West of England Joint Local Transport Plan 4

Habitats Regulations Assessment: Appropriate Assessment

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Executive Summary

ClearLead Consulting has been commissioned by WSP to undertake a Habitats Regulations Assessment (HRA) of the draft West of England (WoE) Joint Local Transport Plan (JLTP) 4.

HRA is required of the JLTP4 in accordance with Article 6 (3) of the EU Habitats Directive[1] as transposed into the UK law by the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations'). The Habitats Regulations require an assessment (referred to as a HRA) to be undertaken in respect of any plan or project which either alone or in combination with other plans or projects would be likely to have a significant effect on a site designated within the Natura 2000 network (or European sites) and is not directly connected with, or necessary to, the management of the site. In 2009, the Department of Transport also issued guidance that local transport authorities need to consider if their Local Transport Plan is likely to have a significant effect on a European site[2].

An HRA should determine whether a plan would adversely affect the integrity of a European site in terms of its nature conservation objectives. Where negative effects are identified, other options should be examined to avoid any potential for damaging effects.

'Screening' is the first stage in HRA. If Likely Significant Effects (LSEs) on European sites are identified in screening, measures must be put in place to avoid them. Further investigation may be necessary to understand how a plan might affect the integrity of European sites i.e. Appropriate Assessment and to develop effective avoidance and mitigation measures (or consider mitigation measures already proposed in relation to schemes and projects).

The following European sites have been considered in the HRA of the WoE JLTP:

- Avon Gorge Woodlands SAC;
- Bath and Bradford-on-Avon Bats SAC;
- Chew Valley Lake SPA;
- Mells Valley SAC;

[1] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

[2] 'European Sites' are: candidate Special Areas of Conservation (cSACs), Special Areas of Conservation (SACs) and Sites of Community Importance (SCIs)[2]; and Special Protection Areas (SPAs). The National Planning Policy Framework also requires proposed SPAs, possible SACs, listed or proposed Ramsar sites, and sites required to provide compensatory measures to be treated as European sites in England.

- Mendip Limestone Grasslands SAC;
- Mendip Woodlands SAC;
- North Somerset & Mendip Bats SAC;
- River Usk / Afon Wysg SAC;
- River Wye SAC;
- Rodborough Common SAC;
- Salisbury Plain SAC and SPA;
- Severn Estuary SAC, SPA and Ramsar;
- Somerset Levels and Moor SPA and Ramsar;
- Wye Valley and Forest of Dean Bats SAC; and
- Wye Valley Woodlands SAC.

Apart from 'softer' actions which will occur as a result of the JLTP4, such as improving information provision and road safety training, it is the major schemes set out within the plan which will physically deliver the JLTP4 with regards to, for example, infrastructure development and changes to traffic. The HRA has therefore focussed on the major schemes in order to identify the potential LSEs on European sites resulting from the JLTP4.

A Geographical Information System (GIS) has been used along with expert judgement to screen the major schemes for potential LSEs.

Screening has identified whether:

a. The scheme is not likely to have a significant effect on a European site - no LSE identified;

b. The scheme is likely to have a significant effect on a European site either alone or in-combination with other plans and projects - LSE identified; or

c. It is not possible to rule out the risk of significant effects on a European site, either alone or in-combination with other plans and projects – LSE identified.

The findings of the screening stage identified LSEs in relation to the following sites:

- Avon Gorge Woodlands SAC;
- Bath and Bradford-on- Avon Bats SAC;
- Chew Valley Lake SPA;
- Mendip Limestone Grasslands SAC;
- Mendip Woodlands SAC;
- North Somerset and Mendip Bats SAC; and
- Severn Estuary SAC, SPA and Ramsar.

Some uncertainty was also identified in relation to some schemes for which insufficient details are available to allow screening and assessment.

As LSEs and uncertainty were identified in the screening stage, the HRA has progressed to the second stage (Appropriate Assessment) in which the potential effects and uncertainty identified in screening have been considered in more detail, including any mitigation already proposed and identifying additional mitigation as necessary.

The Appropriate Assessment stage has considered the following potential effects:

- Loss of foraging areas or severance of flyways used by bats;
- Increase in recreational pressures;
- Water pollution;
- Marine litter;
- Loss of off-site habitats for birds;
- Direct habitat loss;
- Physical modification of watercourses; and
- Coastal squeeze effects.

The Appropriate Assessment of the WoE JLTP4 has considered whether adverse effects or uncertain effects on European sites could result, both from the JLTP4 alone and in combination with the WoE Joint Spatial Plan as well as other plans and projects in or near to the plan area. The assessment has taken into consideration mitigation measures put forward within the Appropriate Assessment of the WoE Joint Spatial Plan.

Several European sites could be affected by a number of different transport schemes as follows:

- The Avon Gorge Woodlands SAC could be affected by the direct loss of habitat as a result of the MetroWest Phase 1 scheme;
- The North Somerset and Mendip Bats SAC could potentially be affected by a number of different schemes and the adverse effects could relate to fragmentation of bat commuting corridors and loss of bat foraging areas and recreational pressure;
- The Bath and Bradford Bats SAC could similarly be affected by a number of schemes in relation to fragmentation of bat commuting corridors and loss of bat foraging areas;
- The Mendip Limestone Grasslands SAC could be affected by a number of cycle route schemes and adverse effects could result from recreational pressure; and
- The Severn Estuary SAC, SPA and Ramsar site could potentially be affected by a number of schemes and adverse effects could result from loss of habitats used by birds, recreational pressure, water pollution and physical medication of watercourses impeding migration of fish.

Suggested mechanisms for potential effects to be mitigated and environmental benefits to be incorporated into scheme delivery have been put forward in order to avoid the risk of adverse effects occurring on all European sites. The HRA is strategic in nature, acknowledging that there is a need for further detailed, specific assessments of impacts and mitigation requirements at the

local level (through the preparation of new Local Plans and their HRAs and the development consent process).

However, the MetroWest Phase 1 scheme would result in the direct loss of up to 0.71ha of woodland within the Avon Gorge Woodland SAC and therefore an adverse effect on this SAC remains following mitigation. No feasible alternatives to this scheme have been identified. It is therefore necessary for this scheme to proceed to the 'IROPI test' (Imperative Reason of Overriding Public Interest). If the UK is still subject to the Habitats Directive at the time the application for the MetroWest Phase 1 is determined (expected to be 2021) then consent may be granted following consultation between the Government and the European Commission. If the UK is no longer subject to the Habitats Directive then it is expected that the decision would be made by the Secretary of State. Compensation measures, included planting of additional woodland, would be provided if the IROPI test is passed. At this stage, it is therefore not possible to conclude no adverse effect on the integrity of the Avon Gorge Woodland SAC as a result of MetroWest Phase 1.

With the exception of the MetroWest Phase 1 scheme, provided that the mitigation measures identified within Chapters 5 to 12 of this report are incorporated within the JLTP4, it should otherwise be possible to conclude that the JLTP4 will not have an adverse effect on the integrity of all other European sites, either alone or in combination with other plans and projects.

The next step is for the recommended mitigation within this report to be responded to and changes made to the JLTP4 by the transport planners. Once mitigation has been incorporated within the JLTP4 it will then be possible to conclude the Appropriate Assessment of the JLTP4 except the MetroWest Phase 1 scheme. The final conclusion of the JLTP4 Appropriate Assessment would be reached in 2021 once a decision has been made on MetroWest Phase 1.

1 Introduction

1.1 This Report

ClearLead Consulting has been commissioned by WSP to undertake a Habitats Regulations Assessment (HRA) of the draft West of England (WoE) Joint Local Transport Plan (LTP) 4. This report sets out the background, methodology and findings of the HRA, including screening (HRA Task 1) and Appropriate Assessment (HRA Tasks 2 and 3).

1.2 Background

The WoE includes the unitary authority areas of Bath & North East Somerset (B&NES), Bristol City, South Gloucestershire and North Somerset. As local transport authorities, the WoE authorities are legally required to produce an LTP under the Transport Act 2000, as revised by the Local Transport Act 2008.

Under the Transport Act 2000, local transport authorities are obligated to produce a LTP every five years and to keep it under review. For the first round of LTPs, each of the unitary authorities of B&NES, Bristol, North Somerset and South Gloucestershire individually prepared plans, which covered the period 2001 to 2006. For the second round of LTPs (LTP2), the four authorities prepared a joint plan covering the period between 2006 and 2011. The current Joint LTP (LTP3) sets out the 15-year Transport Vision for the period 2011 to 2026.

Under the new Transport Act (2008), LTPs are no longer required to be replaced every five years, but instead planning authorities may replace their plans as they see fit.

In 2017, B&NES, Bristol and South Gloucestershire councils voted to proceed with a devolution deal, and as a result the new West of England Combined Authority (WECA) was established. Due to the formation of WECA, the new added flexibility of the revised Transport Act (2008) and the emergence of the WoE Joint Spatial Plan[3] (JSP), it was agreed that a new Joint Local Transport Plan 4 (JLTP4) would be produced and coordinated by WECA in conjunction with B&NES, Bristol, North Somerset and South Gloucestershire councils as part of the WoE region.

[3] West of England Joint Spatial Plan Publication Document November 2017
https://www.jointplanningwofe.org.uk/consult.ti/JSPPublication/viewContent?contentid=346611

HRA is required of the JLTP4 in accordance with Article 6 (3) of the EU Habitats Directive[4] as transposed into the UK law by the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations'). The Habitats Regulations require an assessment (referred to as a Habitats Regulations Assessment or HRA) to be undertaken in respect of any plan or project which either alone or in combination with other plans or projects would be likely to have a significant effect on a site designated within the Natura 2000 network (or European sites) and is not directly connected with, or necessary to, the management of the site. In 2009, the Department of Transport also issued guidance that local transport authorities need to consider if their LTP is likely to have a significant effect on a European site.

'European Sites' are: candidate Special Areas of Conservation (cSACs), Special Areas of Conservation (SACs) and Sites of Community Importance (SCIs)[5] designated pursuant to the Habitats Directive; and Special Protection Areas (SPAs) designated pursuant to the Birds Directive. Paragraph 118 of the National Planning Policy Framework also requires proposed SPAs, possible SACs, listed or proposed Ramsar sites, and sites required to provide compensatory measures to be treated as European sites in England.

[4] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

[5] Mainly offshore sites or sites designated in Scotland.

2 Methodology

2.1 Background

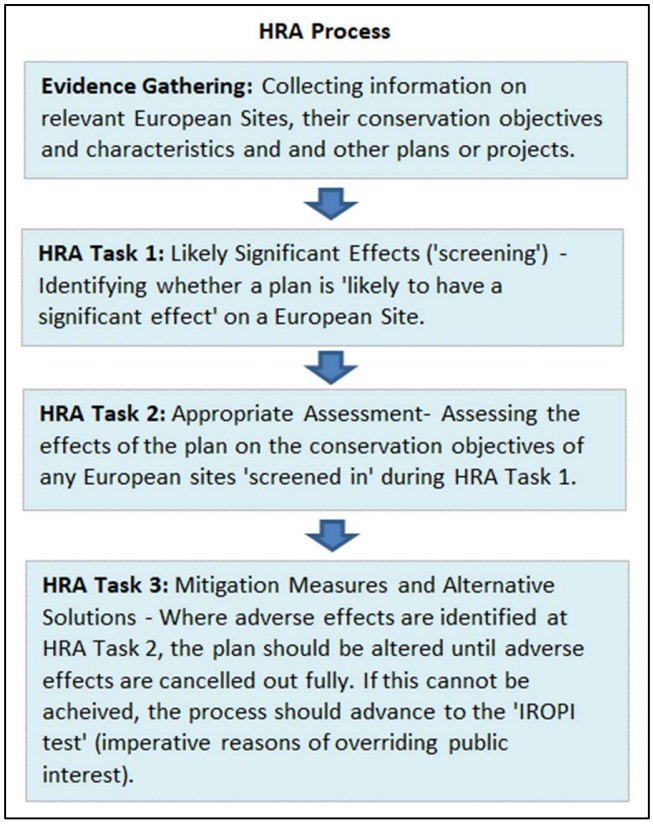
The purpose of an HRA is to assess the significance of potential impacts of a plan on relevant European sites. The assessment should determine whether the plan would adversely affect the integrity of the site in terms of its nature conservation objectives. Where negative effects are identified, other options should be examined to avoid any potential for damaging effects.

The HRA method has been informed by the following guidance documents:

- European Commission (2001). Assessment of plans and projects significantly affecting Natura 2000 sites;
- English Nature (2006) Draft Guidance – The Assessment of Regional Spatial Strategies and Sub-regional strategies under the provisions of the Habitats Regulations;
- Design Manual for Roads and Bridges. Volume 11, Section 4, Part 1: Assessment of Implications (of Highways and/or Roads Projects) on European Sites (including Appropriate Assessment) (HD 44/09); and
- Scottish Natural Heritage (January 2015) Habitats Regulations Appraisal of Plans Guidance for Plan-Making Bodies in Scotland Version 3.0 originally prepared by David Tyldesley and Associates.

Figure 2.1 sets out the HRA process. The HRA process requires close working with Natural England to obtain the necessary information, agree the process, outcomes and mitigation proposals, and to meet the requirements of the Habitats Regulations. The most effective way to achieve this is to agree the approach with Natural England and to undertake the HRA in an iterative manner, informing the development of the plan at each key stage.

Figure 2.1: HRA Process



During screening, the 'Precautionary Principle' has been applied: if an effect cannot be ruled out based on objective information it has been reported as "likely" or not possible to rule out. Furthermore, a judgement[6] by the Court of Justice of the European Union (People Over Wind) ruled that Article 6(3) of the Habitats Directive[7] must be interpreted as meaning that mitigation measures (referred to in the judgment as measures which are intended to avoid or reduce effects) should be assessed within the framework of an Appropriate Assessment (AA) and that it is not permissible to take account of measures intended to avoid or reduce the harmful effects of the plan or project on a European site at the screening stage. The screening exercise must therefore consider elements of the plan without any proposed mitigation.

If Likely Significant Effects (LSEs) on European sites are identified in screening, measures must be put in place to avoid them. Further investigation may be necessary to understand how a plan

[6] http://curia.europa.eu/juris/document/document.jsf?docid=200970&doclang=EN

[7] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

might affect the integrity of European sites i.e. Appropriate Assessment and to develop effective avoidance and mitigation measures (or consider mitigation measures already proposed in relation to schemes and projects).

2.1.1 Evidence Gathering

The first task in undertaking HRA is to confirm the European designated sites to be considered. Current guidance suggests that the following European sites be included in the scope of assessment:

- All sites within the WoE boundary; and
- Other sites shown to be linked to development within the boundary through a known 'pathway'.

Pathways are routes by which a change in activity within a plan area can lead to an effect upon a European site.

The WoE JLTP boundary is the same as the boundary of the WoE JSP. The HRA of the JSP was updated in November 2018 and it is considered that it presents relevant information and a suitable approach which can be utilised within the HRA of the WoE JLTP4 The WoE JSP HRA considered a list of European sites within the WoE boundary and up to 15km from the boundary, as shown in Figure 2.2.

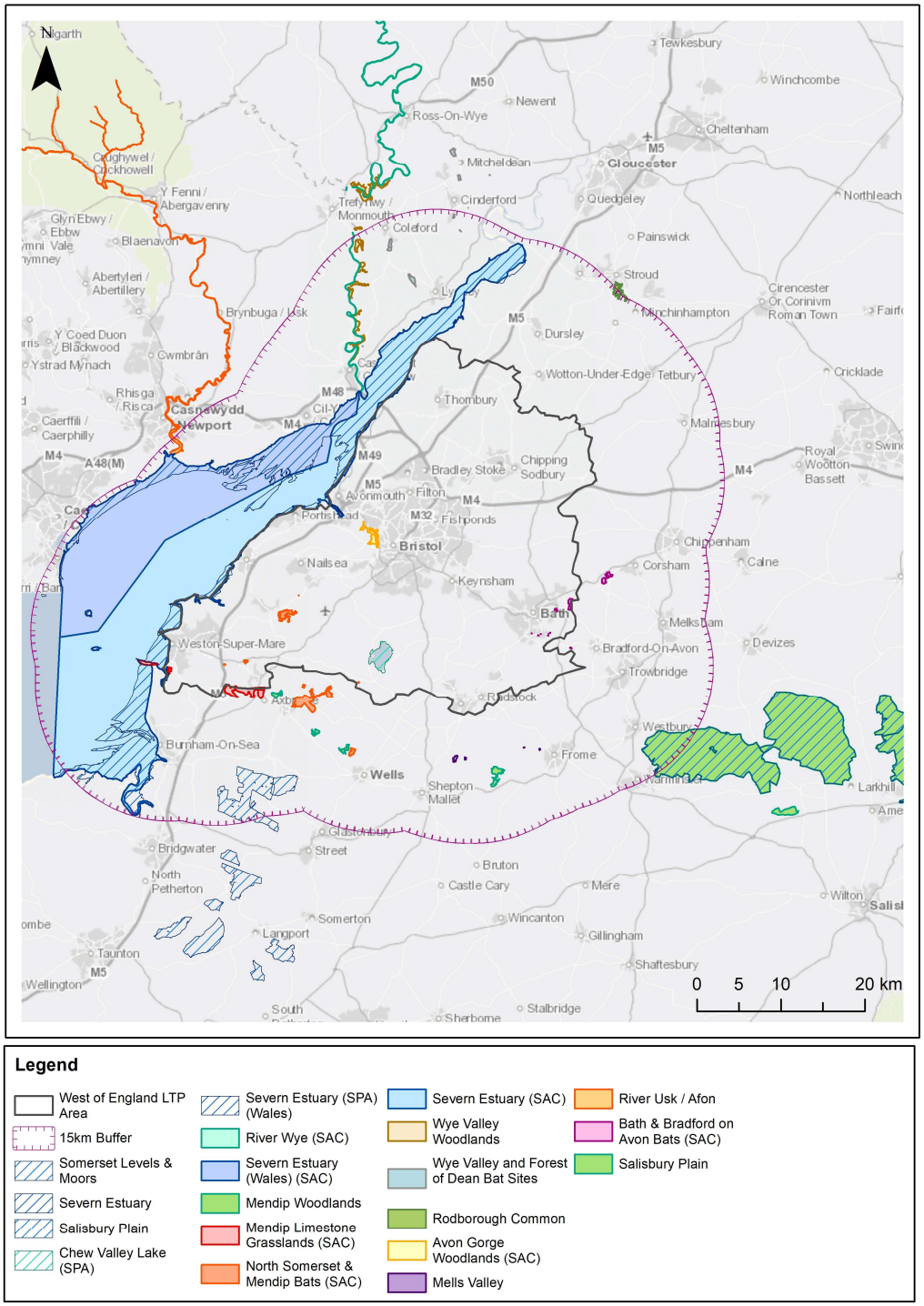
There are six European sites that lie within the WoE boundary, which are:

- Avon Gorge Woodlands SAC;
- Chew Valley Lake SPA;
- Bath and Bradford-on-Avon Bats SAC;
- Mendip Limestone Grasslands SAC;
- North Somerset & Mendip Bats SAC; and
- Severn Estuary SAC, SPA and Ramsar.

Within a 15km buffer there are nine additional European Sites. These are:

- Mells Valley SAC;
- Mendip Woodlands SAC;
- River Usk / Afon Wysg SAC
- River Wye SAC;
- Rodborough Common SAC;
- Salisbury Plain SAC and SPA;
- Somerset Levels and Moor SPA and Ramsar;
- Wye Valley and Forest of Dean Bats SAC; and
- Wye Valley Woodlands SAC.

Figure 2.2: West of England Joint Local Transport Plan Area, 15km Buffer and European sites



Appendix 1 presents a summary of the site designations, qualifying features and priority issues currently impacting or threatening the condition of the features. This information has been obtained from the Natural England site improvement publications and the WoE Joint Spatial Plan HRA Appendix A (November 2017[8] and November 2018 update[9]) which includes initial information from correspondence with site managers/land owners. This information is considered to be sufficient and proportionate to the strategic level of the JLTP4.

It has been agreed with Natural England[10] that the following European sites should be considered in the HRA of the WoE JLTP4:

- Avon Gorge Woodlands SAC;
- Bath and Bradford-on-Avon Bats SAC;
- Chew Valley Lake SPA;
- Mells Valley SAC;
- Mendip Limestone Grasslands SAC;
- Mendip Woodlands SAC;
- North Somerset & Mendip Bats SAC;
- River Usk / Afon Wysg SAC;
- River Wye SAC;
- Rodborough Common SAC;
- Salisbury Plain SAC and SPA;
- Severn Estuary SAC, SPA and Ramsar;
- Somerset Levels and Moor SPA and Ramsar;
- Wye Valley and Forest of Dean Bats SAC; and
- Wye Valley Woodlands SAC.

This concurs with the HRA Update of the WoE JSP (November 2018), with the exception of Salisbury Plan SAC and SPA, which was not included in the WoE JSP HRA. Salisbury Plain SAC and SPA has been included within the screening of the WoE JLTP4 in line with the precautionary principle.

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[8] Accessed from the West of England Joint Spatial Plan website on 24/09/18: https://www.jointplanningwofe.org.uk/consult.ti/JSPPublication/viewContent?contentid=346611

[9] Accessed from West of England Joint Spatial Plan website on 8/05/2019 https://www.jointplanningwofe.org.uk/gf2.ti/-/978402/43579653.1/PDF/-/West_of_England_JSP_HRA_Report_LUC_Update_final.pdf

[10] Letter from Natural England dated 12 October 2018 responding to a consultation request from ClearLead Consulting Ltd

2.1.2 Screening

Details of the JLTP4 are provided in Section 3. The plan consists of a vision and set of objectives and outcomes; 14 high-level policies and 'interventions' supporting the policies. The delivery of these aspects of the plan will be supported by a programme of major transport schemes set out within Appendix 3 of the plan.

The whole plan has been considered in the HRA. No potential LSEs have been identified as resulting from the vision, objectives, outcomes, policies and interventions which are 'softer' aspects of the plan. Where a potential impact pathway could exist with a major scheme in theory, a precautionary buffer distance from the European site has been identified, within which a major scheme could potentially result in an LSE (see Table 2.1).

The priority issues currently impacting or threatening the condition of the features of the European sites listed above are presented within Appendix 1. Table 2.1 identifies which of these issues could be affected by the JLTP4 major schemes. For some priority issues, there is no potential impact pathway with the JLTP4 and this has been explained within Table 2.1 where this is the case.

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Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature**[11]	**Potential impact pathway?**	**Buffer Distance**	**Justification**
Avon Gorge Woodlands SAC	Invasive species particularly from *Cotoneaster spp,* holm oak and other non-native plant species	No	N/A	Invasive plant species already occur on-site within the SAC. Also *Cotoneaster* spp. seeds are typically spread by birds[12], and holm oak acorns by rodents and birds[13]. New transport schemes such as new roads are therefore unlikely to increase the spread of invasive plant species within the SAC.
	Undergrazing resulting in loss of habitat	No	N/A	LTP is not likely to affect the grazing regime on the SAC.
	Direct habitat loss	Yes	0m	Planning applications may result in direct habitat loss of SAC (i.e. MetroWest Phase1)
	Public access/disturbance, particularly from mountain biking and vandalism	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.

[11] Based on Natural England site improvement publications accessed from website on 25/09/2018. http://publications.naturalengland.org.uk/category/5755515191689216

[12] www.plantlife.org.uk/uk/discover-wild-plants-nature/plant-fungi-species/cotoneaster

[13] Gómez JM, Puerta-Piñero C, Schupp EW (2008) Effectiveness of rodents as local seed dispersers of Holm oaks. Oecologia 155: 529–537

[14] https://www.bracknell-forest.gov.uk/sites/default/files/documents/thames-basin-heaths-spa-delivery-framework.pdf

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature**[11]	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	Change in species distribution due to scrub encroachment and climate change	No	N/A	LTP is not likely to affect species distribution.
	Disease including ash dieback	No	N/A	Ash dieback spores are primarily spread by wind and also by movement of diseased ash plant[15]. Ash dieback already occurs in the plan area and the Avon Gorge Woodlands are already connected by existing roads/railways. The LTP is therefore unlikely to increase the spread of disease within this European Site.
	Air pollution – impact of atmospheric nitrogen on grassland, scrub and woodland.	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement[16].
Bath and Bradford-	Planning permission – potential cumulative adverse impacts from development across a wide area. From both the development themselves and the surveys which	Yes	8km	Greater horseshoe bats have shown to have a maximum home range of up to 8km from a roost[1718]. Planning permission could therefore have an adverse effect within this zone.

[15] Ash dieback – advice from the Royal Horticultural Society. Website accessed on 23/12/2018 https://www.rhs.org.uk/advice/profile?PID=779

[16] This is based on DMRB Volume 11, Section 3, Part 1 (HA207/07): Air Quality

[17] Billington, G. 2003. Radio tracking study of Greater Horseshoe bats at Buckfastleigh Caves Site of Special Scientific Interest: English Nature Research Report no. 573. Peterborough: English Nature.

[18] Billington, G. 2001. Radio tracking study of Greater Horseshoe bats at Brockley Hall Stables Site of Special Scientific Interest, May – August 2001.English Nature Research Report No. 442. Peterborough: English Nature.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
on- Avon Bats SAC	are needed to inform the planning applications (i.e. radiotracking).			
	Change in land management	Yes	8km	The LTP could sever fields resulting in changes to grazing regime which could impact on bat foraging. 8km buffer used as greater horseshoe bats have shown to have a maximum home range of 8km from a roost.
	Direct impact on roost sites due to vandalism or recreational pursuits	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people travel for recreation.
	Offsite habitat availability/management due to lack of knowledge of the usage of wider landscape by the SAC species i.e. location of feeding and 'swarming' sites. Feature location, extent and condition unknown due to lack of knowledge about the Bechstein's bat population within and adjacent the SAC.	Yes	8km	An 8km buffer has been used for these priority issues as greater horseshoe bats have shown to have a maximum home range of up to 8km from a roost. This buffer would also ensure any potential LSE to Bechstein's bats are also considered as they have a smaller home range (1km)[19].
	Public access/disturbance due to difficulties with closing the roost	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and

[19] Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation Trust. London.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	sites to the public			relates to the distances people travel for recreation.
	Change in site conditions due to potential collapse of mine sites	No	N/A	The LTP is not likely to affect mine sites.
	Inappropriate designation boundary as several undesignated sites support important population of SAC species	Yes	8km	Greater horseshoe bats have shown to have a maximum home range of up to 8km from a roost[17,18]. Important foraging sites for bats could therefore occur up to 8km from the SAC.
Chew Valley SPA	Maintain favourable hydrology - site is sensitive to changes in water levels. Both increases and reductions can impact upon shoveler, due to their need for soft mud in which to feed.	Yes	4km	Proposed schemes up to 4km of the SPA could potentially result in structural changes to the landscape which could adversely impact the features of this SPA.
	Water quality - site is sensitive to changes to water quality including eutrophication and particularly phosphate levels.	Yes	8km	Road construction and operation adjacent a watercourse linked to the Chew Valley Lake could result in contaminants within surface water run-off entering this SAC. An 8km buffer around this SAC is therefore proposed for water quality as it is considered unlikely that sites outside this zone would adversely impact this lake.
	Public access/disturbance as large numbers of people use the site for recreational activities including fishing, sailing and walking	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people travel for recreation.
Mells Valley SAC	Public access/disturbance – the site is regularly accessed by the public and disturbance of hibernaculum is a threat.	Yes	7km	Recreation - 7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people travel for recreation.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	Wildfire/arson -fire on site are a potential threat to hibernating bats Direct impact from third party due to problems with vandalism and disturbance	Yes	1km	Research has shown that urban effects including arson and damage/disturbance are more likely to occur where developments occur within 500m of a European Site[20] [21] although they do occasionally occur at greater distances. A 1km buffer zone is proposed at this stage in accordance with the 'precautionary principle' as new transport schemes could connect to existing routes that are connected to European Sites, thereby making them more accessible.
	Undergrazing – limestone grassland is currently ungrazed	No	N/A	LTP is not likely to affect grazing regime.
	Inappropriate designation boundary – key habitat could occur outside the SAC as the greater horseshoe bat maternity colony has relocated to an alternative building outside of the SAC	Yes	8km	Greater horseshoe bats have shown to have a maximum home range of up to 8km from a roost[17,18]. Important foraging sites for bats could therefore occur up to 8km from the SAC.

[20] Kirby, J. S. & Tantram, D.A.S. (1999) 'Monitoring heathland fires in Dorset: Phase 1' Report to Department of the Environment, Transport and the Regions: Wildlife and Countryside Directorate

[21] Rylatt, F. Garside, L. Robin, S (2017) Human Impacts on Nature Reserves – The Influence of Nearby Settlements. In Practice Issue 97.

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Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement.[16]
Mendip Limestone Grasslands SAC	Inappropriate scrub control within the grasslands and scrublands	No	N/A	The LTP is not likely to affect scrub control.
	Change in land management because of difficulties in managing vegetation due to terrain	No	N/A	The LTP is not likely to affect land management practices.
	Disease, particularly from ash dieback	No	N/A	Ash dieback spores are primarily spread by wind and also by movement of diseased ash plant[15]. Ash dieback already occurs in the plan area and the Mendip Limestone Grasslands SAC are already connected to the wider locality by existing transport schemes. The LTP is therefore unlikely to increase the spread of disease.
	Public access	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework and relates to the distances people typically travel for recreation.
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement[16].
	Loss of associated habitat – development on land adjacent the greater horseshoe roosts within the	Yes	4km from the caves that support	8km is considered the maximum home range of a greater horseshoe. However, the core foraging habitat is within 4km of a roost. A 4km buffer is therefore considered sufficient to protect the bats, in this

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	caves could result in the loss of foraging/commuting habitat		horseshoe bats	instance, as greater horseshoe are not a primary reason for SAC designation and lower numbers of bats roost here in comparison to the other bat SACs that occur in the locality.
Mendip Woodlands SAC	Illicit vehicles – potential damage from off-road vehicles	Yes	7km	7km buffer for public access/disturbance including illicit vehicle use is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.
	Deer – adverse impact on feature through unsustainable grazing	No	N/A	The LTP is not likely to affect deer grazing
	Disease, particularly from ash dieback	No	N/A	Ash dieback spores are primarily spread by wind and also by movement of diseased ash plant[15]. Ash dieback already occurs in the plan area and the Mendip Woodlands SAC are already connected to the wider locality by existing transport schemes. The LTP is therefore unlikely to increase the spread of disease.
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement.[16]
North Somerset and Mendip Bats SAC	Undergrazing of grassland	Yes	8km	The LTP could sever fields outside of the SAC resulting in changes to grazing regime which could impact on bat foraging. 8km buffer used as greater horseshoe bats have shown to have a maximum home range of 8km from a roost.
	Planning permission – development on land between component SAC sites could result in the loss of foraging/commuting habitat and	Yes	8km	Greater horseshoe bats have shown to have a maximum home range of up to 8km from a roost[17,18.] Important foraging/commuting sites for bats could therefore occur up to 8km from the SAC.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	minor roost sites			
	Change in site conditions due to risk of collapse of mine entrance	No	N/A	The LTP is not likely to affect mine sites.
	Woodland management – excessive sycamore growth may be threatening species composition of woodland	No	N/A	The LTP is not likely to affect woodland management practices.
	Disease, particularly from ash dieback	No	N/A	Ash dieback spores are primarily spread by wind and also by movement of diseased ash plant[15]. Ash dieback already occurs in the plan area and the North Somerset and Mendip Bats SAC are already connected to the wider locality by existing transport schemes. The LTP is therefore unlikely to increase the spread of disease.
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement[16].
River Usk / Afon Wysg SAC	The following priorities were based on the Usk Management Catchment Summary[22]: Water Quality -abstraction threats,	Yes	8km	Road construction and operation adjacent a watercourse linked to the River Usk could result in contaminants within surface water run-off entering this SAC. An 8km buffer around this SAC is proposed as it is considered unlikely that sites outside this zone would

[22] Usk Management Catchment Summary (Natural Resource Wales). Website accessed on 25/09/2018 https://cdn.naturalresources.wales/media/679394/2016_updated_usk_catchment_summary_nrw.pdf?mode=pad&rnd=131596369400000000

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	changes in water level and water quality, including eutrophication due to diffuse pollution from agricultural land management and urban areas.			adversely impact this river. Water abstraction is not considered relevant to this LTP.
	Invasive non-native species, particularly Himalayan balsam, Japanese knotweed and giant hogweed	Yes	7km	Invasive species could be introduced to the River Usk through fly tipping of garden waste, and deliberate and accidental spread by visitors. A maximum buffer of 7km has therefore been implemented as this is considered to be the distance people typically travel for recreation based on the Thames Basin Heaths SPA Framework [14].
	Lack of education and advice	No	N/A	The LTP is not likely to affect education provision relating to the site.
	Decline in aquatic habitats and species due to lack of management.	No	N/A	The LTP is not likely to affect site management practices.
River Wye / Afon Gwy SAC	Water Quality Abstraction threats, changes in water level and water quality, including eutrophication.	Yes	8km	Road construction and operation adjacent to a watercourse linked to the River Wye could result in contaminants within surface water run-off entering this SAC. An 8km buffer around this SAC is proposed as it is considered unlikely that proposed schemes outside this zone would adversely impact this river. As a precaution, large schemes outside of this zone would also be assessed for this issue.
	Physical modification – small scale development throughout the river is impacting on hydromorphology and character	No	N/A	The LTP major schemes are too far away to make have any physical modifications impacts.
	Invasive species, particularly Himalayan balsam, Japanese knotweed and giant hogweed	Yes	7km	Invasive species could be introduced to the River Wye through fly tipping of garden waste, and deliberate and accidental spread by visitors. A maximum buffer of 7km

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
				is therefore proposed as this is considered to be the distance people typically travel for recreation[14].
	Woodland management	No	N/A	The LTP is unlikely to have an effect on woodland management.
	Fisheries – fish stocking occurs at present and management of banks for fishing by river users (i.e. steps, mowing) is not always compatible with SAC features	Yes	7km	7km buffer is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people (including river users) typically travel for recreation.
	Public access/disturbance, particularly from canoeists and anglers	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement.[16]
	Inappropriate scrub control	No	N/A	The LTP is unlikely to have an effect on scrub control / site management.
	Undergrazing of transitional mire and quaking bog feature	No	N/A	The LTP is unlikely to have an effect on grazing / site management.
	Transportation corridors, particularly relevant to Network Rail management activities within SAC.	Yes	200m	Management activities within existing transport corridors that occur within and adjacent a European Site have the potential to result in an LSE. A 200m buffer zone for this issue is considered sufficient to capture any LSE from new schemes.[16]
	Undergrazing of grassland and scrublands	No	N/A	The LTP is unlikely to have an effect on grazing / site management. No impact pathway is identified.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
Rodborough Common SAC	Public access/disturbance, particularly dog walkers	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement.[16]
Salisbury Plain SAC and SPA	The below issues are relevant to the SAC and SPA: Changes in species distribution	Yes	15km	Stone curlews are sensitive to noise and lighting from roads[23]. Traffic increase within the roads that occur through and adjacent the SAC/SPA could result in increased disturbance to stone curlew. In accordance with the Precautionary Principle, proposed schemes within 15km of this SPA/SAC will be screened for LSE.
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement.[16]
Severn Estuary	The below issues are relevant to the SAC and SPA Public access/disturbance particularly from dog walking, horse rising, biking, beach activities, angling and shooting	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.

[23] Green, R.E., Tyler, G.A. & Bowden, C.G.R. (2000) Habitat selection, ranging behaviour and diet of the stone-curlew (*Burhinus oedicnemus*) in southern England. Journal of Zoology, London, 250, 161–183.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
SAC, SPA and Ramsar	Physical modification of watercourse by installation of barriers preventing completion of fish life cycle	Yes	7km	Road construction over a watercourse linked to the Severn Estuary could result in the installation of barriers to fish migration. A 7km buffer zone around the estuary is likely to include proposed schemes which could modify watercourses linked to the Severn Estuary. As a precaution, large schemes outside of this zone would also be assessed for this issue.
	Impacts of development - potential cumulative impact from development	Yes	N/A	This will be considered in the cumulative / in combination effects assessment.
	Coastal squeeze due to rising sea levels reducing available habitat	Yes	4km	Major schemes could potentially contribute to coastal squeeze by introducing new infrastructure near to the coast thereby limiting the potential to create suitable habitat in the long-term. A 4km buffer is proposed in accordance with the Precautionary Principle.
	Change in land management which affects species composition, habitat quality and availability	Yes	4km	The Severn Estuary qualifies as a SPA for several water bird species. These species could also feed within suitable habitats adjacent the estuary. Following the precautionary principle, a 4km buffer zone around the estuary is likely to include all sites which support water bird populations connected to the estuary.
	Change in species distribution resulting from climate change and manmade/natural modifications to habitat	Yes	4km	
	Water pollution from diffuse or direct pollution Marine pollution incidents – potential for significant adverse impact on its features	Yes	8km	Road construction and operation adjacent a watercourse linked to the Severn Estuary could result in contaminants within surface water run-off entering this European Site. An 8km buffer is proposed in accordance with the Precautionary Principle - it is considered unlikely that proposed transport routes outside this zone would have

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
				an LSE on the estuary.
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement.[16]
	Marine consents and permits – the cumulative adverse impacts of aggregate extraction, maintenance dredging and disposal	No	N/A	The LTP is unlikely to affect marine consents and permits, which are subject to project-level HRA.
	Fisheries – potential adverse impacts from recreational and commercial fishing	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.
	Invasive species, particularly from Australian barnacle, mitten crab and the Pacific oyster	No	N/A	The LTP is unlikely to affect the spread of invasive non-native species which are more likely to be affected by policies in the South West and Wales Marine plans and by marine and port activities.
	Marine litter originating from rivers	Yes	8km	Road construction and operation adjacent a watercourse linked to this European Site could result in an increase in litter entering the estuary. An 8km buffer around this SPA has been implemented in accordance with the Precautionary Principle.
Somerset Levels and Moors SPA and Ramsar	Water Quality Maintain favourable hydrology.	Yes	8km	Road construction and operation adjacent a watercourse linked to this European Site could result in contaminants within surface water run-off entering the SPA. An 8km buffer is proposed in accordance with the Precautionary Principle - it is considered unlikely that proposed transport routes outside this zone would have an LSE on the Somerset Levels.
	Water levels and abstraction.	No	N/A	The LTP is unlikely to affect water levels and abstraction.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature**[11]	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	Maintain and upgrade water management structures	No	N/A	The LTP is unlikely to have an effect on water management.
	Change in land management due to landowners deciding to leave Higher Level Stewardship or due to land managers losing access to sites	No	N/A	The LTP is unlikely to have an effect on site management.
	Peat extraction resulting in damage by direct peat removal	No	N/A	The LTP is unlikely to have an effect on peat removal.
	Public access/disturbance particularly from dog walking	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.
	Offsite habitat availability/management – currently limited understanding of how the SPA bird assemblages use the wider ecological network	Yes	8km	The SPA is designated for its over wintering bird assemblage which include golden plover – this species has a large winter home range (200ha)[24] and can frequently range further to feed. Following the precautionary principle, an 8km buffer zone around the SPA is likely to include all sites which support golden plover populations connected to the SPA.
Wye Valley	Physical modification of roost sites due to repair, deterioration and	Yes	200m	The LTP is unlikely to have a physical effect on roost sites. A 200m buffer zone around the SAC is

[24] Kirby. J. *et al (*2000) Key habitat attributes for birds and bird assemblages in England. English Nature Research report No. 359.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
& Forest of Dean Bat Sites SAC	renovation			considered sufficient to flag up any LSE from proposed transport schemes that potentially occur within or adjacent the SAC.[16]
	Public access/disturbance to roost sites due to damage to grilles or unauthorized access by cavers	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.
	Habitat connectivity - between roosts and feeding areas could be adversely impacted by changes to land management	Yes	8km	Greater horseshoe bats have shown to have a maximum home range of up to 8km from a roost[1718]. Important foraging sites for bats could therefore occur up to 8km from the SAC.
Wye Valley Woodlands SAC	Deer grazing impacting woodland	No	N/A	The LTP is unlikely to have an effect on deer grazing.
	Forestry/woodland management required to sustain SAC features	No	N/A	The LTP is unlikely to have an effect on site management.
	Invasive species including Himalayan balsam, periwinkle. Japanese knotweed and cherry laurel	Yes	7km	Invasive species could be introduced to the Wye Valley through fly tipping of garden waste, and deliberate and accidental spread by visitors. A maximum buffer of 7km is therefore proposed as this is considered to be the distance people typically travel for recreation[14].
	Habitat connectivity to maintain migration of species	Yes	4.1km	Lesser horseshoe bats have shown to have a maximum home range of up to 4.1km from a roost in lowland sites[25]. Important foraging sites for this species could therefore occur up to 4.1km from the SAC.
	Species decline due to	No	N/A	The LTP is unlikely to have an effect on site

[25] Knight, T. 2006. The use of landscape features and habitats by the Lesser Horseshoe bat (Rhinolophus hipposideros). PhD thesis. University of Bristol.

Table 2.1: Identifying Theoretical Potential Impact Pathways and Buffer Zones for GIS Screening				
Site	**Priority issues currently impacting or threatening the condition of the feature[11]**	**Potential impact pathway?**	**Buffer Distance**	**Justification**
	inappropriate land management			management.
	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads	Yes	200m	The 200m buffer reflects the need to address issues for habitats which are considered to potentially be at risk from increased air pollution resulting from increased traffic movement.[16]
	Disease, particularly ash dieback and sudden oak death	No	N/A	Ash dieback spores are primarily spread by wind and also by movement of diseased ash plant. Ash dieback already occurs in the plan area and the Wye Valley Woodlands SAC are already connected to the wider locality by existing transport schemes. The JLTP is therefore unlikely to increase the spread of disease.
	Public access/disturbance resulting in erosion and damage to ground flora and potential access to roost site	Yes	7km	7km buffer for public access/disturbance is based on the Thames Basin Heaths SPA Framework[14] and relates to the distances people typically travel for recreation.

In summary, the buffers used for screening are:

8km buffer	to identify potential risk of loss of bat foraging and commuting habitat around the SACs that are designated for greater horseshoe bats where they are a primary reason for selection. All schemes that cross the River Avon are also included, even if they are outside of this 8km buffer, as this watercourse is important for horseshoe bats associated with the Bath and Brad-on-Avon Bats SAC;
	to identify potential risk of water pollution/litter applicable to all European sites where water quality is a priority issue currently affecting or threatening the condition of a feature of the site; and
	to identify potential risk of habitat loss around the SPA designated for bird assemblages including golden plover.
7km buffer	to identify potential risk of increased recreational pressures applicable to all European sites where recreational is a priority issue currently affecting or threatening the condition of a feature of the site; and
	to identify potential risk of invasive species applicable to all European sites where invasive species is priority issue currently affecting or threatening the condition of a feature of the site.
4km buffer	to identify potential risk of loss of bat foraging and commuting habitat around SACs designated for lesser horseshoe bats. This buffer has also been used to identify risk of loss of bat foraging/commuting habitat around the greater horseshoe bat roost that occurs within the Mendip Limestone Grasslands SAC. A smaller buffer been used for this SAC as greater horseshoe are not a primary reason for SAC selection and lower number of bats roost here compared to the other bat SACs in the locality;
	to identify potential risk of hydrological effects applicable to all European sites where water levels are a priority issue currently affecting or threatening the condition of a feature of the site; and
	to identify potential risk of habitat loss around the European Sites designated for water bird assemblages (not including golden plover).
1km buffer	to identify potential risk of urban effects i.e. fire/arson or fly tipping applicable to all European sites where urban effects are priority issues currently affecting or threatening the condition of a feature of the site.
200m buffer	to identify potential risk of localised (rather than dispersed) effects on air quality applicable to all European sites where air quality is a priority issue currently affecting or threatening the condition of a feature of the site.

This is a similar approach to that used in the HRA of the WoE JSP (November 2018) but with some variation to the buffer distances. The distances suggested have been justified within Table 2.1 and the precautionary approach has been followed.

A GIS exercise was undertaken to identify all major schemes which fall within each buffer. The exercise examined each buffer in turn rather than layering buffer zones, in order to examine potential effects separately in the first instance, such as potential LSEs relating to air quality or potential LSEs relating to disturbance of birds. Using buffer zones has helped to identify sites that could be at risk of impact from the JLTP4 schemes, and to filter out those sites not considered at risk of LSEs.

Please note that not all of the major schemes are plotted on the GIS because for some schemes locations or routes are not yet available. Where major schemes have not been available on GIS, locational information within the JLTP4, consultation with WoE officers and reference to supporting studies such as the Joint Transport Study[26] have been used to screen them.

Screening tables were prepared in Excel (presented as a technical appendix - Appendix 3). The screening tables present information on whether or not schemes fall within the identified buffer zones and a screening decision which is based on expert judgement and informed by the buffer zone analysis. The screening decisions are one of the following:

- The scheme is not likely to have a significant effect on a European site - no LSE identified;
- The scheme is likely to have a significant effect on a European site either alone or in-combination with other plans and projects - LSE identified; or
- It is not possible to rule out the risk of significant effects on a European site, either alone or in-combination with other plans and projects – LSE identified.

Screening was completed in November 2018 and the findings are presented within Section 4 of this report. Screening concluded that a number of schemes could result in LSEs, or there was uncertainty, and therefore HRA Task 2 (Appropriate Assessment) would need to be undertaken in relation to these schemes.

2.1.3 Appropriate Assessment

In this task, the schemes 'screened in' in HRA Task 1 have been considered in more detail in order to examine the risk of adverse effects on the conservation objectives and integrity of the European sites. Where screening identified a potential impact pathway between a proposed scheme and a European Site then the scheme and the surrounding habitat was examined in detail

[26] West of England Joint Transport Study Final Report (October 2017)

using GIS and aerial photography to determine the magnitude and extent of the potential impact. Published research relating to the potential impact pathway and the relevant European site was also used where possible within each Appropriate Assessment topic chapter. Where a risk of adverse effects remained following this detailed review then suitable mitigation measures are proposed to avoid adverse effects occurring (HRA Task 3). The Appropriate Assessment is presented in this report from Section 5 onwards.

The JLTP4 is closely aligned with the WoE JSP[27]. Both plans cover the same geographical area. The WoE JSP is a strategic Development Plan Document (DPD) that will provide the strategic overarching development framework to guide housing, employment and infrastructure requirements in the WoE to 2036. The JSP and the framework within the WoE is discussed in more detail in Section 3.2.

The JSP was submitted to the Secretary of State on the 13th April 2018. On this date the JSP entered the 'examination stage'. As part of the inspectors' initial review of the JSP, additional work has been requested to be made public including in relation to the HRA of the JSP. The additional evidence was published in November 2018.

The JSP HRA has been completed in advance of the HRA of the JLTP4. Information within the JSP HRA update (November 2018) has therefore been referred to where relevant within the Appropriate Assessment chapters of this report. The HRA of the JSP has assessed very similar issues compared with the HRA of the JLTP4 but it should be noted that the scopes of the JLTP4 and the JSP and therefore their respective HRAs are different.

This HRA of the JLTP4 is strategic in nature, acknowledging that there is a need for further detailed, specific assessments of impacts and mitigation requirements at the local level (through the preparation of new Local Plans and their HRAs and the development consent process). The objective of the Appropriate Assessment is therefore to determine whether there can be a reasonable degree of certainty that the transport schemes can be delivered in conjunction with the JSP and through lower-tier plans without harm to European qualifying habitats and species.

Potential in combination effects of the JLTP4 schemes with the WoE JSP are considered within each Appropriate Assessment chapter of this report. In addition, potential in combination effects of the JLTP4 schemes interacting with each other have also been considered within each Appropriate Assessment chapters of this report. Finally, a separate consideration of potential in combination effects of the JLTP4 with other relevant plans and projects in the area is presented within Section 14.

[27] West of England Joint Spatial Plan Publication Document November 2017 https://www.jointplanningwofe.org.uk/consult.ti/JSPPublication/viewContent?contentid=346611

2.1.4 Assessment Limitations

The HRA has been limited by the level of detail available on the schemes, which is variable, and the different temporal scopes of the schemes. GIS information provided for the schemes by the WoE transport planning team is not entirely accurate i.e. it provides a generation location for most schemes rather than an exact route alignment. This is deliberate and reflects the fact that some schemes are in the early stages of development, where options and feasibility are being considered. The temporal scope of schemes is also variable. For example, some schemes are early investment schemes under development and some schemes are longer term aspirations which may not be delivered within the JLTP4 plan period. This difference in timings has been considered within the Appropriate Assessment as far as possible, particularly in relation to in combination effects between schemes and with the JSP.

3 The West of England Joint Local Transport Plan 4

3.1 Contents of the Plan

The draft WoE JLTP4 contains a vision and five objectives, each of which is supported by a set of outcomes, as presented within Box 3.1. The JLTP4 also presents policies and accompanying interventions (in Sections 6 to 9 of the JLTP4 – see Box 3.2) and a list of major schemes which will support delivery of the plan objectives and policies (in Section 11 and Appendix 3 of the JLTP4).

The JLTP4 sets out the transport priorities, objectives and policies in order to achieve its vision, to: *'connect people and places for a vibrant and inclusive West of England*'. The JLTP4 aims to address existing issues (including, but not limited to transport connectivity, congestion, air quality, a historic lack of transport funding, etc.). The JLTP4 also aims to address future challenges (e.g. the mobility challenges from an ageing population, the emergence of smarter transport technologies and crucially the major growth in housing and employment) in the WoE up to and beyond 2036.

Box 3.1: WoE JLTP4 Draft Vision, Objectives and Outcomes

Vision

The long-term aspiration for transport in the West of England is encompassed in the vision for JLTP4:

'Connecting people and places for a vibrant and inclusive West of England'

Objectives

Five objectives have been identified, based on the aspirations of the West of England authorities and previous plans and policies prepared. There is no priority allocated to the objectives as they all have a role to play in achieving the vision for the West of England. The objectives, as follows, are in no particular order:

- Support sustainable economic growth
- Enable equality and improve accessibility
- Address poor air quality and take action against climate change
- Contribute to better health, wellbeing, safety and security
- Create better places

Outcomes

For each of the objectives, several outcomes have been agreed. These outcomes set out what is being sought to be achieved by delivering the plan. The policies included in the plan will support the delivery of the objectives and outcomes.

Box 3.1: WoE JLTP4 Draft Vision, Objectives and Outcomes - continued

Support sustainable economic growth

- Improved efficiency and reliability on local, national and international transport networks
- Delivery of new houses and jobs, identified through the JSP, is supported
- Access opportunities to employment growth areas is provided for all
- Transport assets are maintained and managed, and demonstrate value for money
- The high-quality transport network generates inward investment
- Congestion and demand on the network is better managed through technological advances

Enable equality and improve accessibility

- Connectivity is increased and transformed, enabling seamless "door-to-door" movements of people and goods
- Access to services for residents in rural or remote areas is improved
- Better information to aid travel decisions is provided
- Low carbon transport and opportunities for reducing the need to travel are maximised
- New public transport systems, smarter ticketing and faster payment options are enabled

Address poor air quality and take action against climate change

- NOx, particulates and carbon emissions are reduced
- Air quality in the AQMAs is improved
- Air quality remains better than national standards outside the AQMAs
- The transport network is resilient and adaptable
- Technological advances to improve air quality and monitoring are embraced

Contribute to better health, wellbeing, safety and security

- There is a step change in the number of healthy, low carbon walking and cycling trips
- There is a continued reduction in the number of road casualties on the transport network
- Road safety for transport users is improved, particularly for those most at risk
- Personal safety on the transport network is improved, and there is less crime and fear of crime

Create better places

- Journey experience is enhanced through an integrated and connected transport network
- The impact of the transport network on the built, natural and historic environment is minimised
- Streetscape, public spaces and urban environments are enhanced
- The transport network supports neighbourhood renewal and the regeneration of deprived areas

Section 6 of the draft JLTP4 sets out the planned actions with regards to connectivity within the WoE – see Box 3.2.

Box 3.2. sets out the interventions and policies set out in Sections 6 to 9 of the draft JLTP4.

Box 3.2: Interventions and Policies within the JLTP4

Beyond West of England Connectivity policies and interventions

Two main policies will support delivery of the JLTP4 objectives at the beyond West of England connectivity level:

- B1: Enhance competitiveness of major gateways and improve connectivity to international markets
- B2: Improve strategic resilience of the network for all trips

The policies will be delivered by focussing on specific interventions, which are:

- Support Bristol Airport as the main gateway for air travel in the South West
- Support the role of Bristol Port
- Maximise opportunities arising from improvements to the strategic road and rail network, and identify and support delivery of further changes
- Identify opportunities to manage the impact of Severn Bridge tolls removal
- Support the role of coaches for residents and visitors
- Manage and mitigate the impact of regular and infrequent events on the transport network

Within West of England Connectivity policies and interventions

Within the West of England the following policies will support delivery of the JLTP4 objectives:

- W1: Provide more public transport options and improve service quality
- W2: Provide for journeys where public transport is not an option
- W3: Use, as appropriate, charging measures and technological advances to influence and better manage demand
- W4: Improve resilience of the network, providing increased reliability
- W5: Enable business clustering and the efficient movement of freight

The policies will be delivered by focussing on specific interventions which include:

- Provide high quality and reliable mass and rapid transit
- Support and enhance existing public transport services
- Provide for journeys where public transport is not an option
- Provide Park & Ride and sharing schemes to minimise the impact of single occupancy vehicles
- Use technology to keep traffic moving
- Embrace technology to improve cleaner travel options
- Use, as appropriate, charging measures to influence and manage the demand of private car use
- Define, manage and maintain the Key Route Network
- Effectively manage the Major Road Network
- Effectively accommodate development sites and associated trips

Box 3.3: Interventions and Policies within the JLTP4 - continued

- Support the delivery of Enterprise Zones/business clustering
- Balance the requirement for distributing goods, with mitigating the adverse impact of vehicles

Local policies and interventions

Local connectivity in the West of England will support delivery of the JLTP4 objectives, by focussing on these policies:

- L1: Enable walking and cycling, 'active modes of travel', to be the natural choice for shorter journeys
- L2: Reduce the number and severity of casualties for all road users
- L3: Encourage residents and employees to make more sustainable and healthier travel choices
- L4: Support opportunities for all sectors of the population to access the services they require, wherever they live
- L5: Support the identification and implementation of measures that will improve air quality

The policies will be delivered by focussing on specific interventions, which include:

- Provide schemes to support the uptake of cycling
- Consider the needs of all road users in the design of transport and highway schemes, particularly vulnerable road users
- Maximise awareness of sustainable and active travel choices and the benefits these bring
- Support those without a private car, who need to travel, in accessing the services they require
- Promote the role of technology in accessing services and employment
- Support ongoing work to manage the impact of transport on air quality and climate change
- Support ongoing work on Clear Air Zones
- Support work on Zero and Low Emission Vehicles

Neighbourhood policies and interventions

Neighbourhood connectivity in the West of England will support delivery of the JLTP4 objectives, by focussing on these main policies:

- N1: Use master planning and local design to create better places
- N2: Facilitate the use of active modes for all short trips, including the first and last mile of longer journeys

The policies will be delivered by focussing on specific interventions, including:

- Improve the quality of streets and public realm
- Integrate walking, cycling and public transport into new developments
- Support and maintain Public Rights of Way
- Work with residents and communities to identify barriers to accessibility
- Support the provision of safe crossings and speed reduction in appropriate locations

The West of England's Joint Transport Study (JTS) sets out an ambitious vision for transport to 2036, identifying a programme of transport packages that will transform the travel choices available to residents and visitors. These, along with other schemes, are being taken forward as the major transport schemes programme to support the delivery of the JLTP4.

Major schemes are defined as those which are estimated to cost £10M or more. Schemes estimated to cost less than £10M will be delivered by the Local Authorities via their Local Plans and are not part of the JLTP4.

The JLTP4 contains five Transformational Major Schemes, which would consist of mass transit routes, as follows:

- T1 Bristol City Centre to Airport;
- T2 Bristol City Centre to Bath;
- T3 Bristol City Centre to East Fringe;
- T4 Bristol City Centre to North Fringe; and
- T5 Bath City Centre and corridors.

These are all currently in the feasibility stage.

The JLTP4 also contains eight 'Corridor Scheme Packages' to mitigate the growth set out within the WoE Joint Spatial Plan (JSP), which were identified within the WoE Joint Transport Strategy[26].

In addition, there are six early investment schemes in progress (committed projects) and 20 early investment schemes under development. A further six longer term scheme opportunities are also listed in the JLTP4. Details of all of the schemes are included in Appendix 2 of this report.

3.2 Relationship of the JLTP4 with the West of England JSP

The WoE JSP as a statutory Development Plan Document (DPD) will provide the vision for the delivery of homes and jobs needed to address the housing and employment land requirements and spatial distribution strategy for the WoE. On adoption as a DPD it will carry full weight in the planning system and provide the higher-level strategic planning policy framework for each authority's new Local Plan for the period 2016 to 2036. The JSP identifies Strategic Development Locations (SDLs) but does not allocate sites. The SDLs are as follows:

- Bath and North East Somerset: North Keynsham (around 1,500 dwellings), Whitchurch (around 2,000 dwellings);
- Bristol: Land at Bath Road, Brislington (Around 750 dwellings);
- North Somerset: Backwell (around 700 dwellings), Banwell Garden Village (around 1,900 dwellings), Churchill Garden Village (around 2,675 new dwellings), Nailsea (around 2,575 dwellings); and

- South Gloucestershire: Buckover Garden Village (around 3,000 dwellings), Charfield (around 1,200 dwellings), Coalpit Heath (around 1,800 dwellings), Thornbury (around 500 dwellings), Yate (around 2,000 dwellings).

Site specific allocations and policy designations (including to deliver the SDLs) will be determined through each Unitary Authority's Local Plan, which will need to be in general conformity with the JSP and the strategic growth identified.

Both the JLTP4 and JSP were informed and supported by the Joint Transport Study[26] (JTS), a data-driven, technical study that took the proposed growth locations (SDLs) across the WoE and identified the transport infrastructure that would be required to deliver them, against a backdrop of existing and emerging transport issues and challenges, such as the need to shift away from private car use and onto more sustainable modes of transport wherever possible (public transport, walking and cycling). The JLTP4 has been informed by both the JSP Emerging Transport Findings (which informs what transport infrastructure will be required to deliver the SDLs) and the JTS.

The Unitary Authorities Local Plans will be informed by the policies and outputs from both the JSP and JLTP4. Masterplanning the SDLs as part of the Local Plan process will consider the framework of transport policies and major schemes outlined in JLTP4, including safeguarding major transport scheme alignments. SDL Masterplanning for the Local Plans will also outline other planning and spatial considerations such as flood risk and drainage, public open space provision and green infrastructure requirements, as well as land allocations for housing and employment.

The Local Plans will also need to undertake their own HRAs. These will be informed by the strategic solutions and recommendations set within the HRAs of both the JSP and JLTP4.

The Local Plans will also be informed by the WoE Green Infrastructure Strategy (GI Strategy). The GI Strategy is providing a shared evidence base and technical guidance to support the preparation of each Council's Local Plan. This will ensure a consistent approach to GI across the West of England, as well as to ensure conformity with the JSP. While the GI Strategy should provide a tool for developing policy, and best practice examples, it will be up to each Council through the Local Plans to identify how policy wording is framed and how its outputs inform each authority's Local Plan HRA.

At an even more localised level of the framework, individual HRAs for major schemes will be required to demonstrate a positive environmental outcome for sensitive sites in local proximity. This detail is not possible at the strategic level HRA (for JSP and JLTP4 HRAs), with the SDLs and major transport schemes still in the process of being defined in detail. Such major schemes are owned by and will be implemented by the local authority, including WECA, in which the scheme lies (including liaison with neighbouring authorities where appropriate). The JLTP4 will require as policy that the schemes will have programmed sufficient time and budget for the necessary environmental considerations to be included (such as an HRA, when required). This also includes the need to include funding in the overall scheme cost for any mitigations identified

for the scheme in the HRAs at the strategic (JSP and JLTP4), local (Local Plan) and scheme levels. This is common practice in planning as is allocating both time and resources as part of the major scheme planning and delivery process. The HRAs of the JSP and JLTP4 and of the Local Plans will be used to inform the HRA of any major schemes requiring an HRA, completing the multi-tiered framework approach to ensure environmental protection and enhancement at the strategic, local and scheme levels.

As set out above, HRAs at different plan levels are complementary, and information and evidence will inevitably evolve over time. The findings and outputs of the JSP HRA has identified recommendations for changes to the JSP policy as well as additional work, such as surveys, to address impacts on European sites. The surveys to inform more detailed policies and site allocations in Local Plans and their HRAs have commenced. Such survey work is referenced within the Appropriate Assessment chapters 5-12 where relevant.

The mitigations and mechanisms introduced through the HRA of the JSP, together with the HRA of the JLTP4, set a framework which begins at the strategic level and is required to be implemented through Local Plans and detailed project-level HRAs for sites and infrastructure.

4 Screening Findings

4.1 Introduction

This section summarises the screening of the JLTP4 major schemes and is supported by a technical appendix – Appendix 3.

4.2 Screening Findings

Screening of the major schemes has identified LSEs set out in Table 4.1.

LSEs have been identified in relation to the following sites:

- Avon Gorge Woodlands SAC;
- Bath and Bradford-on- Avon Bats SAC;
- Chew Valley Lake SPA;
- Mendip Limestone Grasslands SAC;
- Mendip Woodlands SAC;
- North Somerset and Mendip Bats SAC; and
- Severn Estuary SAC, SPA and Ramsar.

The potential LSEs identified in screening relate to:

- Loss of foraging areas or severance of flyways used by bats;
- Increase in recreational pressures;
- Water pollution;
- Marine litter;
- Loss of off-site habitats for birds;
- Direct habitat loss;
- Physical modification of watercourses; and
- Coastal squeeze effects.

No LSEs were identified in relation to air quality and spread of invasive species and diseases within the screening exercise because no impact pathways were identified. With regards to air quality, only the MetroWest Phase 1 scheme is located within 200m of a European site where air quality is a priority issue currently affecting or threatening the condition of a feature of the sites. However, it has been possible to screen out this scheme within the screening table in Appendix 3 using information available in the Environmental Statement for the scheme.

No schemes are located within 7km of the River Usk / Afon Wysg SAC, the River Wye / Afon Gwy SAC or the Wye Valley Woodlands SAC. These are the only European sites identified in Table 2.1 which are vulnerable to effects from invasive species and therefore no LSEs were identified in relation to invasive species in the screening exercise.

Some uncertainty was identified in relation to some schemes for which locational screening has not been possible at this stage (due to routes not being identified etc.).

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
Mass Transit Schemes		
Bristol City Centre to Airport (T1)	**North Somerset and Mendip Bats SAC**	• The proposed route passes within 8km of the Kings Wood component site of the North Somerset and Mendip Bats SAC and could potentially result in either the loss of foraging areas or severance of flyways used by the greater horseshoe bats.
Bristol City Centre to Bath (T2)	**Bath and Bradford-on- Avon Bats SAC**	• Proposed route (particularly the proposed light rail route option) could potentially result in either the loss of foraging areas or severance of flyways used by the greater horseshoe bats roosting in the Bath and Bradford-on-Avon Bats SAC. • The proposed route could also increase the number of passengers between Bath and Bristol potentially resulting in increased recreational pressures to the SACs.
Bristol City Centre to North Fringe (T4)	**Severn Estuary SAC, SPA and Ramsar**	• The proposed route could increase the number of passengers between north Bristol and central Bristol, potentially increasing recreational pressures to the European Sites. • The proposed route could also result in physical changes to watercourse and increased water pollution and marine litter to the Severn Estuary.
Bath city centre and corridors (T5)	**Bath and Bradford-on- Avon Bats SAC**	• The proposed route could result in either the loss of foraging areas or severance of flyways used by the bats roosting in the Bath and Bradford-on-Avon Bats SAC. • The proposed route could also increase the number of passengers into Bath and the environs thereby resulting in increased recreational pressures to the SAC.

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
Keynsham (G2)		
A4-A4175 Link	**Bath and Bradford-on- Avon Bats SAC**	• New link could cross River Avon which is known to be used by the horseshoe bats associated with the Bath and Bradford-on-Avon Bats SAC.
Nailsea and Backwell (G4)		
Local improvements to road network in Nailsea area	**Severn Estuary SAC, SPA and Ramsar** **North Somerset and Mendip Bats SAC** **Avon Gorge Woodlands SAC**	• New roads could result in the loss of feeding habitats used by bats roosting within the North Somerset and Mendip Bats SAC or birds connected with the Severn Estuary. • The new roads could also result in physical modifications to watercourses, and increase number of visitors, water pollution and marine litter which could affect European Sites.
Nailsea to Clevedon Cycle Route	**Severn Estuary SAC, SPA and Ramsar**	• Potential to increase the number of visitors to the Severn Estuary.
Nailsea - Backwell A370 link	**Avon Gorge Woodlands SAC** **Severn Estuary SAC, SPA and Ramsar** **North Somerset and Mendip Bats SAC**	• Potential to increase the number of visitors to the Severn Estuary and Avon Gorge SAC. • Potential to result in the loss of supporting sites for bats
M5 J19 & J20 improved multi-modal connections	**Severn Estuary SAC, SPA and Ramsar** **North Somerset and Mendip Bats SAC**	• Potential habitat loss within sites used by birds associated with the Severn Estuary and bats associated with the North Somerset and Mendip Bats SAC. • Potential to increase recreational pressures. • It is uncertain whether the new junction/multi-modal corridor would result in physical modification of watercourses associated with the

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
		Severn Estuary or an increase in water pollution and marine litter. LSEs from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.
Banwell and Churchill (G5)		
Sustainable travel package: Banwell-Churchill Cycle Route	**North Somerset and Mendip Bats SAC** **Severn Estuary SAC, SPA and Ramsar** **Mendip Woodlands SAC** **Mendip Limestone Grasslands SAC**	• Potential to increase the number of visitors to the European Sites.
A371 / A368 Banwell Bypass	**Mendip Woodlands SAC** **Mendip Limestone Grasslands SAC** **North Somerset and Mendip Bats SAC**	• Potential to result in habitat loss within sites used by bats associated with the North Somerset and Mendip Bats SAC. • Potential increase in recreational pressures. • It is uncertain whether the bypass would result in physical modification of watercourses associated with the Severn Estuary or an increase in water pollution and marine litter- LSE from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.
A368 Churchill and Sandford Bypass	**Mendip Woodlands SAC** **Mendip Limestone Grasslands SAC** **North Somerset and Mendip Bats SAC**	• Potential result in habitat loss within sites used by bats associated with the North Somerset and Mendip Bats SAC. • Potential increase in recreational pressures. • It is uncertain whether the bypass would result in physical modification of watercourses associated with the Severn Estuary or an increase in water pollution and marine litter- LSE from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
		unlikely to result in marine pollution incidents or coastal squeeze effects.
Bristol Urban Area (G7)		
Bristol walking and cycling package:	**Uncertain**	• Exact routes are yet to be defined and therefore it is not possible to screen locations. LSE due to uncertainty.
A4 Portway Park & Ride expansion	**Severn Estuary SAC, SPA and Ramsar**	• Potential water pollution during construction due to proximity to the estuary.
Weston-super-Mare (G8)		
Local highway junction improvements	**Severn Estuary SAC, SPA and Ramsar** **Mendip Limestone Grasslands SAC** **North Somerset Bats SAC**	• Potential LSE in relation to airfield bridge from the Weston villages development sites onto the A370 in Weston. The bridge is proposed on grassland approximately 2km from the Severn Estuary. An LSE is therefore predicted at this stage due to uncertainty. Various potential effects.
Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route	**North Somerset and Mendip Bats SAC** **Severn Estuary SAC, SPA and Ramsar**	• Potential to increase the number of visitors to the European Sites as they are connected to one another and part of the route runs near to the Severn Estuary and North Somerset and Mendip Bats SAC.
Local walking & cycling infrastructure improvements: Banwell-Churchill Cycle Route	**North Somerset and Mendip Bats SAC** **Severn Estuary SAC, SPA and Ramsar** **Mendip Woodlands SAC** **Mendip Limestone Grasslands SAC**	• Potential to increase the number of visitors to the European Sites as they are all connected to one another.

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
Early Investment Schemes in Progress (Committed Schemes)		
M49 Avonmouth Junction Upgrade (C1)	**Severn Estuary SAC, SPA and Ramsar**	• Potential result in habitat loss within sites used by birds associated with the Severn Estuary. • Potential increase in recreational pressures. • It is uncertain whether the new junction would result in physical modification of watercourses or an increase in water pollution and marine litter to the Severn Estuary. LSEs from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.
MetroWest Phase 1 (C3)	**North Somerset & Mendip Bats SAC** **Avon Gorge Woodlands SAC**	• Conversations with Natural England identified potential direct loss of habitats within the Avon Gorge Woodlands SAC as a result of this scheme. • Potential loss of commuting/feeding habitat for horseshoe bats.
Bristol South West Economic Link (BSWEL) (E1)		
Package 2: A38 online improvements between A368 to Bristol Airport	**North Somerset & Mendip Bats SAC**	• Potential loss of feeding habitat for bats.
Package 4: A38 (south) offline improvements	**Mendip Woodlands SAC** **North Somerset & Mendip Bats SAC** **Avon Gorge Woodlands SAC**	• Potential habitat loss within sites used by bats. • Potential increase in recreational pressures.

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
Package 6: Rail options: Bristol Airport Rail Link Phase One	**Uncertain**	• This is subject of the mass transit feasibility study that is to be completed in December 2018. Location therefore cannot be screened. LSE due to uncertainty.
Package 7: Rail options: Bristol Airport Rail Link Phase Two	**Uncertain**	• This is a long term aspiration and may not be delivered within the JLTP4 plan period. Options for rail or tram-train between WSM and Bristol airport and then onwards to Bristol city centre are included within the BSWEL report. Potential routes for link are yet to be defined. LSE due to uncertainty.
Package 8: A370-A38 Link	**Uncertain**	• This is a long term aspiration and may not be delivered within the JLTP4 plan period. No route options are being considered yet. Currently low risk but LSE identified due to uncertainty.
Early investment schemes under development		
East of Bath Link (E2)	**Bath and Bradford-on- Avon Bats SAC**	• Potential LSE if the proposed road results in loss of feeding habitats from bats connected with the SAC.
M5 Junction 19 (E3)	**Severn Estuary SAC, SPA and Ramsar** **North Somerset and Mendip Bats SAC**	• Potential LSE if the proposed road results in loss of feeding habitats for bats or birds. • Potential increase in number of visitors, water pollution and marine litter.
Passenger Rail Service and Capacity Improvements, Station Upgrades and New Stations Package (E4)	**Severn Estuary SAC, SPA and Ramsar** **North Somerset and Mendip Bats**	• Potential habitat loss associated with widening the tracks, potentially resulting in the loss of feeding habitats for birds and flight corridors for the bat associated with the European Sites.

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
(E4): Ashton Gate Station	**Avon Gorge Woodlands SAC** **Severn Estuary SAC, SPA and Ramsar**	• Potential LSE from increased water pollution during construction. • Potential increase in recreational pressures.
(E4): Pill Station	**Severn Estuary SAC, SPA and Ramsar**	• Potential LSE if the proposed station results in loss of feeding habitats for birds. • Potential increase in number of visitors, water pollution and marine litter.
M5 J21A (E6)	**Mendip Limestone Grasslands SAC** **North Somerset and Mendip Bats SAC** **Severn Estuary SAC, SPA and Ramsar**	• Potential habitat loss within sites used by bats. • Potential increase in recreational pressures. • Uncertain whether the new junction/multi-modal corridor would result in physical modification of watercourses associated with the Severn Estuary or an increase in water pollution and marine litter. LSEs from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.
Freezing Hill junction upgrade and whole route improvements (includes Landsdown P&R) (E8)	**Bath and Bradford-on- Avon Bats SAC**	• Potential LSE if the proposed junction upgrade results in loss of feeding habitats for bats. • Potential increase in number of visitors to the SAC.
Interurban cycle routes (E9)	**Uncertain**	• These routes will be defined through the WoE Local Cycling and Walking Infrastructure Plan. Some routes have already been identified and have been screened individually. The location of other cycle routes have not yet been determined. Many of these will be delivered along the MetroBus corridors (screened elsewhere in this table). LSE due to uncertainty.

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section (via Sand Bay).	**North Somerset and Mendip Bats SAC** **Severn Estuary SAC, SPA and Ramsar**	• Potential to increase the number of visitors at the European sites by creating new cycle route and as cycle routes are all connected to one another. Increased recreation could have negative effects on the integrity of these European sites. • Part of the cycle route at Sand Bay appears to be proposed immediately adjacent the Severn Estuary and it is uncertain whether this would result in loss of habitats connected to the Estuary or coastal squeeze effects.
E9 Interurban Cycle Routes: Strawberry Line Cycle Route	**Severn Estuary SAC, SPA and Ramsar** **Mendip Woodlands SAC** **Mendip Limestone Grasslands SAC** **North Somerset and Mendip Bats SAC**	• Potential to increase the number of visitors to the SACs and SPAs
MetroBus - Bristol City Centre to Clevedon and Nailsea (E11)	**North Somerset and Mendip Bats SAC** **Severn Estuary SAC, SPA and Ramsar** **Avon Gorge Woodlands SAC**	• Potential increased passenger numbers thereby result in an increase in visitors to the SACs and SPA.
Park & Ride package for Bath (includes at Odd Down, Lansdown and Newbridge) (E13)	**Bath and Bradford-on- Avon Bats SAC**	• Potential LSE if the proposed road results in loss of feeding habitats from bats connected with the SAC.
MetroBus - Bristol City Centre to Severnside (E15)	**Avon Gorge Woodlands SAC** **Severn Estuary SAC, SPA and Ramsar**	• Potential increase in the number of visitors to these sites.

Table 4.1 Likely Significant Effects Identified in Screening		
Scheme Name	**European sites which could be affected by the scheme**	**Potential Effects**
Bath Cycle Network and City Centre Package (E16): Bath cycle routes	**Bath and Bradford-on- Avon Bats SAC**	• Potential increase in recreational pressures on the SAC.
Keynsham / Midsomer Norton and Somer Valley Public Realm Improvements Packages (E17)	**Bath and Bradford-on- Avon Bats SAC**	• Potential LSE if cycleway crosses River Avon as this river is known to be used by horseshoe bats associated with this SAC.
Weston-super-Mare Cycling and Walking Network (E20)	**Severn Estuary SAC, SPA and Ramsar** **North Somerset and Mendip Bats SAC** **Mendip Woodlands SAC** **Mendip Limestone Grasslands SAC**	• Potential to increase the number of visitors. • Potential loss of habitats connected to the Estuary or coastal squeeze effects.
Other longer-term opportunities		
Strategic Rail and Road Freight Package (L1)	**Uncertain**	• This scheme recognises a demand problem and freight issues within the network. No work has started to identify what improvements would be needed. This scheme is unlikely to come forward within the plan period. LSE due to uncertainty.
A46 to M4 route improvements, Cold Ashton (L2)	**North Somerset and Mendip Bats SAC**	• Potential LSE if proposed schemes result in habitat loss.

5 Appropriate Assessment: Loss of Supporting Sites for Bats associated with SACs

5.1 Introduction

Screening identified that the proposed schemes could result in the loss of supporting sites for bats and therefore result in an LSE on the greater and lesser horseshoe bats that roost within the following European Sites:

- North Somerset and Mendip Bats SAC; and
- Bath and Bradford-on-Avon Bats SAC[28].

No LSEs are predicted on the greater horseshoe bats that roost within the Mendip Limestone Grasslands SAC.

Screening identified the following schemes as having a potential LSE on the North Somerset and Mendip Bats SAC (hereafter referred to as the 'North Somerset Bats SAC) as they could impact on foraging and commuting habitats that are used by horseshoe bats:

- Mass Transit Schemes: Bristol City Centre to Airport (T1);
- Nailsea and Backwell (G4): Local Improvements to road network in Nailsea area, Nailsea-Backwell A370 link, M5 J19 & 20 improved multi-modal connections;
- Banwell and Churchill (G5): A371/A383 Banwell Bypass, A368 Churchill and Sandford Bypass;
- Bristol South West Economic Link (E1): Package 2 online A38 improvements, Package 4 offline A38 improvements; and
- Early investment schemes: M5 J19, M5 J21A, Passenger Rail Service/Capacity Improvements and Station Upgrades, MetroWest Phase 1 (C3).

Screening identified the following schemes as having a potential LSE on the Bath and Bradford-on-Avon Bats SAC (hereafter referred to as the 'Bath Bats SAC) as they could impact on foraging and commuting habitats that are used by horseshoe bats:

[28] No LSE are predicted on the Bechstein's bat that roost within the Bath and Bradford-on-Avon Bats SAC as this species has a 1.5km home range and no schemes occur within 1.5km of a Bechstein's bat roost (refer to Natural England & Wiltshire Council (2015). Bat Special Areas of Conservation – Planning Guidance for Wiltshire)

- Mass Transit Schemes: Bristol City Centre to Bath (T2), Bath City Centre and corridors (T5);
- Keynsham (G2): A4-A4175 link; and
- Early investment schemes: East of Bath Link (E2), Freezing Hill Junction upgrade and whole route improvements (E8), Park & Ride package for Bath and Keynsham / Midsomer Norton and Somer Valley Public Realm Improvements Packages (E17).

5.2 Background

None of the schemes are proposed within the boundary of the SACs therefore the possible adverse effects of relevance to this assessment are as follows:

- Loss, degradation or isolation of foraging habitats used by greater and lesser horseshoe bats linked to the SAC. This impact on foraging habitats can result in a reduction in prey availability for bats and can therefore affect the mortality rate, carrying capacity and overall population dynamic of the SAC populations; and
- Severance or degradation of flight corridors used by greater and lesser horseshoe bats that are linked to the SACs can impact on bat behaviour. Removal of vegetation cover or increased illumination can result in bats abandoning optimal commuting routes. Although alternative routes may be used, bats tend to use the safest and most efficient route to move between roosting sites and foraging areas. Loss of these routes and use of sub-optimal alternatives can therefore impact upon health and reproductive capacity through increased energetic requirements of commuting.

Planning guidance for the Bath Bats SAC[29], and the Supplementary Planning Document (SPD) for the North Somerset Bats SAC[30] has been produced by Natural England and North Somerset District or Wiltshire Council. These documents aim to identify types and locations of development that presents risks to the bat populations within the two SACs. It gives advice on how to avoid or mitigate impacts to ensure the proposals will not impact on the designated bat population. These publications are based on extensive surveys and compiled by experts based on scientific evidence and best practice. The methodology detailed in these documents have therefore been used to inform the conclusions of this section of the AA.

[29] Natural England & Wiltshire Council (2015). Bat Special Areas of Conservation – Planning Guidance for Wiltshire

[30] North Somerset Council (adopted January 2018). North Somerset and Mendip Bats Special Area of Conservation (SAC) Guidance on Development: Supplementary Planning Document.

The North Somerset Bats SAC SPD sets out Bat Consultation Zones around the bat roosts within this SAC and also around 'other' smaller roosts which are linked to the SAC. These zones are based on radio-tracking studies[31] [32] and are set out in Table 5.1 below.

Table 5.1 Band widths for Horseshoe Bats (from North Somerset Council, adopted January 2018)

Band	Greater Horseshoe bat (metres)		Lesser Horseshoe bat (metres)	
	Maternity	**Other**	**Maternity**	**Other**
A	0-2200	NA	0- 600	NA
B	2201-4000	0 - 610	601 - 2500	0 - 300
C	4001 – 8000	611 – 2440	2501 – 4100	301 - 1250

Development proposals within Band A and B would require extensive surveys and also discussions with the local authority prior to the production of a masterplan. Development proposals within Band C should be informed at an early stage by an ecological consultant to identify and assess any impacts the proposals may have.

The North Somerset Bats SAC SPD acknowledge that there is also a 1km Juvenile Sustenance Zone around greater horseshoe maternity roosts and a 600m zone around lesser horseshoe maternity roosts which provide key habitats for juvenile bats during a sensitive stage of their lifecycle. It states that it is unlikely that development on green field sites in this zone would be acceptable.

The Bath Bats SAC Planning Guidance sets the core zone as 4km around the SAC sites containing greater horseshoe bats and 2km around lesser horseshoe roosts.

[31] Billington, G. 2001. Radio tracking study of Greater Horseshoe bats at Brockley Hall Stables Site of Special Scientific Interest, May–August 2001. English Nature Research Report No. 442. Peterborough: English Nature

[32] Jones, G. & Billington, G. 1999. Radio tracking study of Greater Horseshoe bats at Cheddar, North Somerset. Taunton: English Nature.

5.3 Assessment of Effects Alone and In Combination with the JSP

5.3.1 North Somerset and Mendip Bats SAC

None of the schemes identified in Section 5.1 occurred within Band A. For the purpose of this assessment all schemes in Section 5.1 which occur within Band B and all large major schemes which occur within Band C are assessed in further detail in Table 5.2 below.

Table 5.2. Assessment of Schemes identified as having an LSE on the North Somerset Bats SAC due to loss of supporting sites for bats

Scheme name	Approximate distance to SAC at its closest point	Unmitigated Potential Effects
Mass Transit Schemes		
Bristol City Centre to Airport (T1)	4.3km	Scheme could result in a new heavy rail route between the airport and Bristol city centre. Although this scheme is likely to be outside of Band B (refer to Table 5.1), this is a major scheme which could result in fragmentation of the landscape for bats if suitable bat commuting corridors are not designed into the proposed scheme. The scheme could also potentially result in loss of foraging habitats for horseshoe bats. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**
Nailsea and Backwell (G4)[33]		
Local improvements to road network in Nailsea area	Over 2.2 km	Scheme could result in new roads around Backwell that could potentially fragment horseshoe bat commuting corridors and result in loss of foraging areas. In particular the new proposed road to the east of Nailsea could sever potential commuting routes between the greater horseshoe maternity roost at Brockley Hall part of the North Somerset Bats SAC and the roost at Tyntesfield[34]. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**
Nailsea - Backwell A370 link	Over 2.2 km	Scheme could result in a new road that could potentially fragment horseshoe bat commuting corridors, particularly for bats commuting between Brockley Hall and Tyntesfield. The road could also result in the loss of foraging habitat. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**

[33] Approximate distances for the Nailsea and Backwell area based on the Draft North Somerset Local Plan 2036 Issues and Options Document (Sept 2018).

[34] A.Grundy Natural England Pers. Comm. (19.12.18)

Table 5.2. Assessment of Schemes identified as having an LSE on the North Somerset Bats SAC due to loss of supporting sites for bats		
Scheme name	**Approximate distance to SAC at its closest point**	**Unmitigated Potential Effects**
M5 J19 & J20 improved multi-modal connections	3km	Scheme would include a new multi-modal connection from Junction 20 to Nailsea which could result in severance of horseshoe bat commuting corridors and loss of bat foraging habitat. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**
Banwell and Churchill (G5)		
A371 / A368 Banwell Bypass	Within 0.5km	This scheme is proposed over 4km from the nearest breeding horseshoe bat roost, but is included in Band B as it occurs within 0.5km of Banwell Caves SSSI and Banwell Ochre Cave SSSI, which supports hibernating horseshoe bats and are components of the SAC. The scheme could potentially fragment horseshoe commuting habitat if it does not contain suitable bat corridors across the road. The scheme could also result in loss of foraging habitat for horseshoe due to land take associated with the proposed scheme. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**
A368 Churchill and Sandford Bypass	Within 1km	This scheme is proposed over 4km from the nearest breeding horseshoe bat roost, but it is included in Band B as it occurs within 1km of Banwell Ochre Cave SSSI, which supports hibernating horseshoe bats and is a component of the SAC. The scheme could therefore fragment horseshoe commuting habitat if suitable bat corridors are not designed into the proposed scheme. The scheme could also result in loss of foraging habitat for horseshoe due to land take associated with the proposed scheme. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**
Bristol South West Economic Link (BSWEL) (E1)		
Package 4: A38 (south) offline improvements	4.5km	This scheme would result in offline improvements along the A38. Although this scheme is outside of Band B, this is a major scheme resulting in construction of new road sections. The scheme could result in fragmentation of the landscape for bats if suitable bat commuting corridors are not designed into the proposed scheme. The scheme could also potentially result in loss of foraging habitats for horseshoe bats. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**

Table 5.2. Assessment of Schemes identified as having an LSE on the North Somerset Bats SAC due to loss of supporting sites for bats		
Scheme name	**Approximate distance to SAC at its closest point**	**Unmitigated Potential Effects**
Early investment schemes under development		
M5 Junction 19 (E3)	8km	Part of this scheme around Junction 19 occurs within Band B due to the presence of a non-breeding horseshoe roost within 2km of the scheme. This is not part of the SAC but is considered to be used by the same horseshoe population that use the SAC. This area is outside of North Somerset and therefore no mechanism is currently in place to ensure bat foraging habitat is replaced, as detailed in the SPD. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**
Early investment schemes under development		
MetroWest Phase 1 (C3)	9km	Although this scheme occurs 9km from the SAC, part of the route runs along a disused railway line and within Consultation Band B (refer to Table 5.1). In addition, the project level HRA of this scheme currently being prepared by CH2M refers to radiotracking data that shows that there is movement between greater horseshoe bats that roost within the SAC roost and the disused railway line which is to be reopened as part of this scheme. **Risk of an adverse effect as a result of this scheme**
M5 J21A (E5)	1km	The M5 J21A scheme and associated multi-modal corridor occur within 1km of the Banwell Mines SSSI which is a component of the SAC and supports hibernating horseshoe bats. Scheme could potentially result in loss or degradation of foraging habitat for horseshoes and fragmentation of commuting corridors used by bats. **Risk of an adverse effect as a result of this scheme.**

The following schemes are not considered to have an LSE on the SAC as they are outside Zone B (refer to Table 5.1) and are not considered to be a large Major Schemes:

- Passenger Rail Service and Capacity Improvements, Station Upgrades and New Stations Package (E4); and
- BSWEL - Package 2: A38 online improvements between A368 to Bristol Airport.

5.3.2 Assessment of effects on the North Somerset and Mendip Bats SAC in combination with the JSP

The JSP HRA concludes that the SDLs proposed at Banwell, Mendip Springs (to the north of Churchill), Backwell, and Nailsea would result in an adverse effect on the North Somerset Bats SAC. This is due to the large area of land take and proximity to the horseshoe roosts associated

with the SAC. The Nailsea and Backwell schemes shown in Table 5.2 overlap with these SDLs and therefore there is a potential in combination adverse effect on the integrity of the North Somerset Bats SAC (refer to Section 5.4 for further details).

5.3.3 Assessment of effects on the Bath and Bradford-on-Avon Bats SAC

For the purpose of this assessment all schemes identified in Section 5.1 which occur within 4km of the Bath Bats SAC are assessed in further detail in Table 5.3 below. All major schemes outlined in Section 5.1 which also occur within 8km of the SAC are also assessed in Table 5.3. No schemes occur within the Juvenile Sustenance Zone associated with horseshoe maternity roosts.

Table 5.3 Assessment of Schemes identified as having an LSE on the Bath Bats SAC due to loss of supporting sites for bats

Scheme name	Approximate distance to SAC at its closest point	Unmitigated Potential Effects
Mass Transit Schemes		
Bristol City Centre to Bath (T2)	4.1km	Although the new section of the route is outside of the 4km zone, the far eastern section of the scheme will link with the Newbridge Park & Ride which occurs adjacent the River Avon. The River Avon is a known foraging/commuting corridor used by horseshoe bats associated with the SAC. The scheme could result in either another bridge over the River Avon or changes to the existing bridge (i.e. increased lighting). **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**
Bath city centre and corridors (T5)	0.5km	Four possible routes have been identified. Sections of all four routes occur within 4km of the SAC. The route that links the city centre with Newbridge potentially crosses the River Avon which is used for foraging/commuting by horseshoe bats associated with the SAC. The A367 Odd Down route occurs approximately 0.5km from the Combe Down and Bathampton Down Mines SSSI which supports hibernating horseshoes and is a component of the SAC. **This scheme could result in a risk of an adverse effect on the integrity of the SAC.**
Keynsham (G2)		
A4-A4175 Link	9km	Link potentially includes a new bridge over the River Avon. This river is a known foraging/commuting corridor for horseshoe bats associated with the SAC. The potential new bridge could result in loss of riparian habitat or an increase in lighting which could adversely effect horseshoe bats. **This scheme could therefore**

Table 5.3 Assessment of Schemes identified as having an LSE on the Bath Bats SAC due to loss of supporting sites for bats		
Scheme name	**Approximate distance to SAC at its closest point**	**Unmitigated Potential Effects**
		result in a risk of an adverse effect on the integrity of the SAC.
Early investment schemes under development		
East of Bath Link (E2)	0.5km	This proposed new road scheme could result in additional fragmentation of commuting habitat between Brown's Folly SSSI, and Combe Down and Bathampton Down Mines SSSI (both support hibernating horseshoes and are components of the SAC). The scheme could potentially cross watercourses used for foraging/commuting by horseshoe bats associated with the SAC (i.e. River Avon/Kennet and Avon Canal), therefore resulting in further potential fragmentation. The scheme could also result in loss of foraging habitat for horseshoes due to land take associated with a potential new road. **A risk of an adverse effect on the integrity of the SAC is therefore predicted.**
Park & Ride package for Bath (includes at Odd Down, Lansdown and Newbridge) (E13)	1.6km	This scheme would result in the expansion of three existing Park & Ride sites with the potential for a new facility to the east of Bath. **No adverse effects are predicted for the expansion to Lansdown or Newbridge Park & Ride** as both sites are over 4km from the SAC. The Odd Down Park & Ride occurs approximately 1.6km from the SAC and could result in the loss of foraging habitat for horseshoe bats. The exact form and location of the new facility to the east of Bath is unknown. **The East of Bath Facility and the Odd Down Park & Ride could therefore result in a risk of an adverse effect on the integrity of the SAC.**
Keynsham / Midsomer Norton and Somer Valley Public Realm Improvements Packages (E17)	9km	The cycle link that from Somerdale cycle bridge via the River Avon towpath to the Keynsham Peninsular could potentially result in riparian habitat loss or increased lighting along the River Avon. This river is functionally linked to the Bath Bats SAC and known to be used by horseshoe bats. Habitat loss or increase in light spill along this river could therefore fragment this bat flight corridor and, therefore, there is a **risk of an adverse effect on the integrity of the SAC**.

The Freezing Hill junction upgrade and route improvements are not considered to have an LSE on the SAC as it is over 4km from the SAC and is unlikely to result in significant land take or fragmentation of the landscape.

5.3.4 Assessment of effects on the Bath and Bradford-on-Avon SAC in combination with the JSP

The JSP HRA concludes that urban development around Bath could result in an adverse effect on the Bath Bats SAC. This is due to loss of foraging habitat and proximity to the horseshoe roosts associated with the SAC. Several of the schemes shown in Table 5.3 which occur around Bath link with urban development and adverse effects on the integrity of the Bath Bats SAC is likely as a result of in combination effects (refer to Section 5.4 for further details).

5.4 Mitigation requirements

5.4.1 Strategic mitigation

The WoE JSP includes the policies set out below to reduce the adverse effects from the potential loss of foraging and commuting habitat for bats associated with the North Somerset and Mendips Bats SAC. These policies relate to the Banwell, Mendip Spring, Backwell and Nailsea SDLs which overlap with G5-Banwell and Churchill, and G4-Nailsea and Backwell transport schemes (refer to Table 5.2 above):

- JSP Policy 6 – A West of England Green Infrastructure (GI) Plan will identify the strategic measures and mechanisms to support the delivery of the environmental ambitions of the JSP and Local Plans, including mitigation for protected sites; and
- JSP Policy 7.4, 7.5 and 7.6 requires development of the Backwell, Banwell, Mendip Spring and Nailsea SDLs to take a strategic approach to the assessment, safeguarding and enhancement of greater and lesser horseshoe bat habitat, including investigation of dark/green corridors through the development to the open countryside.

The North Somerset Bats SAC SPD provides an approach to assessing the importance of habitat for horseshoe bats through establishing Bat Consultation Zones around the horseshoe roosts linked to this SAC. The approach detailed within this SPD will form the basis for a strategic approach to identifying key bat foraging areas and commuting corridors in sensitive areas within the WoE. This strategic approach will identify horseshoe bat habitat by using a combination of new and historic data throughout the region, including radio-tracking information (refer to below paragraph for details). The data will be used to map horseshoe bat roosts linked to the bat SACs that occur in the WoE in order to establish zones around these roosts. Development proposed within these zones will require collection of detailed survey data to identify foraging and commuting horseshoe habitat affected by proposals. In addition, the Bath Bats SAC Planning Guidance is due to be updated to ensure these Bat Consultation Zones are considered as part of any planning application around this SAC.

The North Somerset Bats SAC contains the two greater horseshoe breeding roosts within the WoE Area. These are important roosts and therefore further information is being collected by North Somerset Council to inform their strategic approach to bat mitigation around this SAC. This will involve undertaking radiotracking and static bat detector surveys around this SAC, which will provide further details on the greater horseshoe bat population dynamics at the landscape scale. The key objectives of these bat surveys will be to identify home ranges of bats using these two maternity roosts and their core foraging areas/commuting corridors along with potential barriers to dispersal. This information will be used to inform strategic mitigation solutions and the design of the SDLs, major transport schemes and the WoE GI Strategy. It will also provide further details of roosts used by greater horseshoe bats in the area and attempt to identify interaction between SAC units.

The bat survey data (new and historic) detailed above will inform the HRAs of the Local Plans for each WoE authority in order to identify strategic bat foraging and commuting areas associated with the North Somerset Bats SAC and the Bath Bats SAC. The HRAs of each Local Plan should include a horseshoe bat mitigation strategy based on the new/historic bat survey results to safeguard these strategic bat areas to ensure no adverse effects occur to the Bats SACs. This strategy should ensure that a co-ordinated approach is taken to the planning of the SDLs and the schemes within the JLTP4. It is recommended that the Local Plan policies ensure the alignment of the proposed schemes avoids any habitat loss within the Juvenile Sustenance Zones around SAC roosts. These strategic areas could form part of the WoE GI Strategy and be enhanced to increase their value for horseshoe bats.

Through their HRAs, the Local Plans of the WoE authorities would need to demonstrate that there would be no adverse effect on the North Somerset Bats SAC and the Bath Bats SAC as a result of the transport schemes before the plans are adopted.

5.4.2 Scheme level mitigation

The major schemes referred to in the JTLP4, which fall within a Bat Consultation Zone associated with the North Somerset Bats SAC or the Bath Bats SAC, would also need to be supported by detailed bat survey data collected prior to the submission of a planning application. The surveys would be undertaken in accordance with the methodology detailed within the North Somerset Bats SAC SPD (to be extended to the areas around the Bath Bats SAC) and the results used to inform the location and design of the route alignments.

The North Somerset Bats SAC SPD also includes a metric to calculate how much replacement horseshoe bat habitat would be needed to offset the loss of habitat due to a proposed development. The requirement to use this metric is being rolled out across the WoE and would therefore be required for all proposed schemes in the WoE that impact on horseshoe bat habitat. Paragraph 102b and 170d of the National Planning Policy Framework (2018) supports ‘Biodiversity Net Gain’ within transport schemes. There is therefore a requirement for the

proposed schemes to not only replace but also provide a net gain in biodiversity and this can be demonstrated by using the metric detailed in the SPD to calculate the area of on-site/off-site habitat required. Once again, off-site areas could form part of the WoE GI Strategy and be enhanced to increase their value for horseshoe bats.

Following collection of the detailed bat survey data for schemes identified in Tables 5.2 and 5.3 in accordance with the SPD survey methodology, it is likely that further bat crossing points would need to be designed into the schemes to supplement the strategic flight corridors.. It is therefore recommended that the JLTP4 states that a project level HRA will be required for the schemes identified in Table 5.2 and 5.3. If an LSE is screened-in during the project level HRA then an Appropriate Assessment should be undertaken which should include a Horseshoe Bat Mitigation Plan which would detail the design and location of the bat crossing points to enable bats to continue to commute through the landscape. Corridors should be based on best practice measures to enable horseshoe bats to cross the road either through underpasses or green bridges. Crossing design should be in accordance with the principles detailed in the DEFRA report by Berthinussen and Altringham (2015)[35], in particular:

- *Underpasses should be of sufficient height* - Underpasses should be as spacious as possible with height being the critical factor. The minimum requirements for underpass height will be species-specific[36];
- *Crossing structures should maintain connectivity with existing bat commuting routes* Connectivity must be maintained with undisturbed bat flight paths (e.g. treelines, hedgerows, woodland rides and streams), and bat habitat (e.g. woodland) within the surrounding landscape. Crossing structures should not be exposed or sited within open ground; and
- *Crossing structures should be unlit*- horseshoe bats are particularly sensitive to lighting and lighting should be avoided.

[35] Berthinussen and Altringham, WC1060 Development of a cost effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure, Final Report 2015.

[36] Culverts/underpasses under major new roads have previously been found to have a high success rate in allowing horseshoe bats to cross roads, if designed appropriately. Davies, J. (2017), Monitoring the effectiveness of mitigation for horseshoe bats associated with a new road in Wales. Mitigation Case Studies Forum. London. (https://cdn.bats.org.uk/images/Mitigation_Forum_2017_low_res.pdf?mtime=20181101150215)

The project level Appropriate Assessment and associated Horseshoe Mitigation Plan would need to demonstrate that there would be no adverse effect on the North Somerset Bats SAC and the Bath Bats SAC before these developments are granted permission and allowed to go ahead.

5.4.3 Mitigation summary

In summary, it is recommended that the JLTP4 includes the following mitigation principles:

- All schemes within the JLTP4 need to avoid the Juvenile Sustenance Zones around the horseshoe maternity roosts within the SACs;
- HRA of the WoE Local Plans to use the strategic bat survey results to produce horseshoe bat mitigation strategies which would show the key bat foraging/commuting habitats in their areas. These bat habitats would inform the location and design of the schemes thereby ensuring a co-ordinated approach to the planning of the schemes within the JLTP4 and SDLs proposed within the JSP;
- A project level HRA would be required for the schemes listed in Tables 5.2 and 5.3. These HRAs should include a Horseshoe Bat Mitigation Plan, which would be informed by the results of the detailed bat survey of each scheme undertaken in accordance with the SPD survey methodology. The Horseshoe Bat Mitigation Plan would include suitable horseshoe bat crossing points to enable bats to cross the roads and commute through the landscape. The crossing points must have the following features designed in accordance with best practice:
    a) Underpasses to be of sufficient height to allow horseshoe passage;
    b) Crossing structures to maintain connectivity with existing bat commuting routes;
    c) Crossing structures to be unlit.
- The project level HRA of the schemes listed in Tables 5.2 and 5.3 should also use the metric for calculating replacement horseshoe bat foraging habitat as detailed in the North Somerset Bats SAC SPD (or any subsequent updated editions). This metric would be used to demonstrate that the schemes would result in a net gain in horseshoe bat habitat by retaining/enhancing habitat within the proposed scheme and provided off-site if lost; and
- The JLTP4 schemes would only be granted permission and allowed to go ahead if the HRAs of the Local Plans and proposed schemes are able to demonstrate that there would be no adverse effect on the integrity of the North Somerset and Mendip Bats SAC and the Bath and Bradford-on-Avon Bats SAC either alone or in combination.

5.5 Conclusions

Provided the mitigation set out in Section 5.4 is implemented, it is concluded that there will be **no adverse effects** on the integrity of the North Somerset and Mendip Bats SAC, and the Bath and

Bradford-on-Avon Bats SAC from the JLTP4 both alone and in combination with the JSP, as a result of potential impacts on habitats that are used by horseshoe bats linked to these European Sites.

6 Appropriate Assessment: Loss of Supporting Sites for Birds

6.1 Introduction

Screening identified that the proposed schemes could result in the loss of supporting sites for birds associated with the Severn Estuary SPA and Ramsar.

Screening identified that the following schemes have the potential to result in an LSE on the Severn Estuary SPA and Ramsar as they could impact on foraging habitat used by birds associated with this European Site:

- Nailsea and Backwell (G4): Local Improvements to road network in Nailsea area, M5 J19 & 20 improved multi-modal connections; and
- Early investment schemes: M49 Junction upgrade; M5 J19, Passenger Rail Service/Capacity Improvements and Station Upgrades; Pill Station; E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section.

6.2 Background

The Severn Estuary SPA and Ramsar contains water bird populations of European Importance and these birds often use suitable habitats adjacent the site for feeding. Water bird communities are highly mobile and exhibit patterns of activity related to tidal water movements and many other factors[37]. Water birds, particularly waders, can feed in areas of wet coastal grazing marsh, salt marsh and improved grassland which occurs outside the Severn Estuary. The location of the proposed schemes with a potential LSE on the site (refer to Section 6.1) and the surrounding habitats were therefore subject to a detailed review using OS Maps (1:10,000 scale) and aerial photography to identify habitat suitability to determine whether an adverse effect would occur. Further information from Natural England indicates the majority of bird species associated with the SPA/Ramsar are not reliant on habitats beyond 2km of the estuary (HRA of JSP) and this has also been taken into account during this detailed assessment.

[37] The Severn Estuary/Mor Hafren European Marine Site. Natural England and the Countryside Council for Wales advice given under Reg 33(2) (a) of the Conservation (Natural Habitats, c.) Regulations 1994, as amended. June 2009.

6.4 Assessment of Effects

The schemes identified in Section 6.1 are assessed in further detail in Table 6.1 below.

Table 6.1 Assessment of Schemes identified as having an LSE on the Seven Estuary SPA and Ramsar due to loss of supporting sites for birds

Scheme name	Approximate distance to SPA/Ramsar at its closest point	Unmitigated Potential Effects
Nailsea and Backwell (G4)		
Local improvements to road network in Nailsea area	2km	These road improvements occur to the east of M5 with the closest new road proposed immediately adjacent the motorway adjacent Junction 20. It is considered unlikely that suitable affected habitat is of value to foraging waterbirds associated with the Severn Estuary due to the distance and proximity to the motorway. **No risk of an adverse effect from this scheme predicted.**
M5 J19 & J20 improved multi-modal connections	1.6km	The multi-modal connection at Junction 20 potentially also connects into Clevedon which is approximately 0.8km from the estuary. However, this area is urbanised and likely to be of limited value for foraging waterbirds associated with the SPA/Ramsar. **No risk of an adverse effect from this scheme predicted.**
Early Investment Schemes in Progress (Committed Schemes)		
M49 Avonmouth Junction Upgrade (C1)	2.45km	Water birds connected with the Severn Estuary are likely to avoid habitats directly adjacent the motorway. The area around the proposed scheme is also urbanised and likely to be of limited value for foraging water birds associated with the SPA/Ramsar. **No risk of an adverse effect from this scheme predicted.**
Early investment schemes under development		
M5 Junction 19 (E3)	1.6km	None of the pockets of grassland that occur in the areas potentially affected by the scheme are likely to be of importance for birds associated with the estuary as they are surrounded by industrial land likely to be of limited value. **No risk of an adverse effect from this scheme predicted.**
Passenger Rail Service and Capacity Improvements, Station Upgrades and New Stations Package (E4)	0.6km	The majority of the habitats alongside the potential railway track widening around Weston-Super-Mare are heavily urbanised. Although a few small pockets of grassland habitats occur adjacent to the railway in Weston, these are surrounded by residential/industrial development and are unlikely to be suitable for waterbirds associated with the Severn Estuary.

		More extensive grassland habitats in more rural surroundings are present adjacent the railway outside of Weston-super-Mare, however, these are over 4km from the estuary and therefore unlikely to be used as supporting sites. **Overall, this scheme is predicted to result in no risk of an adverse effect due to loss of off-site bird habitat.**
Pill Station (E4)	Within 1km	The area around the proposed station is urbanised and contains limited suitable habitat. This site is therefore likely to be of limited value for foraging waterbirds associated with the SPA/Ramsar and **no risk of an adverse effect on the birds is predicted.**
E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section (via Sand Bay).	Within 10m	The section of the North Somerset Coastal Cycle Route between Weston-super-Mare and Clevedon (via Sand Bay) is proposed directly adjacent to part of the Severn Estuary SPA and Ramsar which could result in the loss of habitats that are used by birds associated with the estuary. **A risk of an adverse effect on the Severn Estuary SPA/Ramsar cannot be ruled out at this stage.**

6.5 Assessment of effects in combination with the JSP

The JSP includes mitigation to ensure the policies within this plan protect and enhance the natural environment by ensuring new development conforms with planning legislation to protect international designated sites. The JSP HRA states that the Avonmouth-Severnside Enterprise Area project would provide new wetland habitat which would provide additional habitat for waterbirds linked to the Severn Estuary SPA/Ramsar. The JSP HRA therefore concludes that there will be no adverse effects on the integrity of the Severn Estuary due to off-site habitat loss. Providing this mitigation is delivered then there would be no additional adverse effects on the integrity of this European Site as a result of in-combination effects.

6.6 Mitigation requirements

The current proposals for the Sand Bay Cycleway adjacent Weston-Super-Mare show the route occurs directly adjacent the Severn Estuary SPA and Ramsar. This could potentially result in the loss of habitat used by birds, particularly waders. It is understood that the proposed route is indicative at this stage and therefore without further information there is a risk of an adverse effect on the integrity of the Severn Estuary SPA and Ramsar site. A project level HRA would therefore be required to screen the potential effects of this scheme once further details are available. If an LSE is screened-in during a project level HRA then an Appropriate Assessment should be undertaken. This project level Appropriate Assessment would need to demonstrate that no

adverse effects will occur on this European Site before the scheme is granted permission and allowed to go ahead. The Appropriate Assessment should include moving the route away from sensitive habitat used by bird populations associated with the estuary.

6.7 Conclusions

Provided the JLTP4 requires that a project level HRA/AA of the Sand Bay Cycleway (E9) is undertaken (as stated above), it is concluded that that this scheme would not result in loss of habitats which could support bird populations linked to the Severn Estuary SPA and Ramsar. Therefore, there will be **no adverse effect** on the integrity of this European Site with regards to loss of off-site habitat as a result of the JLTP4 both alone and in combination with the JSP.

7 Appropriate Assessment: Coastal Squeeze

7.1 Introduction and Background

Screening of the JLTP4 identified that part of the Sand Bay Cycleway (part of the Interurban cycle routes scheme (E9) and forming part of the North Somerset Coastal Cycle Route between Weston-super-Mare and Clevedon) is proposed immediately adjacent the Severn Estuary and it was uncertain whether this could result in coastal squeeze effects. An LSE on the Severn Estuary was therefore screened in due to this uncertainty.

Coastal squeeze is the loss of coastal habitats, including saltmarsh, due to a barrier preventing these habitats from moving landward as sea level rises.

7.2 Assessment of effects alone and in combination with the JSP

The exact location of the cycleway is currently unknown and a detailed review of the coast around Weston-Super-Mare was therefore undertaken using Ordnance Survey Maps (1:10,000 scale) and aerial photography to ascertain whether coastal squeeze was possible in this area. It is evident from this review that a coastal road already occurs around Weston-Super-Mare where this cycleway is proposed. The road therefore already forms a barrier which prevents coastal habitats moving landward. The proposed cycleway in these areas is therefore unlikely to increase coastal squeeze effects as it is likely to be constructed adjacent the road or further inland. Part of the proposed cycleway appears to occur on the top of coastal cliffs which provide a natural barrier.

No in combination effects from coastal squeeze effects are predicted as a result of the JSP and this issue was not screened into the JSP HRA.

7.3 Conclusion

It is concluded that the proposed Sand Bay Cycleway **will not result in a risk of an adverse effect** on the integrity of the Severn Estuary SPA, SAC and Ramsar with regards to coastal squeeze.

8 Appropriate Assessment: Increase in Recreational Pressures

8.1 Introduction

Screening identified that the proposed schemes could result in increased recreational pressure and therefore result in an LSE on the following European Sites:

- Avon Gorge Woodlands SAC;
- Bath and Bradford-on-Avon Bats SAC;
- Chew Valley Lake SPA;
- Mendip Woodlands SAC;
- Mendip Limestone Grasslands SAC;
- North Somerset and Mendip Bats SAC; and
- Severn Estuary SAC, SPA and Ramsar.

Screening identified the following schemes as having a potential LSE in relation to recreational pressure on the European sites:

Avon Gorge SAC

- Early investment schemes under development: (E4): Ashton Gate Station, MetroBus - Bristol City Centre to Clevedon and Nailsea (E11) and MetroBus - Bristol City Centre to Severnside (E15);
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Nailsea and Backwell: G4; and
- Bristol South West Economic Link (BSWEL) (E1): Package 4: A38 (south) offline improvements.

Bath and Bradford-on-Avon Bats SAC

- Mass Transit Schemes: Bristol City Centre to Bath (T2) and Bristol City Centre to Bath (T2); and
- Early investment schemes under development: East of Bath link (E2), Freezing Hill junction upgrade and whole route improvements (includes Landsdown P&R) (E8), Park & Ride package for Bath (includes at Odd Down, Lansdown and Newbridge) (E13), and Bath Cycle Network and City Centre Package (E16): Bath cycle routes.

Chew Valley Lake SPA

- Bristol South West Economic Link (BSWEL) (E1): Package 4: A38 (south) offline improvements.

Mendip Woodlands SAC

- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5): A371 / A368 Banwell Bypass and A368 Churchill and Sandford Bypass;
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8): Local walking & cycling infrastructure improvements: Banwell-Churchill Cycle Route;
- Bristol South West Economic Link (BSWEL) (E1): Package 4: A38 (south) offline improvements; and
- Early investment schemes under development: Weston-super-Mare Cycling and Walking Network (E20).

Mendip Limestone Grasslands SAC

- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5): A371 / A368 Banwell Bypass and A368 Churchill and Sandford Bypass;
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8): Local walking & cycling infrastructure improvements: Banwell-Churchill Cycle Route; and
- Early investment schemes under development: M5 J21A (E6) and Weston-super-Mare Cycling and Walking Network (E20).

North Somerset and Mendip Bats SAC

- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Nailsea and Backwell (G4): M5 J19 & J20 improved multi-modal connections, and local improvements to road network in Nailsea area;
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5): A371 / A368 Banwell Bypass and A368 Churchill and Sandford Bypass, and Sustainable travel package: Banwell-Churchill Cycle Route;
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8): Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route, the Clevedon section of the North Somerset Coastal Cycle Route and Banwell-Churchill Cycle Route;
- Bristol South West Economic Link (BSWEL) (E1): Package 4: A38 (south) offline improvements; and
- Early investment schemes under development: M5 J21A (E6), MetroBus - Bristol City Centre to Clevedon and Nailsea (E11), E9 Interurban Cycle Routes: Strawberry Line Cycle Route and the section of the North Somerset Coastal Cycle Route between Weston-super-

Mare and Clevedon (via Sand Bay), Weston-super-Mare Cycling and Walking Network (E20).

Severn Estuary SAC, SPA and Ramsar

- Mass Transit Schemes: Bristol City Centre to North Fringe (T4);
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Nailsea and Backwell (G4): M5 J19 & J20 improved multi-modal connections, Local improvements to road network in Nailsea area, Nailsea to Clevedon Cycle Route and Nailsea - Backwell A370 link;
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5): A371 / A368 Banwell Bypass and A368 Churchill and Sandford Bypass and Sustainable travel package: Banwell-Churchill Cycle Route;
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8): Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route and Banwell-Churchill Cycle Route;
- Early Investment Schemes in Progress (Committed Schemes): M49 Avonmouth Junction Upgrade (C1) and MetroWest Phase 1 (C3);
- Early Investment Schemes in Progress (Committed Schemes): M49 Avonmouth Junction Upgrade (C1) and MetroWest Phase 1 (C3); and
- Early investment schemes under development: Pill Station and Ashton Gate Station (E4), and M5 J21A (E6); M5 Junction 19 (E3); MetroBus - Bristol City Centre to Clevedon and Nailsea (E11), MetroBus - Bristol City Centre to Severnside (E15), E9 Interurban Cycle Routes: the WSM to Clevedon section of the North Somerset Coastal Cycle Route (via Sand Bay) and the Strawberry Line Cycle Route and Weston-super-Mare Cycling and Walking Network (E20).

8.2 Background

The possible effects of relevance to this assessment are as follows:

- Disturbance of bird species for which the Severn Estuary SPA and Ramsar is designated and physical damage (either by people or accompanying dogs; fishing, sailing, biking, beach activities, shooting and horse riding);
- Disturbance of birds in the Chew Valley SPA as large numbers of people use the site for recreational activities including fishing, sailing and walking;
- Disturbance of bats and direct impacts on bat roost sites due to vandalism and recreation;
- Physical damage and disturbance of SACs from mountain biking and vandalism;
- Potential damage from illicit vehicles entering an SAC; and

- Issues related to grazing such as sheep worrying by dogs, leading to under-grazing of vegetation.

Potential effects in relation to recreation are strongly linked with the WoE JSP, particularly schemes such as the Corridor Scheme Packages, the purposes of which are to mitigate JSP growth. For this reason, the potential effects of the schemes have been considered alone and in combination with the JSP within the assessment tables and there is no sub-section in this chapter which separately discusses the potential in combination effects of the JLTP4 with the JSP. Mitigation measures put forward within the JSP Appropriate Assessment have therefore also been considered within the assessment tables.

8.3 Assessment of Effects Alone and In Combination with the WoE JSP

Table 8.1: Assessment of schemes identified as having a LSE on the Avon Gorge SAC from increased recreational pressures

Scheme Name	Potential Effects
Bristol South West Economic Link (BSWEL) (E1)	
Package 4: A38 (south) offline improvements	This scheme has been screened into the AA because the A38 near Bristol is located within 7km of Avon Gorge SAC. Package 4 consists of offline improvements along the A38 between the Bristol Airport and the South Bristol Link; A38/South Bristol Link Park & Ride; and Banwell, Sandford and Churchill bypasses. The offline improvements to the A38 between Bristol airport and the South Bristol Link are aimed at improving journey times and resilience in the road network and reduce traffic congestion along the A38 in this location. It would also link to a proposed new Park & Ride site off the A38 at Bristol. The scheme is also aimed at transferring passengers from their cars onto buses at the new Park & Ride. It is unlikely that this scheme itself would increase the number of vehicles or people travelling on towards Avon Gorge SAC. The Sandford and Churchill bypasses are more than 7km from the Avon Gorge SAC. The bypasses will reduce congestion in Sandford and Churchill and mitigate for the proposed development of SDLs in these areas. The bypasses will not improve accessibility of the Avon Gorge SAC to residents of North Somerset. Any increase in recreational pressure on the Avon Gorge SAC which could potentially result from growth in the Bristol area is addressed within the AA of the WoE JSP. **Overall, this scheme is predicted to result in no risk of an adverse effect on the SAC from recreation.**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Nailsea and Backwell: G4	
Nailsea - Backwell A370 link	The purpose of the new road link between Nailsea and Backwell and the A370 is to mitigate for the proposed growth in this area set out within the WoE JSP, in order to allow traffic to flow in this area and avoid congestion of local roads. The new link road

Table 8.1: Assessment of schemes identified as having a LSE on the Avon Gorge SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
	itself will not increase traffic travelling towards Bristol and the Avon Gorge SAC. This new link road does not create a new access to the A370 from Nailsea and Backwell and it is currently possible to access the A370 from Nailsea and Backwell by vehicle. Any increase in recreational pressure on the Avon Gorge SAC which could potentially result from growth in this area is addressed within the AA of the WoE JSP. The growth proposed in the JSP for the Nailsea and Backwell area will also be supported by provision of recreational space which will also form part of the WoE Green Infrastructure Plan. **This scheme is predicted to result in no risk of an adverse effect on the SAC from recreation.**
Local improvements to road network in Nailsea area	A package of local improvements to the local road network is proposed in the Nailsea and Backwell area in order to mitigate for the growth proposed in this area in the WoE JSP. This includes small stretches of new roads and junction improvements. These projects will not introduce any new access routes between Nailsea and Backwell and the surrounding local roads which are not already accessible. The measures will improve junctions and provide additional connections to local roads. The measures themselves will not increase traffic travelling towards Bristol and the Avon Gorge SAC. Any increase in recreational pressure on Avon Gorge SAC which could potentially result from growth in this area is addressed within the AA of the WoE JSP. The growth proposed in the JSP for the Nailsea and Backwell area will also be supported by provision of recreational space which will also form part of the WoE GI Strategy. **This scheme is predicted to result in no risk of an adverse effect on the SAC from recreation.**
Early investment schemes under development	
(E4): Ashton Gate Station	A new station at Ashton Gate is part of a package of rail improvement measures between Bristol and Weston-super-Mare. See Appendix 2 for further details of the wider scheme. The location of the new station at Ashton Gate was screened into the AA because it is located within 7km of Avon Gorge SAC. The opening of a new station in this location could potential bring more people within 2.5km of the southern most point of the Avon Gorge SAC as the crow flies but it is not obvious how passengers could then access parts of the Avon Gorge SAC from the new station. The Ashton Court Estate[38] recreational area lies between the new station location and the Avon Gorge SAC and is more likely to attract recreational visitors than the Avon Gorge SAC. The new Ashton Gate rail station could be linked to the proposed extension of the Metrobus Bristol city centre to Avonmouth/Severnside route. The route of the Metrobus extension would be along the A4 along the Avon Gorge and the A403 in Severnside/Avonmouth. It is considered unlikely that the Metrobus extension would

[38] Ashton Court Estate is a country park and mansion with 850 acres of woodland and grassland owned by Bristol City Council

Table 8.1: Assessment of schemes identified as having a LSE on the Avon Gorge SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
	include any additional stops to those already in place for the Portway Park & Ride (two stops at Roman Way and Riverleaze on the north east bank of the River Avon). These locations do not allow convenient access to the Avon Gorge SAC site. Given the 2.5km distance (as the crow flies) from the new station location and the Avon Gorge SAC; the availability of an attractive intervening recreational area (Ashton Court) and the low likelihood that any connecting public transport to the station would provide convenient access to the Avon Gorge SAC, **this scheme is predicted to result in no risk of an adverse effect on the SAC.**
MetroBus - Bristol City Centre to Clevedon and Nailsea (E11)	This scheme is a proposed MetroBus route from Clevedon and Nailsea to Bristol City Centre. This would be a rapid transit limited stop service with segregation from general traffic with bus lanes. The section within Bristol would use the infrastructure for the Ashton Vale to Temple Meads route, which was completed in September 2018. This will help to support growth at Nailsea and Backwell and improve connectivity and travel choices. The scheme will provide an enhanced public transport service from Clevedon and Nailsea to Bristol City Centre. As such, it is not likely to provide any greater accessibility to the Avon Gorge SAC. Passengers wishing to access the Avon Gorge SAC using this Metrobus service would need to walk from the Ashton Vale or Cumberland Basin locations under the Cumberland basin road interchange and up the hill towards Leigh Woods along Rownham Hill or along a footpath to the west of the River Avon. This route is not convenient and it is therefore not considered likely that this Metrobus route would increase recreational pressure from residents of Clevedon and Nailsea on the Avon Gorge SAC. **Overall, this scheme is predicted to result in no risk of an adverse effect on the SAC.**
MetroBus - Bristol City Centre to Severnside (E15)	The route would connect the logistics cluster at Severnside and Avonmouth with Bristol City Centre via the Portway Park & Ride site, with the aim of improving travel options and connectivity for employees and businesses in accessing Severnside and Avonmouth. The scheme builds on the extensive existing bus priority on the A4 Portway, with extended bus priority, enhanced stops and upgraded MetroBus services. The route of the Metrobus extension would be along the A4 along the Avon Gorge and the A403 in Severnside/Avonmouth. It is considered unlikely that the Metrobus extension would include any additional stops to those already in place for the Portway Park & Ride (two stops at Roman Way and Riverleaze on the north east bank of the River Avon). These locations do not allow convenient access to the Avon Gorge SAC site (there is no bridge over the River Avon to access the nearest point of the SAC. The nearest part of the SAC to the Roman Way bus stop is approximately 1.4km walk along the A4 in the direction of Bristol City Centre). It is therefore considered unlikely that this scheme will result in increased recreational pressure on the SAC. **Overall, this scheme is predicted to result in no risk of an adverse effect on the SAC.**

Table 8.2: Assessment of schemes identified as having a LSE on the Bath and Bradford-on- Avon Bats SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
Mass Transit Schemes	
Bristol City Centre to Bath (T2)	The proposed route could potentially increase the number of passengers between Bath and Bristol city centres via this proposed new mass transit scheme. Bath city centre is approximately 2.5km as the crow flies from the nearest component site of the Bath and Bradford on Avon Bats SAC (Combe Down and Bathampton Down Mines SSSI) and over 4km to the Brown's Folly SSSI component site. It is considered very unlikely that improving public transport access between Bristol and Bath city centres, and potentially increasing passengers travelling between the two cities will increase visitors to the component sites of the SAC. **This scheme is predicted to result in no risk of an adverse effect on the SAC.**
Bath city centre and corridors (T5)	This scheme includes a number of proposed mass transit routes into the centre of Bath from the northern outskirts of the city, from the A46 to the east of the city and from Odd Down. The scheme is aimed at improving public transport options to travel into Bath city centre and to reduce traffic congestion and numbers of vehicles on the city's roads. The nearest of the routes to the component sites of the Bath and Bradford on Avon Bats SAC from the A46 into Bath city centre. This route would be approximately 1.5km as the crow flies from part of the Combe Down and Bathampton Down Mines SSSI. There are a number of small component sites of the SAC in the south of Bath (parts of the Combe Down and Bathampton Down Mines SSSI), one part of which would be within 500m of the mass transit route from Odd Down to Bath city centre. However, these are not recreational sites with public access and the mines are gated. The mass transit route connecting the northern extreme of the city with the centre is not close to any SAC component sites. Providing mass transit routes connecting with the A46 and Odd Down, enabling better public transport links with the city centre is not likely to encourage more visitors to access the SAC component sites or an increase in vandalism. **This scheme is predicted to result in no risk of an adverse effect on the SAC.**
Early investment schemes under development	
East of Bath link (E2)	This scheme would consist of a new road connecting the A36 (south of Bathampton) to A363 (near Bathford, south of A4 roundabout) or the A4, to provide a north-south route connecting the A36 and A46 to the east of Bath. This route will enable north-south traffic to avoid passing through Bath. The new road may potentially span the River Avon in this location and could pass within 500m of the SAC component site Brown's Folly SSSI near Bathford. This link road could increase vehicles passing through this area from north to south but it is assumed that the traffic would be through traffic. The new link road would not increase access to Brown's Folly SSSI and it is therefore considered that it will not increase recreational pressure/vandalism on this or any other component part of the SAC. **This scheme is predicted to result in no risk of an adverse effect on the SAC.**

Table 8.2: Assessment of schemes identified as having a LSE on the Bath and Bradford-on- Avon Bats SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
Bath Cycle Network and City Centre Package (E16): Bath cycle routes	This scheme involves the completion of a continuous and integrated network of strategic cycle routes, comprising key corridors and cross city routes, complemented by improved permeability and investment in public realm in the city centre. This network will connect key destinations across the Bath urban area. Local routes will be improved and integrated into the strategic network as part of ongoing programmes. As such, cycling along these routes should be easier and more attractive and this should encourage more use of the routes by cyclists. This could potentially increase recreation pressure if the routes are located close to any of the Bath and Bradford on Avon Bats SAC. The Bath cycle routes are: • Landsdown to Bear Flat; • Newbridge to Bathampton; • Newbridge to Odd Down; and • Odd Down to Batheaston. None of the cycle routes passes within 1km of any component sites of the Bath and Bradford on Avon Bats SAC. The nearest cycle path to a component site of the SAC is the Newbridge to Bathampton route which passes approximately 1.2km (as the crow flies) from part of the Combe Down and Bathampton Down Mines SSSI. It is not considered likely that making this route more attractive to cycling is going to encourage more visits to the component sites of the Bath and Bradford on Avon Bats SAC. **Overall, this scheme is predicted to result in no risk of an adverse effect on the SAC.**
Freezing Hill junction upgrade and whole route improvements (includes Landsdown P&R) (E8)	This scheme includes improvements at three junctions along the route between the A420 and Lansdown Park & Ride to the north of Bath, known as Freezing Hill Lane. Currently there are excessive delays and the route is not suitable for the number of vehicles using it to access Lansdown Park & Ride. The scheme also includes localised widening of the Freezing Hill Lane route. The component sites of the SAC are all removed from Freezing Hill Lane (the nearest being approximately 5km away) and the Lansdown Park & Ride does not connect with any locations near to the component sites; it provides buses to Bath city centre only. This scheme is not predicted increase recreation pressure at any of the SAC component sites. **This scheme is predicted to result in no risk of an adverse effect on the SAC.**
Park & Ride package for Bath (includes at Odd Down, Lansdown and Newbridge) (E13)	This scheme includes exploring the options for potential new Park & Ride site(s) to the east of Bath. This could potentially attract more people to this part of the city. However, people will arrive by car and it is assumed they would want to access Bath city centre. It is considered unlikely that the potential site(s) would be located within a convenient cycle or walk of the SAC component sites of Combe Down and Bathampton Down Mines SSSI and Brown's Folly SSSI which are also located to the east of Bath**. This scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**

Table 8.3: Assessment of schemes identified as having a LSE on the Chew Valley Lake SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
Bristol South West Economic Link (BSWEL) (E1)	
Package 4: A38 (south) offline improvements	Package 4 consists of A38 offline improvements between Bristol Airport and the South Bristol Link (SBL); A38/South Bristol Link Park & Ride; and Sandford and Churchill Bypass. This scheme consists of offline improvements to the A38 between Bristol Airport and Bristol which would enable better journey times and less traffic congestion along the A38 and would also link into a proposed new Park & Ride site off the A38 at Bristol. No new roads / bypasses which could improve connections to Chew Valley SAC are proposed as a part of the package. **This scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**

Table 8.4: Assessment of schemes identified as having a LSE on the Mendip Woodlands SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5)	
A371 / A368 Banwell Bypass and the A368 Churchill and Sandford Bypass	This scheme will create a new connection bypassing the village of Banwell and allowing improved travel between Weston-super-Mare and the A38. The route has not yet been determined but is likely to pass between the M5 motorway (where there is currently no motorway junction but a new junction is proposed), bypassing the village of Banwell north of the A368 and rejoining the A368 at Sandford. Two SDLs are proposed within the WoE JSP in the immediate vicinity of the bypasses; the Banwell SDL to the north west of Banwell and the Mendip Spring SDL to the north of Churchill. The Churchill and Sandford bypass is also proposed which would bypass the villages of Sandford and Churchill and pass through the SDLs in this location. An option being considered is that the Sandford and Churchill bypasses could join together and avoid rejoining the A368 between the two villages, but this is just one of the options being explored. The bypasses will reduce congestion in Sandford and Churchill and mitigate for the proposed development of SDLs in these areas. The bypasses lies the other side of the A38 from the nearest component site of the Mendip Woodlands SAC which is located approximately 5.2km to the south. It is not considered likely that the bypasses will improve accessibility of the Mendip Woodlands SAC component sites for any residents of this part of Somerset. **This scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8)	
Local walking & cycling	The proposed Churchill Cycle route appears to pass along the A368 between the M5 and Churchill. This route is within 7km of the SAC component site Cheddar Wood SSSI. The route could potentially encourage more cycling from the Weston

Table 8.4: Assessment of schemes identified as having a LSE on the Mendip Woodlands SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
infrastructure improvements: Banwell-Churchill Cycle Route	direction towards Churchill and beyond. Cyclists could potentially access the Mendip Woodlands SAC from Churchill along the A38 and through Shipham along Cuck Hill / Shipham Road. There are public footpaths which pass through the eastern most and western most parts of the Cheddar Woods site. It is not known whether the footpaths would be suitable or are popular with authorised or non-authorised mountain biking. The paths are not cycle paths. The SSSI condition report for Cheddar Wood SSSI (updated 2009-2011) does not mention damage caused by illicit vehicles or mountain bikes. No other data is available. Given the location of the SAC component sites from the Banwell-Churchill Cycle Route and the fact that it is very unlikely that someone using the route would specifically desire to continue to Cheddar Wood SSSI (SAC component site) from Churchill, there is no obvious cycle access to the SSSI site and there is no data about cycle use of the site being an existing issue, **this scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route	This cycle route will connect with the Banwell-Churchill Cycle Route and could contribute to increased cyclist use of the Banwell-Churchill Cycle Route. The Banwell-Churchill Cycle Route is assessed above and the same conclusion is reached for this scheme. **The Weston Town Centre to J21 Cycle Route is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
Bristol South West Economic Link (BSWEL) (E1)	
Package 4: A38 (south) offline improvements	Package 4 consists of A38 offline improvements between Bristol Airport and the South Bristol Link (SBL); A38/South Bristol Link Park & Ride; and Sandford and Churchill Bypass. This scheme consists of offline improvements to the A38 between Bristol Airport and Bristol which would enable better journey times and less traffic congestion along the A38 and would also link into a proposed new Park & Ride site off the A38 at Bristol. As discussed above, it is not considered likely that the bypass will improve accessibility of the Mendip Woodlands SAC component sites for any residents of this part of Somerset. **This scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
Early investment schemes under development	
E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section	This scheme has been screened into the AA because it is within 7km of the Cheddar Wood SSSI and is connected to the Weston-super-Mare Cycle Route and in turn, the Banwell-Banwell-Churchill Cycle Route. The Banwell-Churchill Cycle Route is closest to the Cheddar Wood SSSI component site. As discussed above, the Banwell-Churchill Cycle Route is predicted to result in no risk of an adverse effect on the SAC from recreational pressure. The connection with the cycle route between WSM and Clevedon does not alter the risk of an adverse effect and therefore **the WSM to Clevedon section of this cycle route is**

Table 8.4: Assessment of schemes identified as having a LSE on the Mendip Woodlands SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
	predicted to result in no risk of an adverse effect on the SAC from recreational pressure.
E9 Interurban Cycle Routes: Strawberry Line Cycle Route	This route will extend the Strawberry Line Cycle Route from Yatton to Clevedon (which will provide a continuous segregated cycleway from Cheddar all the way to Clevedon, via Sandford, Winscombe, Sandford, Congresbury and Yatton. Cyclists could potential leave the Strawberry line at Sandford and travel along the A38 and through Shipham along Cuck Hill / Shipham Road. There are public footpaths which pass through the eastern most and western most parts of the Cheddar Woods site. It is not known whether the footpaths would be suitable or are popular with authorised or non-authorised mountain biking. The paths are not cycle paths. The SSSI condition report for Cheddar Wood SSSI (updated 2009-2011) does not mention damage caused by illicit vehicles or mountain bikes. No other data is available. Given the location of the SAC component sites from Sandford and the fact that it is very unlikely that someone using the route would specifically desire to continue to Cheddar Wood SSSI (SAC component site), there is no obvious cycle access to the SSSI site and there is no data about cycle use of the site being an existing issue, **this scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**

Table 8.5: Assessment of schemes identified as having a LSE on the Mendip Limestone Grasslands SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5)	
A371 / A368 Banwell Bypass and A368 Churchill and Sandford Bypass	This scheme will create a new connection bypassing the village of Banwell and allowing improved travel between Weston-super-Mare and the A38. The route has not yet been determined but is likely to pass between the M5 motorway (where there is currently no motorway junction but a new junction is proposed), bypassing the village of Banwell north of the A368 and rejoining the A368 at Sandford. Two SDLs are proposed within the WoE JSP in the immediate vicinity of the bypasses; the Banwell SDL to the north west of Banwell and the Mendip Spring SDL to the north of Churchill. The Churchill and Sandford bypass is also proposed which would bypass the villages of Sandford and Churchill and pass through the SDLs in this location. An option being considered is that the Sandford and Churchill bypasses could join together and avoid rejoining the A368 between the two villages, but this is just one of the options being explored. The A368 is approximately 3km north of the Mendip Grasslands SAC as the crow flies. Diverting traffic off the A368 to the north of these villages will take people further away from the Mendip Limestone Grasslands SAC and will not make the site more attractive to visitors. It will also not make accessing the SAC any easier for people travelling from the villages of Banwell, Sandford and Churchill. The

Table 8.5: Assessment of schemes identified as having a LSE on the Mendip Limestone Grasslands SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
	WoE JSP proposes to locate two new SDLs in these locations. Growth in this area will also be accompanied by additional recreational space as a part of the SDLs and the WoE GI Strategy. This would not replace the experience of visiting the Mendip Limestone Grasslands but will provide day to day recreational facilities in close proximity to residents' homes. **This scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8)	
Local walking & cycling infrastructure improvements: Banwell-Churchill Cycle Route	The proposed Churchill Cycle route appears to pass along the A368 between the M5 and Churchill. This route is within 7km of the SAC. The route could potentially encourage more cycling from the Weston direction towards Churchill and beyond. Cyclists could potentially access the SAC from the Banwell-Churchill Cycle Route along the A38 or via the village of Banwell. However, the Banwell-Churchill Cycle Route itself does not make the Mendip Limestone Grasslands SAC any more accessible. It does not provide a new route as it presumably will be an online route along the A368 and there is no direct or attractive cycle route connecting the Churchill Cycle route and the SAC. The WoE Joint Spatial Plan proposes to locate two new SDLs in close vicinity to the A368-A371 corridor, at Banwell and Mendip Spring (to the north of Churchill). Growth in this area will also be accompanied with additional recreational space as a part of the SDLs and the WoE GI Strategy. This would not replace the experience of visiting the Mendip Limestone Grasslands but will provide day to day recreational facilities in close proximity to residents' homes. Given the location of the SAC in relation to the Banwell-Churchill Cycle Route and the fact that the Cycle Route does not make the SAC any more accessible**.** However, the Banwell-Churchill Cycle Route will connect with the existing Strawberry Line Cycle Route which passes south from Sandford and lies adjacent to the SAC at Shute Shelf. **Increased cyclist use of the Strawberry Line Cycle Route could potentially increase recreational pressure on the SAC, although the risk of an adverse effect is uncertain – see above.**
Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route	The Weston Town Centre to J21 Cycle Route passes through the town centre and links the M5 junction 21 with the Banwell-Churchill Cycle Route. The Banwell-Churchill Cycle Route will be connected to the existing Strawberry Line Cycle Route which passes south from Sandford and lies adjacent to the SAC at Shute Shelf. **Increased cyclist use of the Strawberry Line Cycle Route could potentially increase recreational pressure on the SAC, although the risk of an adverse effect is uncertain – see above.**
Early investment schemes under development	
M5 J21A (E6)	A new Junction 21A on the M5 motorway south of the existing J21. This will be supported by a new multi-modal corridor connecting the new junction with the A38, bypasses for the villages of Banwell, Sandford and Churchill and major online improvements to the A38 between Langford and South Bristol. The scheme will improve links to the airport and improve resilience of the Strategic Road Network.

Table 8.5: Assessment of schemes identified as having a LSE on the Mendip Limestone Grasslands SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
	The scheme would improve access to Weston-super-Mare, Weston Villages, the Banwell & Mendip Spring SDLs and access to the A38, Bristol Airport and onwards to Bristol. The scheme will enable traffic to leave the M5 west of Banwell in order to access Bristol Airport and Bristol to the north east, providing an alternative route to M5 junction 22 near Highbridge in the south and M5 junction 21 at Weston-super-Mare to the north. The new junction will also alleviate some congestion on local roads and could reduce traffic passing near to the Mendip Grasslands SAC by allowing direct access to the M5 for residents of the Banwell /Churchill areas and diverting them away from the A38 to the south (towards M5 junction 22). This new motorway junction does not create a new route to the SAC and does not make access to the SAC any easier. Given the location of the SAC in relation to the proposed new M5 junction and the fact that the scheme does not make the SAC any more accessible and could, in fact, divert traffic from the SAC **this scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section	This scheme has been screened into the AA because it is within 7km of the SAC and is connected to the WsM Town Centre to J21 Cycle Route and in turn, the Banwell-Churchill Cycle Route. The Banwell-Churchill Cycle Route will be connected to the existing Strawberry Line Cycle Route which passes south from Sandford and lies adjacent to the SAC at Shute Shelf. **Increased cyclist use of the Strawberry Line Cycle Route could potentially increase recreational pressure on the SAC, although the risk of an adverse effect is uncertain – see above.**
E9 Interurban Cycle Routes: Strawberry Line Cycle Route	This route will extend the Strawberry Line Cycle Route from Yatton to Clevedon (which will provide a continuous segregated cycleway from Cheddar all the way to Clevedon, via Sandford, Winscombe, Sandford, Congresbury and Yatton. This could increase use of the Strawberry Line south of Yatton which passes adjacent to the SAC Shute Shelf where there is an access point to the SAC. **It is uncertain whether this scheme could increase recreation pressure on the SAC.** The Site Improvement Plan[39] for this SAC does not contain any actions in relation to managing recreational impacts and the SSSI condition report for the Crook Peak to Shute Shelve Hill SSSI does not mention issues relating to recreation.

[39] http://publications.naturalengland.org.uk/publication/4795484023554048

Table 8.6 Assessment of schemes identified as having a LSE on the North Somerset and Mendip Bats SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Nailsea and Backwell (G4)	
M5 J19 & J20 improved multi-modal connections and Local improvements to road network in Nailsea area	This scheme includes new or improved multi-modal connections for Nailsea & Backwell to M5 junction 19 (Portbury) and junction 20 (Clevedon), including bus priority, providing improved access to SDLs which may include some new sections of road to the east and west of Nailsea and Backwell. The new sections of road are located within 3.5 km (as the crow flies) from the Kings Wood and Urchin Wood SSSI component site of the North Somerset and Mendip Bats SAC. This component site is located adjacent to the A370 to the south west of Backwell. An SDL is proposed at Nailsea and Backwell and the new roads and multi-modal junction / access improvements are proposed in order to mitigate for the SDL proposed in this area. One of the new road sections would be a link from Nailsea to the A370. This new link alone is not likely to increase vehicles and visitors passing along the A370 in the direction of the SSSI component site. In combination with the SDL at Nailsea, the link could potentially increase vehicles passing in this direction. However, there are no public access point along the A370 or convenient places to park in order to access the SAC at this location. It is not considered that this scheme will increase accessibility to the SAC component sites at Kings Wood and Urchin Wood SSSI or other component sites further afield. WoE JSP growth in the Nailsea and Backwell area will also be accompanied with additional recreational space as a part of the SDLs and the WoE GI Strategy. **This scheme is therefore predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5)	
A371 / A368 Banwell Bypass and A368 Churchill and Sandford Bypass	This scheme will create a new connection bypassing the village of Banwell and allowing improved travel between Weston-super-Mare and the A38. The route has not yet been determined but is likely to pass between the M5 motorway (where there is currently no motorway junction but a new junction is proposed), bypassing the village of Banwell north of the A368 and rejoining the A368 at Sandford. Two SDLs are proposed within the WoE JSP in the immediate vicinity of the bypasses; the Banwell SDL to the north west of Banwell and the Mendip Spring SDL to the north of Churchill. The Churchill and Sandford bypass is also proposed which would bypass the villages of Sandford and Churchill and pass through the SDLs in this location. An option being considered is that the Sandford and Churchill bypasses could join together and avoid rejoining the A368 between the two villages, but this is just one of the options being explored. The SAC qualifying habitats and bat species are sensitive to public access. A component site of the North Somerset and Mendip Bats SAC (Banwell Ochre Caves SSSI) is located adjacent to the A368 between Banwell and Sandford. Another smaller component site (Banwell Caves SSSI) is located approximately 500m south west of the A368 at Banwell. Whilst the bypasses alone are not likely to introduce more visitors to the component sites (in fact, they could potentially divert traffic away from the component site), in combination with the SDLs , the

Table 8.6 Assessment of schemes identified as having a LSE on the North Somerset and Mendip Bats SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
	route options which join up with the A368 close to the component site could potentially introduce more visitors to the sites. However, this is dependent on parking and access being available at these locations. There are no car parks near to the Banwell Ochre Caves SSSI component site and no access points from the A368 for walkers or cyclists. There are also no carparks near to the Banwell Caves SSSI but there is a footpath which passes close to the Banwell Caves SSSI, potentially providing access to the caves. Growth in the SDLs in this area will also be accompanied with additional recreational space as a part of the SDLs and the WoE Green Infrastructure Plan. With this mitigation in place and given the fact the bypasses are likely to divert traffic from the component sites, it is predicted that **this scheme is therefore predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
Sustainable travel package: Banwell-Churchill Cycle Route	The proposed Churchill Cycle route appears to pass along the A368 between the M5 and Churchill and may not be a segregated path. The SAC qualifying habitats and bat species are sensitive to public access. A component site of the North Somerset and Mendip Bats SAC (Banwell Ochre Caves SSSI) is located adjacent to the A368 between Banwell and Sandford. Another smaller component site (Banwell Caves SSSI) is located approximately 500m south west of the A368 at Banwell. Whilst the cycle route alone is not likely to introduce more visitors to this component site, in combination with the SDLs at Banwell and Churchill, the route will encourage cycle use along the A368 which could increase cycle traffic and the risk of people accessing SAC component sites near to the A368. However, this is dependent on access being available at these locations. There are no access points from the A368 for walkers or cyclists. There is a footpath which passes close to the Banwell Caves SSSI, potentially providing access to the caves. **It is uncertain whether this scheme will result in an adverse effect on the SAC from recreational pressure.**
Weston-super-Mare (G8)	
Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route	The Weston Town Centre to J21 Cycle Route passes through the town centre and links the M5 junction 21 with the Banwell-Churchill Cycle Route. Connection with the Banwell-Churchill Cycle Route could increase use of that route by cyclists. The Banwell-Churchill Cycle Route is assessed above and it is concluded that it is uncertain whether it will result in an adverse effect on the SAC from recreational pressure. **It is therefore uncertain whether the Weston Town Centre to J21 Cycle Route will result in an adverse effect on the SAC from recreational pressure.**
Local walking & cycling infrastructure improvements:	Assessed above under G5.

Table 8.6 Assessment of schemes identified as having a LSE on the North Somerset and Mendip Bats SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
Banwell-Churchill Cycle Route	
Bristol South West Economic Link (BSWEL) (E1)	
Package 4: A38 (south) offline improvements	Package 4 consists of A38 offline improvements between Bristol Airport and the South Bristol Link (SBL); A38/SBL Park & Ride; and Sandford and Churchill Bypass. This scheme has been screened in because it includes the Sandford and Churchill bypass. This element of the scheme is assessed above. This scheme also includes offline improvements to the A38 between Bristol Airport and the South Bristol link. Such improvements to the A38, which from Bristol airport passes south and comes within 4km of component sites of the North Somerset and Mendip Bats SAC (Banwell Ochre Caves SSSI and Kings Wood and Urchin Wood SSSI), should improve traffic flows along the A38 and make journey times more reliable. However, it is not considered that the scheme will increase net traffic flows or visitors to the North Somerset and Mendip Bats SAC component sites. Apart from the bypasses which are assessed above, the scheme will not introduce any other new roads which pass close to the North Somerset and Mendip Bats SAC component sites. **This scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**
Early investment schemes under development	
M5 J21A (E6)	A new Junction 21A on the M5 motorway south of the existing J21. This will be supported by a new multi-modal corridor connecting the new junction with the A38, bypasses for the villages of Banwell, Sandford and Churchill and major online improvements to the A38 between Langford and South Bristol. The scheme will improve links to the airport and improve resilience of the Strategic Road Network. The scheme would improve access to Weston-super-Mare, Weston Villages, the Banwell & Mendip Spring SDLs and access to the A38, Bristol Airport and onwards to Bristol. The scheme will enable traffic to leave the M5 west of Banwell in order to access Bristol Airport and Bristol to the north east, providing an alternative route to M5 junction 22 near Highbridge in the south and M5 junction 21 at Weston-super-Mare to the north. A new motorway junction for the M5 to the west of Banwell would be within 4km of the Banwell Ochre Caves SSSI component site of the North Somerset and Mendip SAC. The new motorway junction could potentially introduce additional vehicles and visitors into this area. However, delivery of the new junction would be dependent on the delivery of the Banwell and Churchill and Sandford bypasses (above). Although additional vehicles could therefore pass near to the Banwell Ochre Caves SSSI site, there is no car park or public access to the component site within this area and therefore the risk of an adverse effect on recreational pressure is considered to be low. **This scheme is predicted to result in no risk of an adverse effect on the SAC from recreational pressure.**

Table 8.6 Assessment of schemes identified as having a LSE on the North Somerset and Mendip Bats SAC from increased recreational pressures	
Scheme Name	**Potential Effects**
E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section (via Sand Bay)	The North Somerset Coastal Cycle Route: WsM - Clevedon section (including via Sand bay) will connect with the Weston Town Centre to J21 Cycle Route, which will in turn connect indirectly with the Banwell-Churchill Cycle Route. Connection with the Banwell-Churchill Cycle Route could increase use of that route by cyclists. The Banwell-Churchill Cycle Route is assessed above and it is concluded that it is uncertain whether it will result in an adverse effect on the SAC from recreational pressure. **It is therefore uncertain whether the North Somerset Coastal Cycle Route: WsM - Clevedon section (via Sand Bay) will result in an adverse effect on the SAC from recreational pressure.**
E9 Interurban Cycle Routes: Strawberry Line Cycle Route	This route will extend the Strawberry Line Cycle Route from Yatton to Clevedon (which will provide a continuous segregated cycleway from Cheddar all the way to Clevedon, via Sandford, Winscombe, Sandford, Congresbury and Yatton. This could increase cycle traffic along the A368 Banwell-Churchill Cycle Route (assessed above). The SAC qualifying habitats and bat species are sensitive to public access. A component site of the North Somerset and Mendip Bats SAC (Banwell Ochre Caves SSSI) is located adjacent to the A368 between Banwell and Sandford. Another smaller component site (Banwell Caves SSSI) is located approximately 500m south west of the A368 at Banwell. However, this is dependent on access being available at these locations. There are no access points from the A368 for walkers or cyclists. There is a footpath which passes close to the Banwell Caves SSSI, potentially providing access to the caves. **It is uncertain whether this scheme will result in an adverse effect on the SAC from recreational pressure.**
MetroBus - Bristol City Centre to Clevedon and Nailsea (E11)	This scheme is a proposed MetroBus route from Clevedon and Nailsea to Bristol City Centre. This would be a rapid transit limited stop service with segregation from general traffic with bus lanes. The section within Bristol would use the infrastructure for the Ashton Vale to Temple Meads route, which was completed in September 2018. This will help to support growth at Nailsea and Backwell and improve connectivity and travel choices. The scheme will provide an enhanced public transport service from Clevedon and Nailsea to Bristol City Centre. As such, it is not likely to provide any greater accessibility to the component sites of the North Somerset and Mendip Bats SAC, the nearest of which to the potential Metrobus route is approximately 4km as the crow flies to the south west of Backwell. **Overall, this scheme is predicted to result in no risk of an adverse effect on the SAC.**
Weston-super-Mare Cycling and Walking Network (E20)	Assessed above under E9.

Table 8.7: Assessment of schemes identified as having a LSE on the Severn Estuary SAC, SPA and Ramsar from increased recreational pressures	
Scheme Name	**Potential Effects**
Mass Transit Schemes	
Bristol City Centre to North Fringe (T4)	The proposed route could increase the number of passengers between north Bristol and central Bristol. Although the north fringe of Bristol is within 7km of the Severn Estuary European sites and has therefore been screened into the AA for further consideration, it is considered unlikely that this mass transit scheme, aimed at improving public transport travel time and reliability for journeys into the city centre will increase passengers travelling to the northern fringe and then onwards to the coast from this part of Bristol. Although visitor information is not available, this part of the Severn Estuary European sites located near to Bristol does not provide a particular visitor destination (as opposed to somewhere like Weston-super-Mare). **Overall, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site.**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Nailsea and Backwell (G4)	
Local improvements to road network in Nailsea area	A package of local improvements to the local road network is proposed in the Nailsea and Backwell area in order to mitigate for the growth proposed in this area in the WoE JSP. This includes small stretches of new roads and junction improvements. These projects will not introduce any new access routes between Nailsea and Backwell and the surrounding local roads which are not already accessible. The measures will improve junctions and provide additional connections to local roads. The measures themselves will not increase traffic travelling towards the Severn Estuary European sites. Any increase in recreational pressure on the Severn Estuary European sites which could potentially result from growth in this area is addressed within the AA of the WoE JSP. The growth proposed in the JSP for the Nailsea and Backwell area will also be supported by provision of recreational space which will also form part of the WoE GI Strategy. **This scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
Nailsea to Clevedon Cycle Route	An improved cycle route between Nailsea & Clevedon would improve connectivity by sustainable travel modes for the proposed growth at Nailsea in the WoE JSP. The route itself is not likely to increase visitors to the Severn Estuary European sites located at Clevedon however, in combination with the growth in Nailsea it could increase visitor numbers arising by bicycle. WoE JSP growth in the Nailsea and Backwell area will also be accompanied with additional recreational space as a part of the SDLs and the WoE GI Strategy. The WoE JSP AA has identified a need for contributions to management and monitoring of the Severn Estuary SAC, SPA and Ramsar which would help to implement relevant actions such as those listed in the Site Improvement Plan. Subject to consideration of viability implications, developer contributions could be required from strategic housing developments (scale to be determined) within the Bristol and Weston-super-Mare urban areas and the SDLs within 7km of the

Table 8.7: Assessment of schemes identified as having a LSE on the Severn Estuary SAC, SPA and Ramsar from increased recreational pressures	
Scheme Name	**Potential Effects**
	Severn Estuary SAC, SPA and Ramsar: Nailsea, Banwell, Thornbury and Buckover, or within zones of influence to be defined through visitor surveys. **With the proposed JSP AA mitigation in place, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
Nailsea - Backwell A370 link	The purpose of the new road link between Nailsea and Backwell and the A370 is to mitigate for the proposed growth in this area set out within the WoE JSP, in order to allow traffic to flow in this area and avoid congestion of local roads. The new link road itself will not increase traffic travelling towards the Severn Estuary European sites. Any increase in recreational pressure on the Severn Estuary European sites which could potentially result from growth in this area is addressed within the AA of the WoE JSP. The growth proposed in the JSP for the Nailsea and Backwell area will also be supported by provision of recreational space which will also form part of the WoE GI Strategy. **This scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
M5 J19 & J20 improved multi-modal connections	This scheme includes new or improved multi-modal connections for Nailsea & Backwell to M5 junction 19 (Portbury) and junction 20 (Clevedon), including bus priority, providing improved access to SDL at Nailsea which may include some new sections of road to the east and west of Nailsea and Backwell. The new roads and multi-modal junction / access improvements are proposed in order to mitigate for the SDL proposed in this area. It is not considered that this scheme will increase accessibility to the Severn Estuary European sites. WoE JSP growth in the Nailsea and Backwell area will also be accompanied with additional recreational space as a part of the SDLs and the WoE GI Strategy. **This scheme is therefore predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreational pressure.**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5)	
A371 / A368 Banwell Bypass and A368 Churchill and Sandford Bypass	This scheme will create a new connection bypassing the village of Banwell and allowing improved travel between Weston-super-Mare and the A38. The route has not yet been determined but is likely to pass between the M5 motorway (where there is currently no motorway junction but a new junction is proposed), bypassing the village of Banwell north of the A368 and rejoining the A368 at Sandford. Two SDLs are proposed within the WoE JSP in the immediate vicinity of the bypasses; the Banwell SDL to the north west of Banwell and the Mendip Spring SDL to the north of Churchill. The Churchill and Sandford bypass is also proposed which would bypass the villages of Sandford and Churchill and pass through the SDLs in this location. An option being considered is that the Sandford and Churchill bypasses could join together and avoid rejoining the A368 between the two villages, but this is just one of the options being explored.

Table 8.7: Assessment of schemes identified as having a LSE on the Severn Estuary SAC, SPA and Ramsar from increased recreational pressures	
Scheme Name	**Potential Effects**
	The bypasses will reduce congestion in Sandford and Churchill and mitigate for the proposed development of SDLs in these areas. It is not considered likely that the bypasses will improve accessibility or recreation use of the coast in the Weston area where the Severn Estuary European sites are located. **This scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
Sustainable travel package: Banwell-Churchill Cycle Route	The Banwell-Churchill Cycle Route passes along the A368 from the village of Churchill to the centre of Weston-super-Mare. The route should encourage cycle use along this route and could therefore potentially increase visitors to the coast at Weston where the Severn Estuary European sites are located. This is in combination with proposed growth in the WoE JSP in the form of two SDLs at Banwell and Churchill (Mendip Spring) and Urban Living in Weston-super-Mare. Growth in these areas will also be accompanied by additional recreational space as a part of the SDLs and the WoE GI Strategy. The SAC qualifying habitats of the SAC and the SPA and Ramsar qualifying habitats and bird species are sensitive to recreational activities (walking, dog walking, horse riding, biking, beach activities, angling, wildfowling, other shooting (e.g. clay pigeon) that may cause damage to habitats where pressure is high. The WoE JSP AA has identified a need for contributions to management and monitoring of the Severn Estuary SAC, SPA and Ramsar which would help to implement relevant actions such as those listed in the Site Improvement Plan. Subject to consideration of viability implications, developer contributions could be required from strategic housing developments (scale to be determined) within the Bristol and Weston-super-Mare urban areas and the SDLs within 7km of the Severn Estuary SAC, SPA and Ramsar: Nailsea, Banwell, Thornbury and Buckover, or within zones of influence to be defined through visitor surveys. **With the proposed JSP AA mitigation in place, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8)	
Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route	The Weston Town Centre to J21 Cycle Route passes through the town centre and links the M5 junction 21 with the Banwell-Churchill Cycle Route. Although the route is yet to be defined, it is likely to pass within a kilometre of the Severn Estuary SAC, SPA and Ramsar site. This scheme should enable and therefore encourage cycling between the M5 junction 21 area (i.e. Worle) and Weston town centre. It could increase recreational use of the Severn Estuary SAC, SPA and Ramsar site, particularly in combination with growth in the Weston area, proposed as 'Urban Living' within the WoE JSP as well as growth currently planned within the North Somerset Local Plan. The WoE JSP AA has identified a need for contributions to management and monitoring of the Severn Estuary SAC, SPA and Ramsar which would help to implement relevant actions such as those listed in the Site Improvement Plan. Subject to consideration of viability implications, developer contributions could be

Table 8.7: Assessment of schemes identified as having a LSE on the Severn Estuary SAC, SPA and Ramsar from increased recreational pressures	
Scheme Name	**Potential Effects**
	required from strategic housing developments (scale to be determined) within the Bristol and Weston-super-Mare urban areas and the SDLs within 7km of the Severn Estuary SAC, SPA and Ramsar: Nailsea, Banwell, Thornbury and Buckover, or within zones of influence to be defined through visitor surveys. **With the proposed JSP AA mitigation in place, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
Local walking & cycling infrastructure improvements: Banwell-Churchill Cycle Route	Assessed above under G5
Early Investment Schemes in Progress (Committed Schemes)	
M49 Avonmouth Junction Upgrade (C1)	This scheme is a new M49 Avonmouth junction to improve access to the port of Avonmouth and the Avonmouth Severnside Enterprise Area. Works are expected to be completed by the end of 2019. This new junction could potentially link to roads which connect to the Severn Estuary SPA, SAC and Ramsar site in the Avonmouth area. However, this area is an employment area with limited coastal access which does not provide a particular visitor destination (as opposed to somewhere like Weston-super-Mare). **Overall, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
Early investment schemes under development	
(E4): Ashton Gate Station	A new station at Ashton Gate is part of a package of rail improvement measures between Bristol and Weston-super-Mare. See Appendix 2 for further details of the wider scheme. The location of the new station at Ashton Gate was screened into the AA because it is located within 7km of the Severn Estuary SPA, SAC and Ramsar site. The new Ashton Gate rail station could be linked to the proposed extension of the Metrobus Bristol city centre to Avonmouth/Severnside route. This scheme could potentially increase passengers and visitors to the Severnside and Avonmouth areas and the Severn Estuary SPA, SAC and Ramsar site in these locations. However, these are mainly employment areas with limited coastal access which does not provide a particular visitor destination (as opposed to somewhere like Weston-super-Mare). **Overall, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
(E4): Pill Station	The former Pill railway station is located to the south of the River Avon, within the village of Pill and within 500m of the Severn Estuary SPA, SAC and Ramsar site. Reopening a station in this location could potentially increase visitors to the Severn Estuary SPA, SAC and Ramsar site. However, access to the Severn Estuary SPA, SAC and Ramsar site in the Pill area (i.e. along the south bank of

Table 8.7: Assessment of schemes identified as having a LSE on the Severn Estuary SAC, SPA and Ramsar from increased recreational pressures	
Scheme Name	**Potential Effects**
	the River Avon) is limited and it is not considered likely that any potential increase in visitor activity in this area would be significant. **Overall, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
M5 J21A (E6)	A new Junction 21A on the M5 motorway south of the existing J21. This will be supported by a new multi-modal corridor connecting the new junction with the A38, bypasses for the villages of Banwell, Sandford and Churchill and major online improvements to the A38 between Langford and South Bristol. The scheme will improve links to the airport and improve resilience of the Strategic Road Network. The scheme would improve access to Weston-super-Mare, Weston Villages, the Banwell & Mendip Spring SDLs and access to the A38, Bristol Airport and onwards to Bristol. The scheme will enable traffic to leave the M5 west of Banwell in order to access Bristol Airport and Bristol to the north east, providing an alternative route to M5 junction 22 near Highbridge in the south and M5 junction 21 at Weston-super-Mare to the north. The new junction will also alleviate some congestion on local roads and could reduce traffic passing near to the Mendip Grasslands SAC by allowing direct access to the M5 for residents of the Banwell /Churchill areas and diverting them away from the A38 to the south (towards M5 junction 22). This new motorway junction does not create a new route to the Severn Estuary SPA, SAC and Ramsar site in the Weston-super-Mare area does not make access any easier or more attractive. It is not considered likely that the new junction will itself increase visitors or recreation pressure on the Severn Estuary SPA, SAC and Ramsar site. **Overall, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
M5 Junction 19 (E3)	Improvements to M5 Junction 19 to improve access between the M5 and the Royal Portbury Dock, Portishead, Portbury and Pill. The scheme will provide enhanced capacity to improve the efficiency of movements for freight using the Royal Portbury Dock, enhancing connectivity to national road networks. The scheme will also assist in accommodating future traffic growth generated by planned housing and employment growth in the area. There is no access to the Severn Estuary SPA, SAC and Ramsar site from Portbury and access is limited in the Pill and Portbury Dock areas. Improvements to the junction to reduce congestion are not considered likely to increase visitor numbers to the Severn Estuary SPA, SAC and Ramsar site in the Portishead area, where public access is possible (such as along Esplanade Road). **Overall, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
E9 Interurban Cycle Routes: North Somerset Coastal Cycle	Although this cycle route is yet to be defined, it is likely to pass between the Kewstoke part of Weston-super-Mare to Clevedon, parallel to and within approximately 1km of the coast and therefore the Severn Estuary SPA, SAC and

Table 8.7: Assessment of schemes identified as having a LSE on the Severn Estuary SAC, SPA and Ramsar from increased recreational pressures	
Scheme Name	**Potential Effects**
Route: WsM - Clevedon section (via Sand Bay)	Ramsar site. This cycle route could potentially increase visitors to Clevedon and Weston-super-Mare and parts of the coast in between (particularly at Tutshill Ear). It is also likely to pass close to the coast at Sand Bay, possibly adjacent to the Severn Estuary SPA, SAC and Ramsar site. As such, the scheme could increase visitors and recreational use of the Severn Estuary SPA, SAC and Ramsar site in this area and potentially result in an adverse effect from recreation. The WoE JSP AA has identified a need for contributions to management and monitoring of the Severn Estuary SAC, SPA and Ramsar which would help to implement relevant actions such as those listed in the Site Improvement Plan. Subject to consideration of viability implications, developer contributions could be required from strategic housing developments (scale to be determined) within the Bristol and Weston-super-Mare urban areas and the SDLs within 7km of the Severn Estuary SAC, SPA and Ramsar: Nailsea, Banwell, Thornbury and Buckover, or within zones of influence to be defined through visitor surveys. **A potential adverse effect could result on the Severn Estuary SPA, SAC and Ramsar site from recreation, particularly at the Sand Bay location.**
E9 Interurban Cycle Routes: Strawberry Line Cycle Route	The extension of the existing Strawberry Line Cycle Route from Sandford to Clevedon could potentially increase visitors by cycle to Clevedon which is adjacent to the Severn Estuary SPA, SAC and Ramsar site. The SAC qualifying habitats of the SAC and the SPA and Ramsar qualifying habitats and bird species are sensitive to recreational activities (walking, dog walking, horse riding, biking, beach activities, angling, wildfowling, other shooting (e.g. clay pigeon) that may cause damage to habitats where pressure is high. The WoE JSP AA has identified a need for contributions to management and monitoring of the Severn Estuary SAC, SPA and Ramsar which would help to implement relevant actions such as those listed in the Site Improvement Plan. Subject to consideration of viability implications, developer contributions could be required from strategic housing developments (scale to be determined) within the Bristol and Weston-super-Mare urban areas and the SDLs within 7km of the Severn Estuary SAC, SPA and Ramsar: Nailsea, Banwell, Thornbury and Buckover, or within zones of influence to be defined through visitor surveys. **With the proposed JSP AA mitigation in place, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
MetroBus - Bristol City Centre to Clevedon and Nailsea (E11)	This scheme is a proposed MetroBus route from Clevedon and Nailsea to Bristol City Centre. This would be a rapid transit limited stop service with segregation from general traffic with bus lanes. It will help to support growth at Nailsea and Backwell and improve connectivity and travel choices. The scheme will provide an enhanced public transport service between Clevedon, Nailsea and Bristol City Centre. It could potentially increase visitors from Nailsea and Bristol to Clevedon which is adjacent to the Severn Estuary SPA, SAC and Ramsar site, providing public access to the coast.

Table 8.7: Assessment of schemes identified as having a LSE on the Severn Estuary SAC, SPA and Ramsar from increased recreational pressures	
Scheme Name	**Potential Effects**
	The WoE JSP AA has identified a need for contributions to management and monitoring of the Severn Estuary SAC, SPA and Ramsar which would help to implement relevant actions such as those listed in the Site Improvement Plan. Subject to consideration of viability implications, developer contributions could be required from strategic housing developments (scale to be determined) within the Bristol and Weston-super-Mare urban areas and the SDLs within 7km of the Severn Estuary SAC, SPA and Ramsar: Nailsea, Banwell, Thornbury and Buckover, or within zones of influence to be defined through visitor surveys. **With the proposed JSP AA mitigation in place, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
MetroBus - Bristol City Centre to Severnside (E15)	The route would connect the logistics cluster at Severnside and Avonmouth with Bristol City Centre via the Portway Park & Ride site, with the aim of improving travel options and connectivity for employees and businesses in accessing Severnside and Avonmouth. This scheme could potentially increase passengers and visitors to the Severnside and Avonmouth areas and the Severn Estuary SPA, SAC and Ramsar site in these locations. However, these are mainly employment areas with limited coastal access which does not provide a particular visitor destination (as opposed to somewhere like Weston-super-Mare). **Overall, this scheme is predicted to result in no risk of an adverse effect on the Severn Estuary SPA, SAC and Ramsar site from recreation.**
Weston-super-Mare Cycling and Walking Network (E20)	Assessed above under E9

Tables 8.1 to 8.7 present a number of uncertain or adverse effects, summarised as follows:

Potential adverse effects on **Severn Estuary SPA, SAC and Ramsar site** from the following schemes:

- Early investment schemes under development: E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section at Sand Bay.

Uncertain adverse effects on **Mendip Limestone Grasslands SAC** from the following schemes:

- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8): Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route and Banwell-Churchill Cycle Route; and
- Early investment schemes under development: E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section and Strawberry Line Cycle Route.

Uncertain adverse effects on **North Somerset and Mendip Bats SAC** from the following schemes:

- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Banwell and Churchill (G5): Sustainable travel package: Banwell-Churchill Cycle Route; and
- JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth: Weston-super-Mare (G8): Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route.
- Early investment schemes under development: E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section (including Sand Bay) and Strawberry Line Cycle Route extension.

8.4 Mitigation requirements

8.4.1 Strategic Mitigation

Mitigation set out within the JSP HRA which is relevant to the potential effects of the JLTP4 is included in Tables 8.1 to 8.7 where appropriate. As set out between paragraphs 5.129 and 5.140 of the JSP HRA[Error! Bookmark not defined.], the WoE authorities propose using a tailored approach incorporating both open space within SDLs and a strategic approach to mitigation relating to effects from recreation pressure. Through continued collaboration with Natural England, European site managers and the Unitary Authorities, these mechanisms will be reviewed and implemented, to inform both Local Plans and the WoE GI Strategy.

The detailed approach will require further work (some of which is already underway) by the WoE authorities to define/understand:

- What is known about and can be assumed for recreational travel distances for the European site in question.
- What is known about existing recreational issues for European sites at risk.
- What is known about existing green space provision within urban areas and near SDLs and current performance against existing standards – possible use of ORVal model[40].
- What scale/significance of impacts is likely from scale and location of SDLs and urban living.
- What best practical solutions are considered to be (new country parks; investment in existing parks and green spaces; investment in footpaths; investment in on-site GI etc.).

The strategic approach to addressing recreational pressures within the WoE resulting from the growth proposed in the JSP will involve a package of solutions listed below. They are considered

[40] https://www.leep.exeter.ac.uk/orval/

to be tried and tested methods, which have been utilised elsewhere. The list of solutions should not be seen as exhaustive, as other opportunities may come to light through work begun in tandem with the JSP and GI Strategy that will continue through Local Plan preparation. The detail and extent of each method will be reviewed through the West of England GI Strategy for inclusion in the authorities' Local Plans.

1) Maximising integration of open space within SDLs

The process of designing open space within individual SDLs is to be taken forward and delivered through the four authorities' new Local Plans. Specific requirements for green infrastructure provision is set out in each SDL policy, and the JSP HRA Report has also recommended that a more general requirement is included in the JSP to ensure that all new development makes sufficient provision of accessible green spaces, to ensure that any increase in recreational pressure on European sites identified through the JSP HRA is mitigated.

Sufficient provision would need to be defined through Local Plans and meet the relevant unitary authority's standards in regard to access, quality and quantity of green space, and reflecting the outputs of the Local Plan HRAs. The inclusion and integration of open space and green infrastructure will be implemented through Masterplanning of the strategic development locations.

Although it is unlikely that provision of open space within SDLs will completely attract new residents away from the nearby European sites, it is likely to divert a large proportion of the daily recreational visits (e.g. walkers and dog-walkers) by providing space for these activities on their doorstep. It is considered that this approach would make a significant contribution towards reducing the recreational pressures on those European sites listed above.

2) Use of Suitable Alternative Natural Greenspace (SANG) to alleviate pressures on sensitive sites.

'Suitable Alternative Natural Greenspace' is the name given to green space that is of a quality and type suitable to be used as mitigation for recreational pressures on particular European sites. The role of SANGs is to provide alternative greenspace to divert visitors from European sites and reduce the potential impact of residential development on European sites by preventing an increase in visitor pressure. The effectiveness of SANGs as mitigation will depend upon the location and design, which must be such that the SANG is equally as attractive as the European site(s) to users of the kind that currently visit European sites.

This approach is used by a growing number of local authorities to deliver avoidance and mitigation for recreational impacts on designated sites where visitor surveys and monitoring of qualifying habitats and species identifies a need. In most cases, the approach funds the creation and maintenance of SANGs. Examples of this include:

- Thames Basin Heaths SPA (Surrey Heath Borough Council)
- Ashdown Forest SPA (Mid Sussex District Council)

- Dorset Heathlands SPA (the South East Dorset authorities)
- Bird Aware Solent (Solent Recreation Mitigation Partnership). This uses rangers to help people understand the issue of recreational disturbance and inspire them to act themselves to reduce their impact. A partnership approach funded through local growth deal funding.

As discussed below, visitor surveys will determine zones of influence within which developer contributions could be required and size and scale of SANGs needed and these surveys are currently underway.

3) A strategic approach to recreation mitigation through developer contributions, zones of influence and site management (including wardening and opportunities to improve education)

As part of preparing the WoE GI Strategy, and in addition to the above, recreational visitor surveys and distance mapping of travel patterns will be undertaken where required to understand visitor travel patterns to European sites. This work will inform a requirement for developer contributions to be made on development sites that fall within those travel zones to offset/ mitigate the potential impacts of development, in line with the precautionary approach.

8.4.2 Mitigation - Cycleways

A risk of adverse effects on the integrity of the following European Sites has been identified due to potential recreational pressures as a result of the proposed cycleways within the JLTP4 (refer to Section 8.3):

- Mendip Limestone Grassland SAC;
- North Somerset and Mendip Bats SAC; and
- Severn Estuary SPA, SAC and Ramsar.

The proposed cycleways within the JLTP4 are indicative at this stage and yet to be finalised. It is therefore not possible to fully assess the potential effects of each route. Some cycle routes will be included within the Cycling and Walking Infrastructure Plan.

I is therefore recommended that an HRA of the Local Cycling and Walking Infrastructure Plans would ascertain the predicted level of use of new cycle routes in the WoE and therefore more accurately predict the potential for an adverse effect on the European sites identified and be able to put forward suitable mitigation.

The Interurban cycle routes which form part of scheme E9 will not be included within the Cycling and Walking Infrastructure Plan. It is therefore proposed that the potential effects of recreational pressures resulting from the following cycle routes are assessed through project-level HRA of the

individual schemes, as well as a separate HRA of the WoE Local Cycling and Walking Infrastructure Plan:

- Strawberry Line Cycle Route (Interurban Cycle Routes - E9);
- Weston Town Centre to J21 Cycle Route (Weston-super-Mare: Local walking & cycling infrastructure improvements - G8);
- Banwell - Churchill Cycle Route (Banwell and Churchill: Sustainable travel package - G5); and
- North Somerset Coastal Cycle Route, particularly the WSM to Sand Bay and Sand Bay to Clevedon sections (Interurban Cycle Routes - E9).

It is recommended that the requirement for HRA of individual cycle route schemes is included within the JLTP4. If an LSE is identified in screening during the project level HRA then an Appropriate Assessment should be undertaken and schemes should only be granted permission and allowed to go ahead if the Appropriate Assessment is able to demonstrate that there would be no adverse effects on these European sites, either alone or in combination with other plans and projects. The Appropriate Assessment should input into the design and location of the cycleways as appropriate. There is also an opportunity for the cycleways to provide linkages as a part of the local green infrastructure networks and it is recommended that this opportunity if referred to within the JLTP4.

It is also assumed that all cycleways will eventually be incorporated into Local Plans as part of infrastructure delivery. Local Plans will be subject to their own HRAs and new cycleways will be considered within the HRAs along with other developments. Through their HRAs, the Local Plans of the WoE authorities would need to demonstrate that there would be no adverse effect on the North Somerset Bats SAC and the Severn Estuary SPA, SAC and Ramsar as a result of the transport schemes before the plans are adopted.

8.5 Conclusion

With the strategic mitigation set out in the JSP HRA and also provided that the mitigation set out in Section 8.4.2 is incorporated into the JLTP4, it is concluded that there will be **no adverse effects** on the integrity of the Mendip Limestone Grassland SAC, the North Somerset and Mendip Bats SAC and the Severn Estuary SPA, SAC and Ramsar from the JLTP4, both alone and in combination with the JSP, as a result of recreational pressure.

9 Appropriate Assessment: Increase in Water Pollution and Marine Litter

9.1 Introduction

Screening identified the following schemes as having a potential LSE on the Severn Estuary SAC, SPA & Ramsar as they could result in an increase in the amount of water pollutants and litter entering the estuary.

- Mass Transit Schemes: Bristol City Centre to North Fringe (T4);
- Nailsea and Backwell (G4): Local Improvements to road network in Nailsea area, M5 J19 & 20 improved multi-modal connections;
- Banwell and Churchill (G5): A371/A383 Banwell Bypass, A368 Churchill and Sandford Bypass;
- Bristol Urban Area (G7): A4 Portway Park & Ride expansion; and
- Early investment schemes: M49 Avonmouth, M5 J21A (E6) M5 J19, Ashton Gate Station (E4), Pill Station (E4).

9.2 Background

9.2.1 Temporary Construction Effects

Construction of the proposed schemes could result in pollutants and litter entering the Severn Estuary via a potential impact pathway, such as a watercourse, which creates a hydrological connection between a proposed scheme and the estuary. Pollution could include dust (cement powder) and hydrocarbons (fuels/oils) being released during movement across the construction site or from general construction activities such as any spillages, the release of metal fines and construction material pollutants (welding and wet concrete). Site pollutants could then enter watercourses linked to the estuary either directly or through contamination of surface water run-off. Litter including construction waste could also enter watercourses linked to the estuary through accidental disposal.

9.2.2 Operational Effects

Where proposed schemes cross or run adjacent to a watercourse linked to the Severn Estuary, pollution could arise from spills, leeks, sediments and discharges from operational schemes. Pollutants could then enter watercourses linked to the estuary either directly or through contamination of surface water run-off. Litter could also enter the watercourses due to disposal by users of the scheme.

Pollutants and litter which enter the Severn Estuary during scheme construction and operation could reduce water quality and impact on the habitats and fish populations within the estuary and the associated food source of the birds within the SPA and Ramsar.

The proposed location of the schemes identified in Section 9.1 were subject to a detail review using OS Maps (1:10,000 scale) and aerial photography to determine if the schemes crossed or ran adjacent to a watercourse linked to the Severn Estuary SPA and Ramsar.

9.3 Assessment of Effects

The schemes identified in Section 9.1 are assessed in further detail in Table 9.1 below.

Table 9.1 Assessment of Schemes identified as having an LSE on the Severn Estuary SAC, SPA and Ramsar due to water pollution and marine litter

Scheme name	Approximate distance to Severn Estuary at its closest point	Potential Effects
Mass Transit Schemes		
Bristol City Centre to North Fringe (T4)	5.5km	Northern part of the proposed route occurs adjacent a watercourse called the Henbury Trym which flows into the River Avon via Hazel Brook and the River Trym. The River Avon is a tributary of the Severn Estuary and therefore it is **uncertain whether an adverse effect would occur** due to the risk of pollutants entering the watercourse during construction and operation. It is possible that litter could also enter the watercourse during construction and operation of the scheme. However, it is considered unlikely that litter would enter the Severn Estuary due to the distance between the scheme and the estuary (6km+).
Nailsea and Backwell (G4)		
Local improvements to road network in Nailsea area	2km	Sections of the proposed road schemes cross or run adjacent to watercourses connected to the Land Yeo, Blind Yeo, Middle Yeo or River Kenn. All these watercourses flow into the Severn Estuary and therefore **an adverse effect is predicted** due to the risk of pollutants and litter entering the watercourse during construction and operation of the proposed scheme.
M5 J19 & J20 improved multi-modal connections	1.6km	Multi-modal connections occur adjacent to or cross water features connected to the Severn Estuary. In particularly Junction 19 occurs close to several 'Rhines' which connect with the River Avon 1.75km to the north east. The River Avon flows directly into the Severn Estuary and therefore there is a **risk of**

Table 9.1 Assessment of Schemes identified as having an LSE on the Severn Estuary SAC, SPA and Ramsar due to water pollution and marine litter		
Scheme name	**Approximate distance to Severn Estuary at its closest point**	**Potential Effects**
		an adverse effect from this scheme due to increased water pollution and litter.
Banwell and Churchill (G5)		
A371 / A368 Banwell Bypass	6.5km	Appears to cross a water feature connected to the River Banwell and there is therefore a **risk of an adverse effect**. It is considered unlikely that litter would enter the Severn Estuary due to the distance between the scheme and the estuary (7km+).
A368 Churchill and Sandford Bypass	8km	Oldbridge River flows into the River Yeo which flows into the Severn Estuary. There is therefore a **risk of an adverse effect** due to the risk of pollutants and litter entering the watercourse during construction and operation of the proposed scheme. It is considered unlikely that litter would enter the Severn Estuary due to the distance between the scheme and the estuary (7km+).
Bristol Urban Area (G7)		
A4 Portway Park & Ride expansion	150m	Expansion of existing Park & Ride **unlikely to result in an LSE** from pollution or litter as no connecting pathways were recorded and the site is separated from the River Avon by a railway.
Early Investment Schemes in Progress (Committed Schemes)		
M49 Avonmouth Junction Upgrade (C1)	2.45km	The proposed scheme occurs adjacent several 'Rhines' connected to the Severn Estuary approximately 2.45km to the west. Therefore, there is **a risk of an adverse effect** due to the risk of pollutants entering the watercourse during construction and operation.
M5 Junction 19 (E3)	1.6km	Junction 19 occurs close to several 'Rhines' which connect with the River Avon 1.75km to the north east. The River Avon flows directly into the Severn Estuary and therefore there is **a risk of an adverse effect** from this scheme due to increased water pollution and litter.
(E4): Ashton Gate Station	7km	Proposed scheme occurs 7km from the Severn Estuary and no watercourses occur on or directly adjacent the proposed site. **No adverse effects** on the Severn Estuary predicted due to water pollution or marine litter.

Table 9.1 Assessment of Schemes identified as having an LSE on the Severn Estuary SAC, SPA and Ramsar due to water pollution and marine litter		
Scheme name	**Approximate distance to Severn Estuary at its closest point**	**Potential Effects**
(E4): Pill Station	Within 1km	Scheme appears to be proposed within 100m of the River Avon which flows into the Severn Estuary. Therefore, an **adverse effect is predicted** due to the risk of pollutants entering the watercourse during construction and operation.
M5 J21A (E6)	6km	The new junction and associated multi-modal corridor occur adjacent water features connected to the Severn Estuary and therefore there is **a risk of an adverse effect** on this site as a result of water pollution and marine litter.

9.4 Assessment of Effects In Combination with the JSP

The JSP proposes development in urban areas adjacent the Severn Estuary. The JSP therefore includes mitigation to ensure the policies within this plan protect and enhance the natural environment by ensuring new development conform with planning legislation to protect international designated sites. The JSP HRA concludes that provided sufficient sewage treatment capacity is put in place ahead of new development proposed, then no adverse effects on water quality within the Severn Estuary SAC, SPA and Ramsar would occur. Therefore, if this mitigation is delivered there would be no adverse effects on the integrity of this European Site as a result of in combination effects.

9.5 Mitigation requirements

A risk of an adverse effect on the integrity of the Severn Estuary has been identified due to water pollution and litter during scheme construction. It is therefore recommended that the JLTP4 states that any scheme which has the potential to have an adverse impact on the water quality of the Severn Estuary during construction should ensure that best practice pollution prevention guidelines are followed, including adherence with the following CIRIA guidance documents to manage construction run-off:

- CIRIA C532 (2001). Control of water pollution from construction sites. Guidance for consultants and contractors;
- CIRIA C648 (2006) – Control of Water Pollution from Linear Construction Projects; and
- CIRIA C692 (2010) – Environmental Good Practice on site. 3rd Edition.

Where a risk of an adverse effect on the integrity of the Severn Estuary has been identified due to water pollution and litter during scheme, this could be mitigated by incorporating interceptors into the scheme design to trap the silt, oil and other possible contaminants in run-off to prevent pollution and degradation of the downstream habitats. This should be designed in accordance with current best practice, including adherence to the DMRB Volume 11 Section 3 Part 10 HD 45/09 Road Drainage and the Water Environment.

9.6 Conclusion

Provided that the mitigation set out in Section 9.4 is incorporated within the JLTP4, it is concluded that there will be **no adverse effect** on the integrity of the Severn Estuary SPA, SAC and Ramsar from the JLTP4, both alone and in combination with the JSP, as a result of water pollution and litter.

10 Appropriate Assessment: Physical Modification of Watercourses

10.1 Introduction

Screening identified that the following proposed schemes could result in the physical modification of watercourses potentially used by fish species associated with the Severn Estuary SAC and Ramsar:

- Mass Transit Schemes: Bristol City Centre to North Fringe (T4);
- Nailsea and Backwell (G4): Local Improvements to road network in Nailsea area, M5 J19 & 20 improved multi-modal connections;
- Banwell and Churchill (G5): A371/A383 Banwell Bypass, A368 Churchill and Sandford Bypass; and
- Early investment schemes: M49 Avonmouth (C1), M5 J21A (E6).

10.2 Background

The Severn Estuary SAC is designated for its Annex I habitats and for its populations of twaite shad, sea lamprey and river lamprey, which are Annex II fish species. These species, together with salmon, sea trout, European eel and allis shad are also designated features of the Ramsar. These fish species spawn in the upper reaches of the River Severn but will also migrate up watercourse connected to the Severn Estuary. The proposed schemes that cross watercourses associated with the Severn Estuary could result in the installation of barriers to fish passage, which could prevent migration, interrupt spawning and restricting access to preferred habitat.

10.3 Assessment of Effects

Table 10.1 Assessment of Schemes identified as having an LSE on the Severn Estuary SAC and Ramsar due to potential physical modification of associated watercourses

Scheme name	Approximate distance to Severn Estuary at its closest point	Unmitigated Potential Effects
Mass Transit Schemes		
Bristol City Centre to North Fringe (T4)	5.5km	Northern part of the proposed route potentially crosses watercourse called the Henbury Trym which flows into the River Avon via Hazel Brook and the River Trym. The River Avon is a tributary of the Severn Estuary and therefore, without mitigation, this scheme may potentially impede migration of fish associated

Table 10.1 Assessment of Schemes identified as having an LSE on the Severn Estuary SAC and Ramsar due to potential physical modification of associated watercourses		
Scheme name	**Approximate distance to Severn Estuary at its closest point**	**Unmitigated Potential Effects**
		with the Severn Estuary. There is therefore **a risk of an adverse effect** on this European Site
Nailsea and Backwell (G4)		
Local improvements to road network in Nailsea area	2km	Sections of the proposed road schemes cross or run adjacent to watercourses connected to the Land Yeo, Blind Yeo, Middle Yeo or River Kenn. All these watercourses flow into the Severn Estuary and therefore, without mitigation, this scheme may potentially impede migration of fish associated with the Severn Estuary. There is therefore **a risk of an adverse effect** on this European Site.
M5 J19 & J20 improved multi-modal connections	1.6km	Multi-modal connections potentially cross water features connected to the Severn Estuary including several 'Rhines' connecting with the River Avon. Without mitigation, this scheme may potentially impede migration of fish associated with the Severn Estuary and could result in an **adverse effect on this site**.
Banwell and Churchill (G5)		
A371 / A368 Banwell Bypass	6.5km	Appears to cross a water feature connected to the River Banwell which connects to the Severn Estuary. Without mitigation, this scheme may potentially impede migration of fish associated with the Severn Estuary and could result in an **adverse effect on this site.**
A368 Churchill and Sandford Bypass	8km	Potentially crosses the Oldbridge River which flows into the River Yeo which flows into the Severn Estuary. Without mitigation, this scheme may potentially impede migration of fish associated with the Severn Estuary and could result in an **adverse effect on this site.**
Early Investment Schemes in Progress (Committed Schemes)		
M49 Avonmouth Junction Upgrade (C1)	2.45km	Does not appear to cross any suitable water features and therefore **no risk of an adverse effect** on the Severn Estuary as a result of physical modification.
M5 J21A (E6)	6km	Potentially crosses water features connected to the Severn Estuary. There is therefore a **risk of an adverse effect on this site** as a result of physical modification.

10.4 Assessment of Effects In Combination with the JSP

Although adverse effects on fish passage was not screened into the JSP HRA, the JSP includes mitigation to ensure the policies within this plan protect and enhance the natural environment by ensuring new development conform with planning legislation to protect international designated sites. Fish passages are therefore likely to be installed within new development where required. No in combination effects with the JSP are therefore anticipated.

10.5 Mitigation requirements

A risk of an adverse effect on the integrity of the Severn Estuary has been identified due to physical modification of watercourses potentially used by fish species associated with the Severn Estuary SAC and Ramsar. It is therefore recommended that the JLTP4 states that any scheme which crosses a watercourse linked to the Severn Estuary should ensure it does not result in a barrier to fish passage by ensuring crossing points are designed and constructed in accordance with best practice guidance, including adherence to the Environment Agency Fish Pass Manual (2010)[41].

10.6 Conclusion

Provided the mitigation set out in Section 10.4 is incorporated within the JLTP4, it is concluded that there will be **no adverse effect** on the integrity of the Severn Estuary SAC and Ramsar from the JLTP4, both alone and in combination with the JSP, as a result of physical modification of watercourse linked to this European Site.

[41] Environment Agency Fish Pass Manual (2010) – Guidance Notes on The Legislation, Selection and Approval Of Fish Passes In England and Wales. EA, Bristol.

11 Appropriate Assessment: Habitat loss

11.1 Introduction and Background

Screening of the JLTP4 identified that the MetroWest Phase 1 could result in direct loss of habitat within the Avon Gorge Woodlands SAC.

11.2 Assessment of effects alone and in combination with the JSP

Although there is an existing operational railway from Royal Portbury Dock in Portishead which joins the Bristol to Exeter main line, the provision of a new passenger service would require modifications to the existing railway. The line passes through the Avon Gorge Woodlands SAC and minor scale works would be required within the SAC to improve access for maintenance and to construct new signalling. A project level HRA of MetroWest Phase 1 is currently being prepared by CH2M which concludes that the scheme would lead to the loss of up to 0.71ha of woodland habitat within the SAC which would include 27 whitebeam trees which are a component of the SAC. An adverse effect on the integrity of the Avon Gorge Woodlands SAC would therefore occur as a result of this scheme.

No direct loss of habitat within the Avon Gorge Woodland SAC would occur as a result of the JSP and therefore no in combination effects with the JLTP4 are predicted.

11.3 Mitigation and compensation requirements

The MetroWest Phase 1 project level HRA proposes a series of mitigation measures, including implementing protective measures during scheme construction which would reduce the adverse effects on the Avon Gorge Woodlands SAC. However, it is not possible to avoid the loss of up to 0.71ha of woodland within the SAC and therefore an adverse effect on this SAC remains following mitigation.

The project level HRA has therefore proceeded to evaluate the alternatives to the MetroWest Phase 1 scheme, however, it has not been possible to identify any feasible alternatives to this scheme. It is therefore necessary for this scheme to advance to the 'IROPI test' (imperative reasons of overriding public interest). The IROPI that have been considered within the project level HRA relates to human health, public safety and important environmental benefits. Compensatory measures are also provided within the project level HRA, including habitat management and planting of additional woodland with whitebeams. However, as a result of the European Court of Justice interpretation of the Habitats Directive, these measures cannot be taken into account in the assessment of the implications of the project.

11.4 Conclusions

The MetroWest Phase 1 project level HRA concluded that it cannot be determined that there would be no adverse effect on the integrity of the Avon Gorge Woodlands SAC as a result of MetroWest Phase 1 and therefore it is necessary to proceed to the 'IROPI test'. The planning application for this scheme is due to be submitted in summer 2019 following which it will undergo an 18-month consultation period and be determined by the inspector in 2021.

It is not known whether or not the UK will be subject to the Habitats Directive at the time the application for the MetroWest Phase 1 is determined. If it is, then consent may be granted following consultation between the Government and the European Commission and would be subject to securing compensation measures. If the UK is not subject to the Habitats Directive then it is expected that The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 will be in force, in which case the Secretary of State will be the appropriate person to determine whether the MetroWest Phase 1 must be carried out for IROPI relating to human health, public safety or beneficial consequences of primary importance to the environment, or any other reasons which the Secretary of State considers to be imperative reasons of overriding public interest (Regulation 64(2) as amended).

At this stage, it is therefore **not possible to conclude no adverse effect** on the integrity of the Avon Gorge Woodland SAC as a result of Metrowest Phase 1.

12 Appropriate Assessment: Other Schemes with Uncertain Effects

12.1 Introduction and Background

Screening of the JLTP4 identified a number of schemes for which there are very few details available at the present time. These schemes were screened into the Appropriate Assessment due to uncertainty. The schemes are:

- Bristol Urban Area (G7): Bristol walking and cycling package;
- Bristol South West Economic Link (BSWEL) (E1):
  - Package 6: Rail options: Bristol Airport Rail Link Phase One
  - Package 7: Rail options: Bristol Airport Rail Link Phase Two
  - Package 8: A370-A38 Link
- Early investment schemes under development: Interurban cycle routes (E9); and
- Other longer-term opportunities Strategic Rail and Road Freight Package (L1).

12.2 Assessment of effects alone and in combination with the JSP

Table 12.1: Assessment of Other Schemes with Uncertain Effects	
Scheme Name	**Unmitigated Potential Effects**
Bristol Urban Area (G7):	
Bristol walking and cycling package	Exact routes are yet to be defined and therefore it is not possible to assess this scheme. **Uncertain effects on European sites.**
Bristol South West Economic Link (BSWEL) (E1)	
Package 6: Rail options: Bristol Airport Rail Link Phase One	This scheme is currently in the feasibility stage and therefore cannot be assessed. **Uncertain effects on European sites.**
Package 7: Rail options: Bristol Airport Rail Link Phase Two	This is a long term aspiration and may not be delivered within the JLTP4 plan period. Options for rail or tram-train between WSM and Bristol airport and then onwards to Bristol city centre are included within the BSWEL report. Potential routes for links are yet to be defined and therefore it is not possible for this scheme to be assessed at this stage. **Uncertain effects on European sites.**

Table 12.1: Assessment of Other Schemes with Uncertain Effects	
Scheme Name	**Unmitigated Potential Effects**
Package 8: A370-A38 Link	This is a long term aspiration and may not be delivered within the JLTP4 plan period. No route options are being considered yet and there is therefore a lack of information available in order to assess this scheme. **Uncertain effects on European sites.**
Early investment schemes under development	
Interurban cycle routes (E9)	These routes will be defined through the WoE Local Cycling and Walking Infrastructure Plan. Some routes have already been identified and have been screened individually. The location of other cycle routes have not yet been determined. Many of these will be delivered along the MetroBus corridors (screened elsewhere in this table). **Uncertain effects on European sites.**
Other longer-term opportunities	
Strategic Rail and Road Freight Package (L1)	This scheme recognises a demand problem and freight issues within the network. No work has started to identify what improvements would be needed. This scheme is unlikely to come forward within the plan period. **Uncertain effects on European sites.**

12.3 Mitigation requirements

It is recommended that the JLTP4 states that all of the schemes listed in Table 12.1 are subject to project-level HRA when sufficient information is available. If an LSE is screened-in during the project level HRA then an Appropriate Assessment should be undertaken. The Appropriate Assessment should input into the design and location of the schemes to ensure no adverse effect on European sites occur. Permission should only be granted and schemes allowed to go ahead if the Appropriate Assessments are able to conclude that no adverse effects will occur on European sites. It is recommended individual Interurban cycle routes (E9) are subject to HRA screening in order to ensure that any potential effects on European sites from recreation pressure and loss of supporting sites for birds are identified, assessed and mitigation put in place to avoid adverse effects.

12.4 Conclusions

Given that most of these schemes are at such early stages of development and may not be delivered within the JLTP4 plan period, it is difficult to conclude this part of the JLTP4 Appropriate Assessment. Provided the mitigation set out in Section 12.3 is incorporated within the JLTP4 and the schemes are subject to project-level HRA exercises which conclude that no adverse effects on European sites will result, it should be possible to conclude that there will be **no adverse effects** on the integrity of European sites as a result of the JLTP4.

13 In Combination Effects of the Plan with other Plans and Projects

13.1 Introduction

A review of other plans and projects which could potentially affect European sites in or near to the WoE JLTP 4 area has been undertaken and can be found in Appendix 4. Apart from the conclusions for each plan or project reviewed in Appendix 4 and the text in relation to major projects, all of the text in Appendix 4 has been sourced from the WoE Joint Spatial Plan Habitats Regulations Assessment Update (November 2018). This is due to time constraints and because the review of plans undertaken for the JSP HRA in November 2018 is directly applicable to the JLTP4 plan area and content.

13.2 Findings

The review of other plans and projects which could potentially affect European sites in or near to the WoE JLTP 4 area in Appendix 4 has considered the activities proposed within the plans and projects and also any accompanying HRA documents. The review in Appendix 4 has not identified any potential in combination effects of the WoE JLTP4 with other plans and projects.

13.3 Conclusions

No potential in combination effects have been identified with the WoE JLTP4 and other plans and projects which could potentially affect European sites in or near to the area.

14 Summary, Mitigation and Conclusions

The Appropriate Assessment stage of the WoE JLTP4 has considered whether a number of the schemes included within the plan could result in adverse effects or uncertain effects on European sites, both from the JLTP4 alone and in combination with the WoE Joint Spatial Plan as well as other plans and projects in or near to the plan area. The assessment has taken into consideration mitigation measures put forward within the Appropriate Assessment of the West of England Joint Spatial Plan in informing the conclusions. The JSP and JLTP4 HRAs have been undertaken at the West of England level and although they include specific mitigations for some schemes, they ultimately set the framework for and in due course will inform the more detailed HRAs to be undertaken at the Local Plan level.

Potential adverse or uncertain effects identified in the Appropriate Assessment stage of the WoE JLTP4 and the proposed mitigation measures are summarised within Table 14.1.

Table 14.1: Potential Adverse and Uncertain Effects of the West of England Joint Local Transport Plan 4 and Proposed Mitigation			
European sites potentially affected	**Schemes**	**Potential adverse or uncertain effects**	**Proposed mitigation measures**
Avon Gorge Woodlands SAC	• Early investment schemes (committed schemes): – MetroWest Phase 1 (C3)	Adverse effect from direct loss of SAC habitat	• Protective measures to be implemented to minimise adverse effects on the SAC during scheme construction. Unable to conclude no adverse effect at this stage (see Chapter 11)
North Somerset and Mendip Bats SAC	• Nailsea and Backwell (G4): – Local improvements to road network in Nailsea area; – Nailsea - Backwell A370 link; – M5 J19 & J20 improved multi-modal connections; • Banwell and Churchill (G5): – A371 / A368 Banwell Bypass; – A368 Churchill and Sandford Bypass; • Bristol South West Economic Link (BSWEL) (E1): Package 4: A38 (south) offline improvements; • Early investment schemes under development: M5 Junction 19 (E3); and	Adverse effect from fragmentation of bat commuting corridors and loss of foraging areas	• The approach taken to assess the importance of habitat for SAC bats and calculating replacement horseshoe bat foraging habitat detailed in the North Somerset Bats SAC SPD will be adapted and used across the West of England; • Strategic bat surveys are being undertaken to identify key foraging and commuting habitat around the bat SACs; • The JLTP4 should state the HRA of the WoE Local Plans to use the strategic bat survey results to produce horseshoe bat mitigation strategies which would show the key bat foraging/commuting habitats in their areas.

Table 14.1: Potential Adverse and Uncertain Effects of the West of England Joint Local Transport Plan 4 and Proposed Mitigation			
European sites potentially affected	**Schemes**	**Potential adverse or uncertain effects**	**Proposed mitigation measures**
	• Early investment schemes under development: M5 J21A (E6).		These bat habitats would inform the location and design of the proposed schemes; and • The JLTP4 should state that project level HRA is required for these schemes. Any project-level Appropriate Assessment would need to conclude that no adverse effects on European sites would occur either alone or in combination in order for a scheme to be permitted and allowed to go ahead. See Chapter 5 for full details of mitigation put forward including strategic mitigation.
Bath and Bradford Bats SAC	• Mass Transit Schemes: Bristol City Centre to Bath (T2); • Mass Transit Schemes: Bath city centre and corridors (T5); • Early investment schemes under development: East of Bath Link (E2); and • Early investment schemes under development: Park & Ride package for Bath (includes at Mass Transit Schemes: Odd Down, Lansdown and Newbridge) (E13).	Adverse effect from fragmentation of bat commuting corridors and loss of foraging areas	• The approach taken to assess the importance of habitat for SAC bats and calculating replacement horseshoe bat foraging habitat detailed in the North Somerset Bats SAC SPD will be adapted and used across the West of England; • Strategic bat surveys are being undertaken to identify key foraging and commuting habitat around the bat SACs; • The JLTP4 should state the HRA of the WoE Local Plans to use the strategic bat survey results to produce horseshoe bat mitigation

Table 14.1: Potential Adverse and Uncertain Effects of the West of England Joint Local Transport Plan 4 and Proposed Mitigation			
European sites potentially affected	**Schemes**	**Potential adverse or uncertain effects**	**Proposed mitigation measures**
			strategies which would show the key bat foraging/commuting habitats in their areas. These bat habitats would inform the location and design of the proposed schemes; and • The JLTP4 should state that project level HRA is required for these schemes. Any project-level Appropriate Assessment would need to conclude that no adverse effects on European sites would occur either alone or in combination in order for a scheme to be permitted and allowed to go ahead. See Chapter 5 for full details of mitigation put forward including strategic mitigation.
Severn Estuary SPA and Ramsar site	• Early investment schemes under development: E9 Interurban Cycle Routes: Sand Bay Cycle Route	Adverse effect form loss of habitats used by birds	The JLTP4 should state that project level HRA is required for this scheme. The project level HRA should ensure that no adverse effects occur on this European Site by moving the route away from sensitive habitat used by bird populations associated with the estuary. A project-level Appropriate Assessment would need to conclude that no adverse effects on European sites would occur either alone or in combination in order for

Table 14.1: Potential Adverse and Uncertain Effects of the West of England Joint Local Transport Plan 4 and Proposed Mitigation			
European sites potentially affected	**Schemes**	**Potential adverse or uncertain effects**	**Proposed mitigation measures**
			the scheme to be permitted and allowed to go ahead. See chapter 6 for full details of mitigation proposed.
Mendip Limestone Grasslands SAC	• Weston-super-Mare (G8): Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route and Banwell-Churchill Cycle Route; and • Early investment schemes under development: E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section and Strawberry Line Cycle Route extension.	Uncertain adverse effect from recreation pressure	Strategic mitigation in relation to recreation pressures in the WoE is underway including: • Maximising integration of open space within SDLs; • Use of Suitable Alternative Natural Greenspace (SANG) to alleviate pressures on sensitive sites; and • A strategic approach to recreation mitigation through developer contributions, zones of influence and site management (including wardening and opportunities to improve education). New cycleways incorporated into Local Plans will be considered as part of Local Plan HRAs. HRA of the West of England Local Cycling and Walking Infrastructure Plan is recommended.
North Somerset and Mendip Bats SAC	• Banwell and Churchill (G5): Sustainable travel package: Banwell-Churchill Cycle Route; and • Weston-super-Mare (G8): Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route. • Early investment schemes under development: E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section, Sand Bay Cycle Route and Strawberry Line Cycle Route extension.	Uncertain effect from recreation pressure	

Table 14.1: Potential Adverse and Uncertain Effects of the West of England Joint Local Transport Plan 4 and Proposed Mitigation			
European sites potentially affected	**Schemes**	**Potential adverse or uncertain effects**	**Proposed mitigation measures**
Severn Estuary SAC, SPA and Ramsar site	Early investment schemes under development: E9 Interurban Cycle Routes: North Somerset Coastal Cycle Route: WsM - Clevedon section.	Uncertain effect from recreation pressure	The JLTP4 should state that project level HRA is required for these schemes. A project level Appropriate Assessment should ensure no adverse effects on European sites occur by inputting into the design/location of the cycleways. Any project-level Appropriate Assessment would need to conclude that no adverse effects on European sites would occur either alone or in combination in order for a scheme to be permitted and allowed to go ahead. There is also an opportunity for the cycleways to provide linkages as a part of the local green infrastructure networks and it is recommended that this opportunity if referred to within the JLTP4. See chapter 8 for full details of mitigation proposed including strategic mitigation.
Severn Estuary SAC, SPA and Ramsar site	Early investment schemes under development: E9 Interurban Cycle Routes: Sand Bay Cycle Route.	Adverse effect from recreation pressure	
Severn Estuary SAC, SPA and Ramsar site	Mass Transit Schemes: Bristol City Centre to North Fringe (T4)	Uncertain adverse effect from water pollution	It is recommended that the JLTP4 states that any scheme which has the potential to have an adverse impact on the water quality of the Severn

Table 14.1: Potential Adverse and Uncertain Effects of the West of England Joint Local Transport Plan 4 and Proposed Mitigation			
European sites potentially affected	**Schemes**	**Potential adverse or uncertain effects**	**Proposed mitigation measures**
Severn Estuary SAC, SPA and Ramsar site	Nailsea and Backwell (G4): • Local improvements to road network in Nailsea area; and • M5 J19 & J20 improved multi-modal connections. Early Investment Schemes in Progress (Committed Schemes): • M5 Junction 19 (E3); and • M5 J21A (E6).	Adverse effect from water pollution and litter	Estuary during construction should ensure that best practice pollution prevention guidelines are followed. See chapter 9 for full details of mitigation proposed.
Severn Estuary SAC, SPA and Ramsar site	Banwell and Churchill (G5): • A371 / A368 Banwell Bypass; • A368 Churchill and Sandford Bypass Early Investment Schemes in Progress (Committed Schemes): • M49 Avonmouth Junction Upgrade (C1); and • (E4): Pill Station.	Adverse effect from water pollution	
Severn Estuary SAC and Ramsar site	• Mass Transit Schemes: Bristol City Centre to North Fringe (T4); • Nailsea and Backwell (G4): Local improvements to road network in Nailsea area;	Adverse effect from physical modification of watercourse impeding migration of fish	It is recommended that the JLTP4 states that any scheme which crosses a watercourse linked to the Severn Estuary should ensure it does not result in a barrier to fish passage by ensuring

Table 14.1: Potential Adverse and Uncertain Effects of the West of England Joint Local Transport Plan 4 and Proposed Mitigation			
European sites potentially affected	**Schemes**	**Potential adverse or uncertain effects**	**Proposed mitigation measures**
	• Nailsea and Backwell (G4): M5 J19 & J20 improved multi-modal connections; • Banwell and Churchill (G5): A371 / A368 Banwell Bypass; • Banwell and Churchill (G5): A368 Churchill and Sandford Bypass; and • Early Investment Schemes in Progress (Committed Schemes): M5 J21A (E6).		crossing points are designed and constructed in accordance with best practice guidance. See chapter 10 for full details of mitigation proposed.

Table 14.1 shows that several European sites could be affected by a number of different schemes:

- The Avon Gorge Woodlands SAC would be affected by the direct loss of habitat from the MetroWest Phase 1 scheme;
- The North Somerset and Mendip Bats SAC could potentially be affected by a number of different schemes and the adverse effects could relate to fragmentation of bat commuting corridors and loss of bat foraging areas and recreation pressure;
- The Bath and Bradford Bats SAC could similarly be affected by a number of schemes in relation to fragmentation of bat commuting corridors and loss of bat foraging areas;
- The Mendip Limestone Grasslands could be affected by a number of cycle route schemes and adverse effects could result from recreation pressure; and
- The Severn Estuary SAC, SPA and Ramsar site could potentially be affected by a number of schemes and adverse effects could result from loss of habitats used by birds, recreation pressure, water pollution and physical medication of watercourses impeding migration of fish.

In addition, screening of the JLTP4 identified a number of schemes for which there are very few details available at the present time. These schemes were screened into the Appropriate Assessment due to uncertainty. The schemes are:

- Bristol Urban Area (G7): Bristol walking and cycling package;
- Bristol South West Economic Link (BSWEL) (E1):
  - Package 6: Rail options: Bristol Airport Rail Link Phase One
  - Package 7: Rail options: Bristol Airport Rail Link Phase Two
  - Package 8: A370-A38 Link
- Early investment schemes under development: Interurban cycle routes (E9); and
- Other longer-term opportunities Strategic Rail and Road Freight Package (L1).

It is recommended that the JLTP4 states that all of the schemes listed in Table 12.1 are subject to project-level HRA when sufficient information is available. If appropriate the project level HRA should input into the design and location of the schemes to ensure no adverse effect on European sites. Any project-level Appropriate Assessment would need to conclude that no adverse effects on European would occur sites either alone or in combination in order for a scheme to be permitted and allowed to go ahead. It is also recommended that an HRA of the Local Cycling and Walking Infrastructure Plan would ascertain the predicted level of use of new cycle routes in the WoE and therefore more accurately predict the potential for adverse effects on the Mendip Limestone Grassland SAC, North Somerset and Mendip Bats SAC and Severn Estuary SPA, SAC and Ramsar in relation to recreation pressure and loss of supporting sites for birds. An HRA of the plan would be able to put forward suitable mitigation if necessary.

14.1 Interim Conclusions of the HRA

The MetroWest Phase 1 would result in the direct loss of up to 0.71ha of woodland within the Avon Gorge Woodland SAC and therefore an adverse effect on this SAC remains following mitigation. No feasible alternatives to this scheme have been identified. It is therefore necessary for this scheme to proceed to the 'IROPI text'. If the UK is still subject to the Habitats Directive at the time the application for the MetroWest Phase 1 is determined (expected to be 2021) then consent may be granted following consultation between the Government and the European Commission. If the UK is no longer subject to the Habitats Directive then it is expected that the decision would be made by the Secretary of State. At this stage, it is therefore not possible to conclude no adverse effect on the integrity of the Avon Gorge Woodland SAC as a result of Metrowest Phase 1.

With the exception of the MetroWest Phase 1 scheme, provided that the mitigation measures identified within Chapters 5 to 12 of this report are incorporated within the JLTP4, it should otherwise be possible to conclude that the JLTP4 will not have an adverse effect on the integrity of all other European sites, either alone or in combination with other plans and projects.

The next step is for the recommended mitigation within this report to be responded to and incorporated within the JLTP4 by the transport planners. Once mitigation has been incorporated within the JLTP4 it will then be possible to conclude the Appropriate Assessment of the JLTP4 except the MetroWest Phase 1 scheme. The final conclusion of the JLTP4 Appropriate Assessment would be reached in 2021 once a decision has been made on MetroWest Phase 1.

clearlead

Appendix 1 – Information about European sites

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
Avon Gorge Woodlands SAC	Annex 1 Habitats that are a primary reason for selection: • H9180. Tilio-Acerion forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes* Annex 1 Habitats present as a qualifying feature, but not a primary reason for selection of this site: • H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (FestucoBrometalia); Dry grasslands and scrublands on chalk or limestone	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely	Invasive species particularly from *Cotoneaster spp,* Holm oak and other non-native plant species Undergrazing resulting in loss of habitat Public access/disturbance, particularly from mountain biking and vandalism Disease including ash dieback Change in species distribution due to scrub encroachment and climate change Air pollution – impact of atmospheric nitrogen on grassland, scrub and woodland

[42] Based on Natural England site improvement publications accessed from website on 25/09/2018. http://publications.naturalengland.org.uk/category/5755515191689216

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
Bath and Bradford-on-Avon Bats SAC	Annex II species that are a primary reason for selection of the site: • S1304. Rhinolophus ferrumequinum; Greater horseshoe bat • S1323. Myotis bechsteinii; Bechstein`s bat Annex II species present as a qualifying feature, but not a primary reason for selection of the site: S1303. Rhinolophus hipposideros; Lesser horseshoe bat	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • The supporting processes on which the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	Planning permission – potential cumulative adverse impacts from development across a wide area Change in land management Direct impact on roost sites due to vandalism or recreational pursuits Feature location, extent and condition unknown due to lack of knowledge about the Bechstein's bat population within and adjacent the SAC. Offsite habitat availability/management due to lack of knowledge of the usage of wider landscape by the SAC species i.e. location of feeding and 'swarming' sites. Public access/disturbance due to difficulties with closing the roost sites to the public Change in site conditions due to potential collapse of mine sites Inappropriate designation boundary as several undesignated sites support important population of SAC species

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
Chew Valley SPA	Internationally important bird assemblage. This site qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species: Over winter: A056. Anas clypeata; Northern shoveler (Non- breeding)	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.	Maintain favourable hydrology - site is sensitive to changes in water levels. Both increases and reductions can impact upon shoveler, due to their need for soft mud in which to feed. Also to fluctuations in water quality including eutrophication and particularly phosphate levels. Public access/disturbance as large numbers of people use the site for recreational activities including fishing, sailing and walking
Mells Valley SAC	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (FestucoBrometalia); Dry grasslands and	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural	Public access/disturbance – the site is regularly accessed by the public and disturbance of hibernaculum is a threat. Wildfire/arson -fire on site are a potential threat to hibernating bats Direct impact from third party due to problems with vandalism and

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	scrublands on chalk or limestone • H8310. Caves not open to the public Annex II species that are a primary reason for selection of the site: • S1304. Rhinolophus ferrumequinum; Greater horseshoe bat	habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	disturbance Undergrazing – limestone grassland is currently ungrazed Inappropriate designation boundary - bat maternity colony has relocated to an alternative building outside of the SAC Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads
Mendip Limestone Grasslands SAC	Annex I habitats that are a primary reason for the selection of the site: • H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco Brometalia); Dry grasslands and scrublands on chalk or limestone	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats and habitats of qualifying species	Inappropriate scrub control within the grasslands and scrublands Change in land management because of difficulties in managing vegetation due to terrain Disease, particularly from ash dieback

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • H4030. European dry heaths • H8310. Caves not open to the public • H9180. Tilio-Acerion forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes* • S1304. Rhinolophus ferrumequinum; Greater horseshoe bat	• The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads
Mendip Woodlands SAC	Annex I habitats that are a primary reason for the selection of the site: H9180. Tilio-Acerion forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes*	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats • The structure and function (including	Illicit vehicles – potential damage from off-road vehicles Deer – adverse impact on feature through unsustainable grazing Disease, particularly from ash dieback Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
		typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely	
North Somerset and Mendip Bats SAC	Annex I habitats that are a primary reason for the selection of the site: • H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (FestucoBrometalia); Dry grasslands and scrublands on chalk or limestone • H9180. Tilio-Acerion forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes* Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • H8310. Caves not open to the public	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats and habitats of qualifying • species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely	Undergrazing of grassland Planning permission – development on land between component SAC sites could result in the loss of foraging/commuting habitat and minor roost sites Change in site conditions due to risk of collapse of mine entrance Woodland management – excessive sycamore growth may be threatening species composition of woodland Disease, particularly from ash dieback Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	Annex II species that are a primary reason for selection of the site: • S1303. Rhinolophus hipposideros; Lesser horseshoe bat • S1304. Rhinolophus ferrumequinum; • Greater horseshoe bat	• The populations of qualifying species, and, • The distribution of qualifying species within the site	
River Usk / Afon Wysg SAC	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation Annex II species that are a primary reason for selection of this site • 1095 Sea lamprey Petromyzon marinus • 1096 Brook lamprey Lampetra planeri	• To maintain the availability of current spawning sites and lamprey nurseries. • To maintain suitable flows, water quality and sediment loads to sustain the population of shad, lamprey and nurseries. • To maintain riparian habitats to ensure optimum conditions for shad lamprey and bullhead. • To identify all linking factors on the population of shad, lamprey and bullhead and to seek to remove or minimise	The following priorities were based on the Usk Management Catchment Summary[43]: Water Quality - abstraction threats, changes in water level and water quality, including eutrophication due to diffuse pollution from agricultural land management and urban areas Invasive non-native species Lack of education and advice Decline in aquatic habitats and species due to lack of management.

[43] Usk Management Catchment Summary (Natural Resource Wales). Website accessed on 25/09/2018 https://cdn.naturalresources.wales/media/679394/2016_updated_usk_catchment_summary_nrw.pdf?mode=pad&rnd=131596369400000000

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	• 1099 River lamprey Lampetra fluviatilis • 1103 Twaite shad Alosa fallax • 1106 Atlantic salmon Salmo salar • 1163 Bullhead Cottus gobio • 1355 Otter Lutra lutra Annex II species present as a qualifying feature, but not a primary reason for site selection 1102 Allis shad Alosa alosa	their effects. • Protection of otter breeding sites and resting places.	
River Wye / Afon Gwy SAC	Annex I habitats that are a primary reason for the selection of the site: • H3260. Water courses of plain to montane levels with the Ranunculion fluitantis and CallitrichoBatrachion vegetation; Rivers with floating vegetation often dominated by water-crowfoot Annex I habitats present as a	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of	Water Quality Abstraction threats, changes in water level and water quality, including eutrophication. Physical modification – small scale development throughout the river is impacting on hydromorphology and character Invasive species, particularly Himalyan balsam, Japanese knotweed and giant hogweed Woodland management

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	qualifying feature, but not a primary reason for selection of this site: • H7140. Transition mires and quaking bogs; Very wet mires often identified by an unstable `quaking` surface Annex II species that are a primary reason for selection of the site: • S1092. Austropotamobius pallipes; White-clawed (or Atlantic stream) crayfish • S1095. Petromyzon marinus; Sea lamprey • S1096. Lampetra planeri; Brook lamprey • S1099. Lampetra fluviatilis; River lamprey • S1103. Alosa fallax; Twaite shad • S1106. Salmo salar; Atlantic salmon • S1163. Cottus gobio; Bullhead • S1355. Lutra; Otter	qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	Fisheries – fish stocking occurs at present and management of banks for fishing (i.e. steps, mowing) is not always compatible with SAC features Public access/disturbance, particularly from canoeists and anglers Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads Inappropriate scrub control Undergrazing of transitional mire and quaking bog feature Transportation corridors, particularly relevant to Network Rail management activities within SAC

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	Annex II species present as a qualifying feature, but not a primary reason for selection of this site: 1102 Allis shad Alosa alosa		
Rodborough Common SAC	Annex 1 habitats that are a primary reason for selection of this site: • H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely.	Undergrazing of grassland and scrublands Public access/disturbance, particularly dog walkers Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads
Salisbury Plain SAC and SPA	SAC Annex I habitats that are a primary reason for the selection of the site:	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation	The below issues are relevant to the SAC and SPA: Changes in species distribution, particularly the juniper population

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	• 5130 Juniperus communis formations on heaths or calcareous grasslands • 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) Annex II species that are a primary reason for selection of the site: • 1065 Marsh fritillary butterfly1095. Petromyzon marinus (Sea lamprey) • 1099. Lampetra fluviatilis (River lamprey) • 1109. Alosa fallax (Twaite shad) <u>SPA</u> This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: During the breeding season;	Status of its Qualifying Features/aims of the Wild Bird Directive, by maintaining or restoring; <u>SAC</u> • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	<u>Air pollution due to atmospheric nitrogen deposition</u> which currently exceeds critical loads

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	Stone Curlew Burhinus oedicnemus, 22 pairs representing at least 11.6% of the breeding population in Great Britain (Count as at 1998) Over winter; Hen Harrier Circus cyaneus, 14 individuals representing at least 1.9% of the wintering population in Great Britain (RSPB 1996/7)	SPA • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and • The distribution of the qualifying features within the site.	
Severn Estuary SAC, SPA and Ramsar	SAC Annex I habitats that are a primary reason for the selection of the site: • 1130. Estuaries • 1140. Mudflats and sandflats not covered by seawater at low tide • 1330. Atlantic salt meadows	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the qualifying features	The below issues are relevant to the SAC and SPA Public access/disturbance particularly from dog walking, horse rising, biking, beach activities, angling and shooting Physical modification of watercourse by installation of barriers preventing completion of fish life cycle

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	(Glauco-Puccinellietalia maritimae) Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • 1110. Sandbanks slightly covered by sea water all the time • 1170. Reefs Annex II species that are a primary reason for selection of the site: • 1095. Petromyzon marinus (Sea lamprey) • 1099. Lampetra fluviatilis (River lamprey) • 1109. Alosa fallax (Twaite shad) SPA This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: Over winter: • A037. Cygnus	• The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.	Impacts of development -potential cumulative impact from development Coastal squeeze due to rising sea levels reducing available habitat Change in land management which affects species composition, habitat quality and availability Change in species distribution resulting from climate change and manmade/natural modifications to habitat Water pollution from diffuse or direct pollution Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads Marine consents and permits – the cumulative adverse impacts of aggregate extraction, maintenance dredging and disposal Fisheries – potential adverse impacts from recreational and commercial

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	columbianus bewickii (Bewick's swan) • Internationally important bird assemblage. This site qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species: On passage: • Charadrius hiaticula (Ringed plover) • Calidris alpina alpine (Dunlin) • Nuntenius phaeopus (Whimbrel) • Tringa tetanus (Redshank) Over winter: • A394. Anser albifrons; Greater white- fronted goose (Non-breeding) • A048. Tadorna tadorna; Common shelduck (Non-breeding)		fishing Invasive species, particularly from Australian barnacle, mitten crab and the Pacific oyster Marine litter originating from rivers Marine pollution incidents – potential for significant adverse impact on its features

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	• A051. Anas strepera; Gadwall (Non-breeding) • A149. Calidris alpina; Dunlin (Non-breeding) • A162. Tringa totanus; Common redshank (Non-breeding) The Estuary also supports nationally important wintering populations of a further 10 species: • Nuntenius phaeopus (Whimbrel) • Tringa tetanus (Redshank) <u>Ramsar</u> Assemblage qualification: A wetland of international importance. The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl. • Criterion 1: Presence of Annex I features listed above for SAC.		

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	• Criterion 3: Unusual estuarine communities. • Criterion 4: Run of migratory fish between sea and river via estuary. • Criterion 5/6: Bird assemblages and species of international importance. • Criterion 8: Diverse fish populations, important feeding, nursery ground and migration route.		
Somerset Levels and Moors SPA and Ramsar	SPA This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: Over winter: • A037 Cygnus columbianus bewickii; Bewick's swan (Non-breeding) • A140 Pluvialis apricaria; European golden plover (Non-breeding) • Waterbird assemblage This site also qualifies under Article	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and,	Water Quality Maintain favourable hydrology. Water levels and abstraction. Maintain and upgrade water management structures Change in land management due to landowners deciding to leave Higher Level Stewardship or due to land managers losing access to sites Peat extraction resulting in damage by direct peat removal

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species: Over winter: • A052 Anas crecca; Eurasian teal (Non-breeding) • A142 Vanellus vanellus; Northern lapwing (Non-breeding) • Anas clypeata(Shoveler) • Anas crecca(Teal) • Anas penelope (Wigeon) <u>Ramsar</u> Assemblage qualification: A wetland of international importance. The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl.	• The distribution of the qualifying features within the site.	<u>Public access/disturbance</u> particularly from dog walking <u>Offsite habitat availability/management</u> – currently limited understanding of how the SPA bird assemblages use the wider ecological network

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
Wye Valley & Forest of Dean Bat Sites SAC	Annex II species that are a primary reason for selection of the site: • S1303. Rhinolophus hipposideros; Lesser horseshoe bat • S1304. Rhinolophus ferrumequinum; Greater horseshoe bat	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • The supporting processes on which the habitats of qualifying species rely • The populations of qualifying species, and • The distribution of qualifying species within the site.	Physical modification of roost sites due to repair, deterioration and renovation Public access/disturbance to roost sites due to damage to grilles or unauthorized access by cavers Habitat connectivity - between roosts and feeding areas could be adversely impacted by changes to land management
Wye Valley Woodlands SAC	Annex I habitats that are a primary reason for the selection of the site: • H9130. Asperulo-Fagetum beech forests; Beech forests on neutral to rich soils • H9180. Tilio-Acerion forests	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution	Deer grazing impacting woodland Forestry/woodland management required to sustain SAC features Invasive species including Himalayan balsam, periwinkle. Japanese knotweed and cherry laurel

Site	Qualifying features	Conservation objectives	Priority issues currently impacting or threatening the condition of the feature[42]
	of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes* • H91J0. Taxus baccata woods of the British Isles; Yew-dominated woodland* Annex II species present as a qualifying feature, but not a primary reason for selection of this site: S1303. Rhinolophus hipposideros; Lesser horseshoe bat)	of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	Habitat connectivity to maintain migration of species Species decline due to inappropriate land management Air pollution due to atmospheric nitrogen deposition which currently exceeds critical loads Disease, particularly ash dieback and sudden oak death Public access/disturbance resulting in erosion and damage to ground flora and potential access to roost site

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Appendix 2 – JLTP4 Schemes

Transformational Major Schemes

Ref	Mass Transit Scheme	Details
T1	Bristol City Centre to Airport	Segregated mass transit route connecting Bristol Airport and South Bristol with the city centre. Through the current Mass Transit studies and the Bristol South West Economic Link project (BSWEL) (see Scheme Ref. E1 below), various options are being considered for assessment. Those options which perform well against an initial set of criteria will then be developed into more detailed option variants for further assessment. Options are being considered for bus, tram, tram-train, mass transit (fully segregated underground running) and heavy rail. Route to be determined balancing maximising patronage against engineering costs. The heavy rail option assessment includes a potential heavy rail link from Bristol Temple Meads.
T2	Bristol City Centre to Bath	A mass transit route providing high frequency, high capacity and fast public transport services between Bristol and Bath. The route from Hicks Gate to Bristol will be facilitated by diversion of traffic onto the Callington Road Link to enable reallocation of roadspace from car to public transport within Bristol. Careful consideration of routing options and future management of roadspace between Bristol and Bath, will be required. In the short term MetroBus would provide mass transit along the corridor from Bristol to Bath, and in the longer term there is an ambition for Light Rail.
T3	Bristol City Centre to East Fringe	A dedicated, segregated mass transit route providing high frequency, higher capacity and faster public transport services connecting central Bristol and the East Fringe and associated infrastructure to provide a high quality passenger experience. Sections of the dedicated route would probably need to be delivered below surface due to highway capacity constraints on the A420 and A432 corridors and environmental constraints on the Bristol-Bath Railway Path. It includes the A420/Ring road Park & Ride site(s).

T4	Bristol City Centre to North Fringe	A dedicated, segregated mass transit route providing high frequency, higher capacity and faster public transport services between central Bristol, North Bristol and the North Fringe with associated infrastructure to provide a high quality passenger experience. Constraints on the A38 Gloucester Road and other corridors mean that an underground alignment should be considered as one of the options to fully achieve the scheme objectives. This scheme would be complementary to the North Fringe - Hengrove MetroBus scheme currently being delivered and the planned MetroWest programme.
T5	Bath city centre and corridors	Introducing light rail in Bath city and environs. Given the environmental and physical constraints trams should be one of the options considered. All key routes will be considered including: - A367 Odd Down - Newbridge - either along the A4 or A36 integrating with the new rapid transit corridor between Bath and Bristol - Lansdown from the north of Bath - A4 from the east of Bath

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JSP Transport Programme: Corridor Scheme Packages to Mitigate JSP Growth

Ref	Scheme	Details
G1	South East Bristol and Whitchurch	A4 MetroBus + Callington Road Link MetroBus service along the A4 corridor between Keynsham and Bristol, incorporating Callington Road Link to reduce congestion on the A4. Orbital MetroBus MetroBus between Whitchurch and Emersons Green via a new A4-A37 link and A4174 Ring Road. A37 Sustainable Transport Package of bus priority and enhanced bus services to Whitchurch, possibly including extension of MetroBus from Hengrove, and Park & Ride option at Whitchurch. Hicks Gate Park & Ride New Park & Ride site south of Hicks Gate junction – this would replace existing Brislington Park & Ride site (to be used for development). Hicks Gate Junction Changes to existing roundabout layout including a new link between the A4174 and A4 Keynsham Bypass. South Bristol Orbital Link Made up of A4 – A37 Link between A4 Hicks Gate and A37 south of Whitchurch, and West of A37 Link from A37 Whitchurch connecting either to Washing Pound Lane or Halfacre Lane. Local highway improvements Local traffic management schemes, including improvements to Whitchurch Lane towards Hengrove, and traffic management on A37 towards Pensford.

G2	Keynsham	Keynsham railway station Review of access arrangements and passenger waiting facilities to enhance the attractiveness of rail for commuting and other travel needs from wider Keynsham area. A4-A4175 Link Link between the A4 and A4175 including new bridges over rail line and possibly River Avon, and providing access to the SDL. Avon Mill Lane improvements - Improvements to covert Avon Mill Lane and A4175 junction to a roundabout with enhanced pedestrian and cycle facilities New Link Road Sustainable Travel - Package of strategic cycling corridor, bus priority, and enhanced bus services (including MetroBus) to Bristol and Bath. Including a direct link to the Bristol/Bath cycle way Hicks Gate Junction - Changes to existing roundabout layout including a new link between the A4174 and A4 Keynsham Bypass. Local highway improvements Improvements to other junctions affected by traffic, including A4 / B3116 Roundabout (between Keynsham and Saltford) and A420 / A4175 junction at Bridgeyate (in South Gloucs).

G3	Yate and Coalpit Heath	A432 Sustainable Travel Package of strategic cycling corridor, bus priority, and enhanced bus services (including MetroBus) to Coalpit Heath and Yate and potential Park & Ride option west of Yate. Yate railway station Package of measures to improve access and enhance waiting facilities, including improved bus interchange on A432. Winterbourne and Frampton Cotterell Bypass Single carriageway link between Stoke Gifford and Iron Acton, bypassing Winterbourne and Frampton Cotterell. Local highway improvements Improvements to other parts of the network impacted by traffic, to include B4057 between Winterbourne and Stoke Gifford, B4058 / B4059 junctions at Iron Acton, and route between Yate and East Fringe via Westerleigh. Coalpit Heath and Westerleigh Bypass A new multi-modal corridor (road and cycle route) from Yate to Emersons Green and the east of Bristol, connecting with the Ring Road and possibly a new M4 Junction 18A. The new link would connect the A432 Badminton Road to Westerleigh Road providing access to new employment and housing in Yate. This may be required instead of, or together with, a Winterbourne and Frampton Cotterell Bypass. This link would provide additional capacity, freeing up road space on the A432 for MetroBus
G4	Nailsea and Backwell	Nailsea sustainable travel, rail station and local network improvements Enhanced bus services, including options for improved connections to Bristol via the Long Ashton Park & Ride and Metrobus M2 service, improved interchange at Nailsea & Backwell rail station (cycle connections, improved parking facilities). Local improvements to road network (mostly on-line, with some local bypasses). Nailsea - Backwell A370 link New link from Nailsea to A370 including crossing of the rail line, providing improved access to SDLs. M5 J19 & J20 improved multi-modal connections New or improved, multi-modal connections for Nailsea & Backwell to M5 Junction 19 (Portbury) and Junction 20 (Clevedon), including bus priority, providing improved access to SDLs. Bus priority will support the delivery of enhanced bus services.

G5	Banwell and Churchill	Sustainable travel package To include enhanced cycling facilities, bus priority and bus services along A368/A371 corridor and serving the SDLs. Roadspace reallocation will be enabled by bypasses on the corridor. A371 / A368 Banwell Bypass Bypass to the north of Banwell, linking A371 with A368, and providing improved access to the SDL. A368 Churchill and Sandford Bypass Bypass to the north of Churchill and Sandford, providing access to the SDL. Local highway improvements Improvements to other junctions affected by additional traffic, including A368/A38 Churchill signals.
G6	Thornbury, Buckover and Charfield	A38 Sustainable Travel Package of strategic cycling corridor, bus priority, and enhanced bus services (including metrobus) to Thornbury and Buckover, including potential Park & Ride option. Charfield Station New railway station at Charfield (services to Bristol and Gloucester). M5 J14 Upgraded motorway junction to a full roundabout layout, improved approaches from east and west. Local highway improvements Improvements to local road network in the Thornbury, Buckover and Charfield area, including capacity improvements at B4509 / B4058 junction at Charfield Hill.

G7	Bristol Urban Area	Bristol City Centre Framework Multi-modal package to improve connectivity and growth in Bristol city centre. Includes enhanced cycling provision, enhanced bus priority and reorganisation of road network in city centre core. Local bus package (GBBN2) Expansion of bus priority measures across the Bristol urban area and further improvements to bus facilities to support sustained growth in bus patronage across the city. Bristol walking and cycling package Improvements to walking and cycling infrastructure M32 Park & Ride New Park & Ride site south of M32 J1 to intercept trips into Bristol. A38(S)/A4174 Park & Ride New Park & Ride site at the A38/South Bristol Link roundabout, served by MetroBus and Airport Flyer services to Bristol. A4018 Park & Ride New Park & Ride site, possibly served by rail services to Bristol from proposed Henbury station. A4 Portway and A370 Long Ashton Park & Ride expansion Expansion of existing Park & Ride sites.
G8	Weston-super-Mare	Weston-super-Mare MetroBus MetroBus serving Weston town centre, Weston villages, and possibly Park & Ride. Weston-super-Mare Park & Ride New Park & Ride site at either A370/A371 junction, M5 J21 or proposed J21a. Local bus improvements Additional bus priority measures and bus stop infrastructure to improve journey reliability. Local highway junction improvements Upgrades and improvements to a number of junctions related to the primary distributor route and other key junctions around the Weston-super-Mare area. Local walking & cycling infrastructure improvements Package of walking and cycling infrastructure improvements, to promote sustainable transport modes.

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Early investment schemes in progress (committed projects)

Ref	Scheme	Details
C1	M49 Avonmouth junction	New M49 Avonmouth junction to improve access to the port of Avonmouth and the Avonmouth Severnside Enterprise Area; works are expected to be completed by the end of 2019.
C2	Temple Quarter masterplan	Masterplan to cover the 70-hectare development zone, to feature a mixed-use quarter comprising up to 11,000 homes and a revitalised transport interchange, including improvements to Temple Meads railway station. The masterplan will include station capacity improvements, better access to Temple Meads and the area, with new public space and improvements to the public realm. The project will also involve a sensitive adaptation, development and protection of the grade 1 listed station, which was designed by Brunel.
C3	MetroWest Phase 1	Upgraded train services to half-hourly connections for Severn Beach Line and the Bath Spa to Bristol line. Reopening the Portishead Line to passenger services with an hourly service is a priority for WoE authorities. New station at Portishead and the reopening of former Pill Station.
C4	MetroWest Phase 2	Reopening of Henbury line to an hourly spur and increase train services to Yate. New stations at Henbury, North Filton and Ashley Down.
C5	Hengrove Transport Package	Internal roads and creating access for Metrobus through urban living site of around 1500 homes.
C6	Lockleaze Transport Package	Including bus lane on Muller road and accessible pathway through Stoke Park to cater for urban living sites in Lockleaze (800 homes).

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Early investment schemes under development

Ref	Scheme	Details
E1	Bristol South West Economic Link (BSWEL)	New multi-modal corridor between the M5 and the A38, Bristol Airport, South Bristol and Bristol City Centre to improve connectivity and overall network resilience. The BSWEL Options Assessment Report grouped together the various options to form packages, based on their broad geographical location and their likely ability to meet the project objectives in a coherent way. The packages are labelled from 1-8, indicating the potential order of implementation, although this will depend on funding sources and engagement with external partners: • Package 1: Weston-super-Mare bus network improvements; Weston-super-Mare to Bristol bus services with MetroBus compatibility (complementary services); • Package 2: A38 online improvements between A368 to Bristol Airport, along with Downside Road junction improvements. A38 widening at Bristol Airport; • Package 3: Banwell Bypass; Rail options: Weston Parkway station; Weston-super-Mare (WsM) – Weston Parkway – Bristol Airport bus service; • Package 4: A38 offline improvements between Bristol Airport and South Bristol Link (SBL); A38/SBL Park & Ride; Sandford and Churchill Bypass; • Package 5: M5 J21A • Package 6: Rail options: Bristol Airport Rail Link Phase One: Bristol Airport to Bristol Temple Meads • Package 7: Rail options: Bristol Airport Rail Link Phase Two: Bristol Airport to Bristol Temple Meads, Severn Beach/Bath Spa, Bristol Airport to Weston-super-Mare/Taunton • Package 8: A370-A38 Link
E2	East of Bath Link	A new road connecting the A36 (south of Bathampton) to A363 (near Bathford, south of A4 roundabout) or the A4, to provide a high quality north-south route connecting the A36 and A46 to the east of Bath. This route will enable north-south traffic to avoid passing through Bath.
E3	M5 Junction 19	Improvements to M5 Junction 19 to improve access between the M5 and the Royal Portbury Dock, Portishead, Portbury and Pill. The scheme will provide enhanced capacity to improve the efficiency of movements for freight using the Royal Portbury Dock, enhancing connectivity to national road networks. The

		scheme will also assist in accommodating future traffic growth generated by planned housing and employment growth in the area.
E4	Passenger Rail Service and Capacity Improvements, Station Upgrades and New Stations Package	Package of rail improvement measures: Rail service improvements, bringing the frequency of local rail services up to a minimum of 2 tph, plus hourly rail services from Weston-super-Mare to London. - Infrastructure to support service improvements including double tracks on the loop line between Weston Railway Station, reinstating the southern chord at Weston-super-Mare, and the Herluin Way to Locking Road Link (bridge replacement to enable width for double tracking). - Longer rolling stock to cater for increased demand, in conjunction with longer platforms where required (including Worle, Nailsea & Backwell and Yatton), with higher quality rolling stock from all stations. - Station upgrades for existing rail stations with a focus on developing Interchange Hubs (interchange with MetroBus, Mass Transit, bus services and cycle parking provision), in conjunction with schemes to improve access to existing rail stations by sustainable modes on key routes to stations across the West of England. New railway stations at the following locations: ● Constable Road, Bristol; ● Ashton Gate, Bristol; ● St Annes, Brislington, Bristol; ● Saltford, Bath & North East Somerset. Stations to be delivered with associated infrastructure: passenger waiting facilities, bus stops, cycle stands, car parking, real-time information and be fully Equality Act compliant. Westerleigh junction upgrade.
E5	Smart Motorways: M4 J18-19 and M5 J17-21A	Smart Motorway scheme on the M4 from J18 (A46, Tormarton) to J19 (M32). This will complement the recently delivered M4 J19-20 and M5 J15-17 Smart Motorway to provide an extensive system of motorway management on the most congested parts of the network. The M4 J18-19 scheme will deliver increased capacity and enhanced reliability to complement the delivery of the new M4 J18A (to provide direct access to the Bristol East Fringe). Smart Motorway scheme on the M5 from J21/21a (Weston-super-Mare) to J17 (Cribbs Causeway). This will complement the recently delivered M4 J19-20 and M5 J15-17 Smart Motorway, to provide an extensive system of motorway management on the most congested parts of the network. The scheme will deliver increased capacity and enhanced reliability through a potential combination of controlled motorway, all lane running and dynamic hard shoulder running, enabling improved journey times and regional connectivity.
E6	M5 J21A	A new Junction 21A on the M5 motorway south of the existing J21. This will be supported by a new multi-modal corridor connecting the new junction with the A38, bypasses for the villages of Banwell, Sandford and Churchill and major improvements to the A38 between Langford and South Bristol. The scheme will improve links to the airport and improve resilience of the Strategic Road Network. It will improve connectivity for SDLs

		at Banwell and Mendip Spring Garden Village and Urban Living in Weston-super-Mare. It will also support proposed growth at Bristol Airport.
E7	A4174 Ring Road junction improvements including Wraxall Road (Longwell Green)	Junction improvements supported by JTS linked to orbital bus route and J18a link. Wraxall Road junction will be improved to improve access onto the Ring Road and safety at the roundabout.
E8	Freezing Hill junction upgrade and whole route improvements	This includes improvements at three junctions along the route between the A420 and Lansdown P&R, known as Freezing Hill Lane. Currently there are excessive delays and the route isn't suitable for the number of vehicles using it to access Lansdown P&R. The scheme also includes localised widening of the Freezing Hill Lane route.
E9	Interurban cycle routes	Strategic cycle routes across the region to supplement those detailed in the Corridor Scheme Packages to Mitigate JSP Growth. Many of these will be delivered along the MetroBus corridors and some will be identified through the West of England Local Cycling and Walking Infrastructure Plan.
E10	M4 Junction 18A to A4174 Ring Road	New motorway junction on the M4 (Junction 18A) between Junction 19 for Bristol and Junction 18 for Bath, providing a new highway link between the M4 and the A4174 Ring Road near the Emersons Green Enterprise Area. It would necessitate improvements to the M4 between Junction 19 and the new Junction 18A, plus improvements to junctions on the A4174. The scheme was considered in a feasibility study undertaken by South Gloucestershire Council and in partnership with Highways England which examined potential location options for the junction and link road. South Gloucestershire Council's Cabinet considered the outcome of the feasibility study in March 2018 and Option 1 (the Western Option at Emersons Green) was agreed as the Council's preferred location. The study has been provided to Highways England for their consideration.
E11	MetroBus - Bristol City Centre to Clevedon and Nailsea	MetroBus route from Clevedon and Nailsea to Bristol City Centre, a rapid transit limited stop service with an emphasis on segregation from general traffic with bus lanes. The section within Bristol would use the infrastructure for the Ashton Vale to Temple Meads route, which was completed in September 2018. This will help to support growth at Nailsea and Backwell and improve connectivity and travel choices.

E12	MetroBus consolidation package	A package of measures to make further enhancements to the existing MetroBus network, with potential measures including fleet upgrade, addition of descoped infrastructure, signals replacement, and Great Stoke ('Rabbit') roundabout.
E13	Park & Ride package for Bath	A Park & Ride package comprising future expansion of three existing sites at Odd Down, Lansdown and Newbridge and to explore the options for and support delivery of a new Park & Ride site to the east of Bath to address future demand for travel and to facilitate further mode shift from cars for travel into the city.
E14	Regional Electric Vehicle Charging Network	Increasing public charging infrastructure, including through 'Go Ultra Low West' (Source West) EV charging infrastructure programme.
E15	MetroBus - Bristol City Centre to Severnside	MetroBus route from Severnside to Bristol City Centre via the A403 and A4 Portway, connecting into existing MetroBus infrastructure in Central Bristol. The route would connect the logistics cluster at Severnside and Avonmouth with Bristol City Centre via the Portway Park & Ride site. This would improve travel options and connectivity for employees and businesses in accessing Severnside and Avonmouth. The scheme builds on the extensive existing bus priority on the A4 Portway, with extended bus priority, enhanced stops and upgraded MetroBus services. In particular, further bus priorities including potential bus-only links would be needed into Severnside.
E16	Bath Cycle Network and City Centre Package	Completion of a continuous and integrated network of strategic cycle routes, comprising key corridors and cross city routes, complemented by improved permeability and investment in public realm in the city centre. This network will connect key destinations across the Bath urban area. Local routes will be improved and integrated into the strategic network as part of ongoing programmes. Bath city centre is in a natural 'bowl' with steep slopes into the city centre from the north and south. This is likely to constrain the attractiveness of cycling from the north and south, and the primary opportunities will be on east-west corridors in the city.

E17	Keynsham / Midsomer Norton and Somer Valley Public Realm Improvements Packages	Keynsham town centre public realm/ regeneration improvements to encourage sustainable modes of travel, such as walking, cycling and public transport. Including strategic cycling routes to/from Bath, Bristol, east/ north Bristol and within Keynsham including completion of the link from the Somerdale cycle bridge via the River Avon towpath to the Keynsham Peninsular and the Bristol/Bath strategic cycle network. Midsomer Norton town centre public realm/ regeneration improvements to encourage sustainable modes of travel, such as walking, cycling and public transport. Highway, cyclist and pedestrian improvements linking the Somer Valley Enterprise Zone with the A37 to the west and the wider Somer Valley to the east.
E18	MetroBus - Cribbs Patchway extension	An extension to the existing North Fringe to Hengrove MetroBus route. MetroBus from Bristol Parkway to The Mall via Hatchet Road, Gipsy Patch Lane, North Way and CPNN. Includes bus lanes and bus links to enable rapid, reliable MetroBus services to connect existing and planned residential, employment and leisure areas in the North Fringe. Bus priority includes bus links at San Andreas roundabout and North Way, and bus lanes on Gipsy Patch Lane. The replacement of the existing railway bridge at Gipsy Patch Lane with a wider bridge to remove the pinch-point for motorised and non-motorised users is a key element of the scheme.
E19	Weston-super-Mare Package 2	Package of multi-modal highway/junction improvements to complement and support the other Weston-super-Mare schemes. These could include, but not be limited to, the M5 Junction 21 Bypass, A370/A371 Airport Rbt, Cross Airfield Link/A371 Rbt, West Wick Rbt, Airfield Bridge Link (which is likely to be bus/cycle/ped only) and Herluin Way to Locking Road Link.
E20	Weston-super-Mare Cycling and Walking Network	Completion of a network of legible, attractive and safe strategic cycle routes in the Weston-super-Mare area, with a focus on east-west routes from Worle and Weston Villages into the town centre. Within the Weston-super-Mare Town Centre Masterplan and SPD. This includes better pedestrian and cycling facilities to serve Weston-super-Mare as part of the JSP and Core Strategy Growth.

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Other longer-term opportunities

Ref	Scheme	Details
L1	Strategic Rail and Road Freight Package	Freight consolidation centre (rail) at Avonmouth, network loading gauge enhancements on railway network, sustainable distribution projects at key stations (initially Bristol Temple Meads), and restrictions on HGV movements.
L2	A46 to M4 route improvements, Cold Ashton	Capacity improvements especially at the Cold Ashton roundabout to remove existing delays between Bath and junction 18 of the M4.
L3	Greater Bath Bus Network Package	New vehicles to implement fleet improvements at a faster pace. Real time information (RTI) screens at all stops and upgrade to thin-film-transistor (TFT) displays - seven corridor network.
L4	Henbury Loop rail services	Orbital rail service around north Bristol, introduction of passenger services along freight line.
L5	Rail services to Thornbury	This includes the reopening of the line to passenger services to Thornbury. Assumes the completion of the Westerleigh junction upgrade.
L6	M5 Junction 20 Eastern Arm to Nailsea	New multi-modal connection from M5 Junction 20 (via new eastern arm) to Nailsea, which could include highway, public transport, MetroBus and walking & cycling connections to Nailsea.

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Appendix 3 – Technical Screening Appendix·

West of England Joint Local Transport Plan 4 Habitats Regulations Assessment: Appropriate Assessment

Technical Screening Appendix 3

Prepared by:
ClearLead Consulting Ltd

Project Ref: **C0156**

Contract No:	C0156
Issue	5
Author	Vicky Pearson
	
Project Director	Johanna Mitchell
	
Date:	27/06/2019

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VERSION CONTROL RECORD

Issue		Description of Status	Date	Reviewer Initials	Authors Initials
1		Draft	17/09/2018	VP	KD
2		Final for internal comment	19/11/2018	VP	KD
3		Final for consultation	25/02/2019	VP	KD/HT
4		Final for consultation with amends	16/05/2019	VP	KD/HT

Scheme Name	Scheme Description	Buffers & European Sites						Screen Decision	LSE?
		200m - Air Quality	1000m - Urban Effects on Mells Valley SAC	4000m - Effects on supporting sites for SPA bird assemblage and lesser horseshoe bats; effects on water levels	7000m - effects on recreation, invasive species and physical modification of watercourses	8000m - effects on supporting sites/habitats for golden plover and greater horseshoe, water pollution, coastal squeeze and marine litter	15000m - Effects on species distribution on Salisbury Plain SAC and SPA		
Mass Transit Scheme									
Bristol City Centre to Airport (T1)	Segregated mass transit route connecting Bristol Airport and South Bristol with the city centre. Through the current Mass Transit studies and the Bristol South West Economic Link project (BSWEL) (see Scheme Ref. E1 below), various options are being considered for assessment. Those options which perform well against an initial set of criteria will then be developed into more detailed option variants for further assessment. Options are being considered for bus, tram, tram-train, mass transit (fully segregated underground running) and heavy rail. Route to be determined balancing maximising patronage against engineering costs. The heavy rail option assessment includes a potential heavy rail link from Bristol Temple Meads.	N/A	N/A	N/A	N/A	North Somerset and Mendips Bats SAC	N/A	The proposed transit route does not cross any rivers linked to Chew Valley SPA and therefore no LSE is predicted to this site. The proposed route passes within 8km of the Kings Wood component site of the North Somerset and Mendip Bats SAC and could potentially result in either the loss of foraging areas or severance of flyways used by the greater horseshoe bats.	Y
Bristol City Centre to Bath (T2)	A mass transit route providing high frequency, high capacity and fast public transport services between Bristol and Bath. The route from Hicks Gate to Bristol will be facilitated by diversion of traffic onto the Callington Road Link to enable reallocation of roadspace from car to public transport within Bristol. Careful consideration of routing options and future management of roadspace between Bristol and Bath, will be required. In the short term MetroBus would provide mass transit along the corridor from Bristol to Bath, and in the longer term there is an ambition for Light Rail.	N/A	N/A	N/A	Avon Gorge Woodlands SAC - recreation Bath and Bradford-on-Avon Bats SAC - effects of recreation	Bath and Bradford-on-Avon Bats SAC - effects to supporting sites	N/A	Proposed route (particularly the proposed light rail route option) could potentially result in either the loss of foraging areas or severance of flyways used by the greater horseshoe bats roosting in the Bath and Bradford-on-Avon Bats SAC. The mass transit route runs between the outskirts of Bath and Bristol centre. It does not extend into the Avon Gorge area and as such it is considered unlikely that this scheme will increase the numbers of visitors to Avon Gorge SAC.	Y
Bristol City Centre to East Fringe (T3)	A dedicated, segregated mass transit route providing high frequency, higher capacity and faster public transport services connecting central Bristol and the East Fringe and associated infrastructure to provide a high quality passenger experience. Sections of the dedicated route would probably need to be delivered below surface due to highway capacity constraints on the A420 and A432 corridors and environmental constraints on the Bristol-Bath Railway Path. It includes the A420/Ring road Park and Ride site(s).	N/A	N/A	N/A	Avon Gorge Woodlands SAC - recreation	N/A	N/A	The mass transit route runs between Bristol city centre and the East Fringe of Bristol. It does not extend into the Avon Gorge area and as such it is considered unlikely that this scheme will increase the numbers of visitors to Avon Gorge SAC.	N
Bristol City Centre to North Fringe (T4)	A dedicated, segregated mass transit route providing high frequency, higher capacity and faster public transport services between central Bristol, North Bristol and the North Fringe with associated infrastructure to provide a high quality passenger experience. Constraints on the A38 Gloucester Road and other corridors mean that an underground alignment should be considered as one of the options to fully achieve the scheme objectives. This scheme would be complementary to the North Fringe - Hengrove MetroBus scheme currently being delivered and the planned MetroWest programme.	N/A	N/A	N/A	Avon Gorge Woodlands SAC - recreation	Severn Estuary SAC, SPA and Ramsar - water pollution and recreation	N/A	The mass transit route runs between Bristol city centre and the North Fringe of Bristol. It does not extend into the Avon Gorge area nor in the direction of Avonmouth or Severnside and as such it is considered unlikely that this scheme will increase the numbers of visitors to Avon Gorge SAC and the Severn Estuary SAC, SPA and Ramsar. The proposed route could result in physical changes to watercourses and increased water pollution and litter to the Severn Estuary.	Y
Bath city centre and corridors (T5)	Introducing light rail in Bath city and environs. Given the environmental and physical constraints trams should be one of the options considered. All key routes will be considered including: - A367 Odd Down - Newbridge - either along the A4 or A36 integrating with the new rapid transit corridor between Bath and Bristol - Lansdown from the north of Bath - A4 from the east of Bath	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC - recreation	Bath and Bradford-on-Avon Bats SAC - effects to supporting sites	N/A	The proposed route could result in either the loss of foraging areas or severance of flyways used by the bats roosting in the Bath and Bradford-on-Avon Bats SAC. LSE is therefore predicted. The proposed route could also increase the number of passengers into Bath and the environs thereby resulting in increased recreational pressures to the SAC. A LSE from recreation is therefore included due to uncertainty.	Y
South East Bristol and Whitchurch (G1)									
A4 MetroBus + Callington Road Link	MetroBus service along the A4 corridor between Keynsham and Bristol, incorporating Callington Road Link to reduce congestion on the A4.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Proposed Callington Rd Link is outside the 8km buffer around the Bath and Bradford-on-Avon Bats SAC and therefore no LSEs are predicted from this link due to distance. The proposed MetroBus would use existing roads and focusses on reducing car usage in the area and is unlikely to result in a significant increase in visitors to the area around the SAC. No risk of a LSE to the SAC is predicted.	N
Orbital MetroBus	MetroBus between Whitchurch and Emersons Green via a new A4-A37 link and A4174 Ring Road.	N/A	N/A	N/A	Avon Gorge Woodlands SAC Chew Valley Lake SPA	N/A	N/A	Proposed MetroBus would use existing roads and is focussed on passenger transport to the east and south. This scheme is therefore unlikely to result in an increase in number of visitors to the Avon Gorge Woodlands SAC which occurs in the west of Bristol. The Chew Valley Lake SPA occurs just under 7km from the proposed scheme at its nearest point and is unlikely to result in increased recreational pressures, due to distance and because it will not increase access to the SPA. No risk of LSEs are predicted as a result of this scheme.	N

A37 Sustainable Transport	Package of bus priority and enhanced bus services to Whitchurch, possibly including extension of MetroBus from Hengrove, and Park & Ride option at Whitchurch.	N/A	N/A	N/A	Avon Gorge Woodlands SAC	N/A	N/A	Any physical developments would be too far from European sites to affect them. Proposed scheme focusses on reducing car usage and is unlikely to result in a significant increase in visitors to the city or increased recreational pressure on the SAC. No risk of LSE is therefore predicted.	N
Whitchurch P&R	Part of A37 Sustainable Transport package above.	N/A	N/A	N/A	Chew Valley SPA Avon Gorge Woodlands SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed scheme focusses on reducing car usage around Bristol and is unlikely to result in a significant increase in number of visitors to the city or increased recreational pressure to the European Sites. No risk of LSEs are predicted.	N
Hicks Gate Park & Ride	New Park & Ride site south of Hicks Gate junction – this would replace existing Brislington Park & Ride site (to be used for development).	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Hicks Gate Junction	Changes to existing roundabout layout including a new link between the A4174 and A4 Keynsham Bypass.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
South Bristol Orbital Link	Made up of A4 – A37 Link between A4 Hicks Gate and A37 south of Whitchurch, and West of A37 Link from A37 Whitchurch connecting either to Washing Pound Lane or Halfacre Lane.	N/A	N/A	N/A	Avon Gorge Woodlands SAC Chew Valley Lake SPA	N/A	N/A	The proposed scheme would provide a new road link between the south and east of Bristol and no LSE to the Avon Gorge Woodland SAC, which is located in the west of Bristol, is predicted . The Chew Valley Lake SPA occurs just under 7km from the proposed road at its nearest point and therefore the subsequent increase in number of visitors to this SPA is likely to be negligible.	N
Local highway improvements	Local traffic management schemes, including improvements to Whitchurch Lane towards Hengrove, and traffic management on A37 towards Pensford.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Keynsham (G2)									
Keynsham railway station	Review of access arrangements and passenger waiting facilities to enhance the attractiveness of rail for commuting and other travel needs from wider Keynsham area.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
A4-A4175 Link	Link between the A4 and A4175 including new bridges over rail line and possibly River Avon, and providing access to the SDL. Avon Mill Lane improvements - Improvements to covert Avon Mill Lane and A4175 junction to a roundabout with enhanced pedestrian and cycle facilities New Link Road Sustainable Travel - Package of strategic cycling corridor, bus priority, and enhanced bus services (including MetroBus) to Bristol and Bath. Including a direct link to the Bristol/Bath cycle way Hicks Gate Junction - Changes to existing roundabout layout including a new link between the A4174 and A4 Keynsham Bypass.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. However, new link could cross River Avon which is known to be used by the horseshoe bats associated with the Bath and Bradford-on-Avon Bats SAC. LSE therefore identified.	Y
Local highway improvements	Improvements to other junctions affected by traffic, including A4 / B3116 Roundabout (between Keynsham and Saltford) and A420 / A4175 junction at Bridgeyate (in South Glouc).	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Yate and Coalpit Heath (G3)									
A432 Sustainable Travel	Package of strategic cycling corridor, bus priority, and enhanced bus services (including MetroBus) to Coalpit Heath and Yate and potential Park & Ride option west of Yate.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Yate railway station	Package of measures to improve access and enhance waiting facilities, including improved bus interchange on A432.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Winterbourne and Frampton Cotterell Bypass	Single carriageway link between Stoke Gifford and Iron Acton, bypassing Winterbourne and Frampton Cotterell.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Local highway improvements	Improvements to other parts of the network impacted by traffic, to include B4057 between Winterbourne and Stoke Gifford, B4058 / B4059 junctions at Iron Acton, and route between Yate and East Fringe via Westerleigh.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Coalpit Heath and Westerleigh Bypass	A new multi-modal corridor (road and cycle route) from Yate to Emersons Green and the east of Bristol, connecting with the Ring Road and possibly a new M4 Junction 18A. The new link would connect the A432 Badminton Road to Westerleigh Road providing access to new employment and housing in Yate. This may be required instead of, or together with, a Winterbourne and Frampton Cotterell Bypass. This link would provide additional capacity, freeing up road space on the A432 for MetroBus (scheme XX).	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Nailsea and Backwell (G4)									
Nailsea sustainable travel, rail station and local network improvements	Improved interchange at Nailsea & Backwell rail station (cycle connections, improved parking facilities).	N/A	N/A	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	N/A	The proposed scheme is unlikely to increase number of passengers/visitors to the area and therefore no risk of a LSE to the Severn Estuary is predicted.	N
Local improvements to road network (mostly on-line, with some local bypasses).	Part of 'Nailsea sustainable travel, rail station and local network improvements'	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar North Somerset and Mendip Bats SAC Avon Gorge Woodlands SAC	Severn Estuary SAC, SPA and Ramsar North Somerset and Mendip Bats SAC	N/A	Involves 3 new roads near Clevedon and Nailsea. These new roads could result in the loss of feeding habitats used by bats roosting within the North Somerset and Mendip Bats SAC or birds connected with the Severn Estuary. The new roads could also result in physical changes to watercourses and increase number of visitors, water pollution and marine litter to the European Sites. LSE predicted. This scheme will also involve on line improvements on the A370 at Long Aston which would be within the existing extent of the highway, such as changes to prioritisation, changes to lanes and road markings. Some improvements to local junctions may also take place but these are expected to be minor. No LSE identified in relation to the local junction improvements and the online improvements at Long Ashton.	Y

Long Ashton P&R	Part of 'Nailsea sustainable travel, rail station and local network improvements'	N/A	N/A	N/A	Avon Gorge SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed scheme focusses on reducing car usage around Bristol and is unlikely to result in an increase in the number of visitors to the European Sites. Proposed scheme is also unlikely to result in water pollution or marine litter to the Severn Estuary. No risk of LSEs to the SAC, SPA or Ramsar are predicted. No further LSEs from other issues anticipated.	N
Nailsea to Clevedon Cycle Route	Part of 'Nailsea sustainable travel, rail station and local network improvements'	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	N/A	Cycle route has the potential to increase the number of visitors to the Severn Estuary. LSE due to uncertainty. No further LSE from other issues anticipated.	Y
Metrobus M2 service	Part of 'Nailsea sustainable travel, rail station and local network improvements'	N/A	N/A	N/A	Avon Gorge SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed scheme focusses on reducing car usage around Bristol and is unlikely to result in an increase in the number of visitors to the European Sites. Proposed scheme is also unlikely to result in water pollution or marine litter to the Severn Estuary. No risk of LSEs are predicted. No further LSEs from other issues anticipated.	N
Nailsea - Backwell A370 link	New link from Nailsea to A370 including crossing of the rail line, providing improved access to SDLs.	N/A	N/A	North Somerset SAC	Avon Gorge SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed link has the potential to increase the number of visitors to the Severn Estuary and Avon Gorge SAC. Potential habitat loss of site used by bats associated with the North Somerset Bats SAC. LSE due to uncertainty. No further LSE from other issues anticipated.	Y
M5 J19 & J20 improved multi-modal connections	New or improved, multi-modal connections for Nailsea & Backwell to M5 Junction 19 (Portbury) and Junction 20 (Clevedon), including bus priority, providing improved access to SDLs. Bus priority will support the delivery of enhanced bus services.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar North Somerset and Mendip Bats SAC	N/A	Proposed multi-modal corridor could potentially result in habitat loss within sites used by birds associated with the Severn Estuary and bats associated with the North Somerset and Mendip Bats SAC. The proposed corridor could also link to roads which connect to the European Sites resulting in an increase in recreational pressures. LSEs from these issues are predicted. It is uncertain whether the new junction/multi-modal corridor would result in physical modification of watercourses associated with the Severn Estuary or an increase in water pollution and marine litter. LSEs from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.	Y
Banwell and Churchill (G5)									
Sustainable travel package: Banwell-Churchill Cycle Route	The travel package incldues enhanced cycling facilities along A368/A371 corridor and serving the SDLs. Roadspace reallocation will be enabled by bypasses on the corridor.	North Somerset and Mendip Bats SAC	N/A	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar Mendip Woodlands SAC Mendip Limestone Grasslands SAC	North Somerset and Mendip Bats SAC	N/A	Cycle route has the potential to increase the number of visitors to the European Sites. LSE due to uncertainty. No further LSEs from other issues anticipated.	Y
Sustainable travel package: Strawberry Line Cycle Route	There is a long-standing ambition to reopen the Strawberry Line to connect Clevedon to Yatton (including onward rail access) and onward segregated cycle linkages to Wells in Somerset.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Mendip Woodlands SAC Mendip Limestone Grasslands SAC	North Somerset and Mendip Bats SAC	N/A	Cycle route has the potential to increase the number of visitors to the SACs and SPAs - LSE effect due to uncertainty. No further LSEs from other issues anticipated.	Y
Sustainable travel package: Greater Bristol Bus Network 2 (GBBN2)	GBBN2 will improve passenger experience by providing better bus services, targeted bus priority measures (and better enforcement), traffic signal upgrades, interchange upgrades, enhanced passenger information and integrated ticketing on inter-urban bus corridors, complementing proposed MetroBus and mass transit routes.	N/A	N/A	N/A	Mendip Woodlands SAC Severn Estuary SAC, SPA and Ramsar Mendip Limestone Grasslands SAC	Mendip Woodlands SAC Severn Estuary SAC, SPA and Ramsar	N/A	GBBN 1 includes provision of realtime information, infrastructure improvements to bus stops, frequency improvements on identified corridors, and new branding and marketing. GBBN 2 is similar improvements. These will be minor works such as adding real time information boards to bus stops which would take place over a wide area. Measures could also include some road marking improvements on highways to give priority to buses. There is no impact pathway with the European sites indicated which are wihtin 7 and 8km of the general location of the scheme. No LSE.	N
A371 / A368 Banwell Bypass	Bypass to the north of Banwell, linking A371 with A368, and providing improved access to the SDL.	N/A	N/A	N/A	Mendip Woodlands SAC Severn Estuary SAC, SPA and Ramsar Mendip Limestone Grasslands SAC	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	Proposed bypass could potentially result in habitat loss within sites used by bats associated with the North Somerset and Mendip Bats SAC. The proposed bypass could also link to roads which connect to the SACs and SPAs resulting in an increase in recreational pressures. It is uncertain whether the bypass would result in physical modification of watercourses associated with the Severn Estuary or an increase in water pollution and marine litter- LSE from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.	Y
A368 Churchill and Sandford Bypass	Bypass to the north of Churchill and Sandford, providing access to the SDL.	N/A	N/A	N/A	Mendip Woodlands SAC Severn Estuary SAC, SPA and Ramsar Mendip Limestone Grasslands SAC	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	Proposed bypass could potentially result in habitat loss within sites used by bats associated with the North Somerset and Mendip Bats SAC. The proposed bypass could also link to roads which connect to the SACs and SPAs resulting in an increase in recreational pressures. LSEs are predicted. It is uncertain whether the bypass would result in physical modification of watercourses associated with the Severn Estuary or an increase in water pollution and marine litter- LSE from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.	Y
Local highway improvements: Bath Road/A368 Junction	Improvements to other junctions affected by additional traffic, including A368/A38 Churchill signals.	N/A	N/A	N/A	Mendip Limestone Grasslands SAC North Somerset and Mendip Bats SAC	North Somerset and Mendip Bats SAC	N/A	Proposed improvements unlikely to result in increase in recreational pressures due to low scale nature of proposed works and distance from SAC.	N
Thornbury, Buckover and Charfield (G6)									

A38 Sustainable Travel: Park & Ride	part of the package "strategic cycling corridor, bus priority, and enhanced bus services (including metrobus) to Thornbury and Buckover, including potential Park & Ride option".	N/A	N/A	N/A	Avon Gorge Woodlands SAC	N/A	N/A	Proposed Park and Ride in this location is unlikely to result in an adverse effect on the SAC due to type of development and distance from SAC. No risk of a LSE as a result of this proposed scheme.	N
A38 Sustainable Travel: Thornbury Cycle Route	part of the package "strategic cycling corridor, bus priority, and enhanced bus services (including metrobus) to Thornbury and Buckover, including potential Park & Ride option".	N/A	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed cycleway is approximately 5km from the Severn Estuary and runs parallel to the Estuary. The route does not therefore lead cyclists nearer to the Estuary. Habitat loss likely to be negligible. No LSE is therefore predicted.	N
Charfield Station	New railway station at Charfield (services to Bristol and Gloucester).	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
M5 J14	Upgraded motorway junction to a full roundabout layout, improved approaches from east and west.	N/A	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed motorway junction upgrade is unlikely to result in an increase in recreation on the Severn Estuary. The area adjacent Junction 14 does not contain water courses linked to the estuary and therefore no risk of LSE due to water pollution or marine litter.	N
Local highway improvements	Improvements to local road network in the Thornbury, Buckover and Charfield area, including capacity improvements at B4509 / B4058 junction at Charfield Hill.	N/A	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	WoECA has confirmed that this scheme is likely to involve improvements to existing junctions and capacity improvements which would be minor infrastructure works to improve traffic flow and mitigate for the SDLs at Buckover, Thornbury and Charfield. No impact pathway is identified with these minor highways works. No LSE.	N
Bristol Urban Area (G7)									
Bristol City Centre Framework	Multi-modal package to improve connectivity and growth in Bristol city centre. Includes enhanced cycling provision, enhanced bus priority and reorganisation of road network in city centre core.	N/A	N/A	N/A	Avon Gorge Woodlands SAC	N/A	N/A	A draft Bristol City Centre Framework is available at the time of screening. The strategy aims to improve and encourage walking, cycling and public transport use and improve traffic flows. Measures to deliver the framework are likely to include reallocation of existing highway space within the city centre such as segregated bus lanes and cycling lanes to improve priority for active travel and sustainable transport modes. These minor works are not likely to have any impact pathway with European sites. The improvements are not likely to improve access to any European sites or increase recreational pressure. One aim of the framework is smarter traffic management. Traffic signals will continue to be used to manage vehicle flows in the city centre. The current motor traffic management system, known as SCOOT, will be improved to ensure that when congestion increases, vehicles are held outside the central area to prevent the city centre becoming gridlocked. The aim will be to create spare capacity in the city centre so that motor traffic flows more freely and more reliably and the impact of incidents and roadworks is reduced. However, the framework notes that this strategy will need to avoid creating queues on approaches to the city centre so that bus routes and air quality are not affected. No LSE.	N
Local bus package (GBBN2)	Expansion of bus priority measures across the Bristol urban area and further improvements to bus facilities to support sustained growth in bus patronage across the city.	North Somerset and Mendip Bats SAC	N/A	N/A	Avon Gorge Woodlands SAC Mendip Limestone Grasslands SAC Mendip Woodlands SAC North Somerset and Mendip Bats SAC Chew Valley Lake SPA Mells Valley SPA Mendip Woodlands SAC Severn Estuary SAC, SPA and Ramsar	Bath and Bradford-on-Avon Bats SAC Chew Valley SPA North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar Mells Valley SAC	N/A	Proposed bus improvements unlikely to effect European Sites as it focusses on reducing car usage around Bristol and unlikely to result in an increase in the number of visitors to the SAC, SPA and Ramsar sites. Proposed scheme is also unlikely to result in water pollution or marine litter to the Severn Estuary and negligible habitat loss. Proposed scheme could result in an indirect effect of decreasing air pollution to sites. No risk of LSE are predicted.	N
Bristol walking and cycling package: Whitchurch to Patchway	Part of "Bristol walking and cycling package Improvements to walking and cycling infrastructure "	?	?	?	?	?	N/A	This will be in the West of England Local Cycling and Walking Infrastructure Plan. Exact routes are yet to be defined. The aim will be to segregate cycling from walking and motor traffic as far as is possible. LSE due to uncertainty.	Y
Bristol walking and cycling package: Bristol-A4-Bath	Part of "Bristol walking and cycling package Improvements to walking and cycling infrastructure "	?	?	?	?	?	N/A	This will be in the West of England Local Cycling and Walking Infrastructure Plan. Exact routes are yet to be defined. The aim will be to segregate cycling from walking and motor traffic as far as is possible. LSE due to uncertainty.	Y
Bristol walking and cycling package: Portway	Part of "Bristol walking and cycling package Improvements to walking and cycling infrastructure "	?	?	?	?	?	N/A	This will be in the West of England Local Cycling and Walking Infrastructure Plan. Exact routes are yet to be defined. The aim will be to segregate cycling from walking and motor traffic as far as is possible. LSE due to uncertainty.	Y
Bristol walking and cycling package: South Bristol 1	Part of "Bristol walking and cycling package Improvements to walking and cycling infrastructure "	?	?	?	?	?	N/A	This will be in the West of England Local Cycling and Walking Infrastructure Plan. Exact routes are yet to be defined. The aim will be to segregate cycling from walking and motor traffic as far as is possible. LSE due to uncertainty.	Y
Bristol walking and cycling package: South Bristol 2	Part of "Bristol walking and cycling package Improvements to walking and cycling infrastructure "	?	?	?	?	?	N/A	This will be in the West of England Local Cycling and Walking Infrastructure Plan. Exact routes are yet to be defined. The aim will be to segregate cycling from walking and motor traffic as far as is possible. LSE due to uncertainty.	Y
Bristol walking and cycling package: Warmley-Centre	Part of "Bristol walking and cycling package Improvements to walking and cycling infrastructure "	?	?	?	?	?	N/A	This will be in the West of England Local Cycling and Walking Infrastructure Plan. Exact routes are yet to be defined. The aim will be to segregate cycling from walking and motor traffic as far as is possible. LSE due to uncertainty.	Y
Bristol walking and cycling package: Brislington-Knowle	Part of "Bristol walking and cycling package Improvements to walking and cycling infrastructure "	?	?	?	?	?	N/A	This will be in the West of England Local Cycling and Walking Infrastructure Plan. Exact routes are yet to be defined. The aim will be to segregate cycling from walking and motor traffic as far as is possible. LSE due to uncertainty.	Y
M32 Park & Ride	New Park & Ride site south of M32 J1 to intercept trips into Bristol.	N/A	N/A	N/A	N/A	N/A	N/A	Proposed Park and Ride in this location is unlikely to result in an adverse effect on the SAC due to type of development and distance from SAC. No risk of a LSE as a result of this proposed scheme.	N

A38(S)/A4174 Park & Ride	New Park & Ride site at the A38/South Bristol Link roundabout, served by MetroBus and Airport Flyer services to Bristol.	N/A	N/A	N/A	Avon Gorge Woodlands SAC	N/A	N/A	Proposed Park and Ride in this location is unlikely to result in an adverse effect on the SAC due to type of development and distance from SAC. No risk of a LSE as a result of this proposed scheme.	N
Almondsbury P&R	A38 North between Junction 16 and Thornbury new site. Location indicative. Could intercept trips to Bristol urban area from South Wales and from Thornbury	N/A	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	This scheme is unlikely to increase recreational pressures to European Sites and does not appear to be sited on any water courses linked to the Severn Estuary. No LSE are therefore predicted.	N
A4018 Park & Ride	New Park & Ride site, possibly served by rail services to Bristol from proposed Henbury station.	N/A	N/A	N/A	Avon Gorge Woodlands SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	This scheme is unlikely to increase recreational pressures to European Sites and does not appear to be sited on any water courses linked to the Severn Estuary. No LSE are therefore predicted.	N
A4 Portway Park & Ride expansion	Expansion of existing Park & Ride sites.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Avon Gorge Woodlands SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Potential LSE if the proposed scheme results in loss of habitats used by bird assemblages connected to the Severn Estuary. Could also result in potential water pollution during construction due to proximity to the estuary. LSE from uncertainty. No further LSE from other issues anticipated.	Y
A370 Long Ashton Park & Ride expansion	Expansion of existing Park & Ride sites.	N/A	N/A	N/A	Avon Gorge SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed Park and Ride in this location is unlikely to result in an adverse effect on the SAC due to the type of development and distance from SAC. No risk of a LSE as a result of this proposed scheme.	N
Weston-super-Mare (G8)									
Weston-super-Mare MetroBus	MetroBus serving Weston town centre, Weston villages, and possibly Park & Ride.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Mendip Limestone Grasslands SAC North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed scheme is unlikely to result in an adverse effect on the SAC, SPA and Ramsar sites as the route would run along the existing road network.	N
Weston-super-Mare Park & Ride	New Park & Ride site at either A370/A371 junction, M5 J21 or proposed J21a.	N/A	N/A	N/A	Mendip Limestone Grasslands SAC North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	One of the proposed Park and Ride locations (A370/A371) is just within the 4km buffer around the Severn Estuary but is separated from the Estuary by WSM and therefore unlikely to contain supporting habitat. No increase in recreation pressures to the European Sites are anticipated. No LSE predicted.	N
Local bus improvements	Additional bus priority measures and bus stop infrastructure to improve journey reliability.	N/A	N/A	N/A	N/A	North Somerset and Mendip Bats SAC	N/A	This scheme is due to involve minor works to improve frequency, add real time information at bus stops and possibly some reallocation of highway space to increase bus priority. Works are likely to remain within the existing carriageway. Proposed scheme unlikely to result in an adverse effect due to its small scale nature.	N
Local highway junction improvements	Upgrades and improvements to a number of junctions related to the primary distributor route and other key junctions around the Weston-super-Mare area.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar Mendip Limestone Grasslands SAC North Somerset Bats SAC	Severn Estuary SAC, SPA and Ramsar North Somerset Bats SAC	N/A	This scheme affects J21 of the M5 and the approach to weston town centre. It is likely to involve signalised roundabouts, junction capacity improvements and other minors works, all within the existing highway with the exception of the airfield bridge from the Weston villages development sites onto the A370 in Weston (connecting into roundabout between Winterstoke Road and A370 Herluin Way). This bridge is likely to be bus only and is a longer term ambition which may not be delivered within the timeframe of the JLTP4. However, the bridge is proposed on grassland approximately 2km from the Severn Estuary. A LSE is therefore predicted at this stage due to uncertainty.	Y
Local walking & cycling infrastructure improvements: Weston Town Centre to J21 Cycle Route	Part of "Package of walking and cycling infrastructure improvements, to promote sustainable transport modes"	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Cycle routes in WSM have the potential to increase the number of visitors to the European Sites as they are connected to one another and part of the route runs near to the Severn Estuary and North Somerset and Mendip Bats SAC. No other LSE due to other issues are predicted and the cycle route may have an indirect positive effect on air quality due to reduction in vehicle emissions.	Y
Local walking & cycling infrastructure improvements: WSM to Clevedon Cycle Route	Part of "Package of walking and cycling infrastructure improvements, to promote sustainable transport modes"	N/A	N/A	N/A	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	Cycle route has the potential to increase the number of visitors to the European Sites as they are all connected to one another. Part of the WSM to Clevedon Cycle Route is proposed adjacent the Severn Estuary. No other LSE due to other issues are predicted and the cycle route may have an indirect positive effect on air quality due to reduction in vehicle emissions.	Y

Local walking & cycling infrastructure improvements: Sand Bay Cycle Route	Part of "Package of walking and cycling infrastructure improvements, to promote sustainable transport modes"	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	N/A	Cycle route has the potential to increase the number of visitors to the European Sites as they are all connected to one another. Part of the Sand Bay Route is proposed adjacent the Severn Estuary. T. Part of the cycle route appears to be proposed immediately adjacent the Severn Estuary and it is uncertain whether this would result in loss of habitats connected to the Estuary or coastal squeeze effects. No other LSE due to other issues are predicted and the cycle route may have an indirect positive effect on air quality due to reduction in vehicle emissions.	Y
Local walking & cycling infrastructure improvements: Banwell-Churchill Cycle Route	Part of "Package of walking and cycling infrastructure improvements, to promote sustainable transport modes"	North Somerset and Mendip Bats SAC	N/A	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar Mendip Woodlands SAC Mendip Limestone Grasslands SAC	North Somerset and Mendip Bats SAC	N/A	Cycle routes have the potential to increase the number of visitors to the European Sites as they are all connected to one another. Part of the Banwell-Churchill Cycle Route occurs near to the North Somerset and Mendip Bats SAC. No other LSE due to other issues are predicted and the cycle route may have an indirect positive effect on air quality due to reduction in vehicle emissions.	Y
Early investment schemes in progress (committed projects)									
M49 Avonmouth Junction Upgrade (C1)	New M49 Avonmouth junction to improve access to the port of Avonmouth and the Avonmouth Severnside Enterprise Area; works are expected to be completed by the end of 2019.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	River Wye / Afon Gwy SAC Severn Estuary SAC, SPA and Ramsar	N/A	Proposed new motorway junction could potentially result in habitat loss within sites used by birds associated with the Severn Estuary. The junction could also link to roads which connect to the Severn Estuary resulting in an increase in recreational pressures. LSEs are therefore predicted. It is uncertain whether the new junction would result in physical modification of watercourses associated or an increase in water pollution and marine litter. LSEs from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.	Y
Temple Quarter masterplan (C2)	Masterplan to cover the 70-hectare development zone, to feature a mixed-use quarter comprising up to 11,000 homes and a revitalised transport interchange, including improvements to Temple Meads railway station. The masterplan will include station capacity improvements, better access to Temple Meads and the area, with new public space and improvements to the public realm. The project will also involve a sensitive adaptation, development and protection of the grade 1 listed station, which was designed by Brunel.	N/A	N/A	N/A	Avon Gorge Woodlands SAC	N/A	N/A	This scheme is not entirely transport related. The masterplan includees a Sustainable Urban Mobility Plan (SUMP). The SUMP sets out transport imrpovements which are localised in nature and include improved walking and cycling connections to link up sites within the Temple Quarter. Significant works are already taking place to improve access to the Temple Quarter Enterprise Zone and work is progressing on investment in Bristol Temple Meads station. The scheme is within 7km of the Avon Gorge Woodlands SAC which is at risk from recreational pressure by visitors. It is considered unlikely that the transport elements of the Temple Quarter Masterplan, suhc as improvements to local cycle infrastructure and improvements to Temple Meads Station will increase visitor pressure on the Avon Gorge Woodlands SAC either alone or in combination with the rest of the masterplan.	N
MetroWest Phase 1 (C3)	Upgraded train services to half-hourly connections for Severn Beach Line and the Bath Spa to Bristol line. Reopening the Portishead Line to passenger services with an hourly service is a priority for WoE authorities. New station at Portishead and the reopening of former Pill Station.	Avon Gorge Woodlands SAC Severn Estuary SAC, SPA and Ramsar	N/A	N/A	N/A	North Somerset and Mendips Bats SAC	N/A	Project level HRA is underway for this committed scheme which consists of upgraded train services to half-hourly connections for Severn Beach Line and could therefore potentially increase passengers and visitors to the Severn Estuary SPA, SAC and Ramsar site in the Severnside area. It does not involve new railway infrastructure within the Avon Gorge. This scheme could potentially increase passengers and visitors to the Severnside area and the Severn Estuary SPA, SAC and Ramsar site in that location. However, Severnside is an employment area with limited coastal access which does not provide a particular visitor destination (as opposed to somewhere like Weston-super-Mare). The project level HRA screening (CH2M HILL (April 2014) MetroWest Phase 1: Habitat Regulations Assessment Screening Prepared for North Somerset Council) did not identify any potential for significant adverse effects from increased recreational pressure on the Severn Estuary SAC, SPA and Ramsar sites, therefore no LSE is identified in this screening exercise in relation to recreational pressure on the Severn Estuary SPA, SAC and Ramsar site. The North Somerset and Mendip Bats SAC occurs outside the 8km buffer but an LSE on the bats within this SAC could occur as part of this scheme utilises a disused railway which is a known corridor for horseshoe bats. This scheme could also result in a direct effect from habitat removal within the Avon Gorge Woodlands SAC - LSE therefore identified due to habitat removal and loss of commuting/feeding habitat for horseshoe bats.	Y

MetroWest Phase 2 (C4)	Reopening of Henbury line to an hourly spur and increase train services to Yate. New stations at Henbury, North Filton and Ashley Down.	N/A	N/A	N/A	Severn Estuary SAC, SPA and Ramsar (Henbury and North Filton) Avon Gorge Woodlands SAC (all potential new stations)	Severn Estuary SAC, SPA and Ramsar (all potential new stations)	N/A	Metrowest is a strategic package of rail improvements. MetroWest Phase 2 will see the reopening of the Henbury line to hourly passenger trains. The line is currently open for freight trains only between Avonmouth and Bristol Parkway with a timetable that allows for thirty two freight trains a day. Two new stations will be built at Henbury (immediately east of where the A4018 crosses the railway line) and at Filton North 500 metres to the west of the former North Filton station site (which was adjacent to the A38 bridge). Both stations will have only limited parking of around 30 spaces each. Henbury station will have a turnback facility to enable trains to reverse and return to Bristol Temple Meads. Ashley Down station is on the site of the former Ashley Hill station. It will be served by half hourly train services. No parking will be provided other than a drop off and pick up facility. Yate station will see an increase in services from hourly to half hourly throughout the day. If required a turnback facility, allowing trains to reverse and return to Bristol Temple Meads, will be built on adjacent railway land. This will not be required if services are extended to Gloucester. All MetroWest Phase 2 services will be expected to operate from 7am to 11pm. The new stations will be build or existing buildings refurbished. Some minor construction works will be involved to improve public realm and create limited parking / drop off areas. The works are all in existing urban areas. It is considered that there is no impact pathway with the European sites.	N
Hengrove Transport Package (C5)	Internal roads and creating access for Metrobus through urban living site of around 1500 homes.	N/A	N/A	N/A	Avon Gorge Woodlands SAC	Chew Valley Lake SPA	N/A	The proposed transport package does not cross any watercourses linked to Chew Valley SPA and is unlikely to result in an increase in recreational pressures to the European Sites. No LSE is therefore predicted.	N
Lockleaze Transport Package (C6)	Including bus lane on Muller road and accessible pathway through Stoke Park to cater for urban living sites in Lockleaze (800 homes).	N/A	N/A	N/A	Avon Gorge Woodlands SAC	Severn Estuary SAC, SPA and Ramsar	N/A	The proposed transport package does not cross any watercourses linked to the Severn Estuary and is unlikely to result in an increase in recreational pressures to the European Sites. No LSE is therefore predicted.	N
Bristol South West Economic Link (BSWEL) (E1)									
Package 1: Weston-super-Mare bus network improvements	•Package 1: Weston-super-Mare bus network improvements; Weston-super-Mare to Bristol bus services with MetroBus compatibility (complementary services);							This scheme is a duplication of the schemes in rows 70 and 71. This scheme is JSP mitigation.	
Package 2: A38 online improvements between A368 to Bristol Airport	•Package 2: A38 online improvements between A368 to Bristol Airport, along with Downside Road junction improvements. A38 widening at Bristol Airport;	N/A	N/A	N/A	Mendip Woodlands SAC North Somerset & Mendip Bats SAC	Chew Valley Lake SPA North Somerset & Mendip Bats SAC	N/A	Proposed road improvements and widening could result in the loss of feeding habitat for bats associated with the North Somerset & Mendip Bats SAC.	Y
Package 3: Banwell Bypass	•Package 3: Banwell Bypass; Rail options: Weston Parkway station; Weston-super-Mare (WsM) – Weston Parkway – Bristol Airport bus service;	N/A	N/A	N/A	Mendip Woodlands SAC Severn Estuary SAC, SPA and Ramsar Mendip Limestone Grasslands SAC	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	Package overlap with Banwell Bypass - refer to row 43 above	Y
Package 4: A38 offline improvements between Bristol Airport and South Bristol Link (SBL); A38/SBL Park & Ride; Sandford and Churchill Bypass	•Package 4: A38 offline improvements between Bristol Airport and South Bristol Link (SBL); A38/SBL Park & Ride; Sandford and Churchill Bypass;	N/A	N/A	N/A	Mendip Woodlands SAC North Somerset & Mendip Bats SAC Avon Gorge Woodlands SAC	Chew Valley Lake SPA North Somerset & Mendip Bats SAC	N/A	Proposed road improvements/bypass could potentially result in habitat loss within sites used by bats associated with the North Somerset and Mendip Bats SAC. The proposed scheme could also link to roads which connect to the European Sites resulting in an increase in recreational pressures. LSEs are predicted.	Y
Package 5: M5 J21A	•Package 5: M5 J21A	N/A	N/A	N/A	Mendip Limestone Grasslands SAC North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	Refer to row 105 below	Y
Package 6: Rail options: Bristol Airport Rail Link Phase One	•Package 6: Rail options: Bristol Airport Rail Link Phase One: Bristol Airport to Bristol Temple Meads	?	?	?	?	?	N/A	This is subject of the mass transit feasibility study that is to be completed in December 2018 - LSE due to uncertainty	Y
Package 7: Rail options: Bristol Airport Rail Link Phase Two: Bristol Airport to Bristol Temple Meads, Severn Beach/Bath Spa, Bristol Airport to Weston-super-Mare/Taunton	•Package 7: Rail options: Bristol Airport Rail Link Phase Two: Bristol Airport to Bristol Temple Meads, Severn Beach/Bath Spa, Bristol Airport to Weston-super-Mare/Taunton	?	?	?	?	?	N/A	This is a long term aspiration and may not be delivered within the JLTP4 plan period. Options for rail or tram-train between WSM and Bristol airport and then onwards to Bristol city centre are incldued within the BSWEL report - LSE due to uncertainty. Potential routes for link are yet to be defined.	Y
Package 8: A370-A38 Link	•Package 8: A370-A38 Link	?	?	?	?	?	N/A	This is along term aspiration and may not be delivered within the JLTP4 plan period. No route options are being considered yet. Currently low risk but LSE identified due to uncertainty	Y
Early investment schemes under development									

East of Bath Link (E2)	A new road connecting the A36 (south of Bathampton) to A363 (near Bathford, south of A4 roundabout) or the A4, to provide a high quality north-south route connecting the A36 and A46 to the east of Bath. This route will enable north-south traffic to avoid passing through Bath.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Potential LSE if the proposed road results in loss of feeding habitats from bats connected with the SAC. Scheme could also increase number of visitors to the SAC. LSE predicted.	Y
M5 Junction 19 (E3)	Improvements to M5 Junction 19 to improve access between the M5 and the Royal Portbury Dock, Portishead, Portbury and Pill. The scheme will provide enhanced capacity to improve the efficiency of movements for freight using the Royal Portbury Dock, enhancing connectivity to national road networks. The scheme will also assist in accommodating future traffic growth generated by planned housing and employment growth in the area.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar North Somerset and Mendip Bats SAC	N/A	Potential LSE if the proposed road results in loss of feeding habitats from bats connected with the North Somerset SAC or birds connected with the Severn Estuary. Scheme could also increase number of visitors, water pollution and marine litter to the European Sites. LSE predicted.	Y
Passenger Rail Service and Capacity Improvements, Station Upgrades and New Stations Package (E4)									
Passenger Rail Service and Capaci	Package of rail improvement measures: Rail service improvements, bringing the frequency of local rail services up to a minimum of 2 tph, plus hourly rail services from Weston-super-Mare to London. - Infrastructure to support service improvements including double tracks on the loop line between Weston Railway Station, reinstating the southern chord at Weston-super-Mare, and the Herluin Way to Locking Road Link (bridge replacement to enable width for double tracking; see scheme XX). - Longer rolling stock to cater for increased demand, in conjunction with longer platforms where required (including Worle, Nailsea & Backwell and Yatton), with higher quality rolling stock from all stations. - Station upgrades for existing rail stations with a focus on developing Interchange Hubs (interchange with MetroBus, Mass Transit, bus services and cycle parking provision), in conjunction with schemes to improve access to existing rail stations by sustainable modes on key routes to stations across the West of England. New railway stations at the following locations: ● Constable Road, Bristol; ● Ashton Gate, Bristol; ● St Annes, Brislington, Bristol; ● Saltford, Bath & North East Somerset. Stations to be delivered with associated infrastructure: passenger waiting facilities, bus stops, cycle stands, car parking, real-time information and be fully Equality Act compliant. Westerleigh junction upgrade.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar Mendip Limestone Grasslands SAC North Somerset Bats SAC	North Somerset and Mendip Bats	N/A	New stations are screened individually below. Proposed scheme appears to be low impact, but widening of track on the Weston spur could require further investigation to ascertain whether there is a risk of effects on European sites. Particularly as a result of the likely habitat loss associated with widening the tracks, potentially resulting in the loss of feeding habitats for birds and flight corridors for the bat associated with the European SItes. LSE prediceted due to uncertainty.	Y
Constable Road Station	new railway station as part of package described above	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Ashton Gate	new railway station as part of package described above	N/A	N/A	N/A	Avon Gorge Woodlands SAC Severn Estuary SAC, SPA and Ramsar	N/A	N/A	Potential LSE from increased water pollution to Severn Estaury during construction. Proposed station would occur near to Avon Gorge Woodlands and therefore could result in an increase in recreational pressures to this site. LSE predicted due to uncertainty.	Y
St Annes	new railway station as part of package described above	N/A	N/A	N/A	Avon Gorge Woodlands SAC	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Saltford	new railway station as part of package described above	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Pill	new railway station as part of package described above	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Potential LSE if the proposed station results in loss of feeding habitats from birds connected with the Severn Estuary. Scheme could also increase number of visitors, water pollution and marine litter. LSE predicted.	Y
Early investment schemes under development									
Smart Motorways: M4 J18-19 and M5 J17-21A (E5)	Smart Motorway scheme on the M4 from J18 (A46, Tormarton) to J19 (M32). This will complement the recently delivered M4 J19-20 and M5 J15-17 Smart Motorway to provide an extensive system of motorway management on the most congested parts of the network. The M4 J18-19 scheme will deliver increased capacity and enhanced reliability to complement the delivery of the new M4 J18A (to provide direct access to the Bristol East Fringe). Smart Motorway scheme on the M5 from J21/21a (Weston-super-Mare) to J17 (Cribbs Causeway). This will complement the recently delivered M4 J19-20 and M5 J15-17 Smart Motorway, to provide an extensive system of motorway management on the most congested parts of the network. The scheme will deliver increased capacity and enhanced reliability through a potential combination of controlled motorway, all lane running and dynamic hard shoulder running, enabling improved journey times and regional connectivity.	Severn Estuary SAC, SPA and Ramsar	N/A	Severn Estuary SAC, SPA and Ramsar	Avon Gorge Woodlands SAC North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar North Somerset and Mendip Bats SAC	N/A	The scheme would result in very limited loss of habitat within the motorway verge and no risk of LSE is therefore predicted.	N
M5 J21A (E6)	A new Junction 21A on the M5 motorway south of the existing J21. This will be supported by a new multi-modal corridor connecting the new junction with the A38, bypasses for the villages of Banwell, Sandford and Churchill and major improvements to the A38 between Langford and South Bristol. The scheme will improve links to the airport and improve resilience of the Strategic Road Network. It will facilitate SDLs at Banwell and Mendip Spring Garden Village and Urban Living in Weston-super-Mare. It will also support growth at Bristol Airport.	N/A	N/A	N/A	Mendip Limestone Grasslands SAC North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	Proposed new motorway junction and multi-modal corridor could result in habitat loss within sites used by bats associated with the North Somerset and Mendip Bats SAC. The junction and associated multi-modal corridor could also link to roads which connect to the SACs and SPAs resulting in an increase in recreational pressures. It is uncertain whether the new junction/multi-modal corridor would result in physical modification of watercourses associated with the Severn Estuary or an increase in water pollution and marine litter. LSEs from these issues/threats are therefore predicted due to uncertainty. The proposed scheme is unlikely to result in marine pollution incidents or coastal squeeze effects.	Y

A4174 Ring Road junction improvements including Wraxall Road (Longwell Green) (E7)	Junction improvements supported by JTS linked to orbital bus route and J18a link. Most improvements are included in scheme XX. Wraxall Rd junction will be improved to improve access onto the Ring Road and safety at the roundabout.	N/A	N/A	N/A	N/A	N/A	N/A	Does not fall within any European sites buffer zones. No risk of a LSE as a result of this proposed scheme.	N
Freezing Hill junction upgrade and whole route improvements (includes landsdown P&R) (E8)	This includes improvements at three junctions along the route between the A420 and Lansdown P&R, known as Freezing Hill Lane. Currently there are excessive delays and the route isn't suitable for the number of vehicles using it to access Lansdown P&R. The scheme also includes localised widening of the Freezing Hill Lane route.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Potential LSE if the proposed junction ugrade results in loss of feeding habitats from bats connected with the SAC. Scheme could also increase number of visitors to the SAC. LSE predicted.	Y
Interurban cycle routes (E9)	Strategic cycle routes across the region to supplement those detailed in the Corridor Scheme Packages to Mitigate JSP Growth (scheme XX). Many of these will be delivered along the MetroBus corridors and some will be identified through the West of England Local Cycling and Walking Infrastructure Plan.	?	?	?	?	?	?	These routes will be defined through the WoE Local Cycling and Walking Infrastructure Plan. Some routes have already been identified and have been screened elsewhere within this table (i.e. the coastal Clevedon to Weston and Portishead cycle routes - see row 35). The location of other cycle routes have not yet been determined. Many of these will be delivered along the MetroBus corridors (screened elsewhere in this table). LSE due to uncertainty.	Y
M4 Junction 18A to A4174 Ring Road (E10)	New motorway junction on the M4 (Junction 18A) between Junction 19 for Bristol and Junction 18 for Bath, providing a new highway link between the M4 and the A4174 Ring Road near the Emersons Green Enterprise Area. It would necessitate improvements to the M4 between Junction 19 and the new Junction 18A, plus improvements to junctions on the A4174. The scheme was considered in a feasibility study undertaken by South Gloucestershire Council and in partnership with Highways England which examined potential location options for the junction and link road. South Gloucestershire Council's Cabinet considered the outcome of the feasibility study in March 2018 and Option 1 (the Western Option at Emersons Green) was agreed as the Council's preferred location. The study has been provided to Highways England for their consideration.	N/A	N/A	N/A	N/A	N/A	N/A	No risk or probability of LSE as a result of this proposed scheme due to distance away from European Sites.	N
MetroBus - Bristol City Centre to Clevedon and Nailsea (E11)	MetroBus route from Clevedon and Nailsea to Bristol City Centre, a rapid transit limited stop service with an emphasis on segregation from general traffic with bus lanes. The section within Bristol would use the infrastructure for the Ashton Vale to Temple Meads route, which was completed in September 2018. This will help to support growth at Nailsea and Backwell and improve connectivity and travel choices.	N/A	N/A	N/A	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar - Physical modification, recreation,	North Somerset and Mendip Bats SAC, Severn Estuary SAC, SPA and Ramsar - coastal squeeze, marine litter, water pollution and recreation	N/A	Proposed route would use existing infrastructure resulting in limited habitat loss and the scheme is therefore unlikely to result in an adverse effects on the European SItes from physical modification, water pollution, marine litter, habitat loss and coastal squeeze. The proposed metrobus route could increase passengers into Clevedon, Nailsea and Bristol thereby result in an increase in visitors to the SACs and SPA.	Y
MetroBus consolidation package (E12)	A package of measures to make further enhancements to the existing MetroBus network, with potential measures including fleet upgrade, addition of descoped infrastructure, signals replacement, and Great Stoke ('Rabbit') roundabout.	N/A	N/A	N/A	N/A	N/A	N/A	This scheme does not involve any new major physical infrastructure developments. Any improvements, such as fleet upgrades and signal replacements, would take place on the existing Metrobus routes which are all in operation apart from the third route which is due to open in January 2019. No LSE due to no impact pathway.	N
Park & Ride package for Bath (includes at Odd Down, Lansdown and Newbridge) (E13)	A Park & Ride package comprising future expansion of three existing sites at Odd Down, Lansdown and Newbridge and to explore the options for and support delivery of a new Park and Ride site to the east of Bath to address future demand for travel and to facilitate further mode shift from cars for travel into the city.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Potential LSE if the proposed road results in loss of feeding habitats from bats connected with the SAC. Scheme could also increase number of visitors to the SAC. LSE predicted.	Y
Regional Electric Vehicle Charging Network (E14)	Increasing public charging infrastructure, including through 'Go Ultra Low West' (Source West) EV charging infrastructure programme.	N/A	N/A	N/A	N/A	N/A	N/A	Scheme too general to result in a LSE and does not fall within any buffer zones.	N
MetroBus - Bristol City Centre to Severnside (E15)	MetroBus route from Severnside to Bristol City Centre via the A403 and A4 Portway, connecting into existing MetroBus infrastructure in Central Bristol. The route would connect the logistics cluster at Severnside and Avonmouth with Bristol City Centre via the Portway Park & Ride site. This would improve travel options and connectivity for employees and businesses in accessing Severnside and Avonmouth. The scheme builds on the extensive existing bus priority on the A4 Portway, with extended bus priority, enhanced stops and upgraded MetroBus services. In particular, further bus priorities including potential bus-only links would be needed into Severnside.	N/A	N/A	N/A	Avon Gorge Woodlands SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed MetroBus would use existing roads and is focussed on reducing car travel. No adverse effects from habitat loss or increase in water pollution, marine litter or coastal squeeze are therefore likely. The scheme could potentially increase the number of visitors to the Severn Estuary as Severnside and Avonmouth both occur adjacent the estuary. LSE due to uncertainty.	Y
Bath Cycle Network and City Centre Package (E16)									
	Completion of a continuous and integrated network of strategic cycle routes, comprising key corridors and cross city routes, complemented by improved permeability and investment in public realm in the city centre. This network will connect key destinations across the Bath urban area. Local routes will be improved and integrated into the strategic network as part of ongoing programmes. Bath city centre is in a natural 'bowl' with steep slopes into the city centre from the north and south. This is likely to constrain the attractiveness of cycling from the north and south, and the primary opportunities will be on east-west corridors in the city.							All cycle routes have the potential to increase the number of visitors to the Bath and Bradford-on-Avon SAC as they are connected to each other. Some of the cycle routes lead towards the SAC potentially increasing recreational pressures on the SAC. LSE due to uncertainty. No further LSE from other issues anticipated	Y
Lansdown-Bear Flat	Part of package described above.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Refer to above	Y
Weston to Walcot	Part of package described above.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Refer to above	Y
Newbridge to Bathampton	Part of package described above.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Refer to above	Y

Bristol-A4-Bath	Part of package described above.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Refer to above	Y
Newbridge to Odd Down	Part of package described above.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Refer to above	Y
Odd Down to Bath Eastern	Part of package described above.	N/A	N/A	N/A	Bath and Bradford-on-Avon Bats SAC	Bath and Bradford-on-Avon Bats SAC	N/A	Refer to above	Y
Early investment schemes under development									
Keynsham / Midsomer Norton and Somer Valley Public Realm Improvements Packages (E17)	Keynsham town centre public realm/ regeneration improvements to encourage sustainable modes of travel, such as walking, cycling and public transport. Including strategic cycling routes to/from Bath, Bristol, east/ north Bristol and within Keynsham including completion of the link from the Somerdale cycle bridge via the River Avon towpath to the Keynsham Peninsular and the Bristol/Bath strategic cycle network. Midsomer Norton town centre public realm/ regeneration improvements to encourage sustainable modes of travel, such as walking, cycling and public transport. Highway, cyclist and pedestrian improvements linking the Somer Valley Enterprise Zone with the A37 to the west and the wider Somer Valley to the east.	N/A	N/A	N/A	N/A	Mells Valley SAC	N/A	Public realm only to be screened here. Cycle routes included in other schemes screned elsewhere in this table e.g. corridor schemes and interurban cycle routes. Public Realm improvements and regeneration in Keynsham will focus on the High Street/Temple Street area of the town and include improvements to the street scene and improved facilities for cyclists, pedestrians and public transport users. Public realm and regeneration improvements in Midsomer Norton will focus on the southern end of the High Street between its junctions with Excelsior Terrace and Silver Street. It will include improvements to the street scene and improved facilities for cyclists, pedestrians and public transport users. No LSE on Mells Valley SAC due to no impact pathway. However, although it is not picked up within the buffer zones, there is a	Y
MetroBus - Cribbs Patchway extension (E18)	An extension to the existing North Fringe to Hengrove MetroBus route. MetroBus from Bristol Parkway to The Mall via Hatchet Road, Gipsy Patch Lane, North Way and CPNN. Includes bus lanes and bus links to enable rapid, reliable MetroBus services to connect existing and planned residential, employment and leisure areas in the North Fringe. Bus priority includes bus links at San Andreas roundabout and North Way, and bus lanes on Gipsy Patch Lane. The replacement of the existing railway bridge at Gipsy Patch Lane with a wider bridge to remove the pinch-point for motorised and non-motorised users is a key element of the scheme.	N/A	N/A	N/A	Severn Estuary SAC, SPA and Ramsar Avon Gorge Woodlands SAC	Severn Estuary SAC, SPA and Ramsar	N/A	Proposed scheme would occur primarily along existing roads and unlikley to result in an increase in number of visitors to the European Sites. The replacement of the rail bridge at Gypy Patch Lane would occur approximately 9km from the Severn Estaury and 8km from the Avon Gorge Woodlands SAC and therefore no LSE is predicted.	N
Weston-super-Mare Package 2 (E19)	Package of multi-modal highway/junction improvements to complement and support the other Weston-super-Mare schemes. These could include, but not be limited to, the M5 Junction 21 Bypass, A370/A371 Airport Rbt, Cross Airfield Link/A371 Rbt, West Wick Rbt, Airfield Bridge Link (which is likely to be bus/cycle/ped only) and Herluin Way to Locking Road Link.	See Weston-super-Mare (G8)	See Weston-super-Mare (G8)	See Weston-super-Mare (G8)	See Weston-super-Mare (G8)	See Weston-super-Mare (G8)	See Weston-super-Mare (G8)	Potential LSE if proposed schemes result in habitat loss within 4km of Severn Estuary or 8km of the North Somerset and Mendip Bats SAC. Potential effects also due to water pollution. LSE due to uncertainty.	Y
Weston-super-Mare Cycling and Walking Network (E20)									
	Completion of a network of legible, attractive and safe strategic cycle routes in the Weston-super-Mare area, with a focus on east-west routes from Worle and Weston Villages into the town centre. Within the Weston-super-Mare Town Centre Masterplan and SPD. This includes better pedestrian and cycling facilities to serve Weston-super-Mare as part of the JSP and Core Strategy Growth.							All cycle routes have the potential to increase the number of visitors to the European Sites as they are all connected to one another. Part of the Sandbank and WSM to Clevedon Cycle Route is proposed adjacent the Severn Estuary, and part of the Banwell-Banwell-Churchill Cycle Route occurs near to the North Somerset and Mendip Bats SAC. Part of the cycle route appears to be proposed immediately adjacent the Severn Estuary and it is uncertain whether this would result in loss of habitats connected to the Estuary or coastal squeeze effects. No other LSE due to other issues are predicted and the cycle route may have an indirect positive effect on air quality due to reduction in vehicle emissions.	Y
Weston Town Centre to J21 Cycle Route	Part of package described above.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Refer to above	Y
Sand Bay Cycle Route	Part of E9 Interurban Cycle Routes	Severn Estuary SAC, SPA and Ramsar	N/A	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	N/A	Refer to above	Y
The North Somerset Coastal Cycle Route: WsM - Clevedon section	Part of E9 Interurban Cycle Routes	Severn Estuary SAC, SPA and Ramsar	N/A	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar Mendip Woodlands SAC Mendip Limestone Grasslands SAC	North Somerset and Mendip Bats SAC	N/A	Refer to above	Y
Banwell-Churchill Cycle Route	Part of package described above.	North Somerset and Mendip Bats SAC	N/A	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar Mendip Woodlands SAC Mendip Limestone Grasslands SAC	North Somerset and Mendip Bats SAC	N/A	Refer to above	Y
Other longer-term opportunities									
Strategic Rail and Road Freight Package (L1)	Freight consolidation centre (rail) at Avonmouth, network loading gauge enhancements on railway network, sustainable distribution projects at key stations (initially Bristol Temple Meads), and restrictions on HGV movements.	?	?	?	?	?	?	This scheme recognises a demand problem and freight issues within the network. No work has started to identify what improvements would be needed. This scheme is unlikely to come forward within the plan period. LSE due to uncertainty	Y
A46 to M4 route improvements, Cold Ashton (L2)	Capacity improvements especially at the Cold Ashton roundabout to remove existing delays between Bath and junction 18 of the M4.	N/A	N/A	N/A	N/A	North Somerset and Mendip Bats SAC		Potential LSE if proposed schemes result in habitat loss within 8km of the North Somerset and Mendip Bats SAC. LSE due to uncertainty.	Y

Greater Bath Bus Network Package (L3)	New vehicles to implement fleet improvements at a faster pace. Real time information (RTI) screens at all stops and upgrade to thin-film-transistor (TFT) displays - seven corridor network.	N/A	N/A	N/A	N/A	N/A	N/A	No physical development which could impact any European sites. Indirect effects could be positive with regards to reducing traffic on roads in the plan area and improving air quality.	N
Henbury Loop rail services (L4)	Orbital rail service around north Bristol, introduction of passenger services along freight line.	Severn Estuary SAC, SPA and Ramsar	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar, Avon Gorge Woodlands SAC	Severn Estuary SAC, SPA and Ramsar	N/A	This scheme would involve an increase in frequency of trains along this line and possibly at different times of day than currently. The line is already in use for freight. It is considered unlikely that increasing frequency of trains along this line will result in an LSE on the European sites identified.	N
Rail services to Thornbury (L5)	This includes the reopening of the line to passenger services to Thornbury. Assumes the completion of the Westerleigh junction upgrade.	N/A	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	N/A	Reopening the line would be a long term aspiration. Part of this line from Yate station links to an operational quarry. The line is operational but very rarely used. Beyond the quarry and Thornbury the line has been dismantled. At the approach to Thornbury from A38 the alignment is built on. It is only included in the JLTP4 as a future hook and was also included in JLTP3. There are no current plans to reopen the line. Westerleigh Jct is a long term aspiration for Network Rail. The junction is at capacity for the routes between Bristol and the north. The east/west currently gets priority so to get additional capacity significant engineering works would be required. It is included in the JLTP as a hook to support Network Rail if the opportunity arises. If the line is reopened it will require some construciton works at the Thornbury end to complete a line to the town. It is a long term aspiration and not likely to be delivered within the plan period. Although the potneital effects of reopening this line are unknown the risk of effects during the plan period are very low and therefore no LSE is recorded.	N
M5 Junction 20 Eastern Arm to Nailsea (L6)	New multi-modal connection from M5 Junction 20 (via new eastern arm) to Nailsea, which could include highway, public transport, MetroBus and walking & cycling connections to Nailsea.	N/A	N/A	Severn Estuary SAC, SPA and Ramsar	Severn Estuary SAC, SPA and Ramsar	North Somerset and Mendip Bats SAC Severn Estuary SAC, SPA and Ramsar	N/A	Refer to Row 38	Y

Appendix 4 – In-combination assessment of other plans of other plans and projects

Regional Plans
West of England Joint Waste Core Strategy (2011)
Status The West of England Joint Waste Core Strategy was produced in February 2011 and was adopted by Bath & North East Somerset Council, Bristol City Council, North Somerset Council and South Gloucestershire Council in March 2011. **Development Provision** The Waste Core Strategy safeguards operational waste sites and allocates the following residual waste sites over the plan period to 2026: Bath and North East Somerset - BA19 Broadmead Lane, Keynsham - BA12 Former Fuller's Earth Works, Fosseway - Land located on existing industrial land in Yate within Strategic Area A - on land located on existing industrial land in Yate within Strategic Area A Bristol - BR505 Hartcliffe Way - DSO5 Merebank, Kings Weston Lane - DS06 BZL Site, Kings Weston Lane - DS07 Sevalco Plant (northern part), Severn Road - DS13 Rhodia Chemical Works, Kings Weston Lane - DS14 Gypsy and Traveller Site, Kings Weston Lane - DS15 Advanced Transport System Ltd Site, Severn Rd South Gloucestershire - SG39 South of Severnside Works North Somerset - IS8 Warne Rd, Weston-super-Mare - on land located within the redevelopment area of Weston within Strategic Area B **HRA** The August 2009 HRA of the Waste Core Strategy concluded that there are no likely significant effects on European sites for the impacts of traffic emissions, hydraulic – ground water, hydraulic – surface water and for some of the pollutants for stack emissions (eg heavy metals). The HRA was not able to conclude no likely significant effects for other effects including other stack emissions (eg NOx and NH3, nitrogen deposition and acid deposition) at some sites and disturbance to the Severn Estuary SPA for one site. However, these effects were predominantly in regard to sites that were not included in the adopted version of the plan. In addition, the August 2009 HRA identified sites requiring consideration of bird mitigation to avoid likely significant effects. The requirements for this mitigation was also

incorporated within the adopted version of the plan and sites at which development has been identified as likely to result in significant disturbance to birds must be able to demonstrate that no adverse effects on the integrity of European sites will result.

The May 2010 and July 2010 HRA Recommendations were produced to ensure there would be no likely significant effects on European sites and these recommendations were incorporated within the adopted version of the plan.

Having reviewed the plan and accompanying HRA, it is concluded that there are no likely in-combination effects of the adopted West of England Joint Waste Core Strategy with the West of England Joint Local Transport Plan 4.

Bristol Water: Water Resources Management Plan

(2014)

Status

The existing Management Plan was produced in June 2014.

The emerging Management Plan was published for consultation in March 2018 and is due to be produced in 2019.

Plan Provision

The Management Plan sets out how Bristol Water will manage water resources and the demand for water in its area of supply over the next 25 years from 2015-2040, while continuing to maintain or improve existing supply security.

The emerging Management Plan sets out how, with the active participation of customers, Bristol Water proposes to ensure that there is a sufficient supply of water to meet the demand forecast from all customers over the 25-year planning period from 2020 to 2045. The Management Plan identifies a number of preferred options relating to supply, distribution management and leakage reduction, but concludes that no new supply options need to be developed.

HRA

The February 2014 HRA of the adopted Management plan concluded that there are sufficient safeguards within the WRMP to ensure that it will have no significant or adverse effects on any European sites when
implemented.

Therefore, there are no likely in-combination effects of the adopted Bristol Water: Water Resources Management Plan with the West of England Joint Local Transport Plan 4.

The November 2017 HRA of the emerging Management Plan concludes that the plan will not have any significant effects that cannot be avoided at the scheme-level with normal best-practice measures, and that the plan will have no significant effects, alone or in combination.

Therefore, there are no likely in-combination effects of the emerging Bristol Water: Water Resources Management Plan with the West of England Joint Local Transport Plan 4.

Wessex Water: Water Resources Management Plan (2014)

Emerging Wessex Water: Water Resources Management Plan (2019)

Status

The existing Management Plan was produced in June 2014.

The emerging Management Plan was published for consultation in Spring 2018 and a revised draft final plan was published in August 2018.

Plan Provision

Both the adopted and the emerging Management Plans describe how Wessex Water expect to balance the demand for water from customers with available supplies and protect the environment over the next 25 years (from 2015-2040 for the adopted plan and from 2020 to 2045 for the emerging plan).

HRA

The March 2013 HRA of the adopted Management plan concluded that the plan is not likely to have a significant effect, alone or in combination, on the integrity of any European sites.

Therefore, there are no likely in-combination effects of the existing Wessex Water: Water Resources Management Plan with the West of England Joint Spatial Plan.

The 2017 HRA of the emerging Management Plan concluded that the Plan is not likely to have a significant effect, alone or in combination, on the integrity of any European sites.

Therefore, there are no likely in-combination effects of the emerging Bristol Water: Water Resources Management Plan with the West of England Joint Spatial Plan.

Severn Estuary Coastal Group Shoreline Management Plan (2017)

Status

The Shoreline Management Plan was approved in February 2017.

Plan Provision

The Management Plan proposed how the shoreline around the Severn Estuary should be managed over the next 100 years, taking account of predicted changes to sea level rise caused by climate change over the next 100 years. Policy options are provided for each area along the estuary and for each time period covered by the plan, including:

- Hold the Line – providing some line of defence at their current position (120 preferred policy options).
- No Active Intervention – no maintenance, repair or replacement of existing defence structures takes place (65 preferred policy options).
- Managed Realignment – landward movement of defences, giving up some land to the sea to form a more sustainable defence line in the future (13 preferred policy options).
- Advance the Line - reclaiming land from the sea by building new defences further seaward (no preferred policy options).

One of the main impacts arising from the implementation of the plan includes the loss of intertidal habitat arising from options that hold the existing line of defence and result in coastal squeeze.

HRA

The December 2010 HRA of the Management Plan could not conclude that the plan would not have potentially significant effects on the Severn Estuary SPA, SAC and Ramsar site and the Somerset Levels and Moors SPA and Ramsar site. The adverse impacts of the plan are due to loss of intertidal habitat as a result of coastal squeeze, loss of terrestrial and freshwater habitats as a result of Managed Realignment, and changes to the shape of the estuary as a whole, which could affect the way it works.

In addition, the HRA could not rule out significant adverse effects upon the North Somerset and Mendip Bat SAC and the Mendip Limestone Grasslands SAC as a result of flooding behind defences, the River Usk SAC as a result of habitat loss dependent on the type of defences, and the Severn Estuary SPA and Ramsar site as a result of bird habitat loss behind defences.

The HRA also concluded that it was not possible to tell if some of the possible effects of the plan would be damaging and that more detailed assessment will be needed as part of the emerging Severn Estuary Flood Risk Management Strategy (which is being developed by the Environment Agency and has not yet been drafted).

The HRA of the West of England Joint Local Transport Plan 4 demonstrates that it will not contribute to the potential adverse effects of the Shoreline Management Plan 2017 listed above. **It is therefore concluded that there are no likely in-combination effects of the with the West of England Joint Local Transport Plan 4 with the Severn Estuary Coastal Group Shoreline Management Plan.**

Local Plans and Strategies within the West of England Joint Local Transport Plan 4 area

Bath & North East Somerset Local Plan: Core Strategy (2014), Placemaking Plan (2017), and saved Local Plan (2007) Policies

Status

The adopted Local Plan comprises the Core Strategy, Placemaking Plan, and saved Local Plan (2007) Policies. The Core Strategy was adopted in 2014, the Placemaking Plan was adopted in 2017 and the saved Local Plan Policies were originally adopted in 2007 and saved as part of the Placemaking Plan.

Housing Provision

The adopted Core Strategy makes provision for 13,000 homes over the plan period to 2029, including in Bath, Keynsham and the Somer Valley, as well as within rural areas.

Employment Land Provision

The adopted Core Strategy makes provision for 10,300 jobs, including net gains in office and industrial floor space between 2011-2029 in Bath (10,000m^2 of office floor space), Keynsham (2,300m^2 of office floor space and 8,300m^2 of industrial floor space) and the Somer Valley (2,700m^2 of office floor space), as well as within rural areas.

HRA

The July 2014 HRA of the Core Strategy concluded that there is unlikely to be any significant adverse effects upon European sites, either alone or in combination.

Having reviewed the plan and accompanying HRA, it is concluded that there are no likely in-combination effects of the adopted West of England Joint Waste Core Strategy with the West of England Joint Local Transport Plan 4.

Bristol Development Framework: Core Strategy (2011), Site Allocations and Development Management Policies (2014), Bristol Central Area Plan (2015)

Status

The adopted Local Plan comprises of the Core Strategy which was adopted in June 2011, the Site Allocations Development Management Policies document which was adopted in July 2014 and the Bristol Central Area Plan which was adopted in 2015.

Housing Provision

The adopted Core Strategy makes provisions for 30,600 homes during the plan period with

the majority of these being delivered in the built up area. The remaining dwellings will be delivered in small unidentified sites and Green Belt areas of land.

Employment Land Provision

The adopted Core Strategy makes provisions for up to 236,000m^2 of additional office floorspace during the plan period. Around 150,000m^2 of this office floorspace will be delivered in the city centre, around 60,000m^2 will be delivered in South Bristol and 26,000m^2 will be delivered in town, district and local centres in the rest of the Bristol area.

HRA

The May 2014 HRA of the Bristol Core Strategy conducted Appropriate Assessment of Avon Gorge Woodlands SAC, Chew Valley Lake SPA, Mendip Limestone Grasslands SAC, North Somerset & Mendip Bats SAC and Severn Estuary SAC and SPA. It was concluded that there is unlikely to be significant adverse effects on all these European sites due to there being sufficient mitigation measures in place in the Core Strategy.

There are no likely in-combination effects of the adopted Bristol Local Plan with the West of England Joint Local Transport Plan 4. Potential in combination effects of future development in Bristol proposed in the West of England Joint Spatial Plan has been considered in the assessment sections of the main HRA Report.

North Somerset Council Local Plan: Core Strategy (2017), Development Management Policies (2016), Site Allocations Plan (2018)

Status

The Core Strategy was adopted in April 2012. However, following a high court challenge nine polices were remitted for re-examination. One of the policies was re-adopted in September 2015 and the remaining policies were re-adopted following re-examination in January 2017.

The Development Management Policies were adopted in July 2016 and the Site Allocations Plan was adopted in April 2018.

Housing Provision

The adopted Core Strategy makes provisions for 20,985 additional dwellings during the plan period up to 2026. The delivery of this housing development will be focussed in Weston urban area (6,300 dwellings), Weston Villages (6,500 dwellings), Clevedon, Nailsea and Portishead (5,100 dwellings), service villages (2,100 dwellings) and other settlements and countryside (985 dwellings).

The 2018 adopted Site Allocations Plan makes provisions for a slight increase in housing delivery at 22,285 additional dwellings during the plan period. This is due to the Core Strategy examination of remitted policies increasing flexibility at Weston-super-Mare, the towns and service villages by allowing new residential growth of an appropriate scale.

Employment Land Provision

The adopted Core Strategy makes provisions for 10,100 additional jobs in the plan period until 2026. This will be delivered through 114 hectares of land for B1, B2 and B8 uses.

This employment development will be focused in Weston urban area (43.82ha), Weston villages (37.70ha),

Clevedon (8.95ha), Nailsea (1.40ha), Portishead (3.17ha) and the remainder of the district (18.87ha).

HRA

The February 2011 HRA of the Core Strategy concluded that there are sufficient mitigation measures in place to suggest that it is unlikely that there will be any significant adverse effects on European sites.

The June 2015 HRA for the Development Management Policies document concluded that the mitigation measures detailed in the Core Strategy are sufficient to suggest that there is unlikely to be any significant adverse effects on European sites.

Therefore, there are no likely in-combination effects of the adopted North Somerset Local Plan with the West of England Joint Local Transport Plan 4.

South Gloucestershire Local Plan: Core Strategy (2013), Policies, Sites and Places Plan (2017)

Status

The Core Strategy was adopted in December 2013 and the Polices, Sites and Places Plan was adopted in November 2017.

Housing Provision

The adopted Local Plan makes provisions for up to 22,545 additional dwellings during the plan period 2013- 2027. This housing development will be delivered in the North and East Fringes of Bristol urban area and in new sites in the rest of South Gloucestershire (new neighbourhood at Yate and housing opportunities at Thornbury).

Employment Land Provision

The adopted Local Plan makes provisions for safeguarding and providing additional economic development land in North Fringe of Bristol urban area (355Ha), East Fringe of Bristol urban area (147Ha), Yate and Chipping Sodbury (88Ha), Thornbury (19Ha), Rural Area (14Ha) and Severnside (635Ha).

HRA

The March 2011 HRA of the Core Strategy concluded that the majority of policies are unlikely to have significant adverse effects on European sites. However, it was suggested that a series of policies within the Core Strategy do have the potential to have a significant effect on the Severn Estuary N2K site. It was recommended that revision of policy wording and/or amendment to supporting text will remove the likelihood of these policies to have adverse significant effects on European sites. This recommendation was addressed within the plan.

The June 2016 HRA of the Policies, Sites and Places Development Plan document concluded that there is unlikely to be significant adverse effects upon European sites.

Therefore, there are no likely in-combination effects of the adopted South Gloucestershire Local Plan with the West of England Joint Local Transport Plan 4.

Local Plans and Strategies adjoining the West of England Joint Local Transport Plan 4 area
Cotswold District Local Plan 2011-2031 (2018)
Status The Local Plan document was adopted in August 2018. **Housing Provision** The adopted Local Plan makes provisions for 9,614 additional dwellings during the plan period. The majority of this housing development will be delivered in Cirencester. **Employment Land Provision** The adopted Local Plan makes provisions for up to 11,900 additional jobs and 24Ha of B Class employment land during the plan period. **HRA** The April 2017 HRA of the Cotswold District Local Plan concluded that there is unlikely to be any significant adverse effects on European sites, either alone or in combination. **Therefore, there are no likely in-combination effects of the adopted Cotswold Local Plan with the West of England Joint Local Transport Plan 4.**
Mendip District Council Local Plan Part I: Strategy and Policies 2006-2029 (2014) **Pre Submission Local Plan Part II: Sites & Policies (2018)**
Status The Mendip District Council Local Plan Part 1 was adopted in December 2014. The Pre Submission Local Plan Part II was published in January 2018 and consultation was closed on 12th February 2018. **Housing Provision** The adopted Local Plan makes provisions for 9,635 additional dwellings during the plan period up to 2029 at a development rate of 420 dwellings per annum. The housing development will be delivered in Frome (2,300 dwellings), Glastonbury (1,000 dwellings), Street (1,300 dwellings), Shepton Mallet (1,300 dwellings), Wells (1,450 dwellings) and in rural areas (1,780 dwellings). The Pre Submission Local Plan Part II put forward further allocations for housing increasing the total additional dwellings to 10,528 for the plan period. The represents a 21% for Frome, a 1% for Glastonbury, a 13% increase for Street and Shepton Mallet and a 9% increase for Wells compared to the growth proposals in the original Local Plan. **Employment Land Provision** The adopted Local Plan makes provisions for 7,391 additional jobs and 88,650m^2 of additional employment floorspace during the plan period up to 2029. The employment development will be delivered in Frome, Glastonbury, Shepton Mallet, Street and Wells. The Pre Submission Local Plan Part II allocates 19.4ha of employment land, over the plan period, including 5.9ha in Frome, 7.5ha in Shepton Mallet, 1.7ha in Glastonbury and 4.3ha in Street. **HRA**

The January 2011 HRA of the Local Plan Part I: Strategy and Policies, referred to in the HRA as the Core Strategy, concluded that there is unlikely to be any significant adverse effects on European sites. This was subject to recommended policy amendments and additions being made in the plan to comply with the requirements of HRA and remove the need for any further assessment.

The December 2017 HRA of the Pre Submission Local Plan Part II: Sites & Policies concluded that there is unlikely to be any significant adverse effects on European sites so long as policy wording for STR001, WAL022b and WAL026 were amended in line with the recommendations of the HRA. This recommendation has been included within the plan.

Therefore, there are no likely in-combination effects of the adopted Mendip Local Plan Part I: Strategy and Policies and the Local Plan Part II: Sites & Policies with the West of England Joint Local Transport Plan 4.

Stroud District Local Plan (2015)

Status

The Stroud District Local Plan was adopted in November 2015.

Housing Provision

The plan makes provision for at least 11,400 dwellings from 2006-2031. Many of these have already been built or are firm 'commitments'. Therefore, the Local Plan actually provides for 3,615 dwellings over the plan period to 2031, including at Hunts Grove Extension (750 homes), North East Cam (450 homes), Sharpness (300 homes), Stroud Valleys (450 homes), and West of Stonehouse (1,350 homes).

Employment Land Provision

The plan makes provision for 58ha of additional employment land from 2006-2031, including at, Quedgeley East (13 ha), North East Cam (12 ha), Sharpness (17 ha), Stroud Valleys (Intensification), and West of Stonehouse (10 ha).

HRA

The November 2014 HRA of the Local Plan concludes that, provided recommendations are incorporated within the Local Plan, the plan will not result in any adverse effect on the integrity of any European sites either alone or in combination with other plans or projects. These recommendations have been addressed by the plan.

Therefore, there are no likely in-combination effects of the adopted Stroud District Local Plan with the West of England Joint Local Transport Plan 4.

Sedgemoor Development Plan: Core Strategy (2011) and saved Local Plan (2005) Policies Emerging Sedgemoor Local Plan 2011-2032

Status

The adopted Local Plan comprises the Core Strategy and saved Local Plan (2005) Policies. The Core Strategy was adopted in 2011.

The emerging Local Plan was submitted for examination in August 2017.

Housing Provision

The Core Strategy makes provision for 10,605 homes between 2006-2027, including 7,455 homes in Bridgwater and 1,575 homes in Burnham-on-Sea / Highbridge.

The emerging Local Plan makes provision for 13,530 new homes over the plan period from 2011-2032, including 3,720 homes in Bridgewater, 850 homes in Burnham-on-Sea & Highbridge, 515 homes in Cheddar and 260 homes in North Petherton from 2015-2032.

Employment Land Provision

The Core Strategy makes provision for 9,620 jobs, including employment land provision at:

- NE Bridgwater (B1(a) - 27500m^2, B1(b)(c) - 8500m^2, B8 - 72000m^2)
- Somerset Bridge (B8 - 65000m^2)
- Wellworthys (B2 - 7500m^2)
- Bridgwater Town Centre (A2/B1 (a) - 10000m^2, A1 - 11200m^2)
- Puriton Energy Park (B1 - 15000m^2, B2/B8 - 150000m^2, B8 - 15000m^2, Sui Generis (energy generation) - 80000m^2)
- South Bridgwater (adjacent to A38) (B1/B2 and ancillary uses - Unknown 35,500m^2)
- Bristol Road Corridor (B1(a) - 5000m^2, B1 (b)(c) - 10000m^2, B8 - 20000m^2)
- Burnham Town Centre (office cluster) (A2, B1(a) - 4000m^2)
- Isleport (Committed site within urban area) (B1 (b)(c) - 8000m^2)
- Isleport extension (B1 (a) - 4000m^2, B1 (b)(c) - 8000m^2, B8 - 28000m^2)

The emerging Local Plan makes provision for 75ha of employment land to create 9,795 new jobs over the plan period from 2011-2032, including 6ha at Bridgwater Gateway, 32ha at Huntworth, East of Junction 24, 9ha to the west and east of A38 Bristol Road, 4.5ha at Dunball, 1.9ha at the Former Wellworthy's playing field, 12.5ha at Somerset Bridge, 2ha at Isleport, and 3.8ha west of Draycott Road.

HRA

The July 2010 HRA[44] of the Core Strategy concluded that the plan is unlikely to have an adverse effect on the integrity of international sites, both alone and in-combination, provided that the recommendations provided by the HRA are incorporated within the plan, including policy strengthening through additional text inclusion and through the consultation and final policy development cycles. These recommendations have been incorporated within the plan.

Therefore, there are no likely in-combination effects of the adopted Sedgemoor Development Plan with the West of England Joint Local Transport Plan 4.

The July 2018 HRA of the Proposed Submission Local Plan 2011-2032 concludes that, provided the counter acting measures recommended by the HRA are incorporated into the plan, the plan is unlikely to have a significant effect on the conservation objectives of European sites. The plan was submitted for examination in January 2017 and therefore these recommendations have not yet been incorporated within the plan.
However, proposed modifications to the plan address these recommendations.

Therefore, there are no likely in-combination effects of the emerging Sedgemoor Local Plan with the West of England Joint Local Transport Plan 4.

[44] The HRA is comprised of two volumes: Volume 1 - HRA for the Somerset Levels and Moors and Severn Estuary International Sites and Volume 2 – Other European / International Sites.

Wiltshire Local Plan: Core Strategy (2015), saved Local Plan (2003-2012) Policies

Status

The adopted Local Plan comprises the Core Strategy, saved Local Plan (2003-2012) Policies and the Chippenham Site Allocations Plan. The Core Strategy was adopted in 2015, the Chippenham Site Allocations Plan was adopted in 2017. The saved former District Council Local Plan policies were adopted in 2003 (Salisbury District Local Plan), 2004 (Kennet District Local Plan and West Wiltshire District Plan), 2006 (North Wiltshire Local Plan), 2009 (West Wiltshire Leisure and Recreation DPD) and 2012 (South Wiltshire Core Strategy).

Housing Provision

The Core Strategy makes provision for 42,000 homes from 2006-2026, including strategic housing sites in Salisbury and Wilton, Amesbury, Tidworth and Lugershall, Marlborough, Warminster, Westbury, Trowbridge, Bradford on Avon, and Chippenham.

Employment Land Provision

The Core Strategy makes provision for 27,500 jobs from 2006-2026, including the provision of strategic employment sites at Salisbury and Wilton, Devizes, Westbury, Trowbridge, and Chippenham.

HRA

The February 2012 HRA of the Core Strategy concluded that, provided recommended text is included within the plan to demonstrate that the Core Strategy will not give rise to significant adverse effects, the Core Strategy will not give rise to significant adverse effects on European sites. The recommended text is included within the adopted version of the plan.

The March 2014 HRA of the Core Strategy was produced in light of all modifications proposed to the plan following examination. The HRA concluded that the plan would not lead to adverse effects on European sites, either alone or in-combinations, provided that some sites be subject to HRA at the planning application stage or within the Site Allocations DPD or a neighbourhood plans.

Therefore, there are no likely in-combination effects of the adopted Wiltshire Local Plan with the West of England Joint Local Transport Plan 4.

Major Projects

Hinkley Point C Power Station

EDF are building two new nuclear reactors at Hinkley Point C in Sedgemoor District, Somerset, which will provide low-carbon electricity for around six million homes. Plans for the main site include the two reactors, turbines, a spent fuel store, a temporary jetty and accommodation for 500 construction workers in a temporary campus. The associated development, largely in Sedgemoor District, includes: refurbishing a wharf at Combwich, building a bypass for the village of Cannington, creating Park & Ride sites and freight logistics facilities and putting up temporary accommodation campuses for construction workers (approximately 1000 bed spaces in Bridgwater).

Hinkley Point C will create over 25,000 new employment opportunities as well as generate opportunities for local, national and international businesses and provide community benefits.

EDF Energy are now working fully under the DCO granted by the Secretary of State in 2013, with all aspects of the construction project now fully implemented. EDF Energy are aiming to deliver both reactors by the end of 2025.

The majority of aggregate used in construction of the project is currently coming out of Batts Combe quarry in Cheddar and Whatley in Frome, as well as from Avonmouth and South

Wales, and this is likely to continue until the onsite jetty is complete – and at least over the next 1-2 years[45].

The development site lies adjacent to the Severn Estuary SAC, SPA and Ramsar site. The AA of the Development Consent Order[46] for the construction and operation of the project considered potential effects on the following European sites:

- Severn Estuary SAC, SPA and Ramsar site
- Somerset Levels and Moors SPA and Ramsar site
- Exmoor And Quantocks Oakwoods SAC
- River Usk SAC
- River Wye SAC
- Afon Tywi SAC

Following Appropriate Assessment, measures were incorporated into the design of the station in order to reduce and avoid potential impacts where feasible to do so. It was subsequently determined that the construction and operation of Hinkley Point C power station would not have an adverse effect, alone or in combination, on the integrity of the European sites listed above.

Therefore, there are no likely in-combination effects of the Hinkley Point C Power Station project with the West of England Joint Local Transport Plan 4.

Hinkley Point C Connection project

The Hinkley Point C Connection project relates to an application by National Grid Electricity Transmission plc (National Grid) to seek powers to construct, operate and maintain a new 400,000 volt (400kV) connection between Bridgwater (connecting to Hinkley Point C power station development – see above), Somerset and Seabank Substation, north of Avonmouth, together with various associated development and other works ("the Proposed Development").

That part of the Proposed Development that comprises an electric line above ground within section 16 of the Planning Act 2008 is a Nationally Significant Infrastructure Project (NSIP) for the purposes of that Act. Under Section 31 of the Planning Act 2008, development consent is required for development to the extent that it is or forms part of an NSIP. Development consent is granted by the making of a Development Consent Order (DCO) for which application may be made under section 37 of the Planning Act 2008.

The Proposed Development is in the administrative boundaries of Somerset, West Somerset, North Somerset, Sedgemoor, City of Bristol and South Gloucestershire in the south west of England.

A report was published in 2015 which considers the likely implications of the proposed Hinkley Point C Connection project for the European and Ramsar designated sites in the study area and provides information to inform the HRA process. The HRA information has been produced from the data and assessment provided in the Environment Statement for the

[45] Hinkley Point C Priorities Plan 2017 / 18 https://uk.search.yahoo.com/search?fr=mcafee&type=C211GB128D20150420&p=Hinkley+Point+C+Priorities+Plan+2017+%2F+18

[46] Hinkley Point C Project – HRA Appropriate Assessment October 2011 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/hinkley-point-c-new-nuclear-power-station/

project and supporting Appendices and Figures.

The HRA screened in a number of European sites for further assessment which included:

- Severn Estuary SAC;
- Severn Estuary SPA;
- Severn Estuary Ramsar;
- Mendip Limestone Grasslands SAC;
- Bath and Bradford on Avon SAC;
- North Somerset and Mendip Bats SAC;

The following mitigation measures are required in order to offset the potentially adverse impacts that have been identified and to ensure that the conclusion of no adverse effect on integrity can be reached:

- pylon design;
- bird diverters at King's Sedgemoor Drain, River Huntspill and River Brue;
- bird collision monitoring and mitigation within sections A and B;
- temporary bat flyways;
- temporary bat foraging habitat;
- phasing of habitat removal and reinstatement along the 400kV underground works through the Mendip Hills;
- landscaping at Sandford Substation; and
- hedgerow re-instatement.

The use of the T-pylon, installation of diverters, landscaping at Sandford Substation and re-instatement of hedgerows are all inherent elements of the DCO application. Therefore implementation of these components is secured.

The bird collision monitoring and mitigation proposed for Sections A and B, the use of temporary bat flyways and the temporary management of land for bat foraging are all detailed in the BMS (Volume 5.26.3) submitted with the DCO. These elements all fall within the DCO Order Limits and would be delivered by National Grid during or immediately following the construction period. These are detailed in full in the BMS and will be secured as a Requirement.

Where bird collision monitoring is proposed National Grid would secure access rights for this purpose and rights for this purpose within easement agreements.

The HRA report concludes that the project will not have an adverse effect on these European sites provided that the above mitigation is delivered.

Therefore, there are no likely in-combination effects of the Hinkley Point C Connection project with the West of England Joint Local Transport Plan 4.