BANWELL BYPASS

Environmental Statement

HIF Banwell Bypass and Highways Improvements Project

Environmental Statement Chapter 2 - Scheme Description

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Contents

2 Scheme Description

2.1 Chapter Introduction

2.1.1 This chapter provides an overview of the Scheme location, context and objectives together with a detailed description of the Scheme, This forms the basis for the environmental impact assessment provided in this Environmental Statement (ES).

2.1.2 The Scheme falls within Schedule 2 of the EIA Regulations as it has been identified as having the potential for significant adverse effects on the environment. Measures have been incorporated into the design of the Scheme to avoid or reduce potential adverse environmental effects. These include embedded and essential mitigation measures as outlined in Section 2.7 and included in the Planning Document – Environmental Masterplan (EMP) Drawings. In some cases, these measures may result in enhancement of environmental conditions.

2.1.3 ES Volume 1 Chapter 2 - Scheme Description and ES Volume 1 Chapter 3 - Alternatives considered, together with the subsequent topic chapters, provide the data and information required to identify and assess the likely significant effects of the Scheme in accordance with EIA Regulations (see ES Volume 1 Chapter 4 - Planning Framework).

2.1.4 Reference to chainage (e.g. Ch. 1+075) refers to the distance east from the western end of the Scheme. The chainages are marked on the Planning Document - General Arrangement Drawings in 100m divisions.

Scheme overview

2.1.5 The following section provides a brief description and overview of the Banwell Bypass and Highways Improvements Project.

2.1.6 The Scheme would comprise the following distinct elements:

a) a bypass of the village of Banwell (referred to as the "Banwell Bypass");

b) a route connecting the A371 at Castle Hill and the A368 at East Street (referred to as the "Southern Link"); and

c) Mitigation and enhancement measures, which broadly consist of the following:

- *Environmental mitigation and enhancement measures in connection with the Banwell Bypass and the Southern Link*, examples of which include (but are not limited to) flood compensation areas, planting and habitat creation, attenuation basins etc.
- *Placemaking improvements within Banwell*, comprising mitigation and enhancement measures to the public realm; and
- *Improvements to the wider local road network* in Sandford, Churchill and Winscombe.

2.1.7 Together, these elements comprise the "Scheme". Each element as listed is described in more detail through this ES chapter.

Site Location

2.1.8 The whole Scheme would lie within the administrative area of North Somerset Council (NSC). The National Grid References (NGR) for the various limits of the proposed elements of the Scheme are as shown in Table 2 - 1 along with the corresponding document references.

Table 2 - 1 Scheme Location

Scheme Element	NGR Extents	NGR Extents	Document reference
Banwell Bypass	Eastern E338465, N159306	Western E340625, N159317	Planning Document - General Arrangement Drawings (Sheets 1-6) & Planning Document - Environmental Master Plan (EMP) drawings (Sheets 1-6)
Southern Link	Northern E340089, N158719	Southern E340338, N159142	Planning Document - General Arrangement Drawings (Sheets 5) & Planning Document - Environmental Master Plan Drawings (EMP) (Sheets 5)
Banwell Village Placemaking	Eastern E338587, N159313	Western E340044, N159078	Planning Document - Placemaking site layout Drawings (Sheets 1-9)
Improvements to the wider road network	Eastern E340783, N159366	Western E344758, N159816	Planning Document - Wider Road network and communities' mitigation measure site layout drawings. (Sheets 1-13)

Planning permission and land acquisition

2.1.9 This ES has been submitted alongside and in support of a Planning Application, in accordance with the Town and Country Planning Act 1990. Planning will need to be granted before any works as part of the Scheme can be commenced, alongside satisfying any conditions imposed as part of the Planning Permission.

2.1.10 Some of the land required for the Scheme is already in the ownership of NSC, with the remainder due to be assembled, preferably through voluntary acquisition. It is, however, possible that a Compulsory Purchase Order (CPO) may be required to assemble any land and rights that cannot be acquired voluntarily. It is also likely that a Side Roads Order (SRO) will be required.

Need for the Scheme

2.1.11 As outlined in section 2.1, this ES has been prepared to support the planning application for the Scheme. The Planning Document - Planning Statement has been prepared and provides the full need for the Scheme, with the following section providing a summary.

2.1.12 Banwell has experienced the negative impact of traffic congestion on its local community, economy, and environment since the 1930s. These problems have worsened over the years

as new developments have brought increased population and traffic to the area in combination with rising numbers of car ownership and economic factors. To tackle these long-standing issues, a bypass to the north of Banwell, including a Southern Link Road, is proposed.

2.1.13 The A371 corridor through Banwell provides important local and regional connectivity. Congestion through the village causes journey time delays and uncertainty. This in turn, has economic, transport, cultural, environmental impacts to the area and the wider network. The Scheme would strive to address these needs. The impact on these factors is described further in Table 2 - 2.

Table 2 - 2 Summary of existing problems and who is affected.

Category	Description of problem	Who is affected or concerned?
Economic	Productivity in the South West is restricted by poor connectivity	Businesses and people in the South West of England.
	Economic growth is constrained by traffic congestion, delay, and unreliable journey times.	Local area, SW England, UK generally.
	Tourism and the visitor economy are harmed by congestion and unreliable journey times.	Local area, SW England, UK generally.
	Lack of infrastructure that can enable future housing development (subject to the Local Plan).	Local area, SW England.
Environment	Traffic causes severance, visual intrusion, poor air quality and noise in the village of Banwell.	Local community, visitors.
	Traffic has a negative visual impact upon the surrounding countryside and Mendip Hills AONB.	Local area, visitors.
	Forecasted traffic would increase greenhouse gases through Banwell.	Local area, visitors.
	Climate emergency and decarbonisation of infrastructure.	Local area, SW England, UK generally.
Social and Cultural	Traffic has an adverse impact on local communities.	Local communities.
	Traffic has an adverse impact on the townscape of Banwell.	Local area, visitors.
Transport	Lack of capacity on the existing section of highway which goes through Banwell leads to congestion and delay.	Users of A368 and A371.

Category	Description of problem	Who is affected or concerned?
	Poor journey time reliability makes it difficult to plan journeys.	Users of A368 and A371.
	Lack of active travel and sustainable travel between local villages and Weston-super Mare.	Users of A368, A371 and local communities.

2.1.14 These problems with the existing highway network through Banwell and connectivity for the south west generally have been recognised through strategies and policies (see ES Volume 1 Chapter 4 - Planning Framework).

2.1.15 Funding for the Scheme is from Homes England's Housing Infrastructure Fund (HIF) to deliver the essential infrastructure needed to benefit existing communities and support the delivery of 7,557 new homes.

2.1.16 4,482 of these new homes will be located at the existing Weston Villages development sites of Haywood Village and Locking Parklands where homes are already under construction. The location of the remaining homes will be decided through the emerging Local Plan process.

2.1.17 Whilst the Local Plan and subsequent future housing still needs to go through a process to become adopted policy, the Scheme is vital to support its delivery as it improves access to homes, employment, and education in the area.

2.2 Scheme Objectives and Environmental Vision

Objectives

2.2.1 NSC's overall objectives for the Scheme (which must be delivered within cost, quality, and programme targets) are to:

a) Improve the local road network to deal with existing congestion issues.

b) Improve and enhance Banwell's public spaces by reducing traffic severance and improving the public realm.

c) Provide the opportunity to increase active and sustainable travel between local villages and Weston-super-Mare.

d) Deliver infrastructure that enables housing development (subject to the Local Plan).

e) Ensure the development respects the local area and minimises visual impact upon the surrounding countryside and Mendip Hills Area of Outstanding Natural Beauty (AONB).

f) Innovative and be efficient in reducing and offsetting carbon from the design and construction of the infrastructure.

g) Ensure the development provides the opportunity to increase Biodiversity Net Gain by at least 10%.

h) Proactively engage with stakeholders in a way that is both clear and transparent.

2.2.2 The Planning Document - Planning Statement, which should be read alongside this ES, explains how the Scheme performs against and addresses the above objectives.

Environmental Vision

2.2.3 At the beginning of the Scheme design, the Scheme objectives were considered alongside the Environmental aims of the project. The following Environmental Vision was created, which has been used to focus the development of the Scheme.

We have a vision of implementing an integrated infrastructure Scheme that delivers landscape scale enhancement that is resilient to future challenges and that will provide connectivity for people, the landscape, fauna, and flora. We want to achieve this whilst:

a) Conserving and re-enforcing the special character of the Mendip Hills Area of Outstanding Natural Beauty (AONB);

b) Creatively minimising environmental impact and developing effective mitigation within a framework of at least 10% biodiversity net gain;

c) Maintaining and improving the water environment;

d) Protecting and enhancing the townscape of Banwell with a focus on its valuable cultural heritage;

e) Delivering the foundation for active and sustainable modes of travel and future placemaking;

f) Improving the quality of life and creating climate resilience for the local communities and encouraging partnerships in the delivery and management of the wider scheme elements.

We will take a Carbon led approach to delivery, with carbon considerations being at the forefront of all decision making for user, maintenance, and construction emissions.

2.3 Site and Environmental Context

2.3.1 The following section provides and overview of the site of the Scheme and the environmental context. It is separated into different sections which link to specialist topic chapters within the ES, with references provided.

Banwell village and surrounding area

2.3.2 Banwell is a village and civil parish in North Somerset, its population is 2,929 (according to 2011 Census). The centre of Banwell village is designated as a Conservation Area.

2.3.3 Banwell Village is located approximately 6km east of Weston-super-Mare and 28km southwest of Bristol. There are several villages in the vicinity of Banwell, including Sandford and Winscombe to the east and Locking and Hutton to the west. The immediate surrounding land use is predominately agricultural, with the Mendip Hills Area of Outstanding Natural Beauty (AONB) to the south of the village.

2.3.4 The nearest railway stations are Worle Station and Weston Milton Station, both on the Weston-super-Mare to Bristol line, which are approximately 4 and 5km northwest respectively. Weston-super-Mare main line station is 6.5km to the northwest. Bristol Airport is 12km northeast of the village.

Existing road network

2.3.5 Image 2 - 2 shows the village of Banwell and surrounding road network.

West of Banwell

2.3.6 To the west of Banwell the M5 runs in a north-south alignment. To the northwest of Banwell junction 21 of the M5 connects to the A370 providing east-west connections to the strategic traffic route for freight and commuting traffic. Approximately 3km southwest of the junction the A370 connects to the A371 via a 4-arm roundabout.

2.3.7 To the west of Banwell, the A371 forms three roundabout junctions. Airport Roundabout is the most western point of the A371 which joins with Moor Lane and the A370. Just 250m south of this, the A371 forms a roundabout with Beaufighter Road and The Runway which links to the settlement Bourneville. A further 350m to the southeast, the A371 forms a roundabout with Weston Business Park and Laney's Drove which leads to Acorn and Oaktree camping parks.

2.3.8 To the east of these roundabouts, the A371 connects to Locking via Elm Tree Road and Old Banwell Road priority T-junctions. A recently constructed signal-controlled junction is located further east, providing access to committed housing scheme alongside a new spine road towards Churchland Way. Beyond this junction, the A371 forms a priority-controlled junction with Banwell Road.

2.3.9 Generally, the A371 is a single carriageway with speed limit that varies from 30mph through Banwell and Winscombe villages, 50mph from the east of Banwell to Banwell Road and 60mph from Airport Roundabout to Knightcott Road.

Banwell

2.3.10 The A371 runs through the centre of Banwell in an east-west alignment from Winscombe, approximately 3.1km southeast of Banwell, to Airport Roundabout in Weston-super-Mare, approximately 5.1km northwest of the village.

2.3.11 Less than 400m east of the M5 overpass, the A371 forms two junctions with Summer Lane travelling north to Wolvershill Road and Well Lane travelling south to Banwell Tower and Christon. Both of these are priority junctions join the A371 in a 40mph zone, of which the Summer Lane junction has a narrow pedestrian footway on each side.

2.3.12 Providing access to Way Wick and the A371 to Banwell, Summer Lane and Silver Moor Lane both form priority T-junctions with Wolvershill Road.

2.3.13 Within Banwell, the A371 narrows to a single lane on Castle Hill just east of the junction with the A368 East Street/High Street. Along this section, priority is afforded to southeast-bound vehicles. Similarly, a section of the A371 West Street between the Emery Gate and Church Street priority junctions also narrows to a single lane. These sections of the A371 are referred to as the Banwell Narrows. Refer to Image 2 - 1 below.

2.3.14 At certain times of the day these single lane sections of the carriageway causes congestion, journey time delays, and uncertainty. Traffic growth on the A371 has been limited compared to other A road's around Bristol due to the narrows. This data is shown in Planning Document – Strategic Model Forecast Report.

2.3.15 To the west of the Banwell Narrows, the A371 forms a priority T-junction with Wolvershill Road. Running from Churchland Way to the A371 in Banwell, Wolvershill Road provides access to Wolvershill and Banwell from the A370 Somerset Avenue. It is

a single carriageway road with multiple minor roads contributing to it via small priority T-junctions. To the west of the M5 overpass, Wolvershill Road forms a roundabout with Scot Elm Drive and Derek Mead Way.

2.3.16 Within Banwell, the A371 also forms junctions with Church Street and the A368 towards Sandford. Church Street is a narrow two-way street leading to Riverside and Rolstone and has a 7.5 tonne weight limit and a vehicle width restriction of 2m. Vehicles exiting Church Street have very limited visibility due to surrounding buildings and the narrow junction, and therefore must take extra care when turning onto the A371.

2.3.17 Seven collision were recorded at this junction within the most recent five-year period, of which six involved a pedestrian.

A371 - Winscombe

2.3.18 To the southeast of Banwell, the A371 routes through Winscombe and the A38 beyond. Throughout Winscombe, numerous minor roads form priority T-junctions with the A371. To the west of Winscombe, the A371 forms a junction with Church Road.

2.3.19 To the west, the A371 narrows when passing under the Strawberry Line railway bridge. Priority signs are provided at both sides of the tunnel, giving priority to westbound road users.

2.3.20 In central Winscombe, the A371 Woodborough Road makes a sharp bend which forms junctions with Sandford Road and Hillyfields Way. Sandford Road provides a link to Sandford whilst Hillyfields Way is a no-through road providing access to a free 51-space car park.

2.3.21 To the east of Winscombe, the A371 Sidcot Lane forms a signal-controlled junction with the A38 Bristol Road and A38 Bridgwater Road. A turning area is provided for vehicles turning right onto Sidcot Lane and Fountain Lane (a one-way minor road).

A368 – Sandford and Churchill

2.3.22 The A368 is a single carriageway road that runs from Banwell village to the A39 at Marksbury, to the west of Bath. It runs through the Churchill Junction (A38/A368) and provides access to the settlements of Sandford and Churchill.

2.3.23 The Churchill junction (A371/A38) is a large signal-controlled crossroads with signalised pedestrian crossings provided on the east, south, and west arms and advanced cycle lines on the A38 entries.

2.3.24 The A368 forms a priority junction Hillier's Lane to the west of Churchill. It is understood that Hillier's Lane is used for school buses associated with Churchill Academy and Sixth Form.

2.3.25 When passing through Sandford village, the A368 intersects Nye Road, which travels to Nye and Puxton to the north, and Hill Road, which provides access to Winscombe.

2.3.26 Further information relating to the traffic flows and journey times along the existing roads are provided in Section 2.5 Table 2 - 7 to Table 2 - 13.

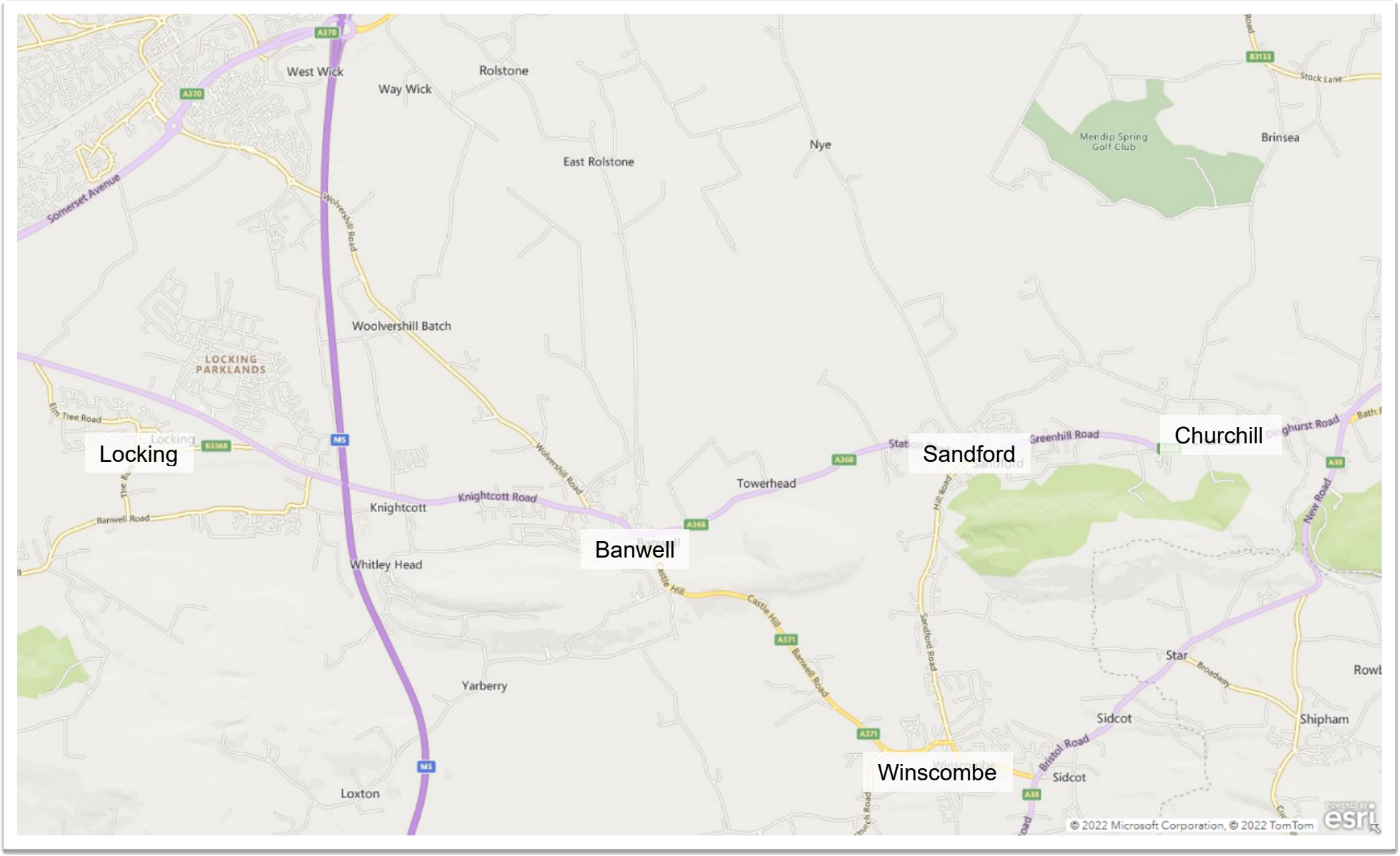

Image 2 - 1 The Wider Network around Banwell.

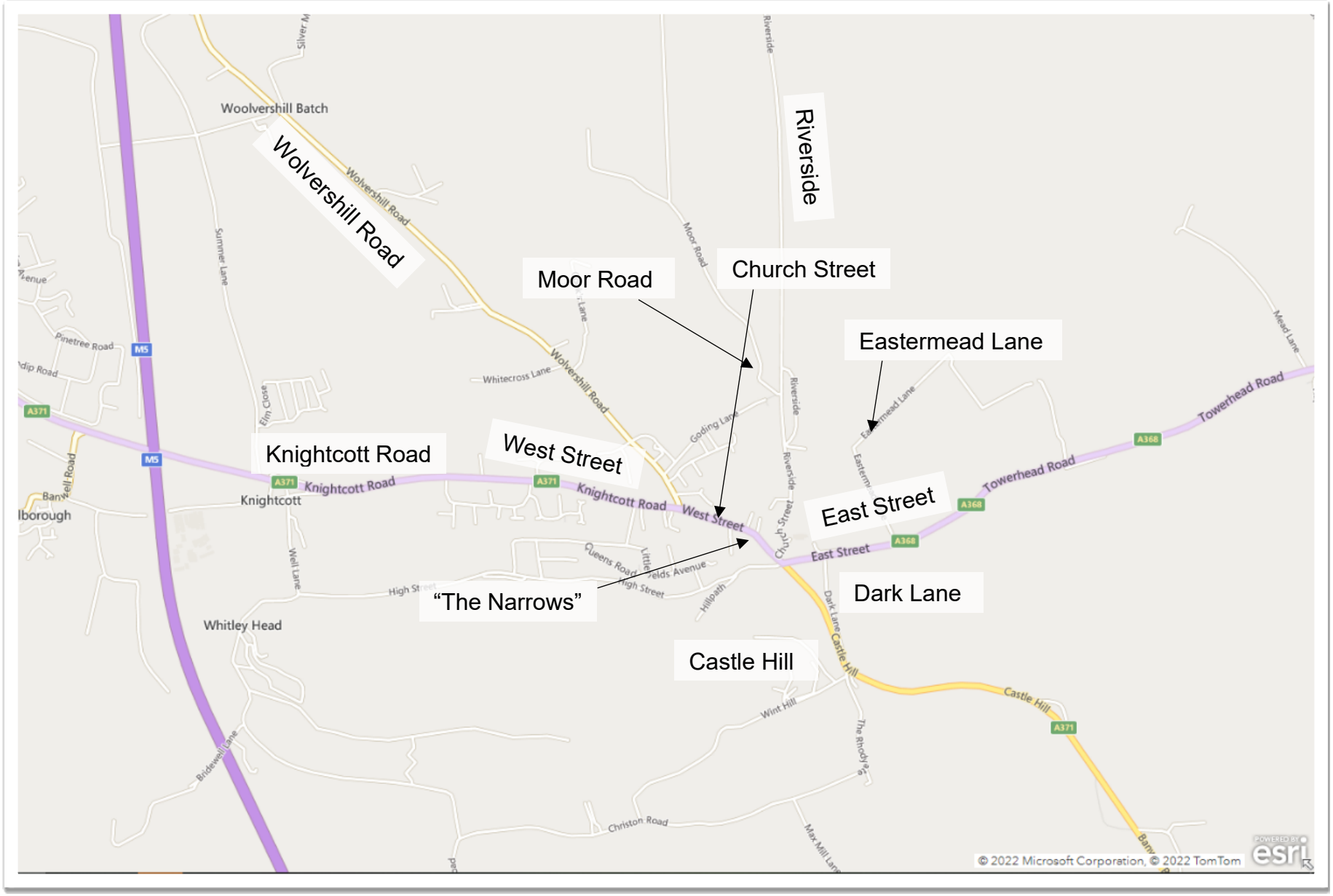

Image 2 - 2 Banwell Village.

Cultural heritage

2.3.27 The landscape around Banwell village has been inhabited and exploited for thousands of years. The North Somerset Levels, which the Scheme would cross, were laid down during the human occupation of this landscape. The dryland areas were inhabited, and the wetland areas exploited, throughout the Iron Age and Romano-British period. Most of the older houses in the village are post-medieval in date, but it is likely many hide medieval origins.

2.3.28 There are five Scheduled Monuments in the vicinity of the Scheme, the closest of which is a Romano-British villa. There are numerous Grade I, II* and II listed buildings within Banwell and its vicinity and the centre of Banwell is designated as a Conservation Area. The levels have potential buried archaeological value, especially within the wet/dry interface of the flood plain. These features are shown on the Environmental Constraints Plan in ES Volume 2 Figure 7.2 – Environmental Constraints.

2.3.29 For further details refer to ES Volume 1 Chapter 6 – Cultural Heritage.

Landscape context

2.3.30 Banwell lies to the immediate north of the Mendip Hills Area of Outstanding Natural Beauty (AONB); part of the Scheme would be within the boundary of the AONB. The A368 forms the northern boundary of the AONB whilst the A371 between Banwell and Winscombe passes through the AONB. This is shown on the Environmental Constraints Plan in ES Volume 2 - Figure 7.2 – Environmental Constraints.

2.3.31 While the Mendip Hills AONB is not a designated International Dark Sky Reserve (IDSR), it is well known for its dark sky environment. An environment which is becoming rarer due to increasing light pollution.

2.3.32 To the north of Banwell are the North Somerset Levels, characterised by flat open landscape of arable land divided by ditches and rhynes. Much of the land north of Banwell is agricultural land with the Land Classifications varying between Grade 1 and Grade 4 (1- best quality and 5 - poorest).

2.3.33 To the east of Banwell, north of the A368 (Towerhead Road) lies a 7.2 MW photovoltaic power station (Banwell Solar Farm) owned by Aquila Capital, operational since 2015. For further details refer to ES Volume 1 - Chapter 7 – Landscape.

Ecology and designated sites

2.3.34 The area provides habitat for a variety of protected and notable species including dormouse, grass snakes, otter, badger, kingfisher, and several species of bat.

2.3.35 Ecological designations within the Banwell area are listed in Table 2 - 3 below. Other designated sites in the locality include ancient woodland, the River Banwell and the network of rhynes and grassland. This is shown on the Environmental Constraints Plan in ES Volume 2 - Figure 7.2 – Environmental Constraints.

Table 2 - 3 Ecological designations

Site Name	Approximate distance/ orientation	Description
North Somerset and Mendip Bats SAC	Adjacent to Scheme	With caves supporting hibernating Greater Horseshoe (*Rhinolophus ferrumequinum)* and Lesser Horseshoe (*Rhinolophus hipposideros)* bat populations.
Severn Estuary Ramsar	5.7km west	These habitats support nationally important flora species, invertebrates, and birds at levels of national importance. Fish species of international importance are also present.
Severn Estuary SPA	5.7km west	This site is of European importance for wintering birds
Mendip Limestone Grassland SAC	2.5km south west	Semi-natural dry grasslands and scrubland facies on calcareous substrates *(Festuco-Brometalia)* (*Important orchid sites) Functionally linked to the North Somerset and Mendip Bats SAC.
Mells Valley SAC	27km south east	Semi-natural dry grasslands and scrubland facies on calcareous substrates *(Festuco-Brometalia)(*Important orchid sites) Functionally linked to the North Somerset and Mendip Bats SAC.
Exmoor and Quantock Oakwoods SAC	28.7km south west	It supports Barbastelle Bat (*Barbastella barbastellus) and* Bechstein's bat (*Myotis bechsteinii*) populations
Banwell Ochre Caves SSSI	Immediately south of Banwell.	The caves are important breeding and hibernation sites for Greater Horseshoe bats and lesser horseshoe bats. Site overlaps with North Somerset and Mendip Bats SAC.
Banwell Caves SSSI	0.5km south	The caves are used as a hibernation site by Greater Horseshoe Bats. Site overlaps with North Somerset and Mendip Bats SAC.
Max Bog SSSI	1.2km south	Max Bog is a calcicolous lowland mire with adjacent wet neutral grassland. Both vegetation

Site Name	Approximate distance/ orientation	Description
		types are nationally rare. This site is one of only four localities in Britain for the rare grass species *Gaudinia fragilis*.

2.3.36 Additional information on protected species and habitats can be found in ES Volume 1 - Chapter 8 - Biodiversity.

Water environment context

2.3.37 Major surface water features within the Scheme area are the River Banwell and Towerhead Brook. The River Banwell is a "Main River", and the source of the River Banwell Estuary, which flows northwards through the area immediately adjacent to the left verge of Riverside (road) and then continues northwest to outfall via the New Bow Sluice to the Bristol Channel approximately 8km north of Banwell. The Towerhead Brook to the east of Banwell, is a large Rhyne which flows northward on the edge of the area and then continues northeast to the Oldbridge River.

2.3.38 The area consists of three catchment areas, the first covering the west of the Scheme shown in Image 2 - 3, the second covering Image 2 - 4 and the third covering the east shown in Image 2 - 5.

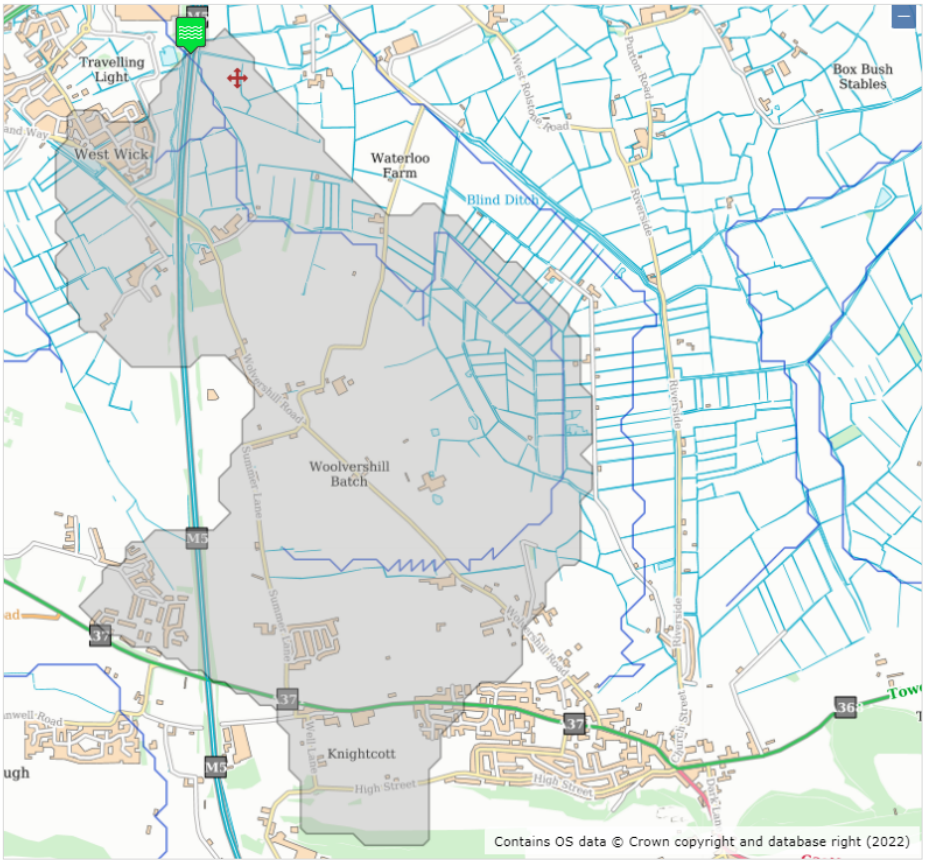

Image 2 - 3 Western Catchment Extents (source fehweb.ceh.ac.uk/)

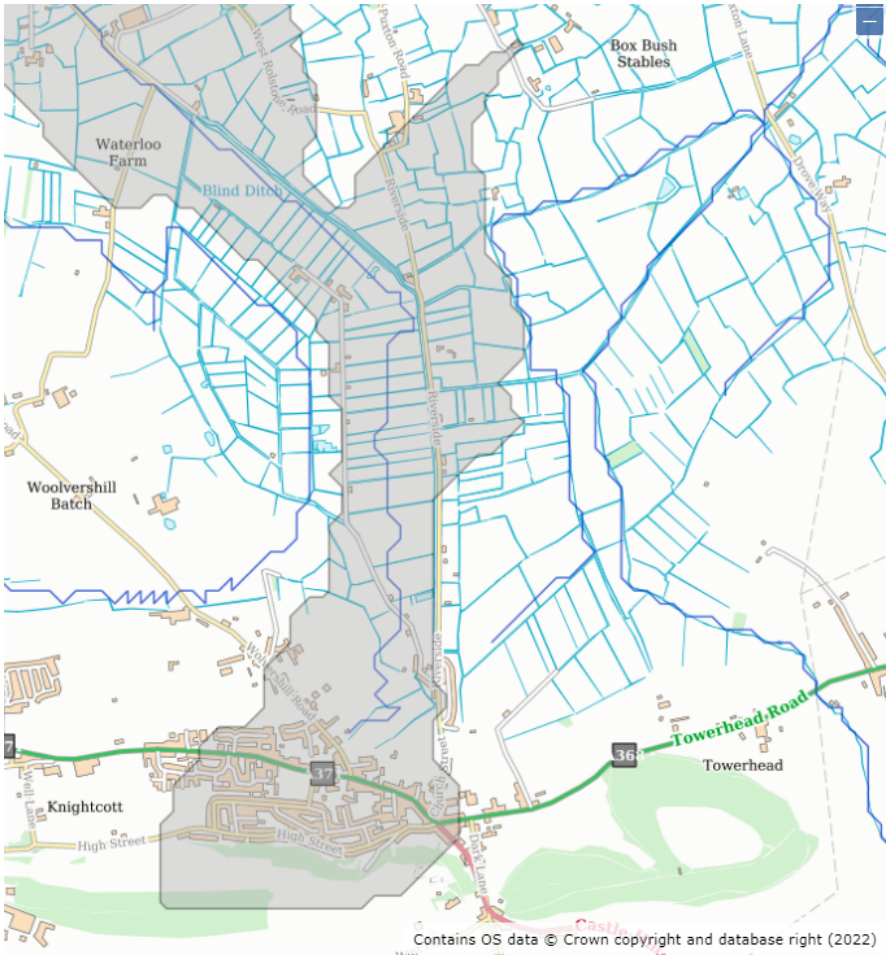

Image 2 - 4 Central Catchment Extents (source fehweb.ceh.ac.uk/)

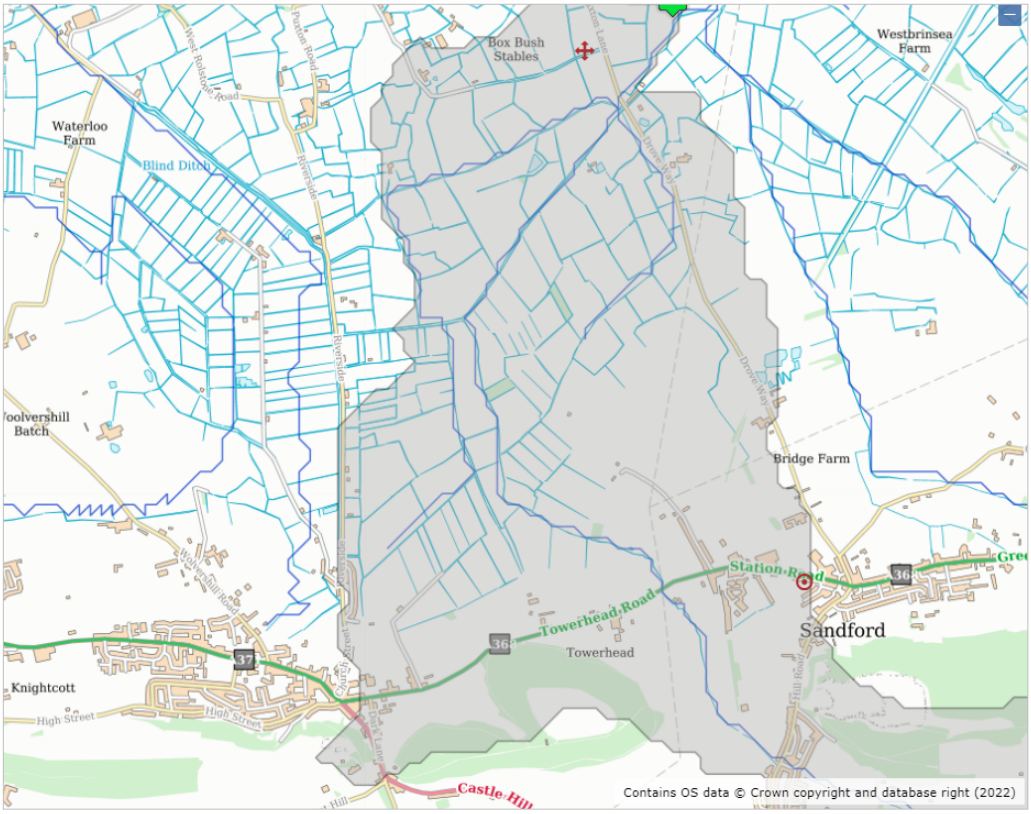

Image 2 - 5 Eastern Catchment Extent (source fehweb.ceh.ac.uk/)

2.3.39 The Old Yeo Rhyne is a drain flowing adjacent to Moor Road. The drain network across the area conveys surface water runoff to the River Banwell and Towerhead Brook, that ultimately convey water northwest towards the Bristol Channel.

2.3.40 The Wallymead Rhyne is a tributary of the Old Yeo Rhyne and drains from west to east. It serves a largely rural catchment with an approximate area of 2.10km^2. Towerhead Brook flows in a general north-westerly direction beneath the A368 to the east of Banwell, discharging to the Liddy Yeo Rhyne approximately 1.5km north of Banwell. The Scheme area is served by a complex network of land drains, as shown in blue on Image 2 - 4– Image 2 - 5 which convey surface water runoff to the River Banwell and ultimately convey water northwest towards the Bristol Channel.

2.3.41 The Scheme would be within an area at risk of flooding, with much of the area designated as Flood Zone 3 (>1% annual probability of river flooding), with peripheral areas designated a Flood Zone 2 (0.1-1% annual probability of river flooding).

2.3.42 For further details refer to ES Volume 1 - Chapter 13 – Road

Drainage and the Water Environment.

Geology and ground conditions

Ground conditions

2.3.43 From the Ground Investigation (GI) undertaken as part of the development of the Scheme, Superficial Tidal Flat Deposits were encountered, which comprise “soft, silty clay with layers of sand, gravel and peat”.

2.3.44 Shallow resting groundwater was identified, approximately 1m below ground level. Artesian groundwater (groundwater above ground level) was encountered within the North Somerset Levels, confined below the superficial Tidal Flat Deposits.

2.3.45 There is a fault line present, approximately 350m northwest of Wolvershill Road (Court Farm) at its closest proximity to where the Banwell Bypass would run.

2.3.46 A review of designations in the Somerset Minerals Plan indicates that the Scheme lies outside of any designated Mineral Safeguard Areas. Further details can be found in ES Volume 1 - Chapter 9 - Geology and Soils

Source Protection Zone

2.3.47 A groundwater Source Protection Zone (SPZ) is located to the south Banwell as shown on the Environmental Constraints Plan in ES Volume 2 - Figure 7.2 – Environmental Constraints. SPZ’s are ground water bodies that are designated and protected to limit pollution as they are used for potable water. The south 335m of the Southern Link would sit in the inner protection zone, zone 1 (SPZ1). The northern part of the Southern Link, and the south of the Banwell Bypass from chainage 2800 would be in the subsurface activity (Zone 1 SPZ1 - subsurface activity). Both SPZs are associated with the Banwell Spring. Further details to be found in ES Volume 1 - Chapter 9 – Geology and Soils and ES Volume 1 - Chapter 13 – Road Drainage and the Water Environment.

Historic landfill

2.3.48 A historical landfill is located within the Scheme area adjacent to Riverside, it is understood to likely to contain a variety of materials and is known to have accepted between 1919 and 1985. This is shown on ES Volume 2 - Figure 7.2 – Environmental Constraints. A licence was obtained for disposal of inert industrial and licenced waste (i.e. hazardous waste) in 1979 after 60 years of uncontrolled disposal. The completed GI

has encountered made ground that has been interpreted as the landfill material (typically a soft to firm gravelly clay with gravel and frequent fragments of glass, plastic, porcelain, metal, brick, limestone, and concrete) to a depth of 2.5m outside the historical landfill boundaries.

2.3.49 A second historic landfill site is to the south of Banwell, west of Castle Hill, approximately 170m from the proposed Southern Link. For more information refer to ES Volume 1 - Chapter 9 - Geology and Soils and ES Volume 1 - Chapter 13 - Road drainage and water environment.

Air and noise quality

2.3.50 There are no Air Quality Management Areas (AQMAs) in North Somerset or neighbouring Sedgemoor District Council. There was no identified exceedance for nitrogen dioxide for the last three monitored years (2017-2019) or particulate matter (PM_{10} and $PM_{2.5}$) in the area. Additional information can be found in ES Volume 1 - Chapter 5 – Air Quality.

2.3.51 There is a group of residential receptors located to the west of the M5, on Trenchard Road which form a noise important area within the area for noise. Current noise levels within Banwell village are relatively high, in excess of 68 LA10,18h dB. For further details refer to ES Volume 1 - Chapter 11 – Noise and Vibration.

Public Rights of Way

2.3.52 There are 26 recorded Public Rights of Way (PRoW) within 500m of the Scheme. The PRoW network is used for a variety of purposes, such as leisure and access to facilities within Banwell. This includes an extensive bridleway network, particularly to the north of Banwell, with high numbers of equestrians utilising routes on PRoW and quiet lanes. These are shown on the Environmental Constraints Plan in ES Volume 2 - Figure 7.2 – Environmental Constraints.

Existing walking and cycling network

2.3.53 To the west of Banwell (A371) there is a segregated shared-use footway/cycleway towards Locking and Weston-super-Mare on the northern side of the carriageway only. There are two existing crossing facilities to the west of Banwell in the form of lit pedestrian refuge islands. Street lighting is present along the A371 carriageway.

2.3.54 Along A371/A368 through Banwell - For the majority of the rural

sections of the A371 and A368 at the outskirts of the village there is a footway on one side of the carriageway only. Throughout the urban section of the A371 through Banwell footways are generally present on both sides of the road. The width of footways varies considerably, generally being wider to the west and east, narrowing towards to the centre of the village near the primary school, including sections with no footways at all through 'the narrows'. Some areas of vegetation overgrowth were noted.

2.3.55 Banwell also has limited crossing facilities for pedestrians with the longest spacing between two crossing points at 500m apart. Pedestrian crossing facilities in the urban setting consists of zebra crossings, with Belisha beacons, road zebra demarcation, and tactile paving for the visually impaired.

2.3.56 A371 towards Sandford – there is no pedestrian route along the rural section of the A371 between Sandford and Banwell, with no footways on Castle Hill or Banwell Road.

2.3.57 A368 Towerhead Road (east of Banwell) & Sandford – For the majority of the A368 around Sandford there is a footway on both sides of the carriageway. There are no footways between Banwell and Sandford. Within Sandford, there are two signalised pedestrian crossings (pelican crossings) with demarcation and tactile paving for the visually impaired located within the village centre, including one by the primary school.

2.3.58 An additional crossing facility (toucan crossing) is located on the western end of Sandford which facilitates crossing of the A368 for users of the Strawberry Line (National Cycle Network route 26).

2.3.59 There are two 'missing links' in the footway network, including near the Railway Inn public house (by the Thatchers Brewery) on the northern side of the carriageway, and outside the village hall. With the exception of a small number of localised narrow sections, the condition of the pedestrian facilities in Sandford was generally good.

2.3.60 A368 Dinghurst Road (Churchill) - There is a significant lack of pedestrian facilities along the majority of A368 Dinghurst Road in both directions, with tall stone walls and vegetation from properties extending right up to the edges of the carriageway. There is no continuous footway route between Sandford and Churchill junction (A38/A368), with pedestrians required either to use grass verges (where available), or parallel roads with lower traffic flows (Front Street, Churchill Green etc).

2.3.61 Churchill Junction (A38/A368) - Existing footways on either side

of the Churchill Junction (A38/A368) west arm are evident on the approach, with one footway continued until the Beeches and the other footway being stopped up past the junction arm to provide access to a limited number of properties.

2.3.62 A signalised two-stage crossing with tactile paving and safety barriers is provided at the west arm of Churchill Junction (A38/A368). There is an existing footway that runs along the approach north arm at Churchill Junction (A38/A368) with an uncontrolled crossing at the turn off road east towards Bath. There are no crossing facilities for pedestrians to cross the A38 north arm carriageway.

2.3.63 An uncontrolled two-stage pedestrian crossing with a refuge island is present at the A368 east arm of Churchill Junction (A38/A368).

2.3.64 There is a two-stage signalised pedestrian crossing with tactile paving and safety railings present across the A38 south arm of Churchill Junction (A38/A368).

2.3.65 The condition of some of the pedestrian facilities around Churchill Junction (A38/A368) was poor in some areas and in need of updating or more regular maintenance, including cutting back of vegetation.

2.3.66 Winscombe - Footways are narrow in areas, particularly on sections of the A371 in the centre of the village outside of the local shops. On Sidcot Lane at the east of the village, footways are only present on the north of the carriageway. Formal crossing facilities are limited, with only a single zebra crossing between The Lynch and Sandford Road.

2.3.67 Sandford Road / Hill Road - There are a number of breaks in footway continuity, with pedestrians frequently required to cross from one side of the carriageway to the other. with a lack of crossing facilities beyond dropped kerbs.

2.3.68 The Walking, Cycling and Horse-Riding (WCH) assessment carried out for the Scheme considered a study area of 5km from the Scheme, including Banwell, Sandford, Winscombe and Churchill. Further details can be found in ES Volume 1 - Chapter 12 – Population and Human Health and Planning Documents - Walking, Cycling and Horse-riding Assessment and Review Report, which provides greater detail on specific routes.

Local schools

2.3.69 There are several primary and secondary schools which are used by residents within the Scheme area.

2.3.70 Banwell Primary School is located on A371 West Street, and is generally accessed by foot or by car from the A371, or the rear entrance from Littlefields Avenue. Levels of cycling to the school are currently very low, based on surveys completed by the school.

2.3.71 Sandford Primary School is located on the A368 Greenhill Road, and is generally accessed by foot or by car from the A368. Local bus stops are located directly outside of the school.

2.3.72 Winscombe Primary School is located on Moorham Road, to the east of Sandford Road. Hill Road and Sandford Road form key walking routes to the school (and others), with car trips also used for pick-up/drop-off.

2.3.73 Secondary schools are located in Churchill and Weston-super-Mare accessed by Car, bus or by bicycle and foot. Routes to Churchill Academy on foot include Churchill Green, Front Street and public footpaths between Church Lane and Sandford. Hilliers Lane is utilised as a school bus waiting area due to the limited number of bays within the school itself. Pick-up/drop-off activity by car takes places on a number of the surrounding local roads. Details on bus routes are provide in Table 2 - 4.

Table 2 - 4 School transport routes

School Route	Number of Pupils	No of routes
Mainstream	143	6
Broadoak Academy	1	1
Churchill Academy	142	5

2.3.74 A Planning application has been submitted ahead of programme seeking to build an expansion of Winterstoke Hundred Academy on a new site at Locking Parklands.

2.4 Scheme Development

2.4.1 The design has been developed by the Alun Griffiths (Contractors) team (AGC Team) following the announcement of the route alignment in October 2021. The Scheme has been designed in accordance with North Somerset Highways Development Guide and the Design Manual for Roads and Bridges (DMRB) and other relevant standards.

2.4.2 The key features of the Banwell Bypass and the Southern Link are highlighted in Table 2 - 5 and Table 2 - 6 below and are shown on the six drawings contained in the Planning Document – General Arrangement Drawings.

Table 2 - 5 Banwell Bypass Components

Feature	Description / Overview
Length	3.3km (A371 Summer Lane to A368 Towerhead road)
Carriageway	Single carriageway
Major cuttings	a) Wolvershill Road Junction (Ch, 0+750) to Chainage 1+070
Major Embankments	b) Banwell West Junction to Wolvershill Road Junction (Ch. 0+000 to Ch. 0+750) c) Chainage 1+070 to the A368 Tie-in (Ch.3+060)
Junctions	a) Summer Lane Junction (Signalised) b) Banwell West Junction (Roundabout) – Ch. 0+000 c) Wolvershill Junction (Signalised) - Ch. 0+750 d) Banwell East Junction (Signalised) – Ch. 2+900
Accesses and Side Road Amendments	a) Field access off of Banwell West Junction- Ch. 0+000 b) Stonebridge Farm (across Wolvershill Junction)- Ch 0+750 c) Moss Land north of solar park to provide access to agricultural land. d) Moor Road (Ch. 1+770 to Ch. 1+940) – a side road connection between the existing Moor Road and Riverside.
Road Crossings	a) Riverside Road (Ch. 1+940)
Watercourse Crossings/ Culverts	a) Wallymead Rhyne – culvert 1 (Ch. 0+550) b) Mammal Pipe – culvert 2 (Ch. 1+120) c) Wallymead Rhyne – culvert 3 (Ch. 1+380) d) Unnamed watercourse - culvert 4 (Ch. 1+670) e) Old Yeo Rhyne – culvert 5 (Ch. 1+770) f) Unnamed Rhyne (Ch. 1+930) g) Banwell River (Ch. 1+940) h) Unnamed watercourse – culvert 6 (Ch. 2+130) i) East Mead Rhyne – culvert 7 (Ch. 2+310) j) Unnamed watercourse - culvert 8 (Ch. 2+580) k) Unnamed watercourse – culvert 9 (Ch. 2+720)
Major Structures	a) Banwell River Bridge (Ch. 1+940)

Feature	Description / Overview
	b) Moor Road to Riverside Bridge (Ch. 1+930) c) Moor Road Retaining Wall (Ch. 1+800) d) Culvert crosses of watercourses (as listed above). The layout of the major culverts can be seen in Planning Document – Culvert Drawings
Drainage Attenuation Basins	a) Attenuation Basin 1a and 1b – Ch. 0+500 and 0+600 (south of road) b) Attenuation Basin 2 – Ch. 1+600 (north of road) c) Attenuation Basin 3 – Ch. 2+280 (north of road) d) Attenuation Basin 4 - Ch. 2+340 (south of road)
Flood Mitigation Storage areas	a) Stonebridge Farm – Ch. 0+500 (north of road) b) Moor Road North - Ch. 1+500 (north of road) c) Moor Road South - Ch. 1+740 (south of road)
Speed limit	The Banwell Bypass would be subject to a mandatory 40mph speed limit.
Lighting	The Banwell West Junction (Roundabout) and Wolvershill Road Junction (signalised) would be lit. No other road/street lighting is proposed.
Bus Stops	There are three bus stops on Knightcott Road in the area of Summer Lane that would be affected by the Scheme. a) Westbound bus stop opposite Summer Lane – re-provided as part of the Scheme. b) Eastbound bus stop, opposite Well Lane – re-provided as part of the Scheme. c) Westbound bus stop 200m east of Well Lane (known as Boulters) – removed as part of the Scheme. shared use path provides alternative connectivity to provided Well Lane bus stops. No new bus stops would be provided on the Banwell Bypass. Bus routes would be through Banwell village (not using Bypass).
Active Travel	A three metre wide shared use path provided along the majority of the Banwell Bypass providing a link from Weston-super-Mare to Sandford. Details of crossing points along the proposed Banwell Bypass route are as follows: a) **Summer Lane Junction** - Signal controlled crossing at Summer Lane Signalised junction (north/south) for pedestrian, cyclist and equestrian use. The signalised crossing also provides for pedestrian/cyclist east/west crossing of Summer Lane and Wells Lane. b) **Banwell West Junction** - Uncontrolled pedestrian & cyclist crossing at Banwell West Junction (Roundabout)- Ch. 0+000. c) **Wolvershill Road Junction** - Signal controlled pedestrian, cycle and equestrian crossing at Wolvershill Road junction (north/south and east/west) – Ch. 0+750. d) Uncontrolled pedestrian crossing (with central island) - Ch. 1+490

Feature	Description / Overview
	e) Moor Road – shared use path linking to Moor Road (north of Banwell Bypass). f) Riverside – shared use path linking to River Side (north of Banwell Bypass) g) Uncontrolled pedestrian, cyclist and equestrian crossing (with central island) – Ch. 2+270 between Eastermead Lane and Banwell Bypass northern shared use path.
Departures from Standard	There are several Departures from Standard included in the design to minimise the impacts of the Banwell Bypass. These are: a) Banwell Bypass Mainline Cross-Section (reduced carriageway width) b) Banwell Bypass Application of Superelevation (reduced cross fall on bends)

Table 2 - 6 Southern Link Components

Feature	Description / Overview
Length	0.63km (including junction link to Banwell Bypass)
Carriageway	Single carriageway
Major cuttings	Northern half of Southern Link (Ch. 0+300 to Ch. 0+600)
Major Embankments	Southern half of Southern Link (Ch. 0+100 to Ch. 0+300)
Junctions	a) Banwell Bypass East Junction (Signalised)- Ch. 0+630 b) Southern Link / Banwell Village Junction (T Junction) - Ch. 0+470
Accesses	a) Re-provided property accesses at Castle Hill (Ch. 0+030 to Ch. 0+060) b) Field access (Ch. 0+130 of Banwell East Junction approach)
Road Crossings	No Road Crossings proposed
Watercourse Crossings	No Watercourse Crossings
Major Structures	No Major Structures
Drainage Attenuation Basins	a) Attenuation Basin 5 – Ch. 0+500 b) Attenuation Basin 6 – Ch. 0+400 (Banwell Village Link)
Flood Mitigation Storage areas	None proposed on the Southern Link.
Speed limit	The Southern Link would be subject to a mandatory 30mph speed limit.
Lighting	The Southern link would not be lit except at Castle Hill where the proposed road ties into the existing A371 Road.
Bus Stops	None proposed on the Southern Link.
Active Travel	Active travel links from Dark Lane at Caste Hill (no through traffic).

Feature	Description / Overview
Departures from Standard	There are several Departures from Standard included in the design to minimise the impacts of the Banwell Bypass. These are: a) Southern Link Cross-Section (reduced carriageway width) b) Combination of reduced horizontal and vertical geometry in combination with reduced stopping sight distance (tying into the existing carriageway at Castle Hill.

2.5 Scheme Proposals

Design speed and traffic flows

2.5.1 The alignment of new lengths of road is designed to a 'design speed'1. This design speed is typically stated in kilometres per hour (kph) and is generally slightly higher than the posted speed limit for a road (given in miles per hour (mph)). This provides a small margin for vehicle speeds in excess of the posted speed limit.

2.5.2 The design speed of the Banwell Bypass would be 70kph and subject to a 40mph (64kph) speed limit. Side roads would be in keeping with the existing local road network. The design speed of the Southern Link would be 50kph and subject to a 30mph (48kph) speed limit.

2.5.3 Traffic modelling has been undertaken to understand the current and future traffic flows. The Planning Document -Transport Assessment contains the output of the traffic modelling. The following section provides an overview of these traffic flows and Table 2 - 7 provides a description of what years and scenarios that have been considered.

2.5.4 Table 2 - 8 provides a summary of the all vehicle Annual Average Daily Traffic (AADT) flow on the road network in the Base Year (2018), the Opening Year (2024) and the Design Year (2039) with and without the scheme.

2.5.5 Table 2 - 9 provides a summary of the annual average daily HGV traffic flow on the road network in the Base Year (2018), Opening Year (2024) and the Design Year (2039) with and without the scheme. HGVs are defined as large transit vans and vehicles larger than this.

2.5.6 Table 2 - 10 and Table 2 - 11 provide a summary of the all vehicle AM and PM peak hour traffic flow for Base Year (2018), Opening Year (2024) and Design Year (2039) with and without the scheme.

2.5.7 Table 2- 12 and 2 - 13 provide a summary of average journey times in AM and PM peak hours across key links of the network with and without the scheme.

2.5.8 The information presented in Table 2 - 8 to Table 2 -13 is from the scenarios without wider mitigation. They correspond to the scenarios used in the Traffic Forecasting Report contained in Planning Document -Transport Assessment Appendix F – Strategic Model Forecasting Report.

2.5.9 For comparison, Table 2 - 14 to Table 2 - 17 provide a summary of the traffic flow as a result of the Scheme with and without wider mitigation as shown on Planning Documents – Wider mitigation measures drawings and as described in this ES chapter:

a) Table 2 - 14 all vehicle AADT flow;

b) Table 2 - 15 annual average daily HGV traffic flow;

c) Table 2 - 16 all vehicle AM peak hour traffic flow; and

d) Table 2 - 17 all vehicle PM peak hour traffic flow.

Table 2 - 7 Model Scenarios and Assessment Years

Base Year (2018)	To examine the performance of the existing highway network within the study area, prior to any changes being implemented.
Opening Year (2024)	To examine the performance of the highway network within the study area after planning approval and upon opening of the Scheme. This scenario does not include HIF enabled development or other emerging Local Plan allocations. It includes local highway improvements that are planned to be delivered (eg A38 Major Road Network project). It would include committed development that would be completed by this date.
Design Year (2039)	For cumulative impact assessment (combined impacts of future development) post HIF enabled development delivery. This is done to understand the impacts, with and without the Scheme alongside and in combination with other projects and developments that are planned to be delivered over the time period. This scenario includes further development beyond 2024, including potential emerging Local Plan housing allocations in North Somerset.
Do Minimum	The do minimum scenarios does not include the Scheme. It is to show what the future impacts are without the Scheme. The potential emerging Local Plan housing is included, but the potential HIF enabled development is spread across North Somerset. All scenarios would be subject to Trip End Model Presentation Program (TEMPRO) growth, which provides generalised traffic growth projections and is developed by the Department for Transport (DfT).
Do Something	The do something scenario without wider mitigation includes the Scheme. It is to show, what the future impacts are with Scheme. The quantum of emerging Local Plan housing is the same as the Do-Minimum scenario, except the potential HIF enabled development is located in the Banwell area. All scenarios would be subject to TEMPRO growth. The Do-Something Scenarios do not include any wider mitigation measures within the current draft model, but do include Banwell village 20mph speed limit (see Placemaking proposals).
Do Something with wider mitigation	The do something scenario with wider mitigation includes the scheme and wider mitigation measures as shown on Planning Documents – Wider mitigation measures drawings and as described in this ES Chapter.

Table 2 - 8 A summary of the total Annualised Average Daily Traffic (AADT) Year (2018), Opening Year (2024) and Design Year (2039).

Location	Direction	Base Year (2018)	Opening Year 2024		Difference from Do Minimum	Design Year 2039		Difference from Do Minimum
			Do Minimum	Do Something		Do Minimum	Do Something	
A371 West of Banwell Road (Locking)	Eastbound	5115	6497	6680	3%	7286	10379	42%
	Westbound	4558	5786	5991	4%	6182	9393	52%
A371 Banwell - Between Wolvershill Road and Riverside	Eastbound	6652	7216	1327	-82%	8365	2004	-76%
	Westbound	6214	6607	1701	-74%	6834	2489	-64%
Bypass Western Section	Eastbound	n/a	n/a	5593	n/a	n/a	9235	n/a
	Westbound	n/a	n/a	4931	n/a	n/a	8844	n/a
Bypass Middle Section	Eastbound	n/a	n/a	7391	n/a	n/a	9145	n/a
	Westbound	n/a	n/a	6384	n/a	n/a	7631	n/a
Bypass Eastern Section	Eastbound	n/a	n/a	7391	n/a	n/a	9145	n/a
	Westbound	n/a	n/a	6384	n/a	n/a	7631	n/a
Wolvershill Road North of Bypass	Northbound	2469	2339	3343	43%	2645	5850	121%
	Southbound	2431	2657	3688	39%	3464	6709	94%
Riverside North of Banwell	Northbound	1215	1300	1242	-4%	1586	1761	11%
	Southbound	1464	1570	1407	-10%	1704	1457	-14%
Southern Link West of Banwell Junction / Castle Hill	Northbound	3662	4036	3828	-5%	4891	4827	-1%
	Southbound	3621	3939	4499	14%	4035	5525	37%
Hill Road South of A368 (Sandford)	Northbound	1034	1078	1209	12%	1255	1341	7%
	Southbound	903	975	1063	9%	1529	1243	-19%
A368 West of A38 (Churchill)	Eastbound	4823	5010	5682	13%	5590	6767	21%
	Westbound	4373	4613	5382	17%	5195	6354	22%
A371 West of Sandford Road (Winscombe)	Eastbound	1973	2393	2870	20%	2404	3821	59%
	Westbound	2243	2636	2394	-9%	3437	3305	-4%
Church Road (Winscombe)	Northbound	1511	1508	1541	2%	1612	1677	4%

		Base	Opening Year 2024		Difference	Design Year 2039		Difference
	Southbound	1739	1654	1737	5%	1788	1859	4%
A368 (Sandford) East of Eastern Bypass Junction	Eastbound	3912	4062	5046	24%	4206	6254	49%
	Westbound	3740	3920	5006	28%	3916	6121	56%
North South Link Road (A371 Locking to Churchland Way)	Northbound	n/a	4726	4538	-4%	6199	7679	24%
	Southbound	n/a	4504	4238	-6%	5458	6637	22%

Table 2 - 9 Existing and Predicted Heavy Goods Vehicle Flows: A summary of the annual average daily HGV flow in the Base Year, Opening Year and Design Year.

Location	Direction	Base Year (2018)	Opening Year 2024		Difference from Do Minimum	Design Year 2039		Difference from Do Minimum
			Do Minimum	Do Something		Do Minimum	Do Something	
A371 West of Banwell Road (Locking)	Eastbound	208	233	230	-2%	296	355	20%
	Westbound	139	145	144	-1%	202	226	12%
A371 Banwell - Between Wolvershill Road and Riverside	Eastbound	338	342	62	-82%	373	91	-76%
	Westbound	259	250	40	-84%	270	58	-79%
Bypass Western Section	Eastbound	n/a	n/a	215	n/a	n/a	298	n/a
	Westbound	n/a	n/a	172	n/a	n/a	259	n/a
Bypass Middle Section	Eastbound	n/a	n/a	298	n/a	n/a	334	n/a
	Westbound	n/a	n/a	218	n/a	n/a	260	n/a
Bypass Eastern Section	Eastbound	n/a	n/a	298	n/a	n/a	334	n/a
	Westbound	n/a	n/a	218	n/a	n/a	260	n/a
Wolvershill Road North of Bypass	Northbound	89	85	95	12%	72	126	75%

Location	Direction	Base Year	Opening Year 2024		Difference from Base	Design Year 2039		Difference from Base
	Southbound	100	101	132	30%	75	156	106%
Riverside North of Banwell	Northbound	0	0	0	0%	0	0	0%
	Southbound	0	0	0	0%	0	0	0%
Southern Link West of Banwell Junction / Castle Hill	Northbound	67	64	59	-9%	65	66	1%
	Southbound	95	97	98	1%	84	126	49%
Hill Road South of A368 (Sandford)	Northbound	24	24	26	8%	30	31	5%
	Southbound	28	29	32	11%	33	36	11%
A368 West of A38 (Churchill)	Eastbound	226	223	244	10%	261	281	8%
	Westbound	200	196	191	-2%	250	240	-4%
A371 West of Sandford Road (Winscombe)	Eastbound	11	13	13	5%	12	40	235%
	Westbound	8	9	7	-23%	17	16	-5%
Church Road (Winscombe)	Northbound	59	55	52	-6%	49	51	5%
	Southbound	84	84	84	0%	73	86	18%
A368 (Sandford) East of Eastern Bypass Junction	Eastbound	229	225	262	16%	231	297	29%
	Westbound	200	196	200	2%	230	250	9%
North South Link Road (A371 Locking to Churchland Way)	Northbound	n/a	40	41	2%	80	75	-6%
	Southbound	n/a	43	43	0%	72	101	40%

Table 2 - 10 A summary of the total AM peak hour (08:00 to 09:00) flows (all vehicles) for Base Year (2018), Opening Year (2024) and Design Year (2039).

Location	Direction	Base Year (2018)	Opening Year 2024		Difference from Do Minimum	Change in vehicles per minute	Design Year 2039		Difference from Do Minimum	Change in vehicles per minute
			Do Minimum	Do Something			Do Minimum	Do Something		
A371 West of Banwell Road (Locking)	Eastbound	444	573	632	59	1.0	812	1007	194	3.0
	Westbound	432	481	508	26	0.5	378	678	300	5.0
A371 Banwell - Between Wolvershill Road and Riverside	Eastbound	565	601	124	-478	-8.0	817	314	-502	-8.5
	Westbound	502	505	149	-356	-6.0	441	210	-231	-4.0
Bypass Western Section	Eastbound	n/a	n/a	611	n/a	n/a	n/a	876	n/a	n/a
	Westbound	n/a	n/a	384	n/a	n/a	n/a	697	n/a	n/a
Bypass Middle Section	Eastbound	n/a	n/a	706	n/a	n/a	n/a	1027	n/a	n/a
	Westbound	n/a	n/a	453	n/a	n/a	n/a	356	n/a	n/a
Bypass Eastern Section	Eastbound	n/a	n/a	706	n/a	n/a	n/a	1027	n/a	n/a
	Westbound	n/a	n/a	453	n/a	n/a	n/a	356	n/a	n/a
Wolvershill Road North of Bypass	Northbound	243	240	318	78	1.5	206	448	242	4.0
	Southbound	206	214	343	129	2.0	206	666	460	7.5
Riverside North of Banwell	Northbound	117	123	123	0	0.0	144	174	30	0.5
	Southbound	125	128	99	-29	-0.5	137	71	-66	-1.0
Southern Link West of Banwell Junction / Castle Hill	Northbound	297	318	297	-21	-0.5	287	271	-16	-0.5
	Southbound	304	327	473	146	2.5	377	686	309	5.0

		Base	Opening Year 2024		Difference	Change in	Design Year 2039		Difference	Change in
Hill Road South of A368 (Sandford)	Northbound	104	107	110	2	0.0	126	120	-6	0.0
	Southbound	66	73	81	8	0.0	79	93	14	0.0
A368 West of A38 (Churchill)	Eastbound	404	413	504	91	1.5	484	719	236	4.0
	Westbound	323	310	366	56	1.0	285	315	30	0.5
A371 West of Sandford Road (Winscombe)	Eastbound	200	232	356	124	2.0	259	561	302	5.0
	Westbound	205	207	185	-21	-0.5	163	145	-19	-0.5
Church Road (Winscombe)	Northbound	101	122	122	0	0.0	140	143	3	0.0
	Southbound	113	106	128	22	0.5	134	141	7	0.0
A368 (Sandford) East of Eastern Bypass Junction	Eastbound	310	302	432	131	2.0	315	669	355	6.0
	Westbound	295	292	375	83	1.5	262	322	61	1.0
North South Link Road (A371 Locking to Churchland Way)	Northbound	n/a	589	565	-24	-0.5	719	896	176	3.0
	Southbound	n/a	266	240	-26	-0.5	445	569	124	2.0

Table 2 - 11 A summary of the total PM peak hour flows (all vehicles) for Base Year (2018), Opening Year (2024) and Design Year (2039).

Location	Direction	Base Year (2018)	Opening Year 2024		Difference from Do Minimum	Change in vehicles per minute	Design Year 2039		Difference from Do Minimum	Change in vehicles per minute
			Do Minimum	Do Something			Do Minimum	Do Something		
A371 West of Banwell Road (Locking)	Eastbound	418	506	542	36	0.5	334	684	350	6.0
	Westbound	329	459	508	48	1.0	511	784	273	4.5

		Base	Opening Year 2024		Difference	Change in	Design Year 2039		Difference	Change in
A371 Banwell - Between Wolvershill Road and Riverside	Eastbound	549	575	140	-435	-7.0	621	132	-489	-8.0
	Westbound	539	539	169	-371	-6.0	531	265	-266	-4.5
Bypass Western Section	Eastbound	n/a	n/a	422	n/a	n/a	n/a	675	n/a	n/a
	Westbound	n/a	n/a	430	n/a	n/a	n/a	792	n/a	n/a
Bypass Middle Section	Eastbound	n/a	n/a	633	n/a	n/a	n/a	575	n/a	n/a
	Westbound	n/a	n/a	682	n/a	n/a	n/a	957	n/a	n/a
Bypass Eastern Section	Eastbound	n/a	n/a	633	n/a	n/a	n/a	575	n/a	n/a
	Westbound	n/a	n/a	682	n/a	n/a	n/a	957	n/a	n/a
Wolvershill Road North of Bypass	Northbound	238	197	390	193	3.0	259	697	438	7.5
	Southbound	223	227	348	121	2.0	409	604	195	3.5
Riverside North of Banwell	Northbound	117	129	112	-17	-0.5	143	132	-10	0.0
	Southbound	125	133	116	-18	-0.5	129	138	9	0.0
Southern Link West of Banwell Junction / Castle Hill	Northbound	378	424	404	-20	-0.5	560	563	3	0.0
	Southbound	294	279	351	72	1.0	250	313	63	1.0
Hill Road South of A368 (Sandford)	Northbound	79	81	101	20	0.5	88	122	34	0.5
	Southbound	84	87	89	3	0.0	226	97	-129	-2.0
A368 West of A38 (Churchill)	Eastbound	390	407	502	95	1.5	457	520	63	1.0
	Westbound	388	412	569	157	2.5	543	765	222	3.5
A371 West of Sandford	Eastbound	156	140	213	74	1.0	116	182	66	1.0

		Base	Opening Year 2024		Difference	Change in	Design Year 2039		Difference	Change in
Road (Winscombe)	Westbound	281	321	296	-25	-0.5	459	448	-11	0.0
Church Road (Winscombe)	Northbound	103	110	115	5	0.0	113	127	14	0.0
	Southbound	143	146	145	-2	0.0	146	142	-4	0.0
A368 (Sandford) East of Eastern Bypass Junction	Eastbound	314	333	465	132	2.0	340	457	117	2.0
	Westbound	319	320	526	206	3.5	293	745	451	7.5
North South Link Road (A371 Locking to Churchland Way)	Northbound	n/a	319	309	-10	0.0	377	532	154	2.5
	Southbound	n/a	518	505	-13	0.0	343	466	123	2.0

Table 2 - 12 Journey Times in AM Peak Hour (08:00 to 09:00) shown in min:sec

Route	Direction	Opening Year 2024		Difference from Do Minimum	Design Year 2039		Difference from Do Minimum
		Do Minimum	Do Something		Do Minimum	Do Something	
A371 (Helicopter Museum roundabout to Summer Lane Junction)	Eastbound	03:27	03:34	00:07	03:53	04:42	00:49
	Westbound	03:32	03:38	00:06	03:41	08:33	04:52
Banwell Bypass (A371 Summer Lane Junction to A368 Towerhead)	Eastbound	12:18	05:15	-07:03	24:27	06:46	-17:41
	Westbound	08:49	05:48	-03:01	11:14	05:58	-05:17
A368 (Towerhead) to A38 (Churchill Gate)	Eastbound	07:09	10:26	03:17	09:25	17:00	07:35
	Westbound	05:31	05:41	00:10	05:28	05:35	00:06
A371 (Castle Hill 30mph/ 50mph sign) to A38 (Sidcot Junction)	Eastbound	04:01	04:25	00:24	04:22	11:31	07:09
	Westbound	03:20	03:21	00:00	03:19	03:22	00:02

Table 2 - 13 Journey Times in PM Peak Hour (17:00 to 18:00) shown in min:sec

Route	Direction	Opening Year 2024		Difference from Do Minimum	Design Year 2039		Difference from Do Minimum
		Do Minimum	Do Something		Do Minimum	Do Something	
A371 (Helicopter Museum roundabout to Summer Lane Junction)	Eastbound	02:52	02:55	00:03	03:03	03:15	00:13
	Westbound	02:47	02:50	00:03	03:30	03:59	00:29
Banwell Bypass (A371 Summer Lane Junction to A368 Towerhead)	Eastbound	10:28	05:23	-05:05	15:58	05:24	-10:34
	Westbound	11:57	05:38	-06:19	18:57	07:00	-11:57
A368 (Towerhead) to A38 (Churchill Gate)	Eastbound	06:55	08:13	01:18	07:11	09:45	02:34
	Westbound	05:41	06:12	00:32	05:53	06:59	01:07
A371 (Castle Hill 30mph/ 50mph sign) to A38 (Sidcot Junction)	Eastbound	04:38	05:19	00:41	05:20	05:38	00:18
	Westbound	03:28	03:28	-00:00	03:38	03:44	00:06

Table 2 - 14 A summary of the all vehicle Annual Average Daily Traffic (AADT) in Opening Year (2024) and Design Year (2039) scheme with and without wider mitigation.

Location	Direction	Opening Year 2024		Difference with mitigation	Design Year 2039		Difference with mitigation
		Without mitigation	With mitigation		Without mitigation	With mitigation	
A371 West of Banwell Road (Locking)	Eastbound	6680	6400	-4%	10379	10151	-2%
	Westbound	5991	5674	-5%	9393	9097	-3%
A371 Banwell - Between Wolvershill Road and Riverside	Eastbound	1327	1224	-8%	2004	1872	-7%
	Westbound	1701	1556	-9%	2489	2325	-7%
Bypass Western Section	Eastbound	5593	5146	-8%	9235	8968	-3%
	Westbound	4931	4500	-9%	8844	8440	-5%
Bypass Middle Section	Eastbound	7391	6815	-8%	9145	8839	-3%
	Westbound	6384	5797	-9%	7631	7072	-7%
Bypass Eastern Section	Eastbound	7391	6815	-8%	9145	8839	-3%
	Westbound	6384	5797	-9%	7631	7072	-7%
Wolvershill Road North of Bypass	Northbound	3343	3154	-6%	5850	5654	-3%
	Southbound	3688	3526	-4%	6709	6635	-1%
Riverside North of Banwell	Northbound	1242	1213	-2%	1761	1752	-1%
	Southbound	1407	1283	-9%	1457	1442	-1%
Southern Link West of Banwell Junction / Castle Hill	Northbound	3828	3786	-1%	4827	4785	-1%
	Southbound	4499	4262	-5%	5525	5622	2%
Hill Road South of A368 (Sandford)	Northbound	1209	1204	0%	1341	1284	-4%
	Southbound	1063	1023	-4%	1243	1130	-9%
A368 West of A38 (Churchill)	Eastbound	5682	5057	-11%	6767	6346	-6%
	Westbound	5382	4591	-15%	6354	5630	-11%
A371 West of Sandford Road (Winscombe)	Eastbound	2870	2605	-9%	3821	3862	1%
	Westbound	2394	2301	-4%	3305	3195	-3%
Church Road (Winscombe)	Northbound	1541	1593	3%	1677	1745	4%

		Opening Year 2024		Difference	Design Year 2039		Difference
	Southbound	1737	1765	2%	1859	1915	3%
A368 (Sandford) East of Eastern Bypass Junction	Eastbound	5046	4398	-13%	6254	5610	-10%
	Westbound	5006	4218	-16%	6121	5322	-13%
North South Link Road (A371 Locking to Churchland Way)	Northbound	4538	4538	0%	7679	7679	0%
	Southbound	4238	4238	0%	6637	6637	0%

Table 2 - 15 A summary of the annual average daily HGV traffic flow in Opening Year (2024) and Design Year (2039) scheme with and without wider mitigation.

Location	Direction	Opening Year 2024		Difference with mitigation	Design Year 2039		Difference with mitigation
		Without mitigation	With mitigation		Without mitigation	With mitigation	
A371 West of Banwell Road (Locking)	Eastbound	230	226	-2%	355	351	-1%
	Westbound	144	142	-1%	226	222	-1%
A371 Banwell - Between Wolvershill Road and Riverside	Eastbound	62	64	4%	91	93	2%
	Westbound	40	36	-10%	58	58	0%
Bypass Western Section	Eastbound	215	200	-7%	298	289	-3%
	Westbound	172	169	-1%	259	248	-4%
Bypass Middle Section	Eastbound	298	282	-5%	334	321	-4%
	Westbound	218	213	-2%	260	249	-4%
Bypass Eastern Section	Eastbound	298	282	-5%	334	321	-4%
	Westbound	218	213	-2%	260	249	-4%
Wolvershill Road North of Bypass	Northbound	95	91	-4%	126	124	-1%
	Southbound	132	130	-1%	156	151	-3%
Riverside North of Banwell	Northbound	0	0	0%	0	0	0%
	Southbound	0	0	0%	0	0	0%
Southern Link West of Banwell	Northbound	59	55	-6%	66	66	0%

		Opening Year 2024		Difference	Design Year 2039		Difference
Junction / Castle Hill	Southbound	98	100	2%	126	124	-1%
Hill Road South of A368 (Sandford)	Northbound	26	26	0%	31	32	1%
	Southbound	32	32	0%	36	34	-6%
A368 West of A38 (Churchill)	Eastbound	244	230	-6%	281	280	0%
	Westbound	191	188	-2%	240	231	-4%
A371 West of Sandford Road (Winscombe)	Eastbound	13	18	30%	40	48	21%
	Westbound	7	7	4%	16	16	2%
Church Road (Winscombe)	Northbound	52	48	-7%	51	51	-1%
	Southbound	84	82	-2%	86	76	-11%
A368 (Sandford) East of Eastern Bypass Junction	Eastbound	262	246	-6%	297	287	-3%
	Westbound	200	195	-3%	250	240	-4%
North South Link Road (A371 Locking to Churchland Way)	Northbound	41	41	0%	75	75	0%
	Southbound	43	43	0%	101	101	0%

Table 2 - 16 A summary of the all vehicle AM peak hour (08:00 to 09:00) traffic flow in Opening Year (2024) and Design Year (2039) scheme with and without wider mitigation.

Location	Direction	Opening Year 2024		Difference with mitigation	Change in vehicles per minute	Design Year 2039		Difference with mitigation	Change in vehicles per minute
		Without mitigation	With mitigation			Without mitigation	With mitigation		
A371 West of Banwell Road (Locking)	Eastbound	632	623	-9	0.0	1007	985	-22	-0.5
	Westbound	508	487	-21	-0.5	678	671	-7	0.0
A371 Banwell - Between Wolvershill Road and Riverside	Eastbound	124	109	-14	0.0	314	298	-16	-0.5
	Westbound	149	130	-19	-0.5	210	201	-9	0.0
Bypass Western Section	Eastbound	611	589	-23	-0.5	876	864	-12	0.0
	Westbound	384	351	-33	-0.5	697	678	-19	-0.5
Bypass Middle Section	Eastbound	706	680	-26	-0.5	1027	1002	-25	-0.5
	Westbound	453	417	-36	-0.5	356	322	-34	-0.5
Bypass Eastern Section	Eastbound	706	680	-26	-0.5	1027	1002	-25	-0.5
	Westbound	453	417	-36	-0.5	356	322	-34	-0.5
Wolvershill Road North of Bypass	Northbound	318	301	-16	-0.5	448	435	-13	0.0
	Southbound	343	326	-17	-0.5	666	654	-12	0.0
Riverside North of Banwell	Northbound	123	123	0	0.0	174	176	2	0.0
	Southbound	99	95	-4	0.0	71	69	-2	0.0
Southern Link West of	Northbound	297	294	-3	0.0	271	271	-1	0.0

		Opening Year 2024		Difference	Change in	Design Year 2039		Difference	Change in
Banwell Junction / Castle Hill	Southbound	473	470	-2	0.0	686	707	20	0.5
Hill Road South of A368 (Sandford)	Northbound	110	114	4	0.0	120	120	0	0.0
	Southbound	81	75	-6	0.0	93	82	-11	0.0
A368 West of A38 (Churchill)	Eastbound	504	469	-34	-0.5	719	703	-16	-0.5
	Westbound	366	314	-52	-1.0	315	275	-40	-0.5
A371 West of Sandford Road (Winscombe)	Eastbound	356	349	-7	0.0	561	583	22	0.5
	Westbound	185	180	-6	0.0	145	142	-2	0.0
Church Road (Winscombe)	Northbound	122	125	3	0.0	143	145	2	0.0
	Southbound	128	133	5	0.0	141	140	-1	0.0
A368 (Sandford) East of Eastern Bypass Junction	Eastbound	432	385	-47	-1.0	669	599	-70	-1.0
	Westbound	375	320	-55	-1.0	322	277	-45	-1.0
North South Link Road (A371 Locking to Churchland Way)	Northbound	565	565	0	0.0	896	896	0	0.0
	Southbound	240	240	0	0.0	569	569	0	0.0

Table 2 - 17 A summary of the all vehicle PM peak hour (17:00 to 18:00) traffic flow in Opening Year (2024) and Design Year (2039) scheme with and without wider mitigation.

Location	Direction	Opening Year 2024		Difference with mitigation	Change in vehicles per minute	Design Year 2039		Difference with mitigation	Change in vehicles per minute
		Without mitigation	With mitigation			Without mitigation	With mitigation		

		Opening Year 2024		Difference	Change in	Design Year 2039		Difference	Change in
A371 West of Banwell Road (Locking)	Eastbound	542	522	-19	-0.5	684	676	-8	0.0
	Westbound	508	502	-5	0.0	784	764	-20	-0.5
A371 Banwell - Between Wolvershill Road and Riverside	Eastbound	140	124	-16	-0.5	132	133	1	0.0
	Westbound	169	163	-6	0.0	265	249	-16	-0.5
Bypass Western Section	Eastbound	422	400	-23	-0.5	675	664	-11	0.0
	Westbound	430	414	-16	-0.5	792	777	-14	0.0
Bypass Middle Section	Eastbound	633	592	-41	-0.5	575	553	-22	-0.5
	Westbound	682	645	-37	-0.5	957	916	-41	-0.5
Bypass Eastern Section	Eastbound	633	592	-41	-0.5	575	553	-22	-0.5
	Westbound	682	645	-37	-0.5	957	916	-41	-0.5
Wolvershill Road North of Bypass	Northbound	390	368	-21	-0.5	697	683	-14	0.0
	Southbound	348	330	-18	-0.5	604	608	4	0.0
Riverside North of Banwell	Northbound	112	113	2	0.0	132	132	0	0.0
	Southbound	116	114	-1	0.0	138	136	-1	0.0
Southern Link West of Banwell Junction / Castle Hill	Northbound	404	417	13	0.0	563	562	-1	0.0
	Southbound	351	327	-24	-0.5	313	320	7	0.0
Hill Road South of A368 (Sandford)	Northbound	101	99	-2	0.0	122	108	-14	0.0
	Southbound	89	88	-1	0.0	97	101	4	0.0
A368 West of A38	Eastbound	502	455	-46	-1.0	520	482	-38	-0.5

		Opening Year 2024		Difference	Change in	Design Year 2039		Difference	Change in
(Churchill)	Westbound	569	507	-63	-1.0	765	727	-39	-0.5
A371 West of Sandford Road (Winscombe)	Eastbound	213	183	-30	-0.5	182	182	-1	0.0
	Westbound	296	299	3	0.0	448	440	-8	0.0
Church Road (Winscombe)	Northbound	115	125	10	0.0	127	134	7	0.0
	Southbound	145	151	6	0.0	142	150	8	0.0
A368 (Sandford) East of Eastern Bypass Junction	Eastbound	465	419	-46	-1.0	457	416	-41	-0.5
	Westbound	526	461	-65	-1.0	745	678	-67	-1.0
North South Link Road (A371 Locking to Churchland Way)	Northbound	309	309	0	0.0	532	532	0	0.0
	Southbound	505	505	0	0.0	466	466	0	0.0

Banwell Bypass

2.5.10 The Banwell Bypass would reduce traffic congestion on the A371 through Banwell Village. In the opening year (2024), there would be a total reduction of traffic of total vehicles through Banwell from 13,800 down to 3,000, which is a 78% reduction.

2.5.11 The Banwell Bypass would provide an alternative and more attractive route to drivers, allowing vehicles to travel away from the village centre and the narrow, single lane section of the A371 where traffic currently builds up.

2.5.12 Without a bypass, any housing developments built in North Somerset would exasperate the existing issues in Banwell. In 2039, without a bypass (do minimum scenario), there would be 15,200 vehicles travelling through Banwell, which is an increase of 1,400 vehicles when compared with the 2024 do minimum scenario.

2.5.13 Any future housing developments would likely generate more traffic from the new homes to access employment and business in Weston-super-Mare and the wider area. In that situation, traffic moving eastwards from Weston-super-Mare to access the A38 and A368 routes would also increase traffic and congestion issues in Banwell.

2.5.14 As such, the Banwell Bypass would prepare the local area to deal with possible impacts of future growth in North Somerset including housing within the immediate area of Banwell, which will be subject to the emerging Local Plan consultation.

2.5.15 Wolvershill Road to the north of the bypass would have an increase of traffic on opening. The traffic modelling shows that Wolvershill Road can accommodate the additional traffic.

Traffic changes on the wider network

2.5.16 As a result of the Scheme, congestion would be relieved in the centre of Banwell, which means that the A368 and A371 corridors perform as more efficient east/west links across North Somerset, resulting in additional traffic along these routes. These changes are outlined further in the following sections.

2.5.17 The findings from the traffic modelling demonstrate that the increase in traffic can be accommodated by both the A368 and A371. Road capacity is measured by a metric known as “Volume over Capacity”, which gives an indication (as a percentage) of how much demand is on a road (100% being at maximum theoretical capacity). The calculations show that in the opening year the A368 corridor with the Banwell Bypass has a maximum

of 72% (in the busiest peak) and on the A371 corridor a maximum of 45%.

2.5.18 From a road user perspective, journey times would improve along the A368 and A371 corridors. Travelling from the Helicopter Roundabout on the A371 to the A38 Sidcot Junction along the A371 would have a reduced overall journey time as a result of the Scheme. Likewise, travelling from the Helicopter Roundabout on the A371 to the A38 Churchill Junction (A38/A368) along the A368 would have an overall reduced journey time as a result of the Scheme.

2.5.19 The following paragraphs provides an overview of the expected changes of traffic as a result of the bypass in each community in the opening year (2024).

2.5.20 **Winscombe** – In the opening year (2024) there would be an increase of 230 vehicles per day from 5,030 to 5,260 along the A368, through Winscombe, because of the bypass. In the AM and PM peak hours, it is expected that there would be approximately two additional cars per minute in each direction. Church Road would see a small increase of vehicles a day from 3,160 to 3,280.

2.5.21 **Churchill** – In the opening year (2024) there would be an increase of 1,440 vehicles per day from 9,620 to 11,060 because of the bypass. In the AM peak hour of the opening year, it is expected that there would be approximately one to two additional cars per minute in each direction, and in the PM peak hour two to three, as a result of the Scheme.

2.5.22 **Sandford -** In the opening year (2024) the A368 through Sandford would experience an increase of 2,070 vehicles per day from 7,980 to 10,050 because of the bypass. In the AM peak hour of the opening year, it is expected that there would be approximately one to two additional cars per minute in each direction, and in the PM peak hour two to four, as a result of the Scheme.

Banwell Bypass description

2.5.23 The Banwell Bypass would include a 3.3km long bypass of the village Banwell, from Summer Lane (A371) in the west to Towerhead Road (A368) in the east, including a new junction and improvements at Summer Lane. The General Arrangement are shown on the six drawings contained in the Planning Document – General Arrangement Drawings.

2.5.24 The Scheme would be generally a 6.8m wide carriageway (3.4m lanes) with 1m verges. The carriageway would be locally widened around bends to allow for HGV movements. The detail of the carriageway cross sections is shown on the Typical Cross Sections in Planning Document – Typical Cross Section Drawings. The Landscaping and Environmental Mitigation can ben seen on the Planning Document – Environmental Masterplan (EMP) Drawings.

2.5.25 At the intersection between Summer Lane, the existing A371 and Well Lane a new online signalised junction would be provided. The existing junction between Well Lane and the A371 would be realigned to the west of its existing location to create a four-arm signalised junction arrangement. No footway provision would be provided on the realignment of Well Lane and would instead remain on the existing alignment. The remainder of Well Lane would not be affected. On the approach to the junction Summer Lane would be widened to provide an additional traffic lane and shared use path.

2.5.26 To the West of Banwell, a new 3-arm roundabout (Banwell West Junction) would be required (Ch. 0+000) to accommodate the Banwell Bypass; to provide access into Banwell village; and to tie into the existing A371 Knightcott Road. East of Well Lane the existing A371 would be realigned to the north of its existing location on a short curve becoming the western arm of the roundabout.

2.5.27 To the east of the roundabout the existing A371 would be realigned to the north on a short curve becoming the eastern arm of the roundabout. The existing A371 between the two arms of the roundabout would be realigned to create a T-junction with the westbound lane of the eastern roundabout arm, providing access to existing properties.

2.5.28 To the northeast of the roundabout, the Banwell Bypass would descend on embankment in a northerly direction to around Ch. 0+500, where it would then travel around a long curve through Stonebridge Farm caravan park and crossing Wolvershill Road (Ch. 0+750). Much of the Banwell Bypass would be on embankment due to its location on the floodplain. A new signalised junction (Wolvershill Road Junction) would provide a connection to the north of Wolvershill Road for all vehicles. The existing road would be widened to provide a three lane approach to the junction. No new walking and cycling path would be provided to the north of Wolvershill Road junction - signage and white lines could be used to advise cyclists to join the road. A connection to the south of Wolvershill Road would be provided for buses (via a bus gate) and for walkers and cyclists. The narrow sections of the existing Wolvershill Road to the north of Stonebridge Farm would be removed as a result of the works.

2.5.29 To the east of Wolvershill Road the Banwell Bypass would enter a cutting at Ch. 0+750 to Ch. 1+070, continuing on the same long curve. At Ch. 1+180 the road would transition on to an embankment continuing around the same curve. Sufficient road width would be provided at this location to provide a turning lane for a northern access from Banwell Bypass at Ch. 1+080 for proposed future housing (Subject to emerging local plan).

2.5.30 From Ch. 1+300 the road would continue in a generally easterly direction on embankment. It would cross Moor Road at Ch. 1+780. Moor Road is severed by the Banwell Bypass. The section of Moor Road to the south of the Banwell Bypass would be stopped-up, becoming a ‘no through road’ accessed from Riverside only, with no direct access from the Banwell Bypass. Access to Moor Road to the north would be provided via a new road connection to Riverside, running parallel to the Banwell Bypass (on the northern side of the Bypass) and crossing the River Banwell on a small bridge structure (Moor Road to Riverside Bridge (Ch.1+930)).

2.5.31 The Banwell Bypass would climb from Moor Road to where it would pass over the Banwell River and Riverside Road (Ch. 1+940) on a proposed bridge structure (Banwell River Bridge). No access from the Banwell Bypass would be provided to Riverside Road. The proposed embankment would encroach on a historic landfill site, to the south of the Banwell Bypass (Ch. 1+900).

2.5.32 Continuing east, Banwell Bypass would descend on embankment from the River Banwell and Riverside Road crossing, where it would pass to the north of a traditional orchard (Ch. 2+000) and would curve around the playing fields used by Banwell Football Club. The Banwell Bypass would then continue travelling to the south passing over Eastermead Rhyne (Ch. 2+300) and passing

to the south of an existing solar farm. The Banwell Bypass would pass over Eastermead Lane (Ch. 2+600), then climb up hill, on embankment and curves around to the east to tie in to the existing A368 Towerhead Road (Ch. 3+100) and avoid any impacts to the ancient woodland to the south of this area. A new signalised junction (Banwell East Junction) at Ch. 2+920, would provide access to the east of Banwell, tying into the Southern Link. The existing section of the A371 that would become redundant between the Banwell Bypass and Southern Link would be removed and the area landscaped.

Southern Link description

2.5.33 The Southern Link would provide a link between the eastern junction of the Bypass, to the A371 Castle Hill north of Banwell Castle; and to the A368, East Street. The Southern Link would be 0.6km in length, travelling generally in a northeast direction, from the A371 to the eastern junction of the Banwell Bypass. The Southern Link would be on embankment for the majority of its length, with a small section of localised cutting, halfway along its length.

2.5.34 The existing A371, south of Dark Lane would be realigned to head northeast and become the Southern Link. To the north of this, the A371 and Dark Lane would be stopped-up at their southern ends, with no direct vehicular access provided onto the Southern Link. Turning heads would be provided in these locations. Access to Castle Hill and Dark Lane would be retained in its current form at their northern intersection with the A368 East Street.

2.5.35 At Ch. 0+470, a T-junction would connect the A368 East Street to the Southern link by realigning the eastbound A368; providing links to Castle Hill and the eastern end of the Banwell Bypass and onto Towerhead Road and Eastermead Lane. (“Banwell Village Link”).

2.5.36 The Southern Link would be located within the Mendips AONB and in the Source Protection Zone (SPZ).

Shared use path

2.5.37 A shared use path would be provided along the Banwell Bypass from the Banwell West Junction to Eastermead Lane. This route would be a three metre wide shared use path (footway and cycleway) and would provide enhanced connectivity for pedestrians, equestrians, and cyclists alongside provision through Banwell Village. It would provide east/west connectivity from Weston-super-Mare (including the Winterstoke Hundred Academy), tying into the existing route on the A368, immediately

east of the M5 overbridge and onwards to Sandford to the east. The route would also provide connectivity to, Banwell Village, Wolvershill Road, Moor Road and Riverside as described below.

2.5.38 To the west the shared use path would run along the eastbound verge, from the A371/M5 motorway overbridge through the Summer Lane Junction to the proposed Banwell West Junction (Ch 0+000). Crossing provision at the Summer Lane Junction would include signalised crossings for pedestrian/cyclist east/west crossing of Summer Lane and Well Lane, in addition to a north/south crossing for pedestrian, cyclists and equestrian use. At the Banwell West Junction, a crossing of the A371 would allow walking and cycling access to the west of Banwell, providing cyclists from Weston-super-Mare safer access into Banwell, and linking the PROW network. This crossing point would be uncontrolled, with a separation island in the centre of the carriageway to provide refuge for those crossing.

2.5.39 The shared use path would continue to the north of the Banwell Bypass, following the bottom of the road embankment to the Wolvershill Road Junction (Ch. 0+750). Pedestrian and Cyclists crossing would be catered for at the signalised crossing, allowing access to the north of Banwell Village along Wolvershill Road.

2.5.40 The Banwell Bypass would cross an existing public footpath (AX3/6/10). This would be connected to the proposed shared use path via an uncontrolled pedestrian crossing.at Ch. 1+490. This is described further in the Public Rights of Way section of this chapter.

2.5.41 The shared use path route would continue to the north of the Banwell Bypass, following the bottom of the embankment and tops of cuttings. The shared use path would rise onto the Banwell Bypass embankment to pass over watercourse culverts. A shared use link would be provided to Moor Road, which would also provide access to Riverside.

2.5.42 The shared use path would pass over the River Banwell and Riverside Road on the Banwell River Bridge (Ch 1+940). An additional shared use link would connect the path to Riverside. It would then continue to the north of the Banwell Bypass, following the road embankment.

2.5.43 An at grade uncontrolled pedestrian, cyclist and equestrian crossing would be provided at Ch. 2+270, linking the foot and cycleway on the south bound embankment from Eastermead Lane. to re-join the northern shared use path in advance of the Solar farm. The uncontrolled crossing would have a separation island in the centre of the carriageway to provide refuge for those crossing.

2.5.44 The shared use path would deviate from the Banwell Bypass at the point where the bypass crosses Eastermead Lane (Ch. 2+575). The route would then travel northeast along an existing access track (to be upgraded) through the Solar farm, until meeting Catworthy Lane, where it would cross over into the neighbouring fields. The path would run eastwards along the northern field boundaries of the agricultural land, crossing the (temporary) National Grid Haul Road. The route would then turn south until it meets the existing A368 providing a link back into Sandford. The existing verge along the north side of the A368 at this location would be upgraded to a 3m wide shared use path (footway and cycleway). The carriageway would be narrowed to a minimum of 5.5m wide to provide sufficient width for the shared use path.

2.5.45 The improvements to the existing footway at this location would continue until meeting the existing toucan crossing outside of Mead Lane, connecting to the existing Strawberry Line cycle path. Widening the existing shared footway on both sides of the toucan crossing would provide a 3m shared use path.

Sandford

2.5.46 In Sandford there are improvements to existing sections of footway. It is proposed the footpath on the north side of the A368 outside The Railway Inn be widened into the existing verge to improve the safety of pedestrians; this is to be completed by North Somerset Council independent of the Banwell Bypass. A puffin crossing would be provided west of the crossroads junction between the A368, Hill Road and Nye Road. This would provide a safe crossing for non-motorised users and avoid the wide existing uncontrolled crossing at Hill Road.

2.5.47 The existing footpath to the east of Greenhill Lane between the A368 and Churchill Green would be upgraded to an active travel route. The route would improve active travel connections from Sandford to the west of Churchill Academy.

Churchill

2.5.48 A zebra crossing would be provided to the west of the junction between the A368 and Skinners Lane to provide safer access to bus stops and Skinners Lane.

2.5.49 The existing footway on the northbound A38 from Churchill Junction (A38/A368) to Langford is proposed to be upgraded to a pedestrian and cycle way as part of the A38 Major Road Network Scheme by others.

2.5.50 The existing footpath to the northeast of Churchill Academy

between Church Lane and Ladymead Lane would be upgraded to an active travel route. The route would improve active travel connections from Churchill to the east of Churchill Academy.

Winscombe

2.5.51 In Winscombe, the existing uncontrolled pedestrian crossing on the A371 to the west of the junction with Knapps Drive would be upgraded to a zebra crossing to increase the safety of pedestrians. Additional zebra crossings would be provided on the A371 outside Winscombe Bakery, on Sidcot Lane by The Chestnuts, and on Sandford Road to the north of its junction with the A371.

Southern Link

2.5.52 There would be no active travel provision on the Southern Link, instead a shared use footway and cycleway could retain connections to the A371 along Castle Hill and Dark Lane.

Ground Improvements

2.5.53 As described in section 2.4, the Scheme passes over the area of flood plain where it encounters soft ground. There is also Artesian groundwater in this area. These ground conditions need to be managed and controlled through construction and operation to manage settlement of the highway's embankments.

2.5.54 The approach that has been assessed in this ES is to install band drains and surcharge the highway embankment (primary ground improvement option), which will control the embankment settlement. Band drains are vertical drains installed in the ground, to provide a drainage path for ground water.

2.5.55 The band drains installed may impact upon the Artesian ground water, refer to ES Volume 1 - Chapter 13 - Road Drainage and Water Environment. There is ongoing dialogue with the Environment Agency (EA) and Bristol Water to determine the impact on this Artesian ground water and the project team is undertaking further monitoring.

2.5.56 Alternative ground improvement solutions are being considered and depending on the outcome of the ongoing monitoring these could be used to control and manage embankment settlement. These options include Controlled Modulus Columns (CMC) and piled embankments (secondary ground improvement option).

2.5.57 To ensure flexibility in approach, both the primary and secondary options as detailed above are considered and assessed in this ES.

Structures

Banwell River Bridge (Ch. 1+940)

2.5.58 A proposed bridge would carry the Banwell Bypass over the Banwell River and Riverside Road (Ch. 1+940) as well as an unnamed rhyne that runs parallel to the Banwell River. The proposed structure would be a single-span integral bridge, compromised of precast prestressed W-beams with a cast in-situ reinforced concrete deck slab and precast parapet edge beams. The bridge deck would be integrally connected to cast in-situ, reinforced concrete abutment walls supported on pile caps and pile foundations.

2.5.59 Concrete return walls supported off a pile cap would be provided at the back of abutments at all four corners and would run parallel to the Banwell Bypass. Beyond these, structurally independent reinforced concrete wing walls would be provided at all four corners of the bridge and shall run parallel the Banwell Bypass.

2.5.60 The layout of the bridge can be seen in Planning Document – Structure Drawings.

Moor Road Retaining Wall (Ch. 1+800)

2.5.61 A proposed retaining wall between at Ch 1+800 and Ch 1+820 would be provided at Moor Road. This would retain the proposed highway embankment, adjacent to the Rowtech Engineering workshop. The retaining wall would be of concrete construction, 24m in length and would be 3m at height.

Moor Road to Riverside Bridge (Ch. 1+930)

2.5.62 A proposed bridge structure would carry the Moor Road to Riverside Link over the River Banwell. The bridge would be a single span precast concrete structure. The layout of the bridge can be seen in Planning Document – Structure Drawings.

Lighting Strategy

2.5.63 The A368 through Banwell is currently fully lit, with part night lighting that switches off from October to March between midnight and 5am and between March and October from 1-6am due to British Summer Time. The strategy for the Scheme would be to minimise the lighting provision to junctions only, where required for safety reasons, as described further below.

2.5.64 Lighting the entirety of the Banwell Bypass was considered. However, due to its location in an E2 Zone of Low District Brightness, NSC's Highways electrical design guide states in

these areas lighting should not be provided unless the Council deem it to be in the best interest of the community for road safety or personal security reasons. On the Banwell Bypass, there would be no major or exceptional road safety or security issues with the exception of junctions which are classified as points of conflict.

2.5.65 The Banwell Bypass would be located on the northern edge of the Mendip Hills AONB which is well known for its dark sky environmrnt which would be impacted by road/street lighting.

2.5.66 The eastern end of the Scheme would be adjacent to the North Somerset and Mendip Bats SAC. Lighting could have an impact on this SAC, therefore the light would been minimised in these areas, in particular the Banwell Eastern Junction would not be lit.

2.5.67 The impact of vehicle lighting on the SAC and bat foraging areas has required the altering of the route alignment and position of the eastern junction on the A368 to reduce any direct impact on the SAC.

2.5.68 Minimising the amount of lighting on the Scheme would reduce the capital carbon (Materials for construction) and maintenance carbon (Electricity in use).

2.5.69 The following sections of the Banwell Bypass would be lit. Lighting columns would likely be 8m tall:

a) Banwell Western Junction – The proposed roundabout would be lit. The existing A371 from Locking into Banwell is currently lit. The roundabout arms, that would turn into the existing A371 and the link into Banwell would be lit, tying into the existing lighting layouts. The Banwell Bypass approach to the roundabout would require lighting for a length of 90m.

b) Wolvershill Road Junction – The proposed signalised junction would be lit. Wolvershill Road is currently lit up until 100m from the proposed junction, the Southbound arm of the junction would be lit up to this point. The proposed northern, eastern, and western arms would require lighting for a length of 90m on the approach to the junction.

c) Southern Link tie in at Castle Hill– A short section of lighting would be required at the southern tie in at Castle Hill. This would tie in to the existing lighting and assist in maintaining forward visibility.

2.5.70 Lighting would be provided on the shared use path between the A368 and Churchill Green as shown on the Planning Document – Wider Mitigation Measure drawings. This would be low level bollard type lighting.

2.5.71 The Planning Document – Lighting Strategy, provides further details on the Scheme lighting provision.

Road drainage and disposal of water

2.5.72 The Banwell Bypass surface water drainage system would be designed in accordance with DMRB (CG501) for a minimum design lifetime of 60 years. The drainage system would use conventional piped drainage as well as swales to remove water from the carriageway which would discharge into seven attenuation basins located beside the Banwell Bypass. These basins would be designed to store surface water and then slowly discharge into the existing watercourses.

2.5.73 The attenuation basins and other drainage measures are set out in ES Volume 1 - Chapter 13 - Road Drainage and Water Environment. Consideration of Sustainable Urban Drainage (SUDs) is also addressed in ES Volume 1 - Chapter 13. The attenuation basin locations are shown on the Planning Document - Environmental Masterplan (EMP) Drawings and as listed below:

a) Attenuation Basin 1a and 1b – Ch. 0+500 and 0+600 (south of Banwell Bypass)

b) Attenuation Basin 2 – Ch. 1+600 (north of Banwell Bypass)

c) Attenuation Basin 3 – Ch. 2+280 (north of Banwell Bypass)

d) Attenuation Basin 4 – Ch. 2+340 (south of Banwell Bypass)

e) Attenuation Basin 5 – Southern Link Ch. 0+500 (Southern Link)

f) Attenuation Basin 6 – Southern Link Ch. 0+400 (Southern Link - Banwell Village Link)

2.5.74 The attenuation basins for the Banwell Bypass (excluding Basins 5 and 6) would have a total water depth of 1m in all locations and would be permanently wet, which provides water quality and biodiversity benefits. The proposed use of swales would also provide water quality benefits when compared to traditional pipe networks. The water quality benefits would lead to biodiversity benefits providing habitats for wading and wintering birds, and would enable Groundwater Dependent Terrestrial Ecosystems (GWDTE) to establish.

2.5.75 The proposed water surface discharge has been calculated for events up to the 100-year return period, including an upper allowance of 40% for climate change, which may possibly be refined as design progresses. The proposed highway drainage has been designed to cater for a 1 in 1-year return period event without surcharging with a 40% allowance for climate change. The design would ensure that there is no surface flooding for a 1

in 5-year return period event with a 40% allowance for climate change. The overland flow routes are assessed for events up to 1 in 100-year with 40% allowance for climate change to ensure that there would be no flooding of third-party land.

2.5.76 Appropriate temporary drainage systems would be implemented to capture and convey surface water during times of heavy rainfall. The construction of the proposed Flood Compensation Areas (FCAs) would occur prior to the construction of the Banwell Bypass, therefore ensuring any loss of flood storage capacity is mitigated before it occurs. A surface water management system, using measures such as temporary silt fencing, cut-off ditches, settlement basins and bunds would be set up as early in the construction period as possible to capture all runoff within or traversing the construction corridor.

Tidal and fluvial flooding

2.5.77 1.2km of the Banwell Bypass would pass through floodplain (Ch. 1+500 to Ch. 2+700). Fluvial flood modelling including a downstream tidal boundary has been undertaken along with a Flood Risk Assessment (FRA) as set out in the ES Volume 1 - Chapter 13 - Road Drainage and Water Environment. Flood levels from the Environment Agency's coastal model have also been assessed as a part of the FRA. The fluvial modelling has shown that the Banwell Bypass would have an impact on the potential flood levels and requires mitigation.

2.5.78 Flood mitigation that would be provided by the Banwell Bypass includes cross carriageway culverts to convey flood water and flood compensatory storage areas for fluvial flooding, located at:

a) Stonebridge Farm – Ch. 0+500 (north of road);
b) Moor Road North - Ch. 1+500 (north of road); and
c) Moor Road South - Ch. 1+740 (south of road).

Fencing

2.5.79 Fencing is proposed in the form of post and wire stock-proof where there is a requirement to discourage access by farm stock from adjacent fields and to delineate the NSC ownership. Post and wire stock-proof fences are proposed because these are less visually intrusive than post and rail stockproof fences, whilst still forming an effective stock-proof barrier and are currently used in the area. Special forms of this fence type would be required to discourage animals such as badger, otter and deer from entering the road corridor and so reduce the risk casualties arising from collisions with vehicles. Specific fencing would be installed as required to discourage access to potentially hazardous locations, such as attenuation basins, the top of retaining walls and steep slopes. Other forms of fencing may be used depending on specific land user requirements and would be specified during detailed design. Indicative alignments of proposed mammal fencing are shown in the Planning Document – Environmental Masterplan Drawings.

2.5.80 The Southern Link would have noise fencing along its western side between Ch. 0+160 and Ch. 0+460 to provide screening to the properties at Dark Lane. The noise fence would be 3 metre tall (measured from carriageway level) and of timber construction. There would be no noise fencing at any location on the Banwell Bypass. Refer to ES Volume 1 Chapter 11 - Noise and Vibration for further details of noise.

Traffic Signs

2.5.81 The Banwell Bypass would incorporate signage in relation to junctions and destinations for both road users and active travel users. The approximate locations of signs are indicated on the Planning Document – General Arrangement Drawings. A symbol is used to show the location but does not indicate actual sizes of signs. There would be no proposed Intelligent Transport Systems (ITS) on the Banwell Bypass (these are signs that display an illuminated message that can be changed from a remote location).

2.5.82 Warning signs to alert drivers of potential danger ahead would be used on the approach to the unlit Banwell East (signalised) Junction. Warning signs would also be used in advance of NMU crossings to alert drivers of possible pedestrians, cyclists, and equestrians.

2.5.83 Signs would conform with the national standards, regarding materials colours and dimensions. These signs would be suitably placed on or at the back of the verge in accordance with standard

requirements. There is only a limited possibility to vary the locations of these signs, but care has been taken in the landscape design to place trees, shrubs, hedges, and other mitigation measures to avoid compromising visibility splays and sightlines. During detailed design of the Banwell Bypass the placing of signs and mitigation would be considered carefully to ensure that signs do not cause unnecessary visual impact nor compromise the quality of mitigation.

2.5.84 Traffic signs would also outline traffic prohibitions (forbidding actions). These would likely be: restrictions to stopping on the highway, a weight limit placed on the Southern Link due to a bridge in Winscombe that forms a constraint (to match the existing provision); and access restrictions to HGVs in Banwell (except for access).

2.5.85 Speed limits are shown on the Planning Document – General Arrangement Drawings, Planning Document - Banwell Placemaking Drawings and Planning Document - Wider Mitigation Drawings and would be signed accordingly, including repeater signs.

Pavement and Road Surfacing

2.5.86 Road surfacing and pavement design would be undertaken during the detailed design. The surfacing of the Banwell Bypass and Southern Link would likely be a Hot Rolled Asphalt (HRA) material, however this is subject to detailed design.

Impact on Public Rights of Way

2.5.87 Existing footpaths, bridleways and private means of access that would be affected by the Scheme would be suitably diverted. In summary, the public rights of way that would require modification are identified in the following paragraphs. There is one Public Right of Way (PRoW) directly affected by the Banwell Bypass.

2.5.88 Whilst it is desired that access be maintained during construction, it may be safer for pedestrians that the affected PRoW is stopped up during construction, with durations kept to a minimum, taking account of the construction programme. Further details are provided in ES Chapter 12 - Population and Human Health and are shown on the Planning Document - General Arrangement Drawings.

2.5.89 There are 26 recorded PRoW within 500m of the Banwell Bypass. The PRoW map surrounding Banwell is shown in Image 2 - 6. Refer also to ES Volume 2 Figure 12.5 – Public Rights of Way.

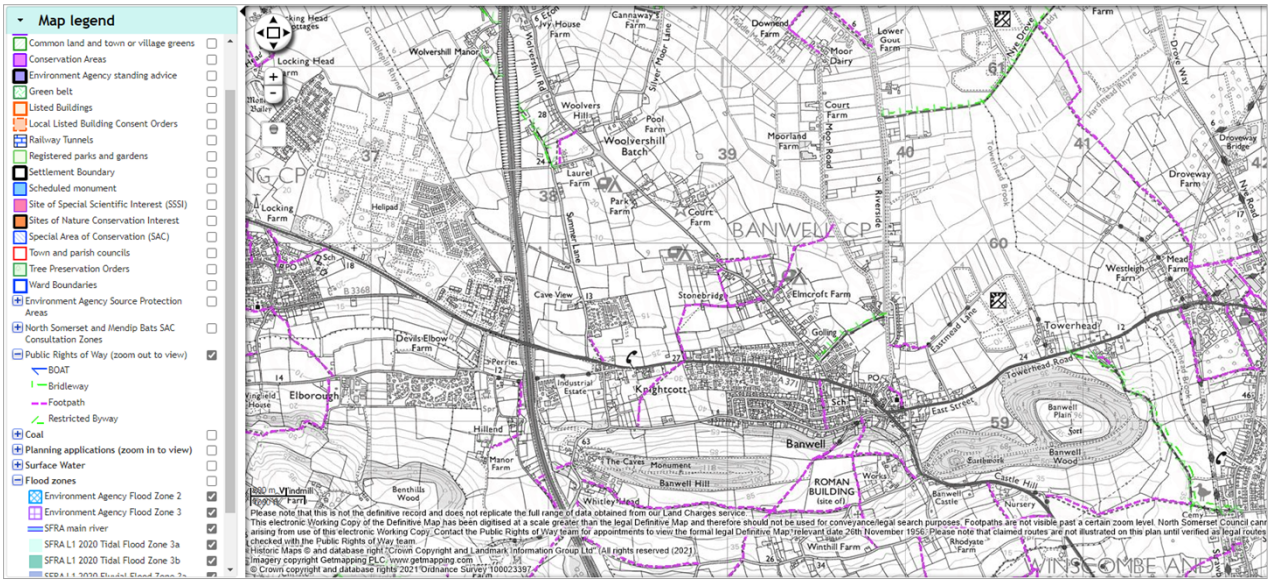

Image 2 - 6 PRoW network surrounding Banwell (© NSC Definitive Map)

2.5.90 **Footpath AX3/6/10** is crossed by the Banwell Bypass. The footpath would be diverted to connect with the proposed shared use path to the north side of the Banwell Bypass, via a safe at-grade uncontrolled crossing. This would tie-in to the north section of the severed AX3/6/10 footpath.

2.5.91 A number of other footpaths would be upgraded to active travel routes, to enable both walking and cycling. These proposed upgrades are described further in Table 2 - 18.

Demolition

2.5.92 The requirement to provide a safe road with good visibility for drivers sometimes means that features in the area are adversely affected by the proximity of the new road and associated structures and earthworks. The route has been aligned to minimise the impact of the Banwell Bypass on adjacent property.

2.5.93 The Scheme would require the demolition of:

a) A shed/outbuilding, which is located at Ch. 0+190;

b) Stables to be demolished and static caravan to be removed, which are located at Ch. 1+980; and

c) A stable/outbuilding located at Ch. 2+580.

Construction strategy and phasing

Construction Strategy

2.5.94 NSC have appointed the AGC team to initially develop the outline design with a view to progressing the detailed design and constructing the Scheme (subject to obtaining planning permission). Covering the detailed design and construction into a single team ensures that both the Contractor and Designer understand and address the problems of construction at an early stage. The team will ensure that the measures to mitigate any impacts of the Scheme will be implemented as part of the construction process and the construction team will have a good understanding and awareness with regard to the various impacts of the Scheme on the existing environment.

2.5.95 The design has followed an iterative process involving the key stakeholders and NSC to ensure that the most appropriate solutions have been identified and developed.

2.5.96 AGC have provided construction and buildability advice throughout the development of the Scheme proposals. Construction impacts have been based upon their advice regarding appropriate methods, programme, and the environmental mitigation.

2.5.97 A risk management strategy has been developed by NSC to ensure that all key risks are identified and minimised early within the Scheme development process.

2.5.98 The essential temporary working space required outside the permanent land take has been identified and incorporated within the land take and the planning red line boundary. This land is included so that the Scheme can be built efficiently and safely, whilst minimising the environmental impacts.

2.5.99 It is intended that all earthwork material excavated from the site would be used within the Scheme, with no earthwork materials transported off site for disposal.

2.5.100 A Construction Traffic Management Plan has been prepared and is included in ES Volume 3 - Appendix 2.A - Construction Traffic Management Plan. This outlines how construction traffic would access the site what movements are expected.

Construction sequence

2.5.101 This section outlines the proposed construction sequence and the key construction activities. The programme for design and construction assumes planning approval and Orders being made

in early 2023 (including a decision to proceed).

2.5.102 Detailed design and construction works are considered likely to commence in early 2023 and would continue for around 2 years with road opening in late 2024. Maintenance and aftercare of the environmental aspects of the Scheme remain the responsibility of the Contractor (AGC) for two years after the completion of construction. Following this period, NSC will be responsible for the ongoing maintenance and aftercare. The statutory time requirement for BNG would be 30 years. Further details of the Scheme maintenance is covered in ES Volume 1 - Chapter 16 - Environmental Management.

2.5.103 Following a decision to proceed to construction, there would be a period when the detailed design would be developed. Prior to work starting on site, property precondition surveys and pre-construction ecological surveys would be carried out.

2.5.104 Early construction activities would include:

a) Relevant Environmental Controls (as outlined in this ES);
b) Construction of the main site compounds (east and west);
c) Temporary and permanent fencing;
d) Construction of temporary diversions to existing footpaths.
e) Construction of main site access points;
f) Site clearance of trees, hedges, fencing, grassland, walls and structures;
g) Implementation of mitigation in accordance with protected species licences, including any early ecological mitigation works;
h) Establishment of temporary and permanent surface water outfalls;
i) Drainage operations including pre-earthworks drainage ditches and the installation of culverts on existing watercourses;
j) Construction of flood compensation areas;
k) Topsoil stripping and stockpiling with archaeological monitoring where required;
l) Construction of the site haul roads;
m) Earthworks operations -including ground treatment prior to construction of embankments.;
n) Statutory Undertakers service diversions;
o) Haulage of materials to and from the site on the existing road network;

p) Side road works at Moor Road and Wolvershill Road;

q) Accommodation works; and

r) Running concurrently with the above activities would be:

- Ongoing programme of seasonal ecological surveys;
- Establishment of surface water quality monitoring.

2.5.105 Permanent fencing would be erected as early as possible to delineate the Scheme boundary. Where this is not possible, temporary fencing would be erected. Site clearance work would commence with vegetation clearance.

2.5.106 Construction compounds and laydown areas have been identified on the Planning Document – General Arrangement Drawings. These areas would be used for storage and working space during the construction period and then reinstated following completion of the Scheme. In the compound areas the topsoil would be stripped and stored during its use and the rehabilitated following completion. In the laydown areas only, vegetation would be removed ("scorched earth"), with the topsoil below being retained.

2.5.107 Bulk earthworks would mainly be carried out in the summer season but would take advantage of any periods of dry weather in the other seasons. Pre-earthworks drainage would follow the earthworks sequence. Mainline pavement construction would continue intermittently through to completion.

2.5.108 Structures would be progressed throughout the construction period. The construction sequence has been determined to ensure that the Scheme would be built with minimum disruption to the local environment, local population, and the travelling public. It is likely construction of the following structures would commence early in the construction programme.

River Banwell Bridge (Ch. 1+940)

2.5.109 Working compounds would be established to the east and the west of the River Banwell for the purposes of constructing the River Banwell Overbridge. The compounds would allow the construction of the bridge abutments in a controlled manner, these works would include an initial piling operation followed by a period of reinforced concrete construction.

2.5.110 With the abutment works completed, the bridge beams would be installed with a closure to Riverside Road, allowing the safe segregation of the large loads that would be a key element of the operation.

2.5.111 Self-contained earthworks zones exist to the east and west of the

proposed bridge and would be constructed concurrently with the bridge works.

2.5.112 Rhyne culverts (4 number) would be constructed early to avoid the need for lengthy watercourse diversions and these would be in place ahead of the bulk earthworks operations commencing.

Utility Diversions

2.5.113 The Scheme would cross several utilities, which would require diversions. The following list provides a summary of the diversions that would be required.

a) Gas (Wales and West Utilities) – Three areas where the proposed Banwell Bypass ties-in with the existing road network. These diversions would be relatively small in scale and would be undertaken within the Scheme boundary.

b) Electricity (Western Power Distributions) – An initial review of the interfaces has concluded that any diversions required would be relatively small in scale and would be undertaken within the Scheme boundary.

c) Water (Bristol Water) – The Banwell Bypass would cross the distribution mains twice, once at the eastern end of the Banwell Bypass and once at the western end of the Banwell Bypass. Further work will be undertaken with Bristol Water during 2022 to establish the best solution for the crossing of / protection of their existing plant. It is envisaged that large scale diversions would be avoided but this is subject to further site investigation to accurately locate and identify the various apparatus. Interfaces with the smaller scale domestic supplies would be limited to the eastern end of the Banwell Bypass at the Southern Link, these small-scale diversions would be accommodated with the boundary of the Scheme and will have minimum impact on existing residents and properties.

d) Water (Wessex Water) – Three areas of interface between the Banwell Bypass and existing apparatus have been identified. Two of the key areas of interface are focused on the tie-in between the Banwell Bypass and the existing road network (Knightcott Road and East Street). The remaining interface is where the Banwell Bypass crosses a rising foul main between Banwell Football Club and Towerhead Road. It is envisaged that the management of all these interfaces would be accommodated within the boundary of the construction works.

e) Telecommunications (BT Openreach) – Approximately ten instances of interface between the Banwell Bypass and the existing apparatus in the area. Most of the apparatus are overhead cables although it is understood that fibre optic cables are present at the western tie-in with Knightcott Road.

2.5.114 Liaison with the Statutory Utility (SU) companies is ongoing. Diversion works would be undertaken by the SU companies. As the utility diversions identified above would be within the Scheme boundary and the nature of the works is considered minor compared to the construction of the Scheme, further assessment of the utilities is scoped out of this ES and is not considered further.

Banwell Football club replacement playing fields

2.5.115 As described in section 2.6 (Banwell Bypass Description), the playing fields used by Banwell Football Club would be affected by the Banwell Bypass, with the northern most football pitches, within the Scheme landtake.

2.5.116 To mitigate this impact, replacement playing fields would be provided. The proposed location of the replacement playing fields would be in the field immediately east of Banwell Football Club. This would be accessible from Eastermead Lane and via the PRoW that runs through Banwell Football Club. Refer to ES Volume 1 Chapter 12 – Population and Human Health.

Banwell placemaking improvements description

2.5.117 As a result of the Banwell Bypass, there would be a reduction of traffic through Banwell, which provides the opportunity to make improvements and enhancements to the existing road corridor through part of Banwell village (refer to Table 2 - 8 for traffic flow details). The improvements would deter vehicles from using Banwell Village as a through route, once the Banwell Bypass is in place.

2.5.118 Part of Banwell village is designated as a Conservation Area to protect the special character and appearance of the village. The proposals to improve Banwell's public space would preserve and enhance the Conservation Area.

2.5.119 The placemaking improvements cover Banwell village from Summer Lane and Knightcott Road in the west to Castle Hill and East Street in the east. The placemaking improvements are shown on the drawings contained in Planning Document – Banwell Placemaking Drawings and summarised in Image 2 - 7 below.

Image 2 - 7 Banwell Public Space Improvements

2.5.120 The improvements within Banwell Village would include:

a) 20mph speed limit through Banwell Village – to improve safety for all users and to provide environmental (air and noise) benefits, whilst discouraging through traffic from using the old road

b) Active travel route through Banwell Village – providing walking and cycling infrastructure to encourage alternative modes of transport and better links to the wider public rights of way network.

c) The Playground and Village Hall – Narrow road lanes, cycle lane or wider shared footpath/cycle route, cycle storage, crossing point, planting improvements and ecological enhancements.

d) School– Increased pavement widths, pedestrian barrier, the use of road surface treatment (paving or colour), cycle storage, connecting cycle link. Additional pedestrian access to the north.

e) The Narrows – Resurfacing and relevelling of space, narrowing of the carriageway, provision of on street parking outside shops, installation of cycle parking and street furniture, planting and pavement improvements.

f) The Square – Changes to surfacing material, pavement widening, crossing points, cycle lane, historically and village specific signage, planters, and community notice board.

2.5.121 **School** - At Banwell Primary School, the main proposals would involve improving safety for children travelling to school on foot or by bike or waiting for bus connections to neighbouring villages. This would include better provision at the Village Hall for park and stride schemes for children dropped off by parents. This would be achieved by widening the pavements on both sides of the road. Road surface treatments would be changed to the congregating zone to prioritise pedestrians over car users with a safer crossing and improved cycling opportunities. The area would form a walking and cycling hub with improved cycle storage and a connecting cycle link along Knightcott Road, linking into the Banwell Bypass shared use path.

2.5.122 **The Playground and Village Hall** - At present, the area has no safe crossings, and the road lanes are wide with narrow pavements. The main proposals for this location are to narrow the road lanes, introduce a cycle lane or wider shared active travel route, introduce cycle storage, and provide a safe pedestrian crossing near the bus stop, allowing better connectivity to these key local facilities. Traffic slowing measures would be implemented along Wolvershill Road in the form of build outs to discourage rat running by vehicles.

2.5.123 **The Narrows -** At West Street, The Narrows would be extended to provide on street parking outside the shops. Cycle parking and street furniture would be installed and placemaking improvements are proposed between Emery Gate and the access to the Banwell Bowls Club. Within 'The Narrows', the area around the war memorial and its bench has the opportunity for enhancement. Narrowing the road would allow for short sections of pavement to be introduced to areas where none currently exist, such as the south side of West Street outside Banwell Methodist Chapel, providing safe and more connected pedestrian routes through the village.

2.5.124 **The Square -** At the Square, road surfacing material changes and pavement widening would help reinstate the area as a community square. Crossing points would be installed to allow pedestrians to get around the Square safely and to improve the setting of East Street by including a cycle lane linking to the Banwell Bypass. Signage in the Square would be replaced with new signage that reflects the historic context, the Conservation Area status and the village location.

Improvements to the wider road network

2.5.125 The construction and operation of the Banwell Bypass would result in additional traffic travelling through areas surrounding Banwell, in particular the villages of Churchill, Sandford and Winscombe. Impacts of other areas west of Banwell and elsewhere including, including Hill Road/Sandford Road and Church Road have also been considered within this assessment. Increased traffic would result in negative impacts to these areas, which would require mitigation.

2.5.126 Image 2 - 8 provides a summary of the measures proposed and the following sections provides an overview of the measures being proposed in each of the villages of Winscombe, Sandford and Churchill. Details of the proposals are shown on the Wider Road Network and Communities Mitigation Measures site layout drawings in Planning Document – Wider Mitigation Drawings. Table 2 - 18 provides a description of each measure and provides a reason for the mitigation, along with a reference, which relates to Image 2 - 8.

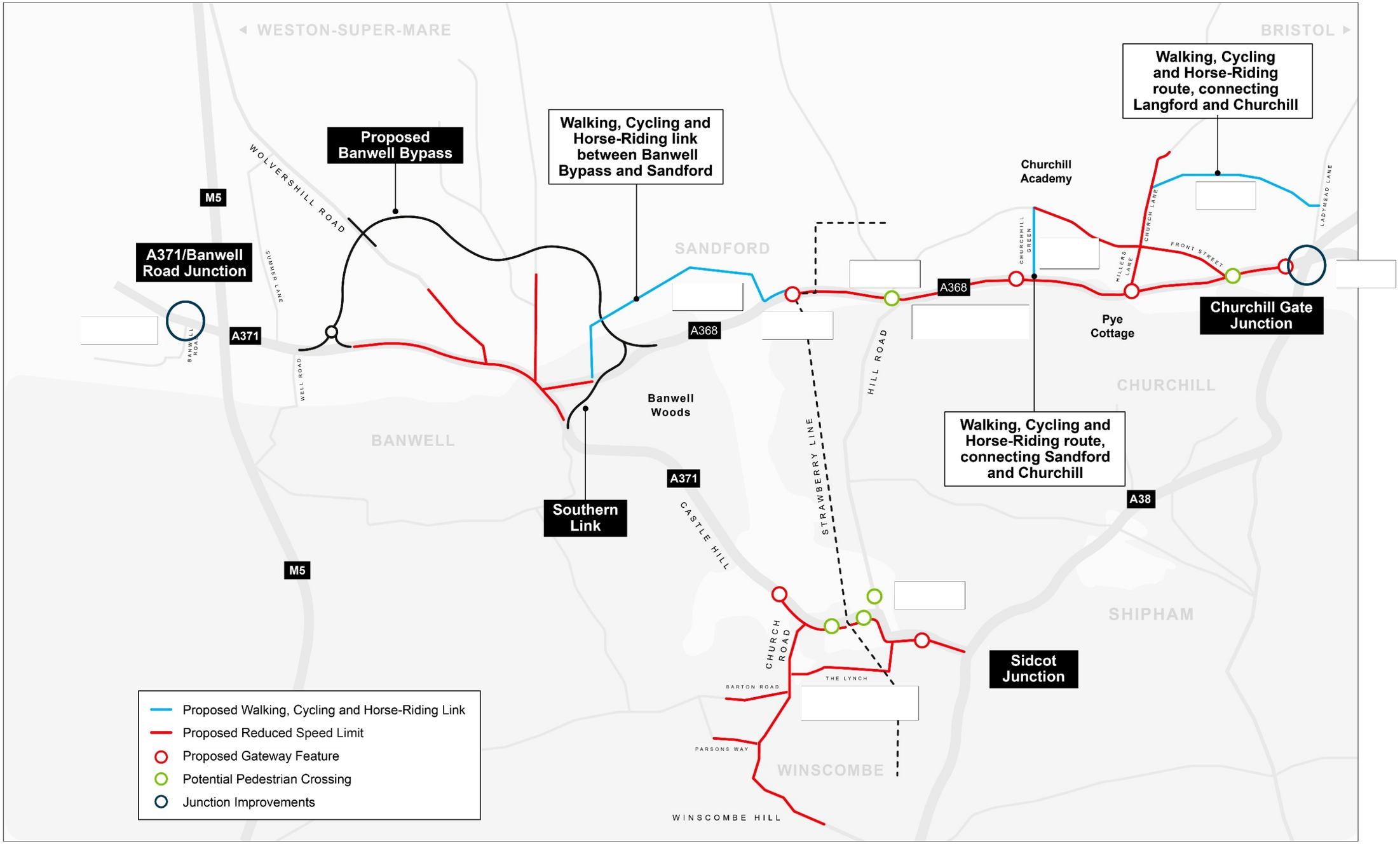

Image 2 - 8 Wider Measures (Sandford, Winscombe and Churchill)

Table 2 - 18 Summary Table - Mitigation considerations

Reference	Theme	Area	Potential impact	Proposed improvement		
			Direct[2]/ Indirect[3]	Type	Description	Reason(s)
Ref1 	Safety and traffic calming	All	Direct	Mitigation	Lower the speed limit to 20mph: • On the A368 through Sandford. • On the A368 through Churchill from The Drive until Churchill Junction. • On Front Street, Churchill Green and Church Lane in Churchill. • On the A371 through Winscombe. • On Church Road, Barton Road, Parsons Way and Winscombe Hill in Winscombe.	In response to increased traffic flows on A368/A371 corridors, measures are proposed to improve road safety Significant public support for lower speed limits. Public support for 20mph speed limit outside Sandford Primary School and Thatcher's Brewery – there is already an existing stretch of 20mph outside Sandford Primary School.
Ref2 	Safety and traffic calming	All	Direct	Mitigation	Lower the speed limit to 30mph: • On the A368 from Sandford heading towards Churchill until The Drive. • At transitions when entering 20mph areas from higher speeds roads.	In response to increased traffic flows on A368/A371 corridors, measures are proposed to improve road safety. Significant public support for lower speed limits.
Ref3 	Safety, traffic calming and pedestrian, landscape, and ecological improvements	All	Direct	Mitigation	Introduce gateway features to: • Churchill entrance and exit (A368). • Sandford entrance and exit (A368). • Western approach to Winscombe from Banwell and between the junctions of Southmead and Belmont Road (A371).	In response to increased traffic flows on A368/A371 corridors, measures are proposed to improve road safety. Gateway features provide a physical and visual indication to vehicles that they are entering the villages (of special character) where traffic calming features can be expected, and of the speed limit of the road. This may help to achieve general speed reductions through the village, leading to improved quality of life and environmental benefits – such as reduction in noise, vibrations, and vehicle emissions – whilst minimising impact to the village character.
Ref4 	Safety, traffic calming and pedestrian improvements	All	Direct	Mitigation	Traffic calming measures (e.g., road markings, carriageway narrowing, signage etc) in Churchill, Sandford and Winscombe.	In response to increased traffic flows on A368/A371 corridors, measures are proposed to improve road safety. Public support for reducing speeds and traffic calming measures Due to the nature of the A368 and A371 carriageways, it is not considered appropriate to introduce significant numbers of physical traffic calming measures. Provides wider community benefits for vulnerable groups; helps address the demands for active modes of travel; complements new gateway features; promotes general safe, smooth travel and helps minimise potential collision issues within communities and residential areas. Reduces road noise from additional traffic.
Ref5 	Highway capacity improvements	Churchill	Direct	Mitigation	Churchill Junction (A38/A368) capacity improvements.	To mitigate additional delays that would be experienced at the junction as a result of increased traffic flows.

Reference	Theme	Area	Potential impact	Proposed improvement		
			Direct[2]/ Indirect[3]	Type	Description	Reason(s)
Ref6 	Placemaking, landscape and ecology enhancements	All	Indirect	Enhancement	Develop soft landscaping: native planting, rewilding, and locally indigenous planting; planting hedgerows/trees to create a sense of place and for ecological benefits. Note – further details to be developed at detail design.	Placemaking and landscaping features promote reduction in speed by making the roads feel narrower, encourage vehicle users to respect the villages when driving through, improve residents' quality of life, ecological improvements, create distinctiveness and sense of place between villages. To support requirement for increase of BNG by at least 10%.
Ref7 	Active Travel	Churchill	Direct	Mitigation	Provision of an off-carriageway cycle route by upgrading along existing route of public footpaths (c.1.2km). Note – route also accessible to horse-riders.	To improve road safety as a result of increased traffic flows on A368 by providing a safe, off-carriageway route for pedestrians, cyclists and horse-riders. Existing PRoW footpaths are heavily used and are unsuitable for cyclists who currently must use Dinghurst Road, which has no off-carriageway provision.
Ref8 	Active Travel	Sandford/ Churchill	Direct	Mitigation	Provision of an off-carriageway cycle route by upgrading along existing route of unsurfaced public footpaths. Note – route also accessible to horse-riders.	To improve road safety as a result of increased traffic flows on A368 by providing a safe, continuous off-carriageway route for pedestrians, cyclists and horse-riders to access Churchill Academy, avoiding the existing sub-standard route past Pye Cottage.
Ref9 	Active Travel	Sandford	Direct	Mitigation	Additional pedestrian crossing provided to the west of Hill Road	To mitigate severance and improve road safety caused by increased traffic flows on the A368, which make the road more difficult and unsafe to cross.
Ref10 	Active Travel	Sandford	Direct	Mitigation	Minor works to the priority junction where the Strawberry Line crosses the A368 Station Road, including widening of existing shared use path to traffic signal crossing.	To improve road safety as a result of increased traffic flows on A368, by providing additional space and priority for vulnerable road users when crossing road. Proposed measures also support and enable the proposed reduction in speed limit through Sandford.
Ref11 	Active Travel	Sandford	Direct	Mitigation	Cycle connection between Banwell and Sandford (providing onwards connections via Strawberry Line). Note – route also accessible to horse-riders.	To mitigate severance and improve road safety caused by increased traffic flows on the A368, by providing a continuous, safe, off-road alternative route for cyclists and other vulnerable road users, including horse-riders. To mitigate increases in traffic flows by providing a viable alternative for journeys by active modes, supporting reduction in local car trips.
Ref12 	Active Travel	Winscombe	Direct	Mitigation	Additional pedestrian crossings on A371 through Winscombe, one either side of railway bridge, one on Sidcot Lane and one on Sandford Road	To mitigate severance and improve road safety caused by increased traffic flows on the A371, which make the road more difficult and unsafe to cross.
Ref13 	Highway capacity improvements	Locking	Direct	Mitigation	A371 / Banwell Road capacity improvements	To mitigate additional delays that would be experienced at the junction as a result of increased traffic flows. To improve road safety as a result of increased traffic flows and provide improved crossing facilities for walkers and cyclists.

2.6 Environmental Mitigation

2.6.1 The Scheme design has developed as part of an iterative process between the engineering, environmental design, and assessment teams, and through active engagement with Statutory consultees, key stakeholders and the wider public. Throughout the design process, interventions have been made and integrated into the Scheme with the primary purpose of avoiding or reducing adverse effects at source and to make the Scheme fit better into its landscape setting. These measures are considered integral to the Scheme and are termed “embedded mitigation”.

2.6.2 Embedded environmental design measures that would be included in the Scheme include:

a) Oversized culverts, providing flood mitigation retaining the rhyne network, and biodiversity connectivity through the use of mammal ledges and amphibian crossings.

b) Design of Banwell River bridge for landscape integration, single span crossing covering Riverside, the River Banwell and un-named rhyne, maintaining visual connections, use of stone cladding to soften impact to reduce visual impact;

c) Boundary fencing;

d) Vertical and horizontal alignment including positioning of the western and eastern junction to avoid sensitive receptors;

e) Sustainable drainage systems - Attenuation basins, swales, rhynes etc to provide biodiverse habitats and improve water quality;

f) Carefully located and minimising overall street lighting, restricted to junction and section of the Southern Link;

g) Shared use path, designed for users, bounded by hedgerows where appropriate to fit within the local landscape and to link into the wider PRoW network;

h) Improvements to wider network to include speed limits, traffic calming, highway safety improvements; and

i) Documents to include the Construction Environmental Management Plan (CEMP); Landscape and Environmental Management Plan (LEMP); and relevant permits, licences and consents.

2.6.3 Essential mitigation, which is mitigation required for the Scheme, but which is not integral to the engineering design would include (but not be limited to) the following:

a) Retained vegetation, retention of field boundaries, translocation of hedgerows, coppice stools where appropriate etc

b) Scheme planting for landscape integration, visual screening and habitat creation, to include species rich hedgerows, native woodland and woodland edge planting, specimen trees, areas for rewilding and a mosaic of grassland and wildflower meadows;

c) Flood compensation areas to compensate for loss of flood storage capacity. These would include biodiversity measures to include scrapes, reptile hibernacula, wet meadows etc;

d) Noise attenuation barrier on Southern Link;

e) Provision of bat, bird and dormouse boxes and other hibernacula, resting places, bat hop overs etc;

f) Mammal and other environmental fencing;

g) Gateway features;

h) Replacement wildlife pond to replace the pond adjacent to Riverside that would be lost to the Scheme;

i) Access to severed land; and

j) Access to individual field parcels.

2.6.4 Enhancements, in addition to the embedded and essential mitigation have also been identified and are reported in each technical chapter (ES Volume 1 Chapters 5-14) where appropriate.

2.6.5 The Scheme objectives, as discussed in section 2.3 of this chapter, outlines that Biodiversity Net Gain (BNG) of 10% is desired. The Environmental Mitigation, as shown on the Planning Document - Environmental Masterplans (EMP) Drawings, provides a BNG value that exceeds the BNG objective. Further details of the BNG assessment are provide in ES Volume 1 - Chapter 8 - Biodiversity and in the Biodiversity Net Gain Assessment, which is contained in ES Volume 3 – Appendix 8.P - Biodiversity Net Gain Assessment.

2.6.6 The environmental design incorporates mitigation and enhancements to create a coordinated coherent and integrated Scheme. These are identified on the Planning Document - Environmental Masterplans (EMP).

2.7 References

1.1.1 1 DMRB CD 109 – Highway link design. Section 2.

1.1.2 2 Direct impact due to increase in traffic associated with the Banwell Bypass mainline Scheme and/or general infrastructure provision/improvements that may be required.

1.1.3 3 Indirect impact as an outcome of public consultation and/or enhancing social and environmental sustainability aspects.