 (minor incident) located 0.2km northeast of scheme involving the discharge of a pollutant into the Tidal Exe catchment (1992).

The scheme comprises mainly of agricultural land and allotments, and is considered to be a Greenfield site.

The Pin Brook lies north of the scheme and flows west to east to the River Clyst via an open channel. The Pin Brook is classified a "main river" by the Environment Agency.

The scheme lies within a Flood Zone 1 area.

The scheme lies 0.2km south of a Flood Zone 3 area, generated from Pin Brook.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The scheme is underlain by three different Vulnerability Zones including a designated Major Aquifer (highly permeable), Minor Aquifer (variably permeable), and a non-aquifer (negligible permeability). Major Aquifers may support large abstractions for public water supply and other purposes. Minor Aquifers are important for local water supplies and supplying base flow to rivers. Non aquifers contain insignificant quantities of groundwater.

Potential Impacts / Sensitive Receptors

Impacts are similar to those from Works Package 1. In addition, there is the potential for change to surface water drainage patterns during operation of the scheme (may affect flood risk elsewhere in the catchment).

A direct discharge to Pin Brook is not acceptable with the exception of an emergency overflow. Surface water discharge should generally be achieved through infiltration techniques.

**PLANNING / INTEGRATION**

Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

Potential Impacts / Sensitive Receptors

The scheme is generally in keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

However, policies state that developments must not harm the landscape, cultural heritage or environment of an area, and must maintain local character.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

## **CONCLUSION / FURTHER WORKS REQUIRED**

### **Noise**

There is potential for some noise impacts to result at the construction stage of all four Work Packages.

During operation, impacts are expected to be minimal for Works Packages 1, 2 and 3. However, Works Package 4 has potential for adverse impacts during operation, due to traffic movements. This is further assessed within the Environmental Statement for the proposed Exeter Science Park development which will be produced in summer 2009.

### **Local Air Quality / Greenhouse Gases**

There is potential for some air quality impacts to result at the construction stage of all four Work Packages.

During operation, impacts are expected to be minimal for Works Packages 1, 2 and 3. However, Works Package 4 has potential for adverse impacts during operation, due to traffic movements. This is further assessed within the Environmental Statement for the proposed Exeter Science Park development which will be produced in summer 2009.

### **Landscape / Townscape / Arboriculture**

The bridge proposed in Work Package 1 and the link road proposed in Work Package 4 would be prominent in the local landscape. However, these would be part of the cumulative effects of the Exeter Science Park Scheme.

### **Heritage of Historic Resources**

Due to known historic activity in the area dating back to the Iron Age, there is potential for archaeological artefacts to be discovered during construction. Consultation with a Devon County Council Archaeologist, and a watching brief, will therefore be required.

If the hedgebanks are considered 'Important' under the Hedgerows Regulations 1997, East Devon District Council must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed. In particular, this may be a limitation for Works Package 2.

### **Biodiversity**

The potential for the Works Packages to impact on protected species will be established through timely surveys for breeding birds, dormice, badgers, reptiles and invertebrates. Appropriate licences would be obtained, as required, prior to construction.

### **Water Environment**

There is potential for some water quality impacts to result at the construction stage of all four Work Packages.

However, Works Package 4 has potential for adverse impacts during operation, due increased hard standing. The impacts of this are further assessed within the Environmental Statement which will be produced in summer 2009, as part of the outline planning application for the proposed Exeter Science Park development.

Consultation with the Environment Agency is required to determine if a Flood Risk Assessment is necessary for the scheme as a whole.

### **Planning / Integration**

So long as appropriate mitigation measures are put in place, the scheme is generally in keeping with National, Regional and Local Planning Policies, and integrates well with other proposed developments.

If the whole scheme is taken forward, a more detailed environmental assessment of all four Works Packages will be required.

## **INTRODUCTION**

This preliminary environmental appraisal is a high level feasibility study relating to a multiple package of works for the Community Infrastructure Scheme CIF 2 Scheme no. 26 – M5 Segregated Crossing. This report should be read in conjunction with the PB's report entitled Community Infrastructure Scheme no. 26 – M5 Segregated Crossing, Full Business Case, November 2008.

## **ROUTE DESCRIPTIONS**

The CIF bid is made up of 4 works packages, as described below.

### **Work Package 1: A new landmark pedestrian / cycle bridge to reconnect Gipsy Hill Lane and Blackhorse Lane over the M5 motorway cutting.**

The shared use bridge would span the M5 between the ends of Gipsy Hill Lane and Blackhorse Lane, reconnecting a historic Public Right of Way (PROW) that was severed with the construction of the M5 in the 1980's.

The bridge would be in one section, without columns, and the abutments at each end would be at the top of the embankments on each side of the cutting. The bridge would of 112m span, 3.25m (average) deck width, and upwards of 15m above the M5 carriageway.

The likely materials are a mixture of structural steel and glass. A conceptual design exercise will be undertaken to establish a landmark design for users and neighbours of the structure, and preliminary consultation with Sustrans has already taken place.

The scheme requires 850m<sup>2</sup> of permanent landtake from highway's or highways stocked land.

Proposed Construction: May 2010 – January 2011

### **Work Package 2: Improvements to Gipsy Hill Lane and Hollow Lane to facilitate access to the new pedestrian / cycle bridge.**

Gipsy Hill Lane serves as vehicular access to a number of residential properties, a hotel, and a nursery. It is therefore proposed to widen the initial 470m by approx 2-3m on the northern side of the Lane to incorporate a dedicated space for the anticipated increase in pedestrian and cycle traffic expected by completing Works Package no.1. This would require removal or translocation of historic hedgebanks along the northern side of the road.

In addition, some resurfacing of Gipsy Hill Lane and Hollow Lane may be required. Hollow Lane will not be widened.

The scheme requires 690m<sup>2</sup> of permanent land take from private landowners to the north of Gipsy hill Lane.

Proposed Construction: May 2010 – July 2010

**Work Package 3: Strengthening and minor widening works to the existing Tithebarn Lane bridge over the M5 motorway to safeguard local Public Transport routes.**

Due to the proposed increased local public transport traffic over the bridge from the proposed Science Park Scheme, there is a desire to widen the carriageway slightly by 0.25m on both sides, giving a carriageway width increase from 5.5m to 6.0m. This will be achieved by saw-cutting into the concrete behind the existing kerbs, removing the material and then re-setting the existing kerbs in their new position. The works will be done within the existing bridge deck. There will be no permanent land take. The approaches to the bridge will be unaffected.

Proposed Construction: May 2010 – July 2010

**Work Package 4: Early completion of 450m of bus priority link road within the proposed Exeter Science Park site.**

As part of the Proposed Science Park masterplan, a new bus priority link road is proposed from Tithe Barn Lane through to Blackhorse Lane, through existing agricultural fields.

The road will be 6.5m in width, without footways at this stage, and will drain via highway drains to a Soakaway with the Science Park site.

The scheme requires 2,990m<sup>2</sup> of permanent landtake.

Proposed Construction: May 2010 – July 2010 (as part of Phase 1 of the Science Park construction)

## **APPROACH AND METHODOLOGY**

### **Baseline Information**

This environmental appraisal is a high-level desktop study. The following sources of publicly available information were used in determining existing environmental baseline conditions and identifying potential sensitive receptors:

- National Planning Policies:
  - Planning Policy Statement 1 – Delivering Sustainable Development
  - Planning Policy Statement 7 – Sustainable Development in Rural Areas
  - Planning Policy Statement 9 - Biodiversity and Geological Conservation
  - Planning Policy Guidance 13: Transport
  - Planning Policy Guidance 15: Planning and the Historic Environment
  - Planning Policy Guidance 16: Archaeology and Planning
- Regional Planning Strategies:
  - Draft Regional Spatial Strategy for the South West (2006-2026)
- Local Plans and Policies:
  - Adopted Devon County Council Structure Plan (2001-2016)
  - Adopted East Devon Local Plan (1995-2011)
  - Adopted Exeter City Council Local Plan (1995-2011)
  - Provisional Devon Local Transport Plan (2006 – 2011)
  - East Devon District Council University of Exeter Science Park Supplementary Planning Document (2007)
- Engineering plans and liaison with PB Engineers (Tim Obee and Alex Starr);
- Devon County Council / East Devon District Council websites;
- Envirocheck information;
- Environment Agency (EA) website ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk));

- MAgiC website ([www.magic.gov.uk](http://www.magic.gov.uk));
- Google Maps ([www.maps.google.com](http://www.maps.google.com)); and
- Natural England ([www.natural-england.org.uk](http://www.natural-england.org.uk));

This information was supplemented by a site walkover undertaken on Friday 14<sup>th</sup> November 2008.

This report considers the existing baseline conditions, identifies sensitive receptors and highlights the scheme's potential impacts on the following issues:

- Noise;
- Local Air Quality / Greenhouse Gases;
- Landscape / Townscape / Arboriculture;
- Heritage of Historic Resources;
- Biodiversity;
- Water Environment; and
- Planning / Integration.

### **Limitations**

The following environmental appraisal was undertaken using the information provided as described in the Approach and Methodology Section in November 2008. It is a high level appraisal. As such, it is recommended that a detailed environmental assessment of the proposed scheme is undertaken in order to aid with the design and consents required.

For the Biodiversity assessment, the Exeter City Council Local Plan was consulted to identify the locations of non-statutory designated ecological sites. It was revealed by the Records Centre that this is out of date, therefore there are potentially some local sites that have not been identified to date for this report. However, it is considered unlikely that the conclusions of this report are affected.

### **Assumptions**

During the operational phase of the Exeter Science Park Scheme, scheduled for 2011, an additional twelve buses per hour will cross over Tithebarn Lane bridge as an extension of existing routes.

### **ASSESSMENT**

The environmental baseline conditions, sensitive receptors and potential impacts of each of the 4 works packages are described below in turn.

**Work Package 1: A new landmark pedestrian / cycle bridge to reconnect Gipsy Hill Lane and Blackhorse Lane over the M5 motorway cutting.**

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The closest noise sensitive receptors are the Gipsy Hill Hotel on Gipsy Hill Lane and residential properties along Gipsy Hill Lane. The Gipsy Hill Hotel is located approximately 150m from the site.

Construction noise may affect residents at the stated receptors. This is considered likely to have only a moderately adverse affect due to the already high background noise level in the area and the temporary and changing nature of construction noise.

Noise from cyclists and pedestrians using the bridge is unlikely to be noticeable. The operational noise impact of the bridge has therefore been assessed as likely to cause negligible impact.

The possibility that wind noise generated by the bridge structure might have a significant tonal component or cause vibration to be transmitted into the ground should be considered at the design stage. If not mitigated in the design, wind noise from the bridge structure has the potential to cause a slight adverse impact.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring within the vicinity shows that air quality is good with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

The study area is 200m from the proposed works, as specified by WebTAG guidance. There are no receptors within 200m of the proposed works. There will be temporary short-term construction impacts on Blackhorse Lane and Gipsy Hill Lane due to construction traffic and construction dust. There are no long-term impacts as the bridge is only for use by pedestrians and cyclists.

Improved pedestrian and cycle ways may encourage the use of these forms of transport instead of cars, which could lead to a decrease in greenhouse gas emissions from traffic.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone. Characteristic features of this landscape type in the study area are variable field sizes delineated by Devon hedges (wide low hedges on distinctive tall earth banks), winding sunken lanes, and parkland planting. Devon hedges are a characteristic and distinctive feature throughout the county; they are important historically and support a wide range of wildlife. Parts of the field pattern may have been laid out during the middle ages. Some hedgerows within the study area may be classed as 'Important' under the Hedgerows Regulations 1997.

The site crosses the M5 where it is set in deep cutting and there are semi mature native species tree/shrub plantations on the upper slopes. It lies adjacent to the urban fringe of Exeter to the west; to the east attractive open farmland, rolling north and south of a central ridgeline at Redhayes, provides

views of the hills and open countryside to the north and east. Land on either side of the bridge is agricultural, with a small area of mature woodland adjacent to the south east boundary in the grounds of Redhayes. Adjoining sections of the narrow Blackhorse Lane and Gipsy Hill Lane are enclosed by Devon hedges with some hedgerow trees.

#### Potential Impacts / Sensitive Receptors

The illuminated 'bow-string' bridge would be a prominent feature locally in daytime and night time views from nearby roads, public rights of way and residential properties. It would be set in the context of the outermost limit of the existing M5/A30 infrastructure which includes large scale roads, overhead sign gantries and lighting so would not appear incongruous.

However, it would introduce a large scale urban feature into an area of rural landscape that is currently downgraded by existing transport uses. It would be necessary to remove short sections of Devon hedges on either side of Blackhorse Lane and Gipsy Hill Lane and some tree/shrub planting from the highway estate to accommodate the bridge. This would have a localised, minor adverse impact on local distinctiveness and landscape character.

### **HERITAGE OF HISTORIC RESOURCES**

#### Description of Baseline Information

The study area is 300m from the scheme, as specified by DMRB guidelines. There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, or Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (300m of the scheme).

However, there are a number of sites of archaeological importance within the study area, in particular:

- Numerous artefacts dating from activity in the area since the Iron Age
- Blackhorse Lane / Gipsy Hill Lane, an old hollow way now severed by the M5, is believed to have been a Medieval, possibly a Roman Road.
- The Redhayes Estate and associated parkland, an early 20<sup>th</sup> century building since destroyed by fire.

#### Potential Impacts / Sensitive Receptors

Due to known Iron Age and roman activity in the area, there is the potential for undiscovered artefacts to be uncovered during ground excavation works. However, it is likely that remaining artefacts were discovered or destroyed during the construction of the M5.

The scheme footprint will not extend past the existing Blackhorse Lane, Gipsy Hill Lane and the M5 cutting.

A benefit of the scheme is that the bridge will re-connect Blackhorse Lane and Gipsy Hill Lane, which were severed by the M5.

### **BIODIVERSITY**

#### Description of Baseline Information

There are no statutory designated sites of nature conservation importance within 2km of the proposed Scheme.

A number of non-statutory designated sites have been recorded in proximity, the majority of which are however isolated from the proposed Scheme by significant areas of motorway and trunk road.

Part of Exeter's Biodiversity Network is situated alongside the M5 corridor to the west and extending north and south of the proposed Scheme. In this location, the network contributes towards the general connectivity of non-designated habitats and potentially provides a corridor for protected and notable species to and from the area of the proposed Scheme.

A desk study for records of protected and/or notable species has indicated the presence of several species of bats, including lesser horseshoe (*Rhinolophus ferrumequinum*), within 5km of the proposed Scheme location. In addition, dormice (*Muscardinus avellanarius*), badger (*meles meles*), otter (*Lutra lutra*), and several species of birds, reptiles and invertebrates have been recorded within 1km.

#### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist of road side verge grassland (improved and semi-improved), scrub and scattered trees. The surrounding landscape contains arable land with species-rich and species-poor hedgerow boundaries; parkland; scattered trees, woodland copses; and the remains of Redhayes manor house.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Permanent and temporary land-take for the bridge; supporting infrastructure; contractors' compounds and temporary access roads** - May result in negative effects as a result of loss of habitat; fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction and operation** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new bridge may fragment the current M5 corridor and cause displacement to species reliant on the linear feature for dispersal and/or commuting. The bridge may provide opportunities to reconnect habitats previously severed by the M5.

## WATER ENVIRONMENT

#### Description of Baseline Information

The scheme lies within a Flood Zone 1 area, which is described as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%). Table D.1 of Planning Policy Statement 25: Development and Flood Risk (PPS 25) indicates that all uses of land are appropriate in Flood Zone 1 areas.

The scheme is not situated within a groundwater Source Protection Zone (SPZ).

The scheme lies within a groundwater Nitrate Vulnerable Zone (NVZ).

The study area is underlain by a designated Major Aquifer, which consists of highly permeable formations that may support large abstractions for public water supply and other purposes.

Two existing South West Water distribution mains exist within proximity to the Scheme: one aligned north to south along the east side of the M5; and one aligned east to west along the south side of Blackhorse Lane, which appears to intersect with the distribution main along the east side of the M5.

#### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the scheme during the construction and operation phases may include:

- Risk of pollution resulting from accidental spillages;
- Deterioration of groundwater quality from accidental spillages;
- Increased surface water runoff from construction works; and
- Reduction in surface water quality as a result of increased suspended solids.

Potential impacts to the water environment surrounding the scheme during the operation phase may include:

- Increased risk of surface water runoff;

- Reduction in surface water quality due to accidental spillages (e.g. transportation, maintenance);
- Reduction of groundwater recharge resulting from an increase in impermeable area; and
- Ingress of poor quality runoff to groundwater.

Potential impacts to the water environment associated with the construction phase will be temporary, localised, of negligible significance, and relatively easily to mitigate. Provided that best practice measures are implemented, it is assumed that there will be no major adverse residual effects to the water environment associated with the Scheme.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the Scheme:

#### National:

- Planning Policy Statement 1 – Delivering Sustainable Development
- Planning Policy Statement 7 – Sustainable Development in Rural Areas
- Planning Policy Statement 9 - Biodiversity and Geological Conservation
- Planning Policy Guidance 13: Transport
- Planning Policy Guidance 15: Planning and the Historic Environment
- Planning Policy Guidance 16: Archaeology and Planning

#### Regional:

- Draft Regional Spatial Strategy for the South West (2006-2026)

#### Local:

- Adopted Devon County Council Structure Plan (2001-2016)
- Adopted East Devon Local Plan (1995-2011)
- Adopted Exeter City Council Local Plan (1995-2011)
- Provisional Devon Local Transport Plan (2006 – 2011)
- East Devon District Council University of Exeter Science Park Supplementary Planning Document (2007)

There are a number of other proposed developments for the area, including the Science Park, Monkerton Housing Development, Cranbrook Community, Intermodal Freight Facility, Skypark business park, the Exeter Airport Expansion, Clyst Honiton Bypass, and the Junction 29 Improvements.

There are no other current planning applications in the vicinity of the scheme.

### Potential Impacts / Sensitive Receptors

The scheme is generally in keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

However, Gipsy Hill Lane and the western cutting of the M5 are designated as “Sites of Local Interest for Nature Conservation” within Exeter City Council Local Plan. Developments that harm such sites will only be permitted if the need for the development is sufficient to outweigh nature conservation considerations, and if the extent of any damage is kept to a minimum and mitigated for.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

**Work Package 2: Improvements to Gipsy Hill Lane and Hollow Lane to facilitate access to the new pedestrian / cycle bridge.**

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The closest noise sensitive receptors are the Gipsy Hill Hotel on Gipsy Hill Lane and residential receptors along Gipsy Hill Lane.

An increase in local traffic, pedestrians and cyclists resulting from the scheme is unlikely to significantly increase the overall ambient noise level in the area.

Local traffic, pedestrians and cyclists sound very different to a distant motorway. There are currently very few vehicle movements per day on Gipsy Hill Lane, so although the overall level may not increase, there will be a change in the noise climate and therefore a minor adverse impact may still result from the scheme.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring within the vicinity shows that air quality in this area is good with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

There are residential properties at the east end of Gipsy Hill Lane within 200m of the widening scheme; these will be impacted temporarily by construction traffic and dust. The road centreline will be re-aligned further away from receptors which may result in a small positive impact. There are no long-term impacts as the bridge is only for use by pedestrians and cyclists.

Improved pedestrian and cycle ways may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The site, a 470m long section of narrow country lane enclosed by Devon hedges, lies between Cumberland Way in the west and the M5 in the east. It lies adjacent to the urban fringe of Exeter and to the south of residential development at Pinhoe and Monkerton in the west. Land immediately adjacent to this section of Gipsy Lane is used for agriculture, detached residential dwellings and a hotel. The eastern section of Gipsy Hill Lane between Gipsy Hill Lane (track) and the M5 is enclosed by comparatively recently planted Devon hedges with some hedgerow trees. The remaining section lies between fields typical of medieval enclosure dating back to the later middle ages.

### Potential Impacts / Sensitive Receptors

Proposals to widen Gipsy Hill Lane by 2-3m between Pinn Lane and Cumberland Way will result in the loss of a significant length of Devon hedge that forms part of historic field enclosure. It is

recommended that the alignment of the footpath/cycleway is designed to retain the older sections of hedge and mature hedgerow trees and that new Devon hedges are constructed adjacent to the route to reinstate the hedgerow pattern.

There may be views of walkers and cyclists using Gipsy Hill Lane from residential properties on the southern edge of Pinhoe following removal of Devon hedge from the northern side of the lane.

## HERITAGE OF HISTORIC RESOURCES

### Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (within 300m of the scheme).

However, there are a number of sites of archaeological importance within the study area, in particular:

- Gipsy Hill Lane, a hollow way, is believed to be a Medieval, possibly a Roman Road.
- Devon hedges (wide low hedges on distinctive tall earth banks) on either side of Gipsy Hill Lane may pre-date the Enclosure Acts, in which case they would be considered as 'Important' under the Hedgerows Regulations 1997.

### Potential Impacts / Sensitive Receptors

The widening of Gipsy Hill Lane would require the relocation of the Devon hedges along the initial 470m of the north side of the Lane by approximately 2-3m. This would have adverse impacts on the value of the hedges, which are important historically. Indeed, if the hedgebanks are considered 'Important' under the Hedgerows Regulations 1997, East Devon District Council must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

Due to known Iron Age and roman activity in the area, there is the potential for undiscovered artefacts to be uncovered during translocation of the hedgebanks.

Overall, the scheme is likely to have a slight adverse effect on heritage of historic resources due to its potential impact on regionally important Devon hedges.

## BIODIVERSITY

### Description of Baseline Information

The baseline information is as described in Works Package 1.

### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist of road side verge grassland (improved and semi-improved), scrub and scattered trees to the east. Moving west the proposed Scheme is situated predominately on an existing track with scrub and 2-3m hedgerow/arable land within the footprint. A gabion wall to the far east will require removal.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Permanent and temporary land-take for the cycleway; supporting infrastructure; contractors' compounds; and temporary access roads** - May result in negative effects as a result of loss of important habitat (including protected hedgerow); fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction (temporary) and operation (permanent)** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new cycleway may connect previously remote habitats.

## WATER ENVIRONMENT

### Description of Baseline Information

The scheme lies within a Flood Zone 1 area, as described in Works Package 1.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The study area is underlain by a designated Major Aquifer, which consists of highly permeable formations that may support large abstractions for public water supply and other purposes.

Four existing South West Water distribution mains exist within proximity to the scheme, including:

- One aligned east to west along the north side of Gypsy Hill Lane;
- One aligned east to west along the north side of Hollow Lane;
- One aligned north to south along Pinn Lane; and
- One trunk main aligned north to south along Cumberland Way.

Two discharge consents exist in proximity to the scheme, including:

- Devon County Council for the discharge of final/treated effluent from a hotel to an unknown receiving water located 0.2km west of the scheme along Hollow Lane; and
- Mr. Will Gannon for the discharge of final/treated effluent from the Pinhoe House into soakaway, located 0.07km south of Gypsy Hill Lane.

One active water abstraction license is identified 0.6km southwest of the scheme, which is allocated to A C Scoble & Sons for agricultural spray irrigation (summer) purposes at Rock Gardens, Pinhoe. The source of water is a reservoir/pond.

### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the Scheme during the construction and operation phases are similar to those described in Work Package 1.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

### Potential Impacts / Sensitive Receptors

Potential impacts are similar to those described in Works Package 1.

**Work Package 3: Strengthening and minor widening works to the existing Tithebarn Lane bridge over the M5 motorway to safeguard local Public Transport routes.**

**NOISE**

Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

Potential Impacts / Sensitive Receptors

The nearest noise sensitive receptors are residential dwellings on Tithebarn Lane, Tithebarn Copse and Grasslands Drive. The closest of these is approximately 250m from the site.

Construction noise has been assessed as likely to have only a very minor adverse affect due to the large distances to sensitive receptors, the already high background noise level in the area and the temporary and changing nature of construction noise. However, if a large amount of construction traffic is to use Tithebarn lane this could significantly increase the impact during the construction phase.

Any increase in traffic flows along Tithebarn Lane resulting from the improvements would be expected to increase the ambient noise level in the area. A 25% increase in traffic flow is likely to lead to an increase in noise of 1dB over the area. Consideration should also be given to the wider impact of any shifts in the pattern of traffic flow associated with this work package.

**LOCAL AIR QUALITY / GREENHOUSE GASES**

Description of Baseline Information

The study area is not within an air quality management area. Local monitoring in the vicinity shows air quality is good in this area, with no exceedences of the objectives at relevant receptors.

Potential Impacts / Sensitive Receptors

There are no receptors within 200m of the proposed works, however, temporary construction traffic may have a temporary impact on receptors along Tithebarn Lane.

During the operational phase of the Exeter science park, scheduled for 2011, an additional twelve buses per hour will run over the bridge as an extension of existing routes. This has the potential to cause deterioration in air quality for the receptors along the new bus routes, namely Tithebarn Lane and along Pinn lane in southern Pinhoe.

This works package has the potential to increase greenhouse gases due to the increase in vehicle miles travelled by the new bus routes, however improved public transport may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic. The increase in greenhouse gas is potentially off set by the modal shift.

**LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The existing bridge crosses the M5 where it is set in a cutting planted with semi-mature native species tree/shrub plantations. It lies adjacent to the urban fringe of Pinhoe, Exeter in the west and attractive open farmland in the east, from where there are views of the hills and open countryside to the north and east. Land on either side of the bridge is in agricultural use.

Potential Impacts / Sensitive Receptors

The proposals would not change the appearance of the existing bridge, therefore it is not anticipated that they would have an impact on the existing landscape character or views of the bridge.

**HERITAGE OF HISTORIC RESOURCES**

Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (within 300m of the scheme).

Artefacts from as early as the Iron Age have been found in the study area.

There are a number of post-medieval Listed Buildings in Monkerton.

Tithebarn Lane is believed to pre-date 1889.

Potential Impacts / Sensitive Receptors

As all works will take place on the existing bridge, no sites of archaeological interest are expected to be affected by the bridge works themselves. If, however, grounds works are required, then further finds during construction are possible due to known Iron Age and roman activity in the area.

Increased bus traffic along Tithebarn Lane may indirectly impact on listed buildings adjacent to the road in Monkerton through increased vibration and particulates.

**BIODIVERSITY**

Description of Baseline Information

There are no statutory designated sites of nature conservation importance within 2km of the proposed Scheme.

A number of non-statutory designated sites have been recorded in the surrounding landscape, the closest of which is Beacon Hill County Wildlife Site (CWS) designated for its notable grassland. The majority of other non-statutory designated sites are isolated from the proposed Scheme by significant areas of motorway and trunk road.

Part of Exeter's Biodiversity Network is situated alongside the M5 corridor to passing beneath the proposed Scheme and extending to the north and south. In this location, the network contributes towards the general connectivity of non-designated habitats and potentially provides a corridor for protected and notable species to and from the area of the proposed Scheme.

A desk study for records of protected and/or notable species been carried out, as described in Works Package 1.

Potential Impacts / Sensitive Receptors

The proposed Scheme works will occur entirely within the existing bridge decking.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Works to Existing Bridge** - May result in negative effects as a result of loss of important habitat (including potentially for bats and birds); direct mortality and/or displacement of species during construction.

**Changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction (temporary) and operation (permanent)** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

## WATER ENVIRONMENT

### Description of Baseline Information

One active water abstraction license is identified 0.6km northwest of the scheme, which is allocated for the nurseries in Pinhoe for general agricultural purposes. The source of water is from a borehole.

One pollution incident to controlled water sources occurred in proximity to the scheme, including:

- Category 3 (minor incident) located 0.25km northwest of the scheme involving the discharge of crude sewage into the Clyst catchment (1994) due to a mechanical/electrical plant failure.

The Pin Brook lies north of the scheme and flows west to east to the River Clyst via an open channel. The Pin Brook is classified a "main river" by the Environment Agency.

The scheme lies within a Flood Zone 1 area, as described in Works Package 1.

The scheme lies 0.07km south of a Flood Zone 2 area, and 0.15km south of a Flood Zone 3 area, generated from Pin Brook.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The study area is underlain by a designated Minor Aquifer, which consists of variably permeable formations that are important for local water supplies and supplying base flow to rivers.

Two existing South West Water distribution mains exist within proximity to the scheme: one aligned north to south along the east side of the M5; and one aligned east to west along Tithebarn Lane.

Two discharge consents exist in proximity to the scheme, including:

- Bovis Homes Ltd for the discharge of mine/groundwater to the Clyst catchment as raised from multiple domestic properties located 0.15km northwest of the scheme; and
- South West Water for sewage discharges from a pumping station to the River Exe located 0.2km northwest of the scheme.

### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the scheme during the construction phase may include:

- Risk of pollution resulting from accidental spillages; and
- Deterioration of groundwater quality from accidental spillages.

It is expected that no additional impacts to the water environment will occur during the operation phase.

Potential impacts to the water environment will be temporary, localised, of negligible significance, and relatively easily to mitigate. Provided that best practice measures are implemented, it is assumed that there will be no major adverse residual effects to the water environment associated with the scheme.

A direct discharge to Pin Brook is not acceptable with the exception of an emergency overflow. Surface water discharge should generally be achieved through infiltration techniques.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

### Potential Impacts / Sensitive Receptors

The scheme is in-keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

**Work Package 4: Early completion of 450m of bus priority link road within the Exeter Science Park site.**

Work Package 4 is currently being assessed under the Town and Country Planning (EIA) (England and Wales) Regulations (1999), and an Environmental Statement will be produced in summer 2009, as part of the outline planning application for the proposed Exeter Science Park development.

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5 and the A30. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The nearest sensitive receptors are residential dwellings along Blackhorse Lane.

The early completion of the bus priority link road will have the effect of making the associated noise impact occur earlier than it would otherwise have done. These likely impacts are described as follows:

Construction noise has been assessed as likely to have only a very minor adverse effect due to the large distance to receptors, the already high background noise level in the area and the temporary and changing nature of construction noise. However if a large amount of construction traffic is to use Tithebarn Lane this could significantly increase the impact during the construction phase.

Any increase in traffic flows along Tithebarn Lane resulting from the improvements would be expected to increase the ambient noise level in the area. A 25% increase in traffic flow is likely to lead to an increase in noise of 1dB over the area. Consideration should also be given to the wider impact of any shifts in the pattern of traffic flow associated with this work package.

New sections of road may pass close to residential receptors at the western end of Blackhorse Lane, potentially leading to an impact at these locations.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring in the vicinity shows air quality is good in this area, with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

There is one receptor within 200m of the new link road at the junction between Blackhorse Lane and Langaton Lane. This road will act as a bus route through the Exeter science park. Once the operational phase of the science park has commenced it is expected that twelve buses per hour will use this route as an extension to the existing bus routes, causing potential deterioration in air quality at this receptor.

This work package has the potential to increase greenhouse gases due to the increase in vehicle miles travelled by the new bus routes, however improved public transport may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic. The increase in greenhouse gas is potentially offset by the modal shift.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The site lies to the east of the M5 within undulating arable land from where there are views of the hills and open countryside to the north and east of Exeter, including Killerton and Ashclyst Forest (National Trust property), and residential development at Pinhoe to the west. The field pattern is characterised by relatively large, rectangular enclosures that may have been laid out between C15th – C18th. The fields through which the proposed route passes and Tithebarn and Blackhorse Lanes are enclosed by Devon hedges. The Redhayes estate lies to the south west of the proposed route and is enclosed by mature woodland, over-mature ornamental planting, a formal avenue and Devon hedges. Despite the relatively high ambient noise level there is a sense of remoteness and tranquillity in this rural area away from the M5.

#### Potential Impacts / Sensitive Receptors

The proposed route would introduce a new road and associated traffic into an area of rural and comparatively tranquil landscape. However, it forms part of a north west - south east transport link within the proposed development of Exeter Science Park which would result in a major change to the character of the surrounding landscape. The road would be constructed at an early stage of the development and its greatest impact on local landscape character would be temporary and would occur following construction and prior to development of adjacent phases of the UESP for a period of approximately 5 years.

It would fragment the existing field pattern leaving a narrow strip and triangular area of land adjacent to Langaton Lane that would not be viable for arable farming. It would cut through Devon hedges along Blackhorse Lane and Tithebarn Lane and one field boundary, which would have an adverse impact on the existing vegetation / field pattern. To comply with East Devon District Council Policy D4 (Landscape Requirements) this should be compensated for by new hedgerows incorporated elsewhere on the site so that they would be integrated with the development and landscape framework for the UESP. It is recommended that crossing points are designed to cut through the least valuable sections of Devon hedges and to avoid removal of hedgerow trees. It is also recommended that the alignment of the road along Tithebarn Lane allows for the retention of the Devon hedge on the northern side to provide screening and enclosure to the new route. Exposed end sections of hedgebanks should be made good with turf and appropriate planting.

There would be a loss of tranquillity in the vicinity of Langaton Lane due to increased traffic activity.

### **HERITAGE OF HISTORIC RESOURCES**

#### Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area.

The area is believed to have been used since the Iron Age. Several sites and artefacts of archaeological interest have been identified within 300m of the route, many of which are of Medieval, Roman or Iron Age.

A number of artefacts have been found in the area north of Blackhorse Lane, across which the Link Road would be constructed, and it has a good potential to contain as yet unfound archaeological deposits. However, as this area is mainly arable land, it is likely that several decades of farming have destroyed shallower artefacts, although deeper artefacts may still remain in a good state of preservation due to the lack of previous development in the area.

Blackhorse Lane is a hollow way, believed to date to the medieval period, and potentially to the Roman period.

Devon hedges either side of Blackhorse Lane and in the agricultural land to the north are historic landscape features and may be considered as 'Important' under the Hedgerows Regulations 1997.

### Potential Impacts / Sensitive Receptors

As grounds works are required, further finds of archaeological interest during construction are possible due to known Iron Age and roman activity in the activity.

The route of the Link Road cuts through Blackhorse Lane. It is possible that artefacts or earlier road surfaces will be unearthed during construction.

Some of the hedgebanks are considered as 'Important' under the Hedgerows Regulations 1997. EDDC must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

Further archaeological investigations would be required prior to construction. An archaeological watching brief would be required. Mitigation would have to be agreed with Devon CC.

## BIODIVERSITY

### Description of Baseline Information

The baseline information is as described for Works Package 1.

### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist predominately of arable land with species-rich and species-poor hedgerow boundaries.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the surrounding area.

**Permanent and temporary land-take for the road; supporting infrastructure; contractors' compounds and temporary access roads** - May result in negative effects as a result of loss of habitat; fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction and operation** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new road will fragment arable land and potentially result in increased isolation of habitats and species.

## WATER ENVIRONMENT

### Description of Baseline Information

Two existing South West Water distribution mains exist within proximity to the scheme: one aligned north to south along the east side of the M5; and one aligned east to west along the south side of Blackhorse Lane.

Two pollution incidents to controlled water sources occurred in proximity to the scheme, including:

- Category 3 (minor incident) located 0.1km southwest of the intersection of Langaton Lane & Blackhorse Lane involving the discharge of a pollutant into the Clyst catchment (1995); and
- Category 3 (minor incident) located 0.2km northeast of scheme involving the discharge of a pollutant into the Tidal Exe catchment (1992).

The scheme comprises mainly of agricultural land and allotments, and is considered to be a Greenfield site.

The Pin Brook lies north of the scheme and flows west to east to the River Clyst via an open channel. The Pin Brook is classified a "main river" by the Environment Agency.

The scheme lies within a Flood Zone 1 area.

The scheme lies 0.2km south of a Flood Zone 3 area, generated from Pin Brook.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The scheme is underlain by three different Vulnerability Zones including a designated Major Aquifer (highly permeable), Minor Aquifer (variably permeable), and a non-aquifer (negligible permeability). Major Aquifers may support large abstractions for public water supply and other purposes. Minor Aquifers are important for local water supplies and supplying base flow to rivers. Non aquifers contain insignificant quantities of groundwater.

Potential Impacts / Sensitive Receptors

Impacts are similar to those from Works Package 1. In addition, there is the potential for change to surface water drainage patterns during operation of the scheme (may affect flood risk elsewhere in the catchment).

A direct discharge to Pin Brook is not acceptable with the exception of an emergency overflow. Surface water discharge should generally be achieved through infiltration techniques.

**PLANNING / INTEGRATION**

Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

Potential Impacts / Sensitive Receptors

The scheme is generally in keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

However, policies state that developments must not harm the landscape, cultural heritage or environment of an area, and must maintain local character.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

## **CONCLUSION / FURTHER WORKS REQUIRED**

### **Noise**

There is potential for some noise impacts to result at the construction stage of all four Work Packages.

During operation, impacts are expected to be minimal for Works Packages 1, 2 and 3. However, Works Package 4 has potential for adverse impacts during operation, due to traffic movements. This is further assessed within the Environmental Statement for the proposed Exeter Science Park development which will be produced in summer 2009.

### **Local Air Quality / Greenhouse Gases**

There is potential for some air quality impacts to result at the construction stage of all four Work Packages.

During operation, impacts are expected to be minimal for Works Packages 1, 2 and 3. However, Works Package 4 has potential for adverse impacts during operation, due to traffic movements. This is further assessed within the Environmental Statement for the proposed Exeter Science Park development which will be produced in summer 2009.

### **Landscape / Townscape / Arboriculture**

The bridge proposed in Work Package 1 and the link road proposed in Work Package 4 would be prominent in the local landscape. However, these would be part of the cumulative effects of the Exeter Science Park Scheme.

### **Heritage of Historic Resources**

Due to known historic activity in the area dating back to the Iron Age, there is potential for archaeological artefacts to be discovered during construction. Consultation with a Devon County Council Archaeologist, and a watching brief, will therefore be required.

If the hedgebanks are considered 'Important' under the Hedgerows Regulations 1997, East Devon District Council must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed. In particular, this may be a limitation for Works Package 2.

### **Biodiversity**

The potential for the Works Packages to impact on protected species will be established through timely surveys for breeding birds, dormice, badgers, reptiles and invertebrates. Appropriate licences would be obtained, as required, prior to construction.

### **Water Environment**

There is potential for some water quality impacts to result at the construction stage of all four Work Packages.

However, Works Package 4 has potential for adverse impacts during operation, due increased hard standing. The impacts of this are further assessed within the Environmental Statement which will be produced in summer 2009, as part of the outline planning application for the proposed Exeter Science Park development.

Consultation with the Environment Agency is required to determine if a Flood Risk Assessment is necessary for the scheme as a whole.

### **Planning / Integration**

So long as appropriate mitigation measures are put in place, the scheme is generally in keeping with National, Regional and Local Planning Policies, and integrates well with other proposed developments.

If the whole scheme is taken forward, a more detailed environmental assessment of all four Works Packages will be required.

## **INTRODUCTION**

This preliminary environmental appraisal is a high level feasibility study relating to a multiple package of works for the Community Infrastructure Scheme CIF 2 Scheme no. 26 – M5 Segregated Crossing. This report should be read in conjunction with the PB's report entitled Community Infrastructure Scheme no. 26 – M5 Segregated Crossing, Full Business Case, November 2008.

## **ROUTE DESCRIPTIONS**

The CIF bid is made up of 4 works packages, as described below.

### **Work Package 1: A new landmark pedestrian / cycle bridge to reconnect Gipsy Hill Lane and Blackhorse Lane over the M5 motorway cutting.**

The shared use bridge would span the M5 between the ends of Gipsy Hill Lane and Blackhorse Lane, reconnecting a historic Public Right of Way (PROW) that was severed with the construction of the M5 in the 1980's.

The bridge would be in one section, without columns, and the abutments at each end would be at the top of the embankments on each side of the cutting. The bridge would of 112m span, 3.25m (average) deck width, and upwards of 15m above the M5 carriageway.

The likely materials are a mixture of structural steel and glass. A conceptual design exercise will be undertaken to establish a landmark design for users and neighbours of the structure, and preliminary consultation with Sustrans has already taken place.

The scheme requires 850m<sup>2</sup> of permanent landtake from highway's or highways stocked land.

Proposed Construction: May 2010 – January 2011

### **Work Package 2: Improvements to Gipsy Hill Lane and Hollow Lane to facilitate access to the new pedestrian / cycle bridge.**

Gipsy Hill Lane serves as vehicular access to a number of residential properties, a hotel, and a nursery. It is therefore proposed to widen the initial 470m by approx 2-3m on the northern side of the Lane to incorporate a dedicated space for the anticipated increase in pedestrian and cycle traffic expected by completing Works Package no.1. This would require removal or translocation of historic hedgebanks along the northern side of the road.

In addition, some resurfacing of Gipsy Hill Lane and Hollow Lane may be required. Hollow Lane will not be widened.

The scheme requires 690m<sup>2</sup> of permanent land take from private landowners to the north of Gipsy hill Lane.

Proposed Construction: May 2010 – July 2010

**Work Package 3: Strengthening and minor widening works to the existing Tithebarn Lane bridge over the M5 motorway to safeguard local Public Transport routes.**

Due to the proposed increased local public transport traffic over the bridge from the proposed Science Park Scheme, there is a desire to widen the carriageway slightly by 0.25m on both sides, giving a carriageway width increase from 5.5m to 6.0m. This will be achieved by saw-cutting into the concrete behind the existing kerbs, removing the material and then re-setting the existing kerbs in their new position. The works will be done within the existing bridge deck. There will be no permanent land take. The approaches to the bridge will be unaffected.

Proposed Construction: May 2010 – July 2010

**Work Package 4: Early completion of 450m of bus priority link road within the proposed Exeter Science Park site.**

As part of the Proposed Science Park masterplan, a new bus priority link road is proposed from Tithe Barn Lane through to Blackhorse Lane, through existing agricultural fields.

The road will be 6.5m in width, without footways at this stage, and will drain via highway drains to a Soakaway with the Science Park site.

The scheme requires 2,990m<sup>2</sup> of permanent landtake.

Proposed Construction: May 2010 – July 2010 (as part of Phase 1 of the Science Park construction)

## **APPROACH AND METHODOLOGY**

### **Baseline Information**

This environmental appraisal is a high-level desktop study. The following sources of publicly available information were used in determining existing environmental baseline conditions and identifying potential sensitive receptors:

- National Planning Policies:
  - Planning Policy Statement 1 – Delivering Sustainable Development
  - Planning Policy Statement 7 – Sustainable Development in Rural Areas
  - Planning Policy Statement 9 - Biodiversity and Geological Conservation
  - Planning Policy Guidance 13: Transport
  - Planning Policy Guidance 15: Planning and the Historic Environment
  - Planning Policy Guidance 16: Archaeology and Planning
- Regional Planning Strategies:
  - Draft Regional Spatial Strategy for the South West (2006-2026)
- Local Plans and Policies:
  - Adopted Devon County Council Structure Plan (2001-2016)
  - Adopted East Devon Local Plan (1995-2011)
  - Adopted Exeter City Council Local Plan (1995-2011)
  - Provisional Devon Local Transport Plan (2006 – 2011)
  - East Devon District Council University of Exeter Science Park Supplementary Planning Document (2007)
- Engineering plans and liaison with PB Engineers (Tim Obee and Alex Starr);
- Devon County Council / East Devon District Council websites;
- Envirocheck information;
- Environment Agency (EA) website ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk));

- MAgiC website ([www.magic.gov.uk](http://www.magic.gov.uk));
- Google Maps ([www.maps.google.com](http://www.maps.google.com)); and
- Natural England ([www.natural-england.org.uk](http://www.natural-england.org.uk));

This information was supplemented by a site walkover undertaken on Friday 14<sup>th</sup> November 2008.

This report considers the existing baseline conditions, identifies sensitive receptors and highlights the scheme's potential impacts on the following issues:

- Noise;
- Local Air Quality / Greenhouse Gases;
- Landscape / Townscape / Arboriculture;
- Heritage of Historic Resources;
- Biodiversity;
- Water Environment; and
- Planning / Integration.

### **Limitations**

The following environmental appraisal was undertaken using the information provided as described in the Approach and Methodology Section in November 2008. It is a high level appraisal. As such, it is recommended that a detailed environmental assessment of the proposed scheme is undertaken in order to aid with the design and consents required.

For the Biodiversity assessment, the Exeter City Council Local Plan was consulted to identify the locations of non-statutory designated ecological sites. It was revealed by the Records Centre that this is out of date, therefore there are potentially some local sites that have not been identified to date for this report. However, it is considered unlikely that the conclusions of this report are affected.

### **Assumptions**

During the operational phase of the Exeter Science Park Scheme, scheduled for 2011, an additional twelve buses per hour will cross over Tithebarn Lane bridge as an extension of existing routes.

### **ASSESSMENT**

The environmental baseline conditions, sensitive receptors and potential impacts of each of the 4 works packages are described below in turn.

**Work Package 1: A new landmark pedestrian / cycle bridge to reconnect Gipsy Hill Lane and Blackhorse Lane over the M5 motorway cutting.**

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The closest noise sensitive receptors are the Gipsy Hill Hotel on Gipsy Hill Lane and residential properties along Gipsy Hill Lane. The Gipsy Hill Hotel is located approximately 150m from the site.

Construction noise may affect residents at the stated receptors. This is considered likely to have only a moderately adverse affect due to the already high background noise level in the area and the temporary and changing nature of construction noise.

Noise from cyclists and pedestrians using the bridge is unlikely to be noticeable. The operational noise impact of the bridge has therefore been assessed as likely to cause negligible impact.

The possibility that wind noise generated by the bridge structure might have a significant tonal component or cause vibration to be transmitted into the ground should be considered at the design stage. If not mitigated in the design, wind noise from the bridge structure has the potential to cause a slight adverse impact.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring within the vicinity shows that air quality is good with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

The study area is 200m from the proposed works, as specified by WebTAG guidance. There are no receptors within 200m of the proposed works. There will be temporary short-term construction impacts on Blackhorse Lane and Gipsy Hill Lane due to construction traffic and construction dust. There are no long-term impacts as the bridge is only for use by pedestrians and cyclists.

Improved pedestrian and cycle ways may encourage the use of these forms of transport instead of cars, which could lead to a decrease in greenhouse gas emissions from traffic.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone. Characteristic features of this landscape type in the study area are variable field sizes delineated by Devon hedges (wide low hedges on distinctive tall earth banks), winding sunken lanes, and parkland planting. Devon hedges are a characteristic and distinctive feature throughout the county; they are important historically and support a wide range of wildlife. Parts of the field pattern may have been laid out during the middle ages. Some hedgerows within the study area may be classed as 'Important' under the Hedgerows Regulations 1997.

The site crosses the M5 where it is set in deep cutting and there are semi mature native species tree/shrub plantations on the upper slopes. It lies adjacent to the urban fringe of Exeter to the west; to the east attractive open farmland, rolling north and south of a central ridgeline at Redhayes, provides

views of the hills and open countryside to the north and east. Land on either side of the bridge is agricultural, with a small area of mature woodland adjacent to the south east boundary in the grounds of Redhayes. Adjoining sections of the narrow Blackhorse Lane and Gipsy Hill Lane are enclosed by Devon hedges with some hedgerow trees.

#### Potential Impacts / Sensitive Receptors

The illuminated 'bow-string' bridge would be a prominent feature locally in daytime and night time views from nearby roads, public rights of way and residential properties. It would be set in the context of the outermost limit of the existing M5/A30 infrastructure which includes large scale roads, overhead sign gantries and lighting so would not appear incongruous.

However, it would introduce a large scale urban feature into an area of rural landscape that is currently downgraded by existing transport uses. It would be necessary to remove short sections of Devon hedges on either side of Blackhorse Lane and Gipsy Hill Lane and some tree/shrub planting from the highway estate to accommodate the bridge. This would have a localised, minor adverse impact on local distinctiveness and landscape character.

### **HERITAGE OF HISTORIC RESOURCES**

#### Description of Baseline Information

The study area is 300m from the scheme, as specified by DMRB guidelines. There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, or Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (300m of the scheme).

However, there are a number of sites of archaeological importance within the study area, in particular:

- Numerous artefacts dating from activity in the area since the Iron Age
- Blackhorse Lane / Gipsy Hill Lane, an old hollow way now severed by the M5, is believed to have been a Medieval, possibly a Roman Road.
- The Redhayes Estate and associated parkland, an early 20<sup>th</sup> century building since destroyed by fire.

#### Potential Impacts / Sensitive Receptors

Due to known Iron Age and roman activity in the area, there is the potential for undiscovered artefacts to be uncovered during ground excavation works. However, it is likely that remaining artefacts were discovered or destroyed during the construction of the M5.

The scheme footprint will not extend past the existing Blackhorse Lane, Gipsy Hill Lane and the M5 cutting.

A benefit of the scheme is that the bridge will re-connect Blackhorse Lane and Gipsy Hill Lane, which were severed by the M5.

### **BIODIVERSITY**

#### Description of Baseline Information

There are no statutory designated sites of nature conservation importance within 2km of the proposed Scheme.

A number of non-statutory designated sites have been recorded in proximity, the majority of which are however isolated from the proposed Scheme by significant areas of motorway and trunk road.

Part of Exeter's Biodiversity Network is situated alongside the M5 corridor to the west and extending north and south of the proposed Scheme. In this location, the network contributes towards the general connectivity of non-designated habitats and potentially provides a corridor for protected and notable species to and from the area of the proposed Scheme.

A desk study for records of protected and/or notable species has indicated the presence of several species of bats, including lesser horseshoe (*Rhinolophus ferrumequinum*), within 5km of the proposed Scheme location. In addition, dormice (*Muscardinus avellanarius*), badger (*meles meles*), otter (*Lutra lutra*), and several species of birds, reptiles and invertebrates have been recorded within 1km.

#### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist of road side verge grassland (improved and semi-improved), scrub and scattered trees. The surrounding landscape contains arable land with species-rich and species-poor hedgerow boundaries; parkland; scattered trees, woodland copses; and the remains of Redhayes manor house.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Permanent and temporary land-take for the bridge; supporting infrastructure; contractors' compounds and temporary access roads** - May result in negative effects as a result of loss of habitat; fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction and operation** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new bridge may fragment the current M5 corridor and cause displacement to species reliant on the linear feature for dispersal and/or commuting. The bridge may provide opportunities to reconnect habitats previously severed by the M5.

## WATER ENVIRONMENT

#### Description of Baseline Information

The scheme lies within a Flood Zone 1 area, which is described as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%). Table D.1 of Planning Policy Statement 25: Development and Flood Risk (PPS 25) indicates that all uses of land are appropriate in Flood Zone 1 areas.

The scheme is not situated within a groundwater Source Protection Zone (SPZ).

The scheme lies within a groundwater Nitrate Vulnerable Zone (NVZ).

The study area is underlain by a designated Major Aquifer, which consists of highly permeable formations that may support large abstractions for public water supply and other purposes.

Two existing South West Water distribution mains exist within proximity to the Scheme: one aligned north to south along the east side of the M5; and one aligned east to west along the south side of Blackhorse Lane, which appears to intersect with the distribution main along the east side of the M5.

#### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the scheme during the construction and operation phases may include:

- Risk of pollution resulting from accidental spillages;
- Deterioration of groundwater quality from accidental spillages;
- Increased surface water runoff from construction works; and
- Reduction in surface water quality as a result of increased suspended solids.

Potential impacts to the water environment surrounding the scheme during the operation phase may include:

- Increased risk of surface water runoff;

- Reduction in surface water quality due to accidental spillages (e.g. transportation, maintenance);
- Reduction of groundwater recharge resulting from an increase in impermeable area; and
- Ingress of poor quality runoff to groundwater.

Potential impacts to the water environment associated with the construction phase will be temporary, localised, of negligible significance, and relatively easily to mitigate. Provided that best practice measures are implemented, it is assumed that there will be no major adverse residual effects to the water environment associated with the Scheme.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the Scheme:

#### National:

- Planning Policy Statement 1 – Delivering Sustainable Development
- Planning Policy Statement 7 – Sustainable Development in Rural Areas
- Planning Policy Statement 9 - Biodiversity and Geological Conservation
- Planning Policy Guidance 13: Transport
- Planning Policy Guidance 15: Planning and the Historic Environment
- Planning Policy Guidance 16: Archaeology and Planning

#### Regional:

- Draft Regional Spatial Strategy for the South West (2006-2026)

#### Local:

- Adopted Devon County Council Structure Plan (2001-2016)
- Adopted East Devon Local Plan (1995-2011)
- Adopted Exeter City Council Local Plan (1995-2011)
- Provisional Devon Local Transport Plan (2006 – 2011)
- East Devon District Council University of Exeter Science Park Supplementary Planning Document (2007)

There are a number of other proposed developments for the area, including the Science Park, Monkerton Housing Development, Cranbrook Community, Intermodal Freight Facility, Skypark business park, the Exeter Airport Expansion, Clyst Honiton Bypass, and the Junction 29 Improvements.

There are no other current planning applications in the vicinity of the scheme.

### Potential Impacts / Sensitive Receptors

The scheme is generally in keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

However, Gipsy Hill Lane and the western cutting of the M5 are designated as “Sites of Local Interest for Nature Conservation” within Exeter City Council Local Plan. Developments that harm such sites will only be permitted if the need for the development is sufficient to outweigh nature conservation considerations, and if the extent of any damage is kept to a minimum and mitigated for.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

**Work Package 2: Improvements to Gipsy Hill Lane and Hollow Lane to facilitate access to the new pedestrian / cycle bridge.**

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The closest noise sensitive receptors are the Gipsy Hill Hotel on Gipsy Hill Lane and residential receptors along Gipsy Hill Lane.

An increase in local traffic, pedestrians and cyclists resulting from the scheme is unlikely to significantly increase the overall ambient noise level in the area.

Local traffic, pedestrians and cyclists sound very different to a distant motorway. There are currently very few vehicle movements per day on Gipsy Hill Lane, so although the overall level may not increase, there will be a change in the noise climate and therefore a minor adverse impact may still result from the scheme.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring within the vicinity shows that air quality in this area is good with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

There are residential properties at the east end of Gipsy Hill Lane within 200m of the widening scheme; these will be impacted temporarily by construction traffic and dust. The road centreline will be re-aligned further away from receptors which may result in a small positive impact. There are no long-term impacts as the bridge is only for use by pedestrians and cyclists.

Improved pedestrian and cycle ways may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The site, a 470m long section of narrow country lane enclosed by Devon hedges, lies between Cumberland Way in the west and the M5 in the east. It lies adjacent to the urban fringe of Exeter and to the south of residential development at Pinhoe and Monkerton in the west. Land immediately adjacent to this section of Gipsy Lane is used for agriculture, detached residential dwellings and a hotel. The eastern section of Gipsy Hill Lane between Gipsy Hill Lane (track) and the M5 is enclosed by comparatively recently planted Devon hedges with some hedgerow trees. The remaining section lies between fields typical of medieval enclosure dating back to the later middle ages.

### Potential Impacts / Sensitive Receptors

Proposals to widen Gipsy Hill Lane by 2-3m between Pinn Lane and Cumberland Way will result in the loss of a significant length of Devon hedge that forms part of historic field enclosure. It is

recommended that the alignment of the footpath/cycleway is designed to retain the older sections of hedge and mature hedgerow trees and that new Devon hedges are constructed adjacent to the route to reinstate the hedgerow pattern.

There may be views of walkers and cyclists using Gipsy Hill Lane from residential properties on the southern edge of Pinhoe following removal of Devon hedge from the northern side of the lane.

## HERITAGE OF HISTORIC RESOURCES

### Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (within 300m of the scheme).

However, there are a number of sites of archaeological importance within the study area, in particular:

- Gipsy Hill Lane, a hollow way, is believed to be a Medieval, possibly a Roman Road.
- Devon hedges (wide low hedges on distinctive tall earth banks) on either side of Gipsy Hill Lane may pre-date the Enclosure Acts, in which case they would be considered as 'Important' under the Hedgerows Regulations 1997.

### Potential Impacts / Sensitive Receptors

The widening of Gipsy Hill Lane would require the relocation of the Devon hedges along the initial 470m of the north side of the Lane by approximately 2-3m. This would have adverse impacts on the value of the hedges, which are important historically. Indeed, if the hedgebanks are considered 'Important' under the Hedgerows Regulations 1997, East Devon District Council must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

Due to known Iron Age and roman activity in the area, there is the potential for undiscovered artefacts to be uncovered during translocation of the hedgebanks.

Overall, the scheme is likely to have a slight adverse effect on heritage of historic resources due to its potential impact on regionally important Devon hedges.

## BIODIVERSITY

### Description of Baseline Information

The baseline information is as described in Works Package 1.

### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist of road side verge grassland (improved and semi-improved), scrub and scattered trees to the east. Moving west the proposed Scheme is situated predominately on an existing track with scrub and 2-3m hedgerow/arable land within the footprint. A gabion wall to the far east will require removal.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Permanent and temporary land-take for the cycleway; supporting infrastructure; contractors' compounds; and temporary access roads** - May result in negative effects as a result of loss of important habitat (including protected hedgerow); fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction (temporary) and operation (permanent)** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new cycleway may connect previously remote habitats.

## WATER ENVIRONMENT

### Description of Baseline Information

The scheme lies within a Flood Zone 1 area, as described in Works Package 1.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The study area is underlain by a designated Major Aquifer, which consists of highly permeable formations that may support large abstractions for public water supply and other purposes.

Four existing South West Water distribution mains exist within proximity to the scheme, including:

- One aligned east to west along the north side of Gypsy Hill Lane;
- One aligned east to west along the north side of Hollow Lane;
- One aligned north to south along Pinn Lane; and
- One trunk main aligned north to south along Cumberland Way.

Two discharge consents exist in proximity to the scheme, including:

- Devon County Council for the discharge of final/treated effluent from a hotel to an unknown receiving water located 0.2km west of the scheme along Hollow Lane; and
- Mr. Will Gannon for the discharge of final/treated effluent from the Pinhoe House into soakaway, located 0.07km south of Gypsy Hill Lane.

One active water abstraction license is identified 0.6km southwest of the scheme, which is allocated to A C Scoble & Sons for agricultural spray irrigation (summer) purposes at Rock Gardens, Pinhoe. The source of water is a reservoir/pond.

### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the Scheme during the construction and operation phases are similar to those described in Work Package 1.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

### Potential Impacts / Sensitive Receptors

Potential impacts are similar to those described in Works Package 1.

**Work Package 3: Strengthening and minor widening works to the existing Tithebarn Lane bridge over the M5 motorway to safeguard local Public Transport routes.**

**NOISE**

Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

Potential Impacts / Sensitive Receptors

The nearest noise sensitive receptors are residential dwellings on Tithebarn Lane, Tithebarn Copse and Grasslands Drive. The closest of these is approximately 250m from the site.

Construction noise has been assessed as likely to have only a very minor adverse affect due to the large distances to sensitive receptors, the already high background noise level in the area and the temporary and changing nature of construction noise. However, if a large amount of construction traffic is to use Tithebarn lane this could significantly increase the impact during the construction phase.

Any increase in traffic flows along Tithebarn Lane resulting from the improvements would be expected to increase the ambient noise level in the area. A 25% increase in traffic flow is likely to lead to an increase in noise of 1dB over the area. Consideration should also be given to the wider impact of any shifts in the pattern of traffic flow associated with this work package.

**LOCAL AIR QUALITY / GREENHOUSE GASES**

Description of Baseline Information

The study area is not within an air quality management area. Local monitoring in the vicinity shows air quality is good in this area, with no exceedences of the objectives at relevant receptors.

Potential Impacts / Sensitive Receptors

There are no receptors within 200m of the proposed works, however, temporary construction traffic may have a temporary impact on receptors along Tithebarn Lane.

During the operational phase of the Exeter science park, scheduled for 2011, an additional twelve buses per hour will run over the bridge as an extension of existing routes. This has the potential to cause deterioration in air quality for the receptors along the new bus routes, namely Tithebarn Lane and along Pinn lane in southern Pinhoe.

This works package has the potential to increase greenhouse gases due to the increase in vehicle miles travelled by the new bus routes, however improved public transport may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic. The increase in greenhouse gas is potentially off set by the modal shift.

**LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The existing bridge crosses the M5 where it is set in a cutting planted with semi-mature native species tree/shrub plantations. It lies adjacent to the urban fringe of Pinhoe, Exeter in the west and attractive open farmland in the east, from where there are views of the hills and open countryside to the north and east. Land on either side of the bridge is in agricultural use.

Potential Impacts / Sensitive Receptors

The proposals would not change the appearance of the existing bridge, therefore it is not anticipated that they would have an impact on the existing landscape character or views of the bridge.

## HERITAGE OF HISTORIC RESOURCES

Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (within 300m of the scheme).

Artefacts from as early as the Iron Age have been found in the study area.

There are a number of post-medieval Listed Buildings in Monkerton.

Tithebarn Lane is believed to pre-date 1889.

Potential Impacts / Sensitive Receptors

As all works will take place on the existing bridge, no sites of archaeological interest are expected to be affected by the bridge works themselves. If, however, grounds works are required, then further finds during construction are possible due to known Iron Age and roman activity in the area.

Increased bus traffic along Tithebarn Lane may indirectly impact on listed buildings adjacent to the road in Monkerton through increased vibration and particulates.

## BIODIVERSITY

Description of Baseline Information

There are no statutory designated sites of nature conservation importance within 2km of the proposed Scheme.

A number of non-statutory designated sites have been recorded in the surrounding landscape, the closest of which is Beacon Hill County Wildlife Site (CWS) designated for its notable grassland. The majority of other non-statutory designated sites are isolated from the proposed Scheme by significant areas of motorway and trunk road.

Part of Exeter's Biodiversity Network is situated alongside the M5 corridor to passing beneath the proposed Scheme and extending to the north and south. In this location, the network contributes towards the general connectivity of non-designated habitats and potentially provides a corridor for protected and notable species to and from the area of the proposed Scheme.

A desk study for records of protected and/or notable species been carried out, as described in Works Package 1.

Potential Impacts / Sensitive Receptors

The proposed Scheme works will occur entirely within the existing bridge decking.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Works to Existing Bridge** - May result in negative effects as a result of loss of important habitat (including potentially for bats and birds); direct mortality and/or displacement of species during construction.

**Changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction (temporary) and operation (permanent)** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

## WATER ENVIRONMENT

### Description of Baseline Information

One active water abstraction license is identified 0.6km northwest of the scheme, which is allocated for the nurseries in Pinhoe for general agricultural purposes. The source of water is from a borehole.

One pollution incident to controlled water sources occurred in proximity to the scheme, including:

- Category 3 (minor incident) located 0.25km northwest of the scheme involving the discharge of crude sewage into the Clyst catchment (1994) due to a mechanical/electrical plant failure.

The Pin Brook lies north of the scheme and flows west to east to the River Clyst via an open channel. The Pin Brook is classified a "main river" by the Environment Agency.

The scheme lies within a Flood Zone 1 area, as described in Works Package 1.

The scheme lies 0.07km south of a Flood Zone 2 area, and 0.15km south of a Flood Zone 3 area, generated from Pin Brook.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The study area is underlain by a designated Minor Aquifer, which consists of variably permeable formations that are important for local water supplies and supplying base flow to rivers.

Two existing South West Water distribution mains exist within proximity to the scheme: one aligned north to south along the east side of the M5; and one aligned east to west along Tithebarn Lane.

Two discharge consents exist in proximity to the scheme, including:

- Bovis Homes Ltd for the discharge of mine/groundwater to the Clyst catchment as raised from multiple domestic properties located 0.15km northwest of the scheme; and
- South West Water for sewage discharges from a pumping station to the River Exe located 0.2km northwest of the scheme.

### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the scheme during the construction phase may include:

- Risk of pollution resulting from accidental spillages; and
- Deterioration of groundwater quality from accidental spillages.

It is expected that no additional impacts to the water environment will occur during the operation phase.

Potential impacts to the water environment will be temporary, localised, of negligible significance, and relatively easily to mitigate. Provided that best practice measures are implemented, it is assumed that there will be no major adverse residual effects to the water environment associated with the scheme.

A direct discharge to Pin Brook is not acceptable with the exception of an emergency overflow. Surface water discharge should generally be achieved through infiltration techniques.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

### Potential Impacts / Sensitive Receptors

The scheme is in-keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

**Work Package 4: Early completion of 450m of bus priority link road within the Exeter Science Park site.**

Work Package 4 is currently being assessed under the Town and Country Planning (EIA) (England and Wales) Regulations (1999), and an Environmental Statement will be produced in summer 2009, as part of the outline planning application for the proposed Exeter Science Park development.

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5 and the A30. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The nearest sensitive receptors are residential dwellings along Blackhorse Lane.

The early completion of the bus priority link road will have the effect of making the associated noise impact occur earlier than it would otherwise have done. These likely impacts are described as follows:

Construction noise has been assessed as likely to have only a very minor adverse effect due to the large distance to receptors, the already high background noise level in the area and the temporary and changing nature of construction noise. However if a large amount of construction traffic is to use Tithebarn Lane this could significantly increase the impact during the construction phase.

Any increase in traffic flows along Tithebarn Lane resulting from the improvements would be expected to increase the ambient noise level in the area. A 25% increase in traffic flow is likely to lead to an increase in noise of 1dB over the area. Consideration should also be given to the wider impact of any shifts in the pattern of traffic flow associated with this work package.

New sections of road may pass close to residential receptors at the western end of Blackhorse Lane, potentially leading to an impact at these locations.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring in the vicinity shows air quality is good in this area, with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

There is one receptor within 200m of the new link road at the junction between Blackhorse Lane and Langaton Lane. This road will act as a bus route through the Exeter science park. Once the operational phase of the science park has commenced it is expected that twelve buses per hour will use this route as an extension to the existing bus routes, causing potential deterioration in air quality at this receptor.

This work package has the potential to increase greenhouse gases due to the increase in vehicle miles travelled by the new bus routes, however improved public transport may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic. The increase in greenhouse gas is potentially offset by the modal shift.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The site lies to the east of the M5 within undulating arable land from where there are views of the hills and open countryside to the north and east of Exeter, including Killerton and Ashclyst Forest (National Trust property), and residential development at Pinhoe to the west. The field pattern is characterised by relatively large, rectangular enclosures that may have been laid out between C15th – C18th. The fields through which the proposed route passes and Tithebarn and Blackhorse Lanes are enclosed by Devon hedges. The Redhayes estate lies to the south west of the proposed route and is enclosed by mature woodland, over-mature ornamental planting, a formal avenue and Devon hedges. Despite the relatively high ambient noise level there is a sense of remoteness and tranquillity in this rural area away from the M5.

#### Potential Impacts / Sensitive Receptors

The proposed route would introduce a new road and associated traffic into an area of rural and comparatively tranquil landscape. However, it forms part of a north west - south east transport link within the proposed development of Exeter Science Park which would result in a major change to the character of the surrounding landscape. The road would be constructed at an early stage of the development and its greatest impact on local landscape character would be temporary and would occur following construction and prior to development of adjacent phases of the UESP for a period of approximately 5 years.

It would fragment the existing field pattern leaving a narrow strip and triangular area of land adjacent to Langaton Lane that would not be viable for arable farming. It would cut through Devon hedges along Blackhorse Lane and Tithebarn Lane and one field boundary, which would have an adverse impact on the existing vegetation / field pattern. To comply with East Devon District Council Policy D4 (Landscape Requirements) this should be compensated for by new hedgerows incorporated elsewhere on the site so that they would be integrated with the development and landscape framework for the UESP. It is recommended that crossing points are designed to cut through the least valuable sections of Devon hedges and to avoid removal of hedgerow trees. It is also recommended that the alignment of the road along Tithebarn Lane allows for the retention of the Devon hedge on the northern side to provide screening and enclosure to the new route. Exposed end sections of hedgebanks should be made good with turf and appropriate planting.

There would be a loss of tranquillity in the vicinity of Langaton Lane due to increased traffic activity.

### **HERITAGE OF HISTORIC RESOURCES**

#### Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area.

The area is believed to have been used since the Iron Age. Several sites and artefacts of archaeological interest have been identified within 300m of the route, many of which are of Medieval, Roman or Iron Age.

A number of artefacts have been found in the area north of Blackhorse Lane, across which the Link Road would be constructed, and it has a good potential to contain as yet unfound archaeological deposits. However, as this area is mainly arable land, it is likely that several decades of farming have destroyed shallower artefacts, although deeper artefacts may still remain in a good state of preservation due to the lack of previous development in the area.

Blackhorse Lane is a hollow way, believed to date to the medieval period, and potentially to the Roman period.

Devon hedges either side of Blackhorse Lane and in the agricultural land to the north are historic landscape features and may be considered as 'Important' under the Hedgerows Regulations 1997.

### Potential Impacts / Sensitive Receptors

As grounds works are required, further finds of archaeological interest during construction are possible due to known Iron Age and roman activity in the activity.

The route of the Link Road cuts through Blackhorse Lane. It is possible that artefacts or earlier road surfaces will be unearthed during construction.

Some of the hedgebanks are considered as 'Important' under the Hedgerows Regulations 1997. EDDC must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

Further archaeological investigations would be required prior to construction. An archaeological watching brief would be required. Mitigation would have to be agreed with Devon CC.

## BIODIVERSITY

### Description of Baseline Information

The baseline information is as described for Works Package 1.

### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist predominately of arable land with species-rich and species-poor hedgerow boundaries.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the surrounding area.

**Permanent and temporary land-take for the road; supporting infrastructure; contractors' compounds and temporary access roads** - May result in negative effects as a result of loss of habitat; fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction and operation** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new road will fragment arable land and potentially result in increased isolation of habitats and species.

## WATER ENVIRONMENT

### Description of Baseline Information

Two existing South West Water distribution mains exist within proximity to the scheme: one aligned north to south along the east side of the M5; and one aligned east to west along the south side of Blackhorse Lane.

Two pollution incidents to controlled water sources occurred in proximity to the scheme, including:

- Category 3 (minor incident) located 0.1km southwest of the intersection of Langaton Lane & Blackhorse Lane involving the discharge of a pollutant into the Clyst catchment (1995); and
- Category 3 (minor incident) located 0.2km northeast of scheme involving the discharge of a pollutant into the Tidal Exe catchment (1992).

The scheme comprises mainly of agricultural land and allotments, and is considered to be a Greenfield site.

The Pin Brook lies north of the scheme and flows west to east to the River Clyst via an open channel. The Pin Brook is classified a "main river" by the Environment Agency.

The scheme lies within a Flood Zone 1 area.

The scheme lies 0.2km south of a Flood Zone 3 area, generated from Pin Brook.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The scheme is underlain by three different Vulnerability Zones including a designated Major Aquifer (highly permeable), Minor Aquifer (variably permeable), and a non-aquifer (negligible permeability). Major Aquifers may support large abstractions for public water supply and other purposes. Minor Aquifers are important for local water supplies and supplying base flow to rivers. Non aquifers contain insignificant quantities of groundwater.

Potential Impacts / Sensitive Receptors

Impacts are similar to those from Works Package 1. In addition, there is the potential for change to surface water drainage patterns during operation of the scheme (may affect flood risk elsewhere in the catchment).

A direct discharge to Pin Brook is not acceptable with the exception of an emergency overflow. Surface water discharge should generally be achieved through infiltration techniques.

**PLANNING / INTEGRATION**

Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

Potential Impacts / Sensitive Receptors

The scheme is generally in keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

However, policies state that developments must not harm the landscape, cultural heritage or environment of an area, and must maintain local character.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

## **CONCLUSION / FURTHER WORKS REQUIRED**

### **Noise**

There is potential for some noise impacts to result at the construction stage of all four Work Packages.

During operation, impacts are expected to be minimal for Works Packages 1, 2 and 3. However, Works Package 4 has potential for adverse impacts during operation, due to traffic movements. This is further assessed within the Environmental Statement for the proposed Exeter Science Park development which will be produced in summer 2009.

### **Local Air Quality / Greenhouse Gases**

There is potential for some air quality impacts to result at the construction stage of all four Work Packages.

During operation, impacts are expected to be minimal for Works Packages 1, 2 and 3. However, Works Package 4 has potential for adverse impacts during operation, due to traffic movements. This is further assessed within the Environmental Statement for the proposed Exeter Science Park development which will be produced in summer 2009.

### **Landscape / Townscape / Arboriculture**

The bridge proposed in Work Package 1 and the link road proposed in Work Package 4 would be prominent in the local landscape. However, these would be part of the cumulative effects of the Exeter Science Park Scheme.

### **Heritage of Historic Resources**

Due to known historic activity in the area dating back to the Iron Age, there is potential for archaeological artefacts to be discovered during construction. Consultation with a Devon County Council Archaeologist, and a watching brief, will therefore be required.

If the hedgebanks are considered 'Important' under the Hedgerows Regulations 1997, East Devon District Council must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed. In particular, this may be a limitation for Works Package 2.

### **Biodiversity**

The potential for the Works Packages to impact on protected species will be established through timely surveys for breeding birds, dormice, badgers, reptiles and invertebrates. Appropriate licences would be obtained, as required, prior to construction.

### **Water Environment**

There is potential for some water quality impacts to result at the construction stage of all four Work Packages.

However, Works Package 4 has potential for adverse impacts during operation, due increased hard standing. The impacts of this are further assessed within the Environmental Statement which will be produced in summer 2009, as part of the outline planning application for the proposed Exeter Science Park development.

Consultation with the Environment Agency is required to determine if a Flood Risk Assessment is necessary for the scheme as a whole.

### **Planning / Integration**

So long as appropriate mitigation measures are put in place, the scheme is generally in keeping with National, Regional and Local Planning Policies, and integrates well with other proposed developments.

If the whole scheme is taken forward, a more detailed environmental assessment of all four Works Packages will be required.

## **INTRODUCTION**

This preliminary environmental appraisal is a high level feasibility study relating to a multiple package of works for the Community Infrastructure Scheme CIF 2 Scheme no. 26 – M5 Segregated Crossing. This report should be read in conjunction with the PB's report entitled Community Infrastructure Scheme no. 26 – M5 Segregated Crossing, Full Business Case, November 2008.

## **ROUTE DESCRIPTIONS**

The CIF bid is made up of 4 works packages, as described below.

### **Work Package 1: A new landmark pedestrian / cycle bridge to reconnect Gipsy Hill Lane and Blackhorse Lane over the M5 motorway cutting.**

The shared use bridge would span the M5 between the ends of Gipsy Hill Lane and Blackhorse Lane, reconnecting a historic Public Right of Way (PROW) that was severed with the construction of the M5 in the 1980's.

The bridge would be in one section, without columns, and the abutments at each end would be at the top of the embankments on each side of the cutting. The bridge would of 112m span, 3.25m (average) deck width, and upwards of 15m above the M5 carriageway.

The likely materials are a mixture of structural steel and glass. A conceptual design exercise will be undertaken to establish a landmark design for users and neighbours of the structure, and preliminary consultation with Sustrans has already taken place.

The scheme requires 850m<sup>2</sup> of permanent landtake from highway's or highways stocked land.

Proposed Construction: May 2010 – January 2011

### **Work Package 2: Improvements to Gipsy Hill Lane and Hollow Lane to facilitate access to the new pedestrian / cycle bridge.**

Gipsy Hill Lane serves as vehicular access to a number of residential properties, a hotel, and a nursery. It is therefore proposed to widen the initial 470m by approx 2-3m on the northern side of the Lane to incorporate a dedicated space for the anticipated increase in pedestrian and cycle traffic expected by completing Works Package no.1. This would require removal or translocation of historic hedgebanks along the northern side of the road.

In addition, some resurfacing of Gipsy Hill Lane and Hollow Lane may be required. Hollow Lane will not be widened.

The scheme requires 690m<sup>2</sup> of permanent land take from private landowners to the north of Gipsy hill Lane.

Proposed Construction: May 2010 – July 2010

**Work Package 3: Strengthening and minor widening works to the existing Tithebarn Lane bridge over the M5 motorway to safeguard local Public Transport routes.**

Due to the proposed increased local public transport traffic over the bridge from the proposed Science Park Scheme, there is a desire to widen the carriageway slightly by 0.25m on both sides, giving a carriageway width increase from 5.5m to 6.0m. This will be achieved by saw-cutting into the concrete behind the existing kerbs, removing the material and then re-setting the existing kerbs in their new position. The works will be done within the existing bridge deck. There will be no permanent land take. The approaches to the bridge will be unaffected.

Proposed Construction: May 2010 – July 2010

**Work Package 4: Early completion of 450m of bus priority link road within the proposed Exeter Science Park site.**

As part of the Proposed Science Park masterplan, a new bus priority link road is proposed from Tithe Barn Lane through to Blackhorse Lane, through existing agricultural fields.

The road will be 6.5m in width, without footways at this stage, and will drain via highway drains to a Soakaway with the Science Park site.

The scheme requires 2,990m<sup>2</sup> of permanent landtake.

Proposed Construction: May 2010 – July 2010 (as part of Phase 1 of the Science Park construction)

## **APPROACH AND METHODOLOGY**

### **Baseline Information**

This environmental appraisal is a high-level desktop study. The following sources of publicly available information were used in determining existing environmental baseline conditions and identifying potential sensitive receptors:

- National Planning Policies:
  - Planning Policy Statement 1 – Delivering Sustainable Development
  - Planning Policy Statement 7 – Sustainable Development in Rural Areas
  - Planning Policy Statement 9 - Biodiversity and Geological Conservation
  - Planning Policy Guidance 13: Transport
  - Planning Policy Guidance 15: Planning and the Historic Environment
  - Planning Policy Guidance 16: Archaeology and Planning
- Regional Planning Strategies:
  - Draft Regional Spatial Strategy for the South West (2006-2026)
- Local Plans and Policies:
  - Adopted Devon County Council Structure Plan (2001-2016)
  - Adopted East Devon Local Plan (1995-2011)
  - Adopted Exeter City Council Local Plan (1995-2011)
  - Provisional Devon Local Transport Plan (2006 – 2011)
  - East Devon District Council University of Exeter Science Park Supplementary Planning Document (2007)
- Engineering plans and liaison with PB Engineers (Tim Obee and Alex Starr);
- Devon County Council / East Devon District Council websites;
- Envirocheck information;
- Environment Agency (EA) website ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk));

- MAgiC website ([www.magic.gov.uk](http://www.magic.gov.uk));
- Google Maps ([www.maps.google.com](http://www.maps.google.com)); and
- Natural England ([www.natural-england.org.uk](http://www.natural-england.org.uk));

This information was supplemented by a site walkover undertaken on Friday 14<sup>th</sup> November 2008.

This report considers the existing baseline conditions, identifies sensitive receptors and highlights the scheme's potential impacts on the following issues:

- Noise;
- Local Air Quality / Greenhouse Gases;
- Landscape / Townscape / Arboriculture;
- Heritage of Historic Resources;
- Biodiversity;
- Water Environment; and
- Planning / Integration.

### **Limitations**

The following environmental appraisal was undertaken using the information provided as described in the Approach and Methodology Section in November 2008. It is a high level appraisal. As such, it is recommended that a detailed environmental assessment of the proposed scheme is undertaken in order to aid with the design and consents required.

For the Biodiversity assessment, the Exeter City Council Local Plan was consulted to identify the locations of non-statutory designated ecological sites. It was revealed by the Records Centre that this is out of date, therefore there are potentially some local sites that have not been identified to date for this report. However, it is considered unlikely that the conclusions of this report are affected.

### **Assumptions**

During the operational phase of the Exeter Science Park Scheme, scheduled for 2011, an additional twelve buses per hour will cross over Tithebarn Lane bridge as an extension of existing routes.

### **ASSESSMENT**

The environmental baseline conditions, sensitive receptors and potential impacts of each of the 4 works packages are described below in turn.

**Work Package 1: A new landmark pedestrian / cycle bridge to reconnect Gipsy Hill Lane and Blackhorse Lane over the M5 motorway cutting.**

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The closest noise sensitive receptors are the Gipsy Hill Hotel on Gipsy Hill Lane and residential properties along Gipsy Hill Lane. The Gipsy Hill Hotel is located approximately 150m from the site.

Construction noise may affect residents at the stated receptors. This is considered likely to have only a moderately adverse affect due to the already high background noise level in the area and the temporary and changing nature of construction noise.

Noise from cyclists and pedestrians using the bridge is unlikely to be noticeable. The operational noise impact of the bridge has therefore been assessed as likely to cause negligible impact.

The possibility that wind noise generated by the bridge structure might have a significant tonal component or cause vibration to be transmitted into the ground should be considered at the design stage. If not mitigated in the design, wind noise from the bridge structure has the potential to cause a slight adverse impact.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring within the vicinity shows that air quality is good with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

The study area is 200m from the proposed works, as specified by WebTAG guidance. There are no receptors within 200m of the proposed works. There will be temporary short-term construction impacts on Blackhorse Lane and Gipsy Hill Lane due to construction traffic and construction dust. There are no long-term impacts as the bridge is only for use by pedestrians and cyclists.

Improved pedestrian and cycle ways may encourage the use of these forms of transport instead of cars, which could lead to a decrease in greenhouse gas emissions from traffic.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone. Characteristic features of this landscape type in the study area are variable field sizes delineated by Devon hedges (wide low hedges on distinctive tall earth banks), winding sunken lanes, and parkland planting. Devon hedges are a characteristic and distinctive feature throughout the county; they are important historically and support a wide range of wildlife. Parts of the field pattern may have been laid out during the middle ages. Some hedgerows within the study area may be classed as 'Important' under the Hedgerows Regulations 1997.

The site crosses the M5 where it is set in deep cutting and there are semi mature native species tree/shrub plantations on the upper slopes. It lies adjacent to the urban fringe of Exeter to the west; to the east attractive open farmland, rolling north and south of a central ridgeline at Redhayes, provides

views of the hills and open countryside to the north and east. Land on either side of the bridge is agricultural, with a small area of mature woodland adjacent to the south east boundary in the grounds of Redhayes. Adjoining sections of the narrow Blackhorse Lane and Gipsy Hill Lane are enclosed by Devon hedges with some hedgerow trees.

#### Potential Impacts / Sensitive Receptors

The illuminated 'bow-string' bridge would be a prominent feature locally in daytime and night time views from nearby roads, public rights of way and residential properties. It would be set in the context of the outermost limit of the existing M5/A30 infrastructure which includes large scale roads, overhead sign gantries and lighting so would not appear incongruous.

However, it would introduce a large scale urban feature into an area of rural landscape that is currently downgraded by existing transport uses. It would be necessary to remove short sections of Devon hedges on either side of Blackhorse Lane and Gipsy Hill Lane and some tree/shrub planting from the highway estate to accommodate the bridge. This would have a localised, minor adverse impact on local distinctiveness and landscape character.

### **HERITAGE OF HISTORIC RESOURCES**

#### Description of Baseline Information

The study area is 300m from the scheme, as specified by DMRB guidelines. There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, or Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (300m of the scheme).

However, there are a number of sites of archaeological importance within the study area, in particular:

- Numerous artefacts dating from activity in the area since the Iron Age
- Blackhorse Lane / Gipsy Hill Lane, an old hollow way now severed by the M5, is believed to have been a Medieval, possibly a Roman Road.
- The Redhayes Estate and associated parkland, an early 20<sup>th</sup> century building since destroyed by fire.

#### Potential Impacts / Sensitive Receptors

Due to known Iron Age and roman activity in the area, there is the potential for undiscovered artefacts to be uncovered during ground excavation works. However, it is likely that remaining artefacts were discovered or destroyed during the construction of the M5.

The scheme footprint will not extend past the existing Blackhorse Lane, Gipsy Hill Lane and the M5 cutting.

A benefit of the scheme is that the bridge will re-connect Blackhorse Lane and Gipsy Hill Lane, which were severed by the M5.

### **BIODIVERSITY**

#### Description of Baseline Information

There are no statutory designated sites of nature conservation importance within 2km of the proposed Scheme.

A number of non-statutory designated sites have been recorded in proximity, the majority of which are however isolated from the proposed Scheme by significant areas of motorway and trunk road.

Part of Exeter's Biodiversity Network is situated alongside the M5 corridor to the west and extending north and south of the proposed Scheme. In this location, the network contributes towards the general connectivity of non-designated habitats and potentially provides a corridor for protected and notable species to and from the area of the proposed Scheme.

A desk study for records of protected and/or notable species has indicated the presence of several species of bats, including lesser horseshoe (*Rhinolophus ferrumequinum*), within 5km of the proposed Scheme location. In addition, dormice (*Muscardinus avellanarius*), badger (*meles meles*), otter (*Lutra lutra*), and several species of birds, reptiles and invertebrates have been recorded within 1km.

#### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist of road side verge grassland (improved and semi-improved), scrub and scattered trees. The surrounding landscape contains arable land with species-rich and species-poor hedgerow boundaries; parkland; scattered trees, woodland copses; and the remains of Redhayes manor house.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Permanent and temporary land-take for the bridge; supporting infrastructure; contractors' compounds and temporary access roads** - May result in negative effects as a result of loss of habitat; fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction and operation** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new bridge may fragment the current M5 corridor and cause displacement to species reliant on the linear feature for dispersal and/or commuting. The bridge may provide opportunities to reconnect habitats previously severed by the M5.

## WATER ENVIRONMENT

#### Description of Baseline Information

The scheme lies within a Flood Zone 1 area, which is described as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%). Table D.1 of Planning Policy Statement 25: Development and Flood Risk (PPS 25) indicates that all uses of land are appropriate in Flood Zone 1 areas.

The scheme is not situated within a groundwater Source Protection Zone (SPZ).

The scheme lies within a groundwater Nitrate Vulnerable Zone (NVZ).

The study area is underlain by a designated Major Aquifer, which consists of highly permeable formations that may support large abstractions for public water supply and other purposes.

Two existing South West Water distribution mains exist within proximity to the Scheme: one aligned north to south along the east side of the M5; and one aligned east to west along the south side of Blackhorse Lane, which appears to intersect with the distribution main along the east side of the M5.

#### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the scheme during the construction and operation phases may include:

- Risk of pollution resulting from accidental spillages;
- Deterioration of groundwater quality from accidental spillages;
- Increased surface water runoff from construction works; and
- Reduction in surface water quality as a result of increased suspended solids.

Potential impacts to the water environment surrounding the scheme during the operation phase may include:

- Increased risk of surface water runoff;

- Reduction in surface water quality due to accidental spillages (e.g. transportation, maintenance);
- Reduction of groundwater recharge resulting from an increase in impermeable area; and
- Ingress of poor quality runoff to groundwater.

Potential impacts to the water environment associated with the construction phase will be temporary, localised, of negligible significance, and relatively easily to mitigate. Provided that best practice measures are implemented, it is assumed that there will be no major adverse residual effects to the water environment associated with the Scheme.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the Scheme:

#### National:

- Planning Policy Statement 1 – Delivering Sustainable Development
- Planning Policy Statement 7 – Sustainable Development in Rural Areas
- Planning Policy Statement 9 - Biodiversity and Geological Conservation
- Planning Policy Guidance 13: Transport
- Planning Policy Guidance 15: Planning and the Historic Environment
- Planning Policy Guidance 16: Archaeology and Planning

#### Regional:

- Draft Regional Spatial Strategy for the South West (2006-2026)

#### Local:

- Adopted Devon County Council Structure Plan (2001-2016)
- Adopted East Devon Local Plan (1995-2011)
- Adopted Exeter City Council Local Plan (1995-2011)
- Provisional Devon Local Transport Plan (2006 – 2011)
- East Devon District Council University of Exeter Science Park Supplementary Planning Document (2007)

There are a number of other proposed developments for the area, including the Science Park, Monkerton Housing Development, Cranbrook Community, Intermodal Freight Facility, Skypark business park, the Exeter Airport Expansion, Clyst Honiton Bypass, and the Junction 29 Improvements.

There are no other current planning applications in the vicinity of the scheme.

### Potential Impacts / Sensitive Receptors

The scheme is generally in keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

However, Gipsy Hill Lane and the western cutting of the M5 are designated as “Sites of Local Interest for Nature Conservation” within Exeter City Council Local Plan. Developments that harm such sites will only be permitted if the need for the development is sufficient to outweigh nature conservation considerations, and if the extent of any damage is kept to a minimum and mitigated for.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

**Work Package 2: Improvements to Gipsy Hill Lane and Hollow Lane to facilitate access to the new pedestrian / cycle bridge.**

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The closest noise sensitive receptors are the Gipsy Hill Hotel on Gipsy Hill Lane and residential receptors along Gipsy Hill Lane.

An increase in local traffic, pedestrians and cyclists resulting from the scheme is unlikely to significantly increase the overall ambient noise level in the area.

Local traffic, pedestrians and cyclists sound very different to a distant motorway. There are currently very few vehicle movements per day on Gipsy Hill Lane, so although the overall level may not increase, there will be a change in the noise climate and therefore a minor adverse impact may still result from the scheme.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring within the vicinity shows that air quality in this area is good with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

There are residential properties at the east end of Gipsy Hill Lane within 200m of the widening scheme; these will be impacted temporarily by construction traffic and dust. The road centreline will be re-aligned further away from receptors which may result in a small positive impact. There are no long-term impacts as the bridge is only for use by pedestrians and cyclists.

Improved pedestrian and cycle ways may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The site, a 470m long section of narrow country lane enclosed by Devon hedges, lies between Cumberland Way in the west and the M5 in the east. It lies adjacent to the urban fringe of Exeter and to the south of residential development at Pinhoe and Monkerton in the west. Land immediately adjacent to this section of Gipsy Lane is used for agriculture, detached residential dwellings and a hotel. The eastern section of Gipsy Hill Lane between Gipsy Hill Lane (track) and the M5 is enclosed by comparatively recently planted Devon hedges with some hedgerow trees. The remaining section lies between fields typical of medieval enclosure dating back to the later middle ages.

### Potential Impacts / Sensitive Receptors

Proposals to widen Gipsy Hill Lane by 2-3m between Pinn Lane and Cumberland Way will result in the loss of a significant length of Devon hedge that forms part of historic field enclosure. It is

recommended that the alignment of the footpath/cycleway is designed to retain the older sections of hedge and mature hedgerow trees and that new Devon hedges are constructed adjacent to the route to reinstate the hedgerow pattern.

There may be views of walkers and cyclists using Gipsy Hill Lane from residential properties on the southern edge of Pinhoe following removal of Devon hedge from the northern side of the lane.

## HERITAGE OF HISTORIC RESOURCES

### Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (within 300m of the scheme).

However, there are a number of sites of archaeological importance within the study area, in particular:

- Gipsy Hill Lane, a hollow way, is believed to be a Medieval, possibly a Roman Road.
- Devon hedges (wide low hedges on distinctive tall earth banks) on either side of Gipsy Hill Lane may pre-date the Enclosure Acts, in which case they would be considered as 'Important' under the Hedgerows Regulations 1997.

### Potential Impacts / Sensitive Receptors

The widening of Gipsy Hill Lane would require the relocation of the Devon hedges along the initial 470m of the north side of the Lane by approximately 2-3m. This would have adverse impacts on the value of the hedges, which are important historically. Indeed, if the hedgebanks are considered 'Important' under the Hedgerows Regulations 1997, East Devon District Council must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

Due to known Iron Age and roman activity in the area, there is the potential for undiscovered artefacts to be uncovered during translocation of the hedgebanks.

Overall, the scheme is likely to have a slight adverse effect on heritage of historic resources due to its potential impact on regionally important Devon hedges.

## BIODIVERSITY

### Description of Baseline Information

The baseline information is as described in Works Package 1.

### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist of road side verge grassland (improved and semi-improved), scrub and scattered trees to the east. Moving west the proposed Scheme is situated predominately on an existing track with scrub and 2-3m hedgerow/arable land within the footprint. A gabion wall to the far east will require removal.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Permanent and temporary land-take for the cycleway; supporting infrastructure; contractors' compounds; and temporary access roads** - May result in negative effects as a result of loss of important habitat (including protected hedgerow); fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction (temporary) and operation (permanent)** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new cycleway may connect previously remote habitats.

## WATER ENVIRONMENT

### Description of Baseline Information

The scheme lies within a Flood Zone 1 area, as described in Works Package 1.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The study area is underlain by a designated Major Aquifer, which consists of highly permeable formations that may support large abstractions for public water supply and other purposes.

Four existing South West Water distribution mains exist within proximity to the scheme, including:

- One aligned east to west along the north side of Gypsy Hill Lane;
- One aligned east to west along the north side of Hollow Lane;
- One aligned north to south along Pinn Lane; and
- One trunk main aligned north to south along Cumberland Way.

Two discharge consents exist in proximity to the scheme, including:

- Devon County Council for the discharge of final/treated effluent from a hotel to an unknown receiving water located 0.2km west of the scheme along Hollow Lane; and
- Mr. Will Gannon for the discharge of final/treated effluent from the Pinhoe House into soakaway, located 0.07km south of Gypsy Hill Lane.

One active water abstraction license is identified 0.6km southwest of the scheme, which is allocated to A C Scoble & Sons for agricultural spray irrigation (summer) purposes at Rock Gardens, Pinhoe. The source of water is a reservoir/pond.

### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the Scheme during the construction and operation phases are similar to those described in Work Package 1.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

### Potential Impacts / Sensitive Receptors

Potential impacts are similar to those described in Works Package 1.

**Work Package 3: Strengthening and minor widening works to the existing Tithebarn Lane bridge over the M5 motorway to safeguard local Public Transport routes.**

**NOISE**

Description of Baseline Information

The noise climate in the area is currently dominated by the M5. Aircraft on approach to and departing from Exeter airport also contribute significantly.

Potential Impacts / Sensitive Receptors

The nearest noise sensitive receptors are residential dwellings on Tithebarn Lane, Tithebarn Copse and Grasslands Drive. The closest of these is approximately 250m from the site.

Construction noise has been assessed as likely to have only a very minor adverse affect due to the large distances to sensitive receptors, the already high background noise level in the area and the temporary and changing nature of construction noise. However, if a large amount of construction traffic is to use Tithebarn lane this could significantly increase the impact during the construction phase.

Any increase in traffic flows along Tithebarn Lane resulting from the improvements would be expected to increase the ambient noise level in the area. A 25% increase in traffic flow is likely to lead to an increase in noise of 1dB over the area. Consideration should also be given to the wider impact of any shifts in the pattern of traffic flow associated with this work package.

**LOCAL AIR QUALITY / GREENHOUSE GASES**

Description of Baseline Information

The study area is not within an air quality management area. Local monitoring in the vicinity shows air quality is good in this area, with no exceedences of the objectives at relevant receptors.

Potential Impacts / Sensitive Receptors

There are no receptors within 200m of the proposed works, however, temporary construction traffic may have a temporary impact on receptors along Tithebarn Lane.

During the operational phase of the Exeter science park, scheduled for 2011, an additional twelve buses per hour will run over the bridge as an extension of existing routes. This has the potential to cause deterioration in air quality for the receptors along the new bus routes, namely Tithebarn Lane and along Pinn lane in southern Pinhoe.

This works package has the potential to increase greenhouse gases due to the increase in vehicle miles travelled by the new bus routes, however improved public transport may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic. The increase in greenhouse gas is potentially off set by the modal shift.

**LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The existing bridge crosses the M5 where it is set in a cutting planted with semi-mature native species tree/shrub plantations. It lies adjacent to the urban fringe of Pinhoe, Exeter in the west and attractive open farmland in the east, from where there are views of the hills and open countryside to the north and east. Land on either side of the bridge is in agricultural use.

Potential Impacts / Sensitive Receptors

The proposals would not change the appearance of the existing bridge, therefore it is not anticipated that they would have an impact on the existing landscape character or views of the bridge.

**HERITAGE OF HISTORIC RESOURCES**

Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area (within 300m of the scheme).

Artefacts from as early as the Iron Age have been found in the study area.

There are a number of post-medieval Listed Buildings in Monkerton.

Tithebarn Lane is believed to pre-date 1889.

Potential Impacts / Sensitive Receptors

As all works will take place on the existing bridge, no sites of archaeological interest are expected to be affected by the bridge works themselves. If, however, grounds works are required, then further finds during construction are possible due to known Iron Age and roman activity in the area.

Increased bus traffic along Tithebarn Lane may indirectly impact on listed buildings adjacent to the road in Monkerton through increased vibration and particulates.

**BIODIVERSITY**

Description of Baseline Information

There are no statutory designated sites of nature conservation importance within 2km of the proposed Scheme.

A number of non-statutory designated sites have been recorded in the surrounding landscape, the closest of which is Beacon Hill County Wildlife Site (CWS) designated for its notable grassland. The majority of other non-statutory designated sites are isolated from the proposed Scheme by significant areas of motorway and trunk road.

Part of Exeter's Biodiversity Network is situated alongside the M5 corridor to passing beneath the proposed Scheme and extending to the north and south. In this location, the network contributes towards the general connectivity of non-designated habitats and potentially provides a corridor for protected and notable species to and from the area of the proposed Scheme.

A desk study for records of protected and/or notable species been carried out, as described in Works Package 1.

Potential Impacts / Sensitive Receptors

The proposed Scheme works will occur entirely within the existing bridge decking.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the neighbouring area.

**Works to Existing Bridge** - May result in negative effects as a result of loss of important habitat (including potentially for bats and birds); direct mortality and/or displacement of species during construction.

**Changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction (temporary) and operation (permanent)** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

## WATER ENVIRONMENT

### Description of Baseline Information

One active water abstraction license is identified 0.6km northwest of the scheme, which is allocated for the nurseries in Pinhoe for general agricultural purposes. The source of water is from a borehole.

One pollution incident to controlled water sources occurred in proximity to the scheme, including:

- Category 3 (minor incident) located 0.25km northwest of the scheme involving the discharge of crude sewage into the Clyst catchment (1994) due to a mechanical/electrical plant failure.

The Pin Brook lies north of the scheme and flows west to east to the River Clyst via an open channel. The Pin Brook is classified a "main river" by the Environment Agency.

The scheme lies within a Flood Zone 1 area, as described in Works Package 1.

The scheme lies 0.07km south of a Flood Zone 2 area, and 0.15km south of a Flood Zone 3 area, generated from Pin Brook.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The study area is underlain by a designated Minor Aquifer, which consists of variably permeable formations that are important for local water supplies and supplying base flow to rivers.

Two existing South West Water distribution mains exist within proximity to the scheme: one aligned north to south along the east side of the M5; and one aligned east to west along Tithebarn Lane.

Two discharge consents exist in proximity to the scheme, including:

- Bovis Homes Ltd for the discharge of mine/groundwater to the Clyst catchment as raised from multiple domestic properties located 0.15km northwest of the scheme; and
- South West Water for sewage discharges from a pumping station to the River Exe located 0.2km northwest of the scheme.

### Potential Impacts / Sensitive Receptors

Potential impacts to the water environment surrounding the scheme during the construction phase may include:

- Risk of pollution resulting from accidental spillages; and
- Deterioration of groundwater quality from accidental spillages.

It is expected that no additional impacts to the water environment will occur during the operation phase.

Potential impacts to the water environment will be temporary, localised, of negligible significance, and relatively easily to mitigate. Provided that best practice measures are implemented, it is assumed that there will be no major adverse residual effects to the water environment associated with the scheme.

A direct discharge to Pin Brook is not acceptable with the exception of an emergency overflow. Surface water discharge should generally be achieved through infiltration techniques.

## PLANNING / INTEGRATION

### Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

### Potential Impacts / Sensitive Receptors

The scheme is in-keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

**Work Package 4: Early completion of 450m of bus priority link road within the Exeter Science Park site.**

Work Package 4 is currently being assessed under the Town and Country Planning (EIA) (England and Wales) Regulations (1999), and an Environmental Statement will be produced in summer 2009, as part of the outline planning application for the proposed Exeter Science Park development.

## **NOISE**

### Description of Baseline Information

The noise climate in the area is currently dominated by the M5 and the A30. Aircraft on approach to and departing from Exeter airport also contribute significantly.

### Potential Impacts / Sensitive Receptors

The nearest sensitive receptors are residential dwellings along Blackhorse Lane.

The early completion of the bus priority link road will have the effect of making the associated noise impact occur earlier than it would otherwise have done. These likely impacts are described as follows:

Construction noise has been assessed as likely to have only a very minor adverse effect due to the large distance to receptors, the already high background noise level in the area and the temporary and changing nature of construction noise. However if a large amount of construction traffic is to use Tithebarn Lane this could significantly increase the impact during the construction phase.

Any increase in traffic flows along Tithebarn Lane resulting from the improvements would be expected to increase the ambient noise level in the area. A 25% increase in traffic flow is likely to lead to an increase in noise of 1dB over the area. Consideration should also be given to the wider impact of any shifts in the pattern of traffic flow associated with this work package.

New sections of road may pass close to residential receptors at the western end of Blackhorse Lane, potentially leading to an impact at these locations.

## **LOCAL AIR QUALITY / GREENHOUSE GASES**

### Description of Baseline Information

The study area is not within an air quality management area. Local monitoring in the vicinity shows air quality is good in this area, with no exceedences of the objectives at relevant receptors.

### Potential Impacts / Sensitive Receptors

There is one receptor within 200m of the new link road at the junction between Blackhorse Lane and Langaton Lane. This road will act as a bus route through the Exeter science park. Once the operational phase of the science park has commenced it is expected that twelve buses per hour will use this route as an extension to the existing bus routes, causing potential deterioration in air quality at this receptor.

This work package has the potential to increase greenhouse gases due to the increase in vehicle miles travelled by the new bus routes, however improved public transport may encourage the use of these forms of transport instead of cars which could lead to a decrease in greenhouse gas emissions from traffic. The increase in greenhouse gas is potentially offset by the modal shift.

## **LANDSCAPE / TOWNSCAPE / ARBORICULTURE**

### Description of Baseline Information

The study area does not contain any statutory or non-statutory landscape designations. The East Devon Area of Outstanding Natural Beauty lies approximately 8 km to the south and east.

It lies within Devon County Council's Exeter and Estuary Fringe Landscape Character Zone, as described in Works Package 1.

The site lies to the east of the M5 within undulating arable land from where there are views of the hills and open countryside to the north and east of Exeter, including Killerton and Ashclyst Forest (National Trust property), and residential development at Pinhoe to the west. The field pattern is characterised by relatively large, rectangular enclosures that may have been laid out between C15th – C18th. The fields through which the proposed route passes and Tithebarn and Blackhorse Lanes are enclosed by Devon hedges. The Redhayes estate lies to the south west of the proposed route and is enclosed by mature woodland, over-mature ornamental planting, a formal avenue and Devon hedges. Despite the relatively high ambient noise level there is a sense of remoteness and tranquillity in this rural area away from the M5.

#### Potential Impacts / Sensitive Receptors

The proposed route would introduce a new road and associated traffic into an area of rural and comparatively tranquil landscape. However, it forms part of a north west - south east transport link within the proposed development of Exeter Science Park which would result in a major change to the character of the surrounding landscape. The road would be constructed at an early stage of the development and its greatest impact on local landscape character would be temporary and would occur following construction and prior to development of adjacent phases of the UESP for a period of approximately 5 years.

It would fragment the existing field pattern leaving a narrow strip and triangular area of land adjacent to Langaton Lane that would not be viable for arable farming. It would cut through Devon hedges along Blackhorse Lane and Tithebarn Lane and one field boundary, which would have an adverse impact on the existing vegetation / field pattern. To comply with East Devon District Council Policy D4 (Landscape Requirements) this should be compensated for by new hedgerows incorporated elsewhere on the site so that they would be integrated with the development and landscape framework for the UESP. It is recommended that crossing points are designed to cut through the least valuable sections of Devon hedges and to avoid removal of hedgerow trees. It is also recommended that the alignment of the road along Tithebarn Lane allows for the retention of the Devon hedge on the northern side to provide screening and enclosure to the new route. Exposed end sections of hedgebanks should be made good with turf and appropriate planting.

There would be a loss of tranquillity in the vicinity of Langaton Lane due to increased traffic activity.

### **HERITAGE OF HISTORIC RESOURCES**

#### Description of Baseline Information

There are no Scheduled Monuments, Registered Parks and Gardens, Historic Battlefields, Local Based Designations (such as Areas of Archaeological Priority and Conservation Areas) within the study area.

The area is believed to have been used since the Iron Age. Several sites and artefacts of archaeological interest have been identified within 300m of the route, many of which are of Medieval, Roman or Iron Age.

A number of artefacts have been found in the area north of Blackhorse Lane, across which the Link Road would be constructed, and it has a good potential to contain as yet unfound archaeological deposits. However, as this area is mainly arable land, it is likely that several decades of farming have destroyed shallower artefacts, although deeper artefacts may still remain in a good state of preservation due to the lack of previous development in the area.

Blackhorse Lane is a hollow way, believed to date to the medieval period, and potentially to the Roman period.

Devon hedges either side of Blackhorse Lane and in the agricultural land to the north are historic landscape features and may be considered as 'Important' under the Hedgerows Regulations 1997.

### Potential Impacts / Sensitive Receptors

As grounds works are required, further finds of archaeological interest during construction are possible due to known Iron Age and roman activity in the activity.

The route of the Link Road cuts through Blackhorse Lane. It is possible that artefacts or earlier road surfaces will be unearthed during construction.

Some of the hedgebanks are considered as 'Important' under the Hedgerows Regulations 1997. EDDC must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

Further archaeological investigations would be required prior to construction. An archaeological watching brief would be required. Mitigation would have to be agreed with Devon CC.

## BIODIVERSITY

### Description of Baseline Information

The baseline information is as described for Works Package 1.

### Potential Impacts / Sensitive Receptors

The habitats comprising the proposed Scheme consist predominately of arable land with species-rich and species-poor hedgerow boundaries.

Surveys carried out for neighbouring developments have indicated the presence of breeding birds, dormice, badgers, reptiles and invertebrates in the surrounding area.

**Permanent and temporary land-take for the road; supporting infrastructure; contractors' compounds and temporary access roads** - May result in negative effects as a result of loss of habitat; fragmentation of species and/or habitats; direct mortality of species during clearance; and displacement of adjacent reliant species.

**Permanent and temporary changes to the visual, lighting, air quality, noise and vibration baselines as a result of construction and operation** - May result in the disturbance and displacement of adjacent species and/or damage to adjacent ecologically sensitive receptors.

**Temporary construction compounds – storage of materials, and permanent increase in hard surfaces – run off** - May result in increased potential for pollution incidences (direct mortality) and damage to adjacent ecologically sensitive receptors.

**Permanent change to Physical and Natural Environment** - The new road will fragment arable land and potentially result in increased isolation of habitats and species.

## WATER ENVIRONMENT

### Description of Baseline Information

Two existing South West Water distribution mains exist within proximity to the scheme: one aligned north to south along the east side of the M5; and one aligned east to west along the south side of Blackhorse Lane.

Two pollution incidents to controlled water sources occurred in proximity to the scheme, including:

- Category 3 (minor incident) located 0.1km southwest of the intersection of Langaton Lane & Blackhorse Lane involving the discharge of a pollutant into the Clyst catchment (1995); and
- Category 3 (minor incident) located 0.2km northeast of scheme involving the discharge of a pollutant into the Tidal Exe catchment (1992).

The scheme comprises mainly of agricultural land and allotments, and is considered to be a Greenfield site.

The Pin Brook lies north of the scheme and flows west to east to the River Clyst via an open channel. The Pin Brook is classified a "main river" by the Environment Agency.

The scheme lies within a Flood Zone 1 area.

The scheme lies 0.2km south of a Flood Zone 3 area, generated from Pin Brook.

The scheme is not situated within a groundwater SPZ. The scheme lies within a groundwater NVZ.

The scheme is underlain by three different Vulnerability Zones including a designated Major Aquifer (highly permeable), Minor Aquifer (variably permeable), and a non-aquifer (negligible permeability). Major Aquifers may support large abstractions for public water supply and other purposes. Minor Aquifers are important for local water supplies and supplying base flow to rivers. Non aquifers contain insignificant quantities of groundwater.

Potential Impacts / Sensitive Receptors

Impacts are similar to those from Works Package 1. In addition, there is the potential for change to surface water drainage patterns during operation of the scheme (may affect flood risk elsewhere in the catchment).

A direct discharge to Pin Brook is not acceptable with the exception of an emergency overflow. Surface water discharge should generally be achieved through infiltration techniques.

**PLANNING / INTEGRATION**

Description of Baseline Information

Several National and Regional Plans and Strategies apply to the scheme, as listed in Works Package 1.

Potential Impacts / Sensitive Receptors

The scheme is generally in keeping with the policies and guidance in the above documents, regarding improving accessibility through integrated transport systems, improved public transport, cycling and walking facilities.

However, policies state that developments must not harm the landscape, cultural heritage or environment of an area, and must maintain local character.

The scheme integrates well with the proposed Science Park, as it forms part of the transport infrastructure of the completed Park.

## **CONCLUSION / FURTHER WORKS REQUIRED**

### **Noise**

There is potential for some noise impacts to result at the construction stage of all four Work Packages.

During operation, impacts are expected to be minimal for Works Packages 1, 2 and 3. However, Works Package 4 has potential for adverse impacts during operation, due to traffic movements. This is further assessed within the Environmental Statement for the proposed Exeter Science Park development which will be produced in summer 2009.

### **Local Air Quality / Greenhouse Gases**

There is potential for some air quality impacts to result at the construction stage of all four Work Packages.

During operation, impacts are expected to be minimal for Works Packages 1, 2 and 3. However, Works Package 4 has potential for adverse impacts during operation, due to traffic movements. This is further assessed within the Environmental Statement for the proposed Exeter Science Park development which will be produced in summer 2009.

### **Landscape / Townscape / Arboriculture**

The bridge proposed in Work Package 1 and the link road proposed in Work Package 4 would be prominent in the local landscape. However, these would be part of the cumulative effects of the Exeter Science Park Scheme.

### **Heritage of Historic Resources**

Due to known historic activity in the area dating back to the Iron Age, there is potential for archaeological artefacts to be discovered during construction. Consultation with a Devon County Council Archaeologist, and a watching brief, will therefore be required.

If the hedgebanks are considered 'Important' under the Hedgerows Regulations 1997, East Devon District Council must be notified before these are removed, and may serve a hedgerow retention notice to the effect that the hedgerow should not be removed. In particular, this may be a limitation for Works Package 2.

### **Biodiversity**

The potential for the Works Packages to impact on protected species will be established through timely surveys for breeding birds, dormice, badgers, reptiles and invertebrates. Appropriate licences would be obtained, as required, prior to construction.

### **Water Environment**

There is potential for some water quality impacts to result at the construction stage of all four Work Packages.

However, Works Package 4 has potential for adverse impacts during operation, due increased hard standing. The impacts of this are further assessed within the Environmental Statement which will be produced in summer 2009, as part of the outline planning application for the proposed Exeter Science Park development.

Consultation with the Environment Agency is required to determine if a Flood Risk Assessment is necessary for the scheme as a whole.

### **Planning / Integration**

So long as appropriate mitigation measures are put in place, the scheme is generally in keeping with National, Regional and Local Planning Policies, and integrates well with other proposed developments.

If the whole scheme is taken forward, a more detailed environmental assessment of all four Works Packages will be required.