

M5 Junction 10 Improvements Scheme

Preliminary Environmental Information Report (PEIR) Landscape and Visual chapter

Date: 12/11/21

Status: A1 APPROVED - PUBLISHED



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This document has 49 pages including the cover.

Document history

Revision	Status	Purpose description	Originated	Checked	Reviewed	Authorised	Date
C03	A1	For issue	CDC	MN	PT	TT	12/11/21
C02	A1	Updates following GCC/SES comments	PT	SB	CDC	TT	19/10/21
C01	A1	Draft for review	SB	MN	PT	TT	24/09/21

Client signoff

Client	Gloucestershire County Council
Project	M5 Junction 10 Improvements Scheme
Job number	5206696
Client signature / date	

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Document accessibility

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Glossary

Term	Abbreviation
AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic
AEP	Annual Exceedance Probability
ALC	Agricultural Land Classification
AMP	Archaeological Management Plan
AONB	Area of Outstanding Natural Building
ARN	Affected Road Network
ASPT	Average Score Per Taxon
AQAL	Air Quality Assessment Level
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
BAP	Biodiversity Action Plan
BCT	Bat Conservation Trust
BEIS	Department of Business, Energy and Industrial Strategy
BGS	British Geological Survey
BMV	Best and Most Versatile
BoQ	Bill of Quantities
BS	British Standards
BTO	British Trust for Ornithology
CAMS	Catchment Abstraction Management Strategy
CBC	Cheltenham Borough Council
CBC	Common Birds Census
CCC	Committee on Climate Change
CD&E	construction, Demolition and Excavation
CEMP	Construction Environmental Management Plan
CEA	Cumulative Effects Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CLP	Classification, Labelling and Packaging
CMS	Continuous Monitoring Station
CO ₂	Carbon Dioxide
CO _{2e}	Carbon Dioxide Equivalent
COP	Conference of the Parties
COSHH	Control of Substances Hazardous to Health
CPS	Connecting Places Strategies
CRoW	Countryside and Rights of Way
CRTN	Calculation of Road Traffic Noise
CSZs	Core Sustenance Zones
DCO	Development Consent Order

Term	Abbreviation
DfT	Department for Transport
DM	Do Minimum
DMOY	Do Minimum Scenario in the Opening Year
DMFY	Do Minimum Scenario in the Future Assessment Year
DMRB	Design Manual for Roads and Bridges
DoE	Department of the Environment
DoWCoP	Definition of Waste: Development Industry Code of Practice
DS	Do Something
DSFY	Do Something in the Future Assessment Year
DSOY	Do Something Scenario in the Opening Year
EC	European Commission
ECoW	Ecological Clerk of Works
eDNA	environmental DNA
EEA	European Economic Area
EFT	Emissions Factors Toolkit
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
END	Environmental Noise Directive
EPA	Environmental Protection Act
EPS	European Protected Species
EPUK	Environmental Protection UK
EQS	Environmental Quality Standards
EU	European Union
ES	Environmental Statement
FRA	Flood Risk Assessment
ES	Environmental Statement
GCC	Gloucester City Council
GCER	Gloucestershire Centre for Environmental Records
GCN	Great Crested Newt
GFirst LEP	Gloucestershire Local Enterprise Partnership
GHER	Gloucestershire Historic Environment Record
GHGs	Greenhouse Gases
GLNP	Gloucestershire Local Nature Partnership
GLVIA3	Guidelines for Landscape and Visual Impact Assessment
GLTA	Ground Level Tree Assessment
GPLC	Guiding Principles for Land Contamination
GWDTE	Groundwater Dependant Terrestrial Ecosystems
GWT	Gloucestershire Wildlife Trust
HDV	Heavy Duty Vehicles
HER	Historic Environment Record
HEWRAT	Highways England Water Risk Assessment Tool
HGVs	High Good Vehicles

Term	Abbreviation
HIF	Housing Infrastructure Fund
HLC	Historic Landscape Characterisation
HMC	Habitat Modification Class
HMS	Habitat Modification Score
HRA	Habitat Regulations Assessments
HSI	Habitat Suitability Index
IAQM	Institute of Air Quality Management
IDB	International Drainage Board
IPCC	International Panel on Climate Change
JCS	Joint Core Strategy
JNCC	Joint Nature Conservation Committee
LAQM	Local Air Quality Management
LCAs	Landscape Character Assessments
LCRM	Land Contamination: Risk Management
LCT	Landscape Character Type
LDV	Light Duty Vehicles
LLFA	Lead Local Flood Authority
LNR	Local Nature Reserves
LOAEL	Lowest observed adverse effect level
LTP	Local Transport Plans
LVIA	Landscape and Visual Impact Assessment
MAFF	Ministry of Agriculture, Fisheries and Food
MCHW	Manual of Contract Documents for Highway Works
MHCLG	Ministry of Housing, Communities and Local Government
MMP	Materials Management Plan
MSA	Mineral Safeguarding Areas
MW	Minor Watercourse
NCA	National Character Area
NERC	Natural Environment and Rural Communities
NHLE	National Heritage List for England
NIA	Noise Important Areas
NMP	National Mapping Programme
NMU	Non- Motorised User
NNR	National Nature Reserves
NPS NN	National Policy Statement for National Networks
NOEL	No Observed Effect Level
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NPSE	Noise Policy Statement for England
NSIP	Nationally Significant Infrastructure Projects
NSR	Noise Sensitive Receptors
NVC	National Vegetation Classification

Term	Abbreviation
OS	Ordnance Survey
PAH	Polycyclic Aromatic Hydrocarbons
PAS	Portable Antiquities Scheme
PCBs	Polychlorinated Biphenyls
PCF	Project Control Framework
PCL	Potential Contaminant Linkage
PCM	Pollution Climate Mapping
PCSM	Preliminary Conceptual Site Model
PEAOR	Preliminary Environmental Assessment of Options Report
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PPE	Personal Protective Equipment
PPGs	Pollution Prevention Guidelines
PPG	Planning Practice Guidance
PPS10	Planning Policy Statement 10
PPGN	Planning Practice Guidance: Noise
PRA	Preliminary Roost Assessment
PRoW	Public Right of Way
Q ₉₅	The 5 percentile flow
RAMS	Risk Assessments, Method Statements
RBD	River Basin Districts
RBMP	River Basin Management Plans
RCP	Relative Concentration Pathway
RCS	River Corridor Survey
RFFPs	Reasonably Foreseeable Future Projects
RHS	River Habitat Survey
RNAG	Reason for not Achieving Good
RoWIP	Rights of Way Improvement Plan
SAC	Special Area of Conservation
SHMP	Soil Handling Management Plan
SM	Scheduled Monument
SOAEL	Significant Observed Adverse Effect Level
SoCC	Statement of Community Consultation
SPD	Supplementary Planning Document
SPA	Special Protection Area
SPZ	Source Protection Zones
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
SWMP	Site Waste Management Plan
TAMP	Transport Asset Management Plan
TBC	Tewkesbury Borough Council
TAR	Technical Appraisal Report

Term	Abbreviation
TSCS	Thin Surface Course System
UKCP18	United Kingdom Climate Projections 2018
UNFCCC	United Nations Framework Convention on Climate Change
UXO	Unexploded Ordnance
VfM	Value for Money
WCH	Walkers, Cyclists and Horse Riders
WEEE	Waste Electrical and Electronic Equipment
WER	Water Environment Regulations
WFD	Water Framework Directive
WHTP	Whalley, Hawkes, Paisley & Trigg
WSI	Written Scheme of Investigation
ZTV	Zone of Theoretical Visibility

Chapters 1-4 of this PEIR have been produced as a separate document.

1. Introduction

2. The Scheme

3. Assessment of Alternatives

4. Environmental Assessment Methodology

Table 4-1 - Significance Matrix

Sensitivity of receptor	Magnitude of impact				
	Major	Moderate	Minor	Negligible	No change
Very high	Very large	Large or very large	Moderate or large	Slight	Neutral
High	Large or very large	Moderate or large	Slight or moderate	Slight	Neutral
Medium	Moderate or large	Moderate	Slight	Neutral or slight	Neutral
Low	Slight or moderate	Slight	Neutral or slight	Neutral or slight	Neutral
Negligible	Slight	Neutral or slight	Neutral or slight	Neutral	Neutral

Table Source: DMRB LA 104 Environmental assessment and monitoring Table 3.8.1

Table 4-2 - Significance categories and typical descriptions

Value	Typical descriptors
Very Large	Effects at this level are material in the decision-making process.
Large	Effects at this level are likely to be material in the decision-making process.
Moderate	Effects at this level can be considered to be material decision-making factors.
Slight	Effects at this level are not material in the decision-making process.
Negligible	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Table Source: DMRB LA 104 Environmental assessment and monitoring Table 3.7

The discipline specific chapters of this PEIR have been produced as separate documents.

5. Air Quality
6. Noise and Vibration
7. Biodiversity
8. Road Drainage and the Water Environment

9. Landscape and Visual

9.1. Introduction

- 9.1.1. This chapter presents the preliminary environmental assessment of the M5 Junction 10 Improvements Scheme (the Scheme) for Landscape and Visual based on the Scheme as it is described in Chapter 2 (and detailed in the Design Fix 2 drawings in Appendix 2.1).
- 9.1.2. The purpose of the Landscape and Visual Impact Assessment (LVIA) is to identify potentially significant landscape and visual effects that are predicted to arise from the construction and operation of the Scheme. Landscape effects derive from changes in the physical landscape which may give rise to changes in its important features and thus its character, and how this is experienced. Visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.
- 9.1.3. The full LVIA will be undertaken in accordance with current best practice guidelines as set out within the documents below and these have been taken into account in this PEIR appraisal:
- Sustainability & Environmental Appraisal, LA 107 Landscape and Visual Effects, DMRB, Revision 2 - Feb 2020 (formerly DMRB Volume 11 Section 3 Part 5 Landscape Effects and IAN 135/10);
 - Guidelines for Landscape and Visual Impact Assessment Third Edition (2013) (GLVIA3), published by the Landscape Institute and the Institute of Environmental Management & Assessment;
 - GLVIA3 Statement of Clarification 1/13 (2013), published by the Landscape Institute;
 - Landscape Institute Advice Note 01/11, Photography and Photomontage in Landscape and Visual Impact Assessment (2011), published by the Landscape Institute; and
 - An Approach to Landscape Character Assessment (2014), Christine Tudor, published by Natural England.

9.2. Planning policy and topic legislative context

National Policy

National Planning Statement for National Networks, 2014

- 9.2.1. The NPS NN is directly relevant to highway infrastructure projects on the national road network that are defined as NSIP. The Scheme falls within the definition of an NSIP, making the NPS NN the primary planning policy against which an application for a DCO for the Scheme would be judged.
- 9.2.2. Paragraph 5.144 states that 'where the development is subject to EIA the applicant should undertake an assessment of any likely significant landscape and visual impacts in the environmental impact assessment and describe these in the environmental assessment'. This should include reference to any landscape character assessment and any relevant policies based on these assessments in local development documents in England.
- 9.2.3. The assessment should include visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include any noise and light pollution effects, including on local amenity, tranquillity and nature conservation.
- 9.2.4. Paragraph 5.151 states that the Secretary of State should refuse development consent for NSIPs in nationally designated areas such as AONB and National Parks, except in exceptional circumstances and where it can be demonstrated that it is in the public

interest. Furthermore, paragraph 5.156 outlines that local landscape designations should not be used in themselves as reasons to refuse consent, as this may unduly restrict acceptable development. However, developments should be carefully designed and seek to avoid or minimise harm to the landscape.

- 9.2.5. Furthermore, the criteria for 'good design' for national network infrastructure, in Paragraph 4.29, outlines the requirement that 'visual appearance should be a key factor in considering the design of new infrastructure, as well as functionality, fitness for purpose, sustainability and cost. Applying 'good design' to national network projects should therefore produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction, matched by an appearance that demonstrates good aesthetics as far as possible.'
- 9.2.6. Paragraphs 5.162 - 5.185 relate to 'land use including open space, green infrastructure and Green Belt'. The guidance stipulates that the Secretary of State should 'consider whether mitigation of any adverse effects on green infrastructure or open space is adequately provided for by means of any planning obligations.'

[National Planning Policy Framework, 2019](#)

- 9.2.7. Paragraph 127 asserts that policies and decisions should ensure that developments 'are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change.'
- 9.2.8. Paragraph 170 states that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes. As with biodiversity, protection should be commensurate with their status.
- 9.2.9. Paragraph 180 states that policies and decisions should ensure that new development is appropriate for its location, taking into account 'the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

[Regional Policy](#)

[Gloucestershire Local Transport Plan 2015-2031](#)

- 9.2.10. LTP PD 4.3 - Highway Maintenance offers important guidance on design of developments in relation to the landscape setting, stating that GCC will manage the local highway asset in line with the Transport Asset Management Plan (TAMP), the Highways Maintenance Handbook and other guidance or policies in order to 'minimise the impact of highway work on the surrounding landscape and ensure where new highway structures are required, they need to be sympathetic to their surroundings.'

[Local Policy](#)

[Gloucester, Cheltenham, and Tewkesbury Joint Core Strategy 2011-2031](#)

- 9.2.11. Policy SD4: Design Requirements outlines several key factors that developments must adhere to. Regarding public realm and landscape, the policy states that 'new development should ensure that the design of landscaped areas, open space and public realm are of high quality, provide a clear structure and constitute an integral and cohesive element within the design.'
- 9.2.12. Policy SD6: Landscape builds on Policy SD4 and provides further detailed landscape requirements to consider. In particular, 'development will seek to protect landscape character for its own intrinsic beauty and for its benefit to economic, environmental and social well-being', as well as having regard 'to the local distinctiveness and historic character of the different landscapes in the JCS area'. All developments will be required to 'demonstrate how the development will protect or enhance landscape character and avoid detrimental effects on types, patterns and features which make a significant contribution to the character, history and setting of a settlement or area.'

- 9.2.13. Policy INF3: Green Infrastructure is important as it places weight on the relevance of the green infrastructure network to landscape character, stating that 'development proposals should consider and contribute positively towards green infrastructure, including the wider landscape context and strategic corridors between major assets and populations.'

[Cheltenham Borough Council Local Plan – Saved Policies \(2006\)](#)

- 9.2.14. Policy CP 3: Sustainable Environment states that development will be permitted only where it would 'not harm landscape character.' Furthermore, Policy CP 7: Design states that development will only be permitted where it 'complements and respects neighbouring development and the character of the locality and/or landscape.'

[Landscaping in New Development Supplementary Planning Guidance \(2004\)](#)

- 9.2.15. The overarching objective of this SPD, produced by CBC, is to set out a framework to ensure that the design, implementation and aftercare of landscaped areas in Cheltenham achieve a high standard. As such, considerable importance is placed on achieving high quality landscaped areas.
- 9.2.16. Paragraph 4.1 sets out that CBC will expect developers to be responsible for the design, specification, and layout of landscaped areas as part of the overall development of a site.

9.3. Methodology

- 9.3.1. The assessment follows DMRB LA 107 methodology. Since DMRB LA 107 is based on the 2013 Guidelines for Landscape and Visual Impact Assessment¹ (GLVIA3); the principles of the GLVIA3 have also therefore been considered. The assessment includes:
- Collation of landscape and visual baseline information for the receptors outlined in this chapter; and
 - An overview of the sensitivity of identified receptors in relation to the route options.
- 9.3.2. The landscape and visual assessment considers the impact of the Scheme during the following timeframes:
- During Construction;
 - During year 1 of opening (to represent the maximum effect, before any planted mitigation can take effect), taking account of the completed project and the traffic using it; and
 - During year 15 after project opening (to represent when any planted mitigation measures can be expected to be reasonably effective, both in winter and summer), taking account of the completed project and the traffic using it.
- 9.3.3. The operational impact assessment scenarios are considered during both day and night to account for any proposed lighting effects – although a full lighting impact assessment has not been undertaken – see section 9.13.
- 9.3.4. Landscape has been considered in terms of existing Landscape Character Assessments (LCAs), landscape designations and local landscape features.
- 9.3.5. Visual amenity has been considered in terms of effects on visual receptors within the study area. These include views for:
- Users of PRow;
 - Residential properties;
 - Commercial and public buildings; and
 - Users of roads.
- 9.3.6. Table 9-1 and Table 9-2 describe the criteria for the identification of sensitivity and magnitude of impact (change) for landscape receptors. These have been derived from equivalent tables in DMRB 107. It should be noted that for this assessment the value

assigned to residential views has been given High for all types of resident not just for densely populated areas as the assessor considers this is a better judgement of such views.

Table 9-1 - Sensitivity (susceptibility and value) of landscape receptor

Landscape sensitivity (susceptibility and value) of receptor/resource	Typical description
Very High	Landscapes of very high international/national importance and rarity or value with no or very limited ability to accommodate change without substantial loss/gain (i.e. national parks, internationally acclaimed landscapes - UNESCO World Heritage Sites).
High	Landscapes of high national importance containing distinctive features/elements with limited ability to accommodate change without incurring substantial loss/gain (i.e. designated areas, areas of strong sense of place - registered parks and gardens, country parks).
Medium	Landscapes of local or regional recognition of importance able to accommodate some change (i.e. features worthy of conservation, some sense of place or value through use/perception).
Low	Local landscape areas or receptors of low to medium importance with ability to accommodate change (i.e. non-designated or designated areas of local recognition or areas of little sense of place).
Negligible	Landscapes of very low importance and rarity able to accommodate change.

Table 9-2 - Magnitude and nature of landscape change

Magnitude of effect (change)		Typical descriptions
Major	Adverse	Total loss or large-scale damage to existing landscape character or distinctive features or elements; and/or addition of new uncharacteristic, conspicuous features or elements (i.e. road infrastructure).
	Beneficial	Large scale improvement of landscape character to features and elements; and/or addition of new distinctive features or elements, or removal of conspicuous road infrastructure elements.
Moderate	Adverse	Partial loss or noticeable damage to existing landscape character or distinctive features or elements; and/or addition of new uncharacteristic, noticeable features or elements (i.e. road infrastructure).
	Beneficial	Partial or noticeable improvement of landscape character by restoration of existing features or elements; or addition of new characteristic features or elements or removal of noticeable features or elements.
Minor	Adverse	Slight loss or damage to existing landscape character of one (maybe more) key features and elements; and/or addition of new uncharacteristic features and elements.
	Beneficial	Slight improvement of landscape character by the restoration of one (maybe more) key existing features and elements; and/or the addition of new characteristic features.

Magnitude of effect (change)		Typical descriptions
Negligible	Adverse	Very minor loss, damage, or alteration to existing landscape character of one or more features and elements.
	Beneficial	Very minor noticeable improvement of character by the restoration of one or more existing features and elements.
No Change		No noticeable alteration or improvement, temporary or permanent, of landscape character of existing features and elements.

9.3.7. The magnitude of visual effect will be reported in the assessment in accordance with the criteria provided in Table 9-3.

Table 9-3 - Sensitivity of visual receptor

Sensitivity (susceptibility and value)	Typical descriptions
Very High	<ul style="list-style-type: none"> Static views from and of major tourist attractions; Views from and of very important national/international landscapes, cultural/historical sites (e.g. National Parks, UNESCO World Heritage sites); and Receptors engaged in specific activities for enjoyment of dark skies.
High	<ul style="list-style-type: none"> Views by users of nationally important PRow / recreational trails (e.g. national trails, long distance footpaths); Views by users of public open spaces for enjoyment of the countryside (e.g. country parks); Static views from dense residential areas, longer transient views from designated public open space, recreational areas; and Views from and of rare designated landscapes of national importance.
Moderate	<ul style="list-style-type: none"> Static views from less populated residential areas, schools and other institutional buildings and their outdoor areas; Views by outdoor workers; Transient views from local/regional areas such as public open space, scenic roads, railways or waterways, users of local/regional designated tourist routes of moderate importance; and Views from and of landscapes of regional importance.
Low	<ul style="list-style-type: none"> Views by users of main roads or passengers in public transport on main arterial routes; Views by indoor workers; Views by users of recreational/formal sports facilities where the landscape is secondary to enjoyment of the sport; and Views by users of local public open spaces of limited importance with limited variety or distinctiveness.
Negligible	<ul style="list-style-type: none"> Quick transient views such as from fast moving vehicles; Views from industrial area, land awaiting re-development; and Views from landscapes of no importance with no variety or distinctiveness.

9.3.8. The magnitude of visual change will be reported in the assessment in accordance with the criteria provided in Table 9-4.

Table 9-4 - Magnitude of visual change

Magnitude (change) of visual effect	Typical descriptions
Major	The project, or a part of it, would become the dominant feature or focal point of the view.
Moderate	The project, or a part of it, would form a noticeable feature or element of the view which is readily apparent to the receptor.
Minor	The project, or a part of it, would be perceptible but not alter the overall balance of features and elements that comprise the existing view.
Negligible	Only a very small part of the project work or activity would be discernible or being at such a distance it would form a barely noticeable feature or element of the view.
No Change	No part of the project work or activity would be discernible.

9.3.9. The significance of landscape and visual impacts has been determined through combining the sensitivity of the landscape and visual receptors with the magnitude of landscape and visual impact. The criteria for guiding the professional judgement of the assessor in deciding the significance of landscape and visual impacts are set out in Table 9-5 and Table 9-6.

Table 9-5 - Landscape and visual effect significance

Sensitivity of landscape/visual receptor	Magnitude of landscape/visual impact				
	No change	Negligible	Minor	Moderate	Major
Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Moderate	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate

Table 9-6 - Typical descriptors of significance of effect

Significance	Typical descriptors of landscape effect	Typical descriptors of visual effect
Very Large Beneficial	<p>The project will:</p> <ul style="list-style-type: none"> Greatly enhance the character (including quality and value) of the landscape; Create an iconic high-quality feature and/or series of elements; and Enable a sense of place to be created or greatly enhanced. 	The project would create an iconic new feature that would greatly enhance the view.

Significance	Typical descriptors of landscape effect	Typical descriptors of visual effect
Large Beneficial	<p>The project will:</p> <ul style="list-style-type: none"> Enhance the character (including quality and value) of the landscape; Enable the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development; and Enable a sense of place to be enhanced. 	<p>The project would lead to a major improvement in a view from a highly sensitive receptor.</p>
Moderate Beneficial	<p>The project will:</p> <ul style="list-style-type: none"> Improve the character (including quality and value) of the landscape; Enable the restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development; and Enable a sense of place to be restored. 	<p>The proposals would cause obvious improvement to a view from a moderately sensitive receptor, or perceptible improvement to a view from a more sensitive receptor.</p>
Slight Beneficial	<p>The project will:</p> <ul style="list-style-type: none"> Complement the character (including quality and value) of the landscape; Maintain or enhance characteristic features and elements; and Enable some sense of place to be restored. 	<p>The project would cause limited improvement to a view from a receptor of medium sensitivity or would cause greater improvement to a view from a receptor of low sensitivity.</p>
Neutral	<p>The project will:</p> <ul style="list-style-type: none"> Maintain the character (including quality and value) of the landscape; Blend in with characteristic features and elements; and Enable a sense of place to be retained. 	<p>No perceptible change in the view.</p>
Slight Adverse	<p>The project will:</p> <ul style="list-style-type: none"> Not quite fit the character (including quality and value) of the landscape; Be at variance with characteristic features and elements; and Detract from a sense of place. 	<p>The project would cause limited deterioration to a view from a receptor of medium sensitivity or cause greater deterioration to a view from a receptor of low sensitivity.</p>
Moderate Adverse	<p>The project will:</p> <ul style="list-style-type: none"> Conflict with the character (including quality and value) of the landscape; Have an adverse impact on characteristic features or elements; and Diminish a sense of place. 	<p>The project would cause obvious deterioration to a view from a moderately sensitive receptor, or perceptible damage to a view from a more sensitive receptor.</p>

Significance	Typical descriptors of landscape effect	Typical descriptors of visual effect
Large Adverse	<p>The project will:</p> <ul style="list-style-type: none"> • Be at considerable variance with the character (including quality and value) of the landscape; • Degrade or diminish the integrity of a range of characteristic features and elements; and • Damage a sense of place. 	<p>The project would cause major deterioration to a view from a highly sensitive receptor and would constitute a major discordant element in the view.</p>
Very Large Adverse	<p>The project will:</p> <ul style="list-style-type: none"> • Be at complete variance with the character (including quality and value) of the landscape; • Cause the integrity of characteristic features and elements to be lost; and • Cause a sense of place to be lost. 	<p>The project would cause the loss of views from a highly sensitive receptor and would constitute a dominant discordant feature in the view.</p>

9.3.10. Landscape and visual effects that are assessed as having either a moderate, large or very large significance of effect, either adverse or beneficial, are generally considered to be 'significant' in EIA terms. It should be noted that the tables are used as a guide only and reasoning by the assessor is provided for any rating given.

9.4. Study Area

- 9.4.1. As set out in the Scoping Report, a study area of 1km from the Scheme has been considered appropriate for the scale and type of scheme.
- 9.4.2. It is unlikely that any significant effects on the landscape would be incurred beyond 1km. Similarly, any effects on visual receptors beyond the study area of 1km are unlikely to be significant and have generally been scoped out from further assessment.
- 9.4.3. However, as a precautionary approach it is considered prudent to examine potential impacts on special landscapes and visual receptors in certain locations outside of the 1km study area. These include the Cotswolds AONB landscape itself and PRow and open access land within the Cotswolds AONB set on higher ground, where longer distance views of the Scheme may be possible.

9.5. Landscape and Visual Receptors

Landscape Scope

- 9.5.1. Table 9-7 below lists the landscape resource receptors identified in the Scoping Report to be scoped in or scoped out from further assessment in the LVIA.
- 9.5.2. These have been agreed with the relevant statutory consultees in the Scoping Opinion.

Table 9-7- Landscape resources scoped in and out for further assessment

Landscape Resources	Scoped IN / OUT	Comments /Justification
Areas of vegetation local to the proposed highway corridors and Junction areas, including woodland, hedgerows, hedgerow trees, tree blocks and individual trees.	IN	The Scheme is likely to result in loss of vegetation along the proposed highway corridor.
Local landscape character features i.e. landform and landscape pattern.	IN	These landscape features are likely to be affected by the Scheme through

Landscape Resources	Scoped IN / OUT	Comments /Justification
		introduction of earthworks and loss of landscape links in the form of boundary vegetation and change of land use.
Landscape character at national and county level.	OUT	The Scheme would not give rise to the alteration of key characteristics of landscape character at the national and regional level.
Effects on Gloucestershire local LCA's SV6B: Vale of Gloucester.	IN	Effects on landscape character requires further assessment. The effects would take into consideration key attributes of landscape character area and above listed effects on loss of vegetation, landform, land use and landscape pattern.

Visual Scope

- 9.5.3. Table 9-8 below lists the potential visual receptors identified in the Scoping Report to be scoped in or scoped out from further assessment within the LVIA.
- 9.5.4. These have been agreed with the relevant statutory consultees in the Scoping Opinion.
- 9.5.5. Note that additional potential receptors have been added to this list following production of the ZTV (see Figure 9-1), although these have then been scoped out following desktop analysis (and confirmed up by brief site visit).

Table 9-8 - Visual receptors scoped in and out for further assessment

Visual Receptor (VR)	Scoped IN / OUT	Comments /Justification	VR No in PIER
The network of PRoWs within 500m of the Scheme including Cheltenham Circular Path.	IN	Views from PRoWs are particularly sensitive and the potential effects on their users requires further assessment. They will be assessed separately or in groups of similar effects.	VR7, VR12, VR14, VR16
PRoW within AONB particularly at Crickley Hill/Cleeve Common (closest, highest points).	IN	Views are possible and significant effects are considered unlikely but due to designation should be considered further.	VR21
Properties on Withybridge Gardens.	IN	Based on current (DF2) design all properties would require demolition. This will be noted within LVIA, but actual effect rating need not be assessed.	VR1
Properties Withybridge and Laburnum on the A4019. (200 m from existing M5 junction 10)	IN	Based on current (DF2) design both properties would require demolition. This will be noted within LVIA, but actual effect rating need not be assessed.	VR2
Properties on Stanboro Lane, Sheldon including Sheldon Nurseries.	IN	Based on current (DF2) design all properties would require demolition. This will be noted within LVIA, but actual effect rating need not be assessed.	VR3

Visual Receptor (VR)	Scoped IN / OUT	Comments /Justification	VR No in PIER
Properties at Piffs Elm including Stanboro Lane Nurseries, Stanboro Cottage B&B/ fishing lake and The Gloucester Old Spot public house, adjacent Main Road and A4019 junction. (300+ m from existing M5 junction)	IN	Views from these properties have potential to be affected by the Scheme. Receptors will be assessed separately or within groups of similar effects.	VR15
Barn Farm, Stanboro Lane. (next to existing M5)	IN	Visual impacts from vegetation removal in MW corridor in close proximity and over longer distance to improved junction roundabout and slip road.	VR4
Traveller's site close to the eastern verge of the M5 near Junction 10. (next to existing M5)	IN	Visual impact due to loss of screening vegetation in Motorway verge that may be avoided/mitigated through detail design.	VR5
Residents and businesses of Hardwicke. (850 m from any proposed works to the M5)	OUT	Views towards the Scheme are quite heavily screened by intervening mature vegetation and trees along the roads and field boundaries. Although some works along the M5 are with 850m, the junction itself is over 1.5km away. It is possible that upper floor views from some receptors would be able to make out the initial loss of vegetation. However, given both the distance and intervening vegetation, this is anticipated to not be overly noticeable and Neutral effect expected for during both construction and operation.	N/A
Properties at Colman's Farm and Elmstone Hardwicke on Lowdilow Lane and Church Lane. (400 m from any proposed works to the M5)	IN	Visual impact due to loss of screening vegetation in Motorway verge that may be avoided/mitigated through detail design.	VR17
Group of properties at Butlers Court, west of Withybridge Lane. (100 m from existing M5, 500 m from the proposed bridge)	IN	Some visual impact from proposed B4643 link road. Existing vegetation provides some effective screening. Impacts due to Motorway verge works and new roundabout junction and attenuation basin.	VR6
Properties at Mill House Farm, east of Withybridge Lane. (450 m from existing M5, 150 m from the proposed bridge)	IN	Visual impact from proposed B4643 link road. Existing vegetation provides some effective screening, but views are highly likely of the new River Chelt Bridge.	VR8

Visual Receptor (VR)	Scoped IN / OUT	Comments /Justification	VR No in PIER
Group of properties at Orchard House and Hayden Farm, at the junction of Withybridge Lane and B4634 Old Gloucester Road. (directly adjacent the new round-a-bout on Old Gloucester Road)	IN	Visual impact from proposed B4643 link road depending upon height of bridge, and roundabout works. Existing vegetation provides some screening, but views are likely.	VR9
The House in the Tree public house and Elm Cottage. At the junction of Withybridge Lane and B4634 Old Gloucester Road. (directly adjacent the new round-a-bout on Old Gloucester Road)	IN	Visual impact from proposed B4643 link road and roundabout works.	VR9
Properties at Hayden Hill Fruit Farm, on the Old Gloucester Road. (directly adjacent the new round-a-bout on Old Gloucester Road)	IN	Visual impact from proposed B4643 link road and roundabout works.	VR10
Properties off Old Gloucester Road at Hayden Hill. (Various distances, approx. 500 m from the proposed bridge over the River Chelt)	IN	Visual impact from proposed B4643 link road. Existing vegetation provides some effective screening.	VR11
Properties in Hayden and Hayden Green. (nearest property 350m from the proposed new round-a-bout on the Old Gloucester Road)	OUT	Views towards the Scheme are quite heavily screened by intervening buildings and mature vegetation and trees along the roads, field boundaries and gardens. Buildings are also generally orientated away from the Scheme further restricting views. It is possible that upper floor views from some receptors would be able to make out the initial loss of vegetation. However, given the intervening vegetation, this is anticipated to not be overly noticeable and Neutral effect expected.	N/A
Properties on the western edge of Springbank and Springbank Primary Academy. (from the proposed new round-a-bout on the Old Gloucester Road)	OUT	Receptor is on edge of the study area. Views towards the Scheme are largely prevented by the topography with a ridgeline intervening long range views. In addition, views are heavily screened by intervening buildings and mature vegetation and trees along the roads, field boundaries and gardens . Neutral effect expected.	N/A

Visual Receptor (VR)	Scoped IN / OUT	Comments /Justification	VR No in PIER
Properties on Pilgrove Way and Pilgrove Way playground. (1 km from the proposed bridge over the River Chelt)	OUT	Receptor is on edge of the study area. Views towards the Scheme are largely prevented by the intervening buildings and mature vegetation and trees along the roads, field boundaries and gardens; topography also prevents views. Neutral effect expected.	N/A
Hayden Allotments. (900 m from the proposed bridge over the River Chelt. 300 m from works to A4019)	OUT	Receptor is on edge of the study area. Views towards the Scheme are largely prevented by the topography with a ridgeline intervening long range views. In addition, views are heavily screened by intervening buildings and mature vegetation and trees along the roads, field boundaries and gardens. Neutral effect expected.	N/A
Properties and businesses in Kingsditch. (adjacent eastern end of proposed works to A4019)	IN	Views from the properties have potential to be affected by the Scheme, although effects are not expected to be significant. To be assessed further in the visual assessment.	VR20
Properties, Allotments and playing fields in Swindon Village. (1 km from proposed works to the A4019)	OUT	Receptor is on edge of the study area. Views towards the Scheme are heavily screened by intervening mature vegetation and trees, especially along the River Swilgate. Neutral effect expected.	N/A
Properties in Uckington, south of the A4019. (Directly adjacent the A4019 widening and 500 m approx. from the proposed bridge over the River Chelt)	IN	Visual impact from proposed B4643 link road and some encroachment for A4019 properties. Existing vegetation provides some effective screening. Setting for scheduled monument needs careful mitigation.	VR19
Properties along west side of The Green, Uckington.	IN	Some impacts from vegetation clearance along A4019 and encroachment of property on A4019.	VR18
Properties along the A4019, east of Uckington, including residential, business and community facilities. (directly adjacent the A4019 widening)	IN	Impacts from vegetation clearance, widening and occasional encroachment of land along A4019. Impacts likely to be minor to major depending upon detail design.	VR20
Properties in Boddington, including Boddington House, Boddington Manor, Home Farm and St Mary Magdalene Church.	IN	Visual impact due to loss of screening vegetation in MW verge that may be avoided/mitigated through detail design.	VR13

Visual Receptor (VR)	Scoped IN / OUT	Comments /Justification	VR No in PIER
(700 m from the existing M5 junction 10)			
Properties between Knightsbridge and Coombe Hill (identified from ZTV)	OUT	The ZTV does not account for existing vegetation. Desktop appraisal noted it is highly likely that views from properties in this area have views towards the Scheme heavily screened by existing garden, road and field vegetation. It is possible that there may be glimpses of initial vegetation clearance, but it is unlikely to be overly noticeable, given both the distance and intervening vegetation. Neutral effect expected for during both construction and operation.	N/A

9.6. Consultation

- 9.6.1. A Non-Statutory Consultation took place in the Autumn of 2020.
- 9.6.2. Based on the above, the preferred route announcement took place on the 16th June 2021, and a Statutory Public Consultation will take place towards the end of the year in 2021.
- 9.6.3. GCC, with support from Atkins, will lead on publicising the consultation working closely with the communications teams from GCC, Cheltenham Borough Council and Tewkesbury Borough Council to promote the consultation within their communities.
- 9.6.4. No formal consultation specific to Landscape and Visual Amenity Assessment has taken place at this stage. However, a combined meeting with GCC officers and the Atkins environment team took place in July 2021 to discuss aspirations for the environmental mitigation and enhancement measures.
- 9.6.5. Consultation with relevant council officers and stakeholders will be undertaken prior to the start of the full LVIA. This consultation will seek to confirm key viewpoints, requirements for photomontages and any further environmental design measures.

9.7. Baseline conditions

- 9.7.1. There are two baseline conditions that are considered – landscape character baseline & visual amenity baseline that are further detailed out below in Section 9.8 and 9.9.

9.8. Landscape Character Baseline

National

- 9.8.1. The study area is wholly located within National Character Area (NCA) No.106 – Seven and Avon Vales. The character is broadly defined as low lying agricultural vale.

County

- 9.8.2. The landscape character of Gloucestershire is described within the Gloucestershire LCA undertaken by LDA Design in 2006, covering the Severn Vale, upper Thames Valley, Vale of Moreton and Vale of Evesham Fringe.
- 9.8.3. The Scheme is wholly located in the Landscape Character Type (LCT) 'Settled Unwooded Vale'. The key characteristics of this LCT are:
 - *“soft, gently undulating to flat landscape, but with intermittent locally elevated areas that project above the otherwise flatter landform;*

- *major transport corridors pass through the Vale, frequently aligned north-south, beyond which is a network of local roads and lanes linking villages and hamlets;*
- *limited woodland cover with mature hedgerow trees;*
- *area drained by a series of east west aligned tributaries of the Severn, including the Chelt;*
- *mixed arable and pastoral land use enclosed by hedgerow network, in places forming a strong landscape pattern;*
- *rural areas bordered by large urban and suburban areas and interspersed with commercial and industrial premises; and*
- *widespread network of pylons and transmission lines.”*

9.8.4. As set out in the scoping report, it is considered that whilst NCA's and the regional LCT provide a level of information to help inform the context of local character assessments, they do not provide a sufficient level of detail appropriate to the nature of the effects likely to arise as a result of the Scheme. As such these will not be considered further in the assessment.

Local

9.8.5. The Gloucestershire LCA further breaks down the LCT into character areas. The Scheme lies wholly within the SV6B: Landscape Character Area 'Vale of Gloucester'. The key characteristics of this LCA are:

- *“to the east, the Vale is defined by the rising landform of the Cotswolds escarpment and Oxenton Hill. To the west of the Vale lies the Floodplain Farmland landscape character type;*
- *the intermittent small ridges, hillocks and undulations that rise above the general level of the Vale are important local features;*
- *undulating landform encloses views in some areas whilst in other areas there are distant views beyond the vale landscape towards the Cotswolds Escarpment and the Escarpment Outliers;*
- *woodland is not a characteristic feature of the Vale of Gloucester and is generally limited to few small copses;*
- *the M5 forms a spine through the heart of the Vale and, although often screened by adjacent embankments and vegetation, there are frequent filtered views towards the motorway from the surrounding Vale landscape and the noise generated by motorway traffic is readily audible;*
- *there is a widespread network of pylons and transmission lines; and*
- *large watercourses including Hyde Brook, River Swilgate, River Chelt and Hatherley Brook generally flow east-west across this landscape before heading south to join the River Severn.”*

9.8.6. It is considered that the SV6B LCA has a *Moderate* sensitivity to change, given the existing features are important on a local scale but also include aspects related to the proposed Scheme.

Local Landscape Features

9.8.7. The landscape within the study area is typical of the character described within the published LCAs, being a gently undulating vale landscape featuring a mixture of arable and pastoral fields. Arable fields tend to be more frequent in the west of the study area adjacent the M5 corridor and larger in size than those of pasture. Smaller pastoral fields are often located adjacent the urban edges of Cheltenham in the east near Uckington, Swindon Village and Springbank, some being horse paddocks associated with the settlements.

9.8.8. The land rises up in the east and north east beyond the study area creating the Cotswolds escarpment and outliners, such as Cleeve Hill and Oxenton Hill which form part of the

Cotswold AONB. These are prominent features on the skyline, often visible from the low lying open areas, although over 6 km away.

- 9.8.9. Flat low-lying floodplain farmland exists to the west of the study area, where tributaries to the river Severn form a network of smaller rivers, streams, brooks and ditches. Views across this floodplain landscape are notable from the slightly higher ground in the far west of the study area at Coombes Hill, where a ridge line exists which the A38 follows, running parallel with the River Severn.
- 9.8.10. The M5 forms a major feature through the landscape, although this major transport corridor is often well screened in places by vegetation aligning the route. The carriageway for the section within the study area is slightly raised above the surrounding flat landscape, with small, vegetated embankments to either side. These embankments are at times heavily planted with tall trees and shrubs, while intermittently these break up into patchy scrub and individual trees. At these locations' views are possible across the surrounding vale landscape. Overbridges and the existing raised Junction 10 tend to be well screened by vegetation. The M5 is unlit along this section within the study area.
- 9.8.11. The A4019 at the junction with the M5 is raised up quite high above the surrounding landscape and although there's substantial vegetation to provide screening, views to the west are possible. As the road runs east away from the junction, it falls down to the level of the surrounding landscape by the time it reaches the junction with Withybridge Lane. The majority of the highway is bordered by low field hedgerows, allowing open views across the landscape. To the east of Uckington the road becomes more enclosed by residential and community properties, and associated perimeter vegetation, becoming urban in character with retail and business parks appearing on the approach to the junction with the B4634. To the west of Uckington the carriageway is unlit but to the east side it is lit on the approach to the outskirts of Cheltenham.
- 9.8.12. The River Chelt passes centrally through the study area, meandering east to west through floodplain farmland. It runs from Kingsditch, then to the south of Uckington, through Withy Bridge before crossing under the M5 to reach Boddington and Barrow in the west.
- 9.8.13. High voltage pylons march in pairs across the southern section of this floodplain from Springbank in the east, heading west past Hayden, crossing the M5 west towards Prior's Norton. Further pylons branch off these, running north parallel with the M5, passing Boddington and heading off past Hardwicke. These pylons make a prominent feature along the skyline in the study area.
- 9.8.14. Settlements tend to be small clusters of properties generally focused on a farm, village hall or church, which are often well screened by property vegetation, although properties along the A4019 generally have more open views.
- 9.8.15. It is considered that the local landscape features have a *Moderate* sensitivity to change, given they are important on a local scale but also include aspects related to the proposed Scheme.

Landscape Designations

- 9.8.16. The majority of the Scheme lies within land designated as Green Belt.
- 9.8.17. The Cotswolds AONB is a nationally designated area of importance, recognised for its distinctive landscape with wide open views, dry stone walls, intimate valleys, flower rich grasslands, ancient woodlands, dark skies, tranquillity, archaeology, historic and cultural heritage and distinctive Cotswold stone architecture.
- 9.8.18. The AONB is located 4.5 km from the extent of the of works on A4019 and over 6 km from the M5 junction 10. Although this is quite some distance, it is important to consider any visibility from the AONB of the Scheme that may detrimentally impact upon its unique and attractive qualities.
- 9.8.19. The AONB includes the higher ground east of Cheltenham such as Cleeve Hill which does have views toward the Scheme study area, such as from Cleeve Common where there is limited immediate vegetation cover.

- 9.8.20. The AONB is considered to have a *High* (rather than *Very High*) sensitivity to change, given its National status but also accounting for its distance from the Scheme.

9.9. Visual Amenity Baseline

- 9.9.1. Visual receptors are the people who live in or visit the landscape, and who will experience views of the Scheme. Residents and users of accessible land and rights of ways used for the enjoyment of the countryside are considered higher sensitivity visual receptors. Users of roads or those undertaking occupational work, are considered lower sensitivity visual receptors.
- 9.9.2. The receptors have been identified by desktop study using OS and google maps during the scoping stage. A Zone of Theoretical Visibility (ZTV) (refer Figure 9-1) has been produced to supplement this research and further highlight areas that may potentially be impacted by the Scheme. It should be noted that the ZTV does not account for all intervening vegetation and therefore is indicative, requiring validation of potentially impacted areas with further desktop study and site visits. It is considered that the visual receptors identified for the LVIA are proportionate and represent the most potentially affected areas.
- 9.9.3. A full list of visual receptors considered in this report are provided in the Potential Impacts section and are indicated on Figure 9-2. Note that individual visual receptors have been grouped together where they have similar views and potential impacts from the Scheme. These may be further grouped or split as the design develops in later stages.
- 9.9.4. To avoid repetitive text and ease of reading, the baseline view for each receptor is described alongside the potential visual impacts appraisal in Table 9-9. Indicative site photographs for some receptors will be provided within the full EIA.
- 9.9.5. A brief description of generalised existing views for high sensitivity receptors are noted below.

Public Rights of Way

- 9.9.6. The study area contains several footpaths and bridleways, including the Long-Distance Footpath of Cheltenham Circular.
- 9.9.7. The PRoW are generally within fields often running along hedged boundaries or the side of streams or rivers, occasionally crossing open areas within the fields. Mid-range views are limited by intervening hedge boundaries, buildings and the flat topography. Longer ranging views are possible of the raised land beyond the study area which includes the Cotswold escarpment and outliers.
- 9.9.8. Views towards the Scheme from these raised landforms, such as the open access and PRoWs within the Cotswolds AONB, are possible but over very long distances.

Residential Properties

- 9.9.9. There are quite distinct clusters of properties dotted within the study area, usually forming parts of the local villages and settlements.
- 9.9.10. Many residential properties are also surrounded by outbuildings. Garden, boundary and roadside vegetation often aid screening.
- 9.9.11. Views vary; sometimes enclosed by property vegetation, sometimes open across quite a rural landscape, occasionally punctuated with detracting views of pylons or road infrastructure and, particularly toward the eastern end of the A4019, over a more urbanised landscape.

9.10. Potential impacts

- 9.10.1. This section sets out the overall potential effect of the proposed Scheme, including the designed-in mitigation and enhancements.

- 9.10.2. At this stage of the assessment process, predicted effects and judgements have not been made. A full detailed assessment of likely effects of the proposed scheme will be assessed within the ES LVIA, which will accompany the DCO application.
- 9.10.3. Demolition and construction activities associated with this development would take place over a period of approximately 18 months (2024-2025).
- 9.10.4. Full details of the Scheme are set out in earlier chapters; below is a summary of potential impacts relevant to landscape.

Construction

- 9.10.5. During Construction, the general aspects of the Scheme that are likely to cause impacts through changes to the landscape or visual amenity of the area are:
- the introduction of temporary construction compounds, storage areas and haul routes, temporary lighting and traffic management, presence of construction machinery including cranes and increased vehicular movement;
 - diversions of roads with associated signage;
 - vegetation removal within the Scheme footprint;
 - demolition of buildings and structures;
 - construction of embankments cuttings;
 - construction of new motorway junction, new link roads and roundabouts;
 - widening of A4019;
 - temporary closure/diversion of PRowS; and
 - construction of attenuation basins as new features within the landscape.

Operation

- 9.10.6. During Operation, the general aspects of the Scheme that are likely to cause impacts through changes to the landscape or visual amenity of the area are:
- increased visual prominence of infrastructure features including bridges, new roads, roundabouts and associated earthworks, particularly in the early years of operation as mitigation planting is maturing;
 - new crossing features on existing PRow, or permanently diverted PRow routes;
 - presence of new drainage features visible in the landscape, such as attenuation basins, culverts and ditches;
 - new gantries and signage, lighting, and other road safety features; and
 - introduction of environmental design measures including new areas of planting and seeding to help the integration of the Scheme into the landscape.

9.11. Landscape Character Impacts

SV6B Vale of Gloucester

- 9.11.1. The vegetation clearance and construction activities are likely to cause initial adverse impacts on this character area. Standard mitigation measures for construction activities would be implemented to limit these impacts and any significant effects would be temporary only.
- 9.11.2. The vegetation loss and resultant character changes cannot easily be mitigated in the short term, although early mitigation planting could be considered to help speed up the process.
- 9.11.3. Given the scale of this character area is it considered that upon completion, even given the loss of vegetation, that the impacts would not be significant. Although there would be increased presence of roads and associated infrastructure, these would essentially be in

keeping with the existing landscape character of the area, which includes roads aligned north/south as characteristic aspects. Similarly, adjustments to the M5 Junction itself would not be out of place in the existing landscape character context. The bridge for the link road over the river Chelt, would present a new raised feature in the landscape however, again it is not anticipated that this would significantly affect the LCA of SV6.

- 9.11.4. The Scheme would include attenuation basins and an area for flood compensation. The basin will be designed to reflect more “naturalistic” formations, utilising underground storage features and introducing well-considered landscaping, which would help to integrate the basins and limit any adverse effect on the character of the landscape due to the introduction of incongruent and potentially intrusive features. Designed well, they could be an asset to the landscape. The flood compensation area will require some earthworks but once complete the features is unlikely to be detracting to the character of the area.

Local Landscape Features and Vegetation

- 9.11.5. As with the SV6B LCA, vegetation removal and construction activities would cause adverse effects on the local landscape features and, particularly around the junction, which is currently heavily screened, these may be temporarily significant during construction.
- 9.11.6. Key areas of vegetation removal, which include trees, shrubs and ground cover, are anticipated to be at:
- Junction 10: all vegetation within each quadrant of the junction, except a small area within the north-bound onslip woodland which will be retained;
 - M5: Verge vegetation either side of the motorway will be removed to accommodate the works but retained wherever possible;
 - A4019 west of J10: some verge side vegetation will be lost and some within the woodland adjacent to Stanboro Lane;
 - A4019 east of J10: verge vegetation will be lost along the majority of this road, particularly along the northern side east of Uckington. Note also that some TPO trees will be affected here (see below);
 - Link Road: grass areas and hedges where the road passes through, individual tree loss will be avoided if possible;
 - Old Gloucester Road: some verge vegetation, particularly to the southern side.
- 9.11.7. Upon completion, the loss of vegetation would remain an adverse impact, however, early mitigation planting, if possible, within the Scheme program, would aid the reduction of adverse effects more quickly. Care would need to be taken in providing appropriate vegetation screening to mitigate visual impacts, whilst not creating blocks of woodland that are atypical of the character of the area, particularly along the new link road.
- 9.11.8. There are a few Tree Preservation Orders (TPOs) in the study area. Only one (TPO325 North West Cheltenham, Uckington) would be directly impacted. This TPO is for the line of Poplar trees adjacent to the Cheltenham Circular PRow where it joins the A4019. The A4019 widening requires the loss of approximately 15m of the line of trees. It would be important to retain as many trees as possible and protect the Root Protection Area (RPA) of those retained.
- 9.11.9. A tree survey is currently being compiled to confirm the presence of Ancient and Veteran Trees and other tree categories are currently being identified. Any impact on these resources would be assessed as part of the full EIA and detrimental effects avoided where possible in the design.
- 9.11.10. The vegetation loss and property demolitions around Stanboro Lane and along the eastern extents of the A4019, potentially may result in initial significant effects during operation as this would be a dramatic impact on these very localised areas. However, given appropriate mitigation planting it is considered that in the longer-term, significant effects can be avoided.

- 9.11.11. For the whole Scheme, vegetation removal should be kept to that necessary for the works and where possible new road alignments should be adjusted during design development to avoid mature trees and hedgerows as these are identified.
- 9.11.12. Good quality junction, road, bridge and associated infrastructure is essential to embed these features into the landscape and ensure they do not dominate or appear out of place.
- 9.11.13. Well considered mitigation planting is important to provide adequate screening in appropriately sized banks of planting.

Landscape Designations

- 9.11.14. In terms of the Cotswold AONB, it is considered that the setting of this landscape is highly unlikely to be affected by the Scheme. Given the distance and the existing setting (urban Cheltenham giving way to a rural farmland) the Scheme is able to be absorbed into the setting and have a neutral effect on the AONB landscape character.

9.12. Visual Amenity Impacts

- 9.12.1. Where views are possible, the potential effects of the Scheme generally depend upon proximity and existing retained screening. In some cases, demolition of properties is required and several PRow are directly affected by the Scheme.
- 9.12.2. A detailed description of the baseline visual amenity for each of the visual receptors is described in Table 9-9 below, together with indicative potential impacts. Note that the receptors identified are all considered to be of *High* sensitivity given they are static views from residential properties or transient views by users of leisure routes (PRow).
- 9.12.3. Figure 9-1 below presents the ZTV of the study area; Figure 9-2 presents the location of the visual receptors being assessed.

Table 9-9 - Summary of the baseline visual amenity and preliminary assessment of potential impacts for each visual receptor

Visual Receptor	Baseline	Potential Impacts
VR1 Withybridge Gardens	A group of 14 residential properties on Withybridge Gardens. They all face a retaining wall supporting the A40 as it rises up to cross the M5. Rear views are of open countryside and Withybridge Lane.	All these properties would be demolished to make way for the scheme. Therefore, no further assessment has been undertaken.
VR2 Withy Bridge and Laburnum	2 residential properties on the A4019 opposite Withybridge Gardens. They both have close open views over the A4019 with rear views across open countryside.	Both properties would be demolished to make way for the scheme. Therefore, no further assessment has been undertaken.
VR3 Stanboro Lane and Sheldon Nurseries	5 residential properties and a plant nursery business (Sheldon Nurseries) off Stanboro Lane to north west of existing M5 Junction 10. The properties are all well screened by mature vegetation and, despite the proximity of the M5 and A4019, are in an attractive setting.	All these properties would be demolished to make way for the scheme. Therefore, no further assessment has been undertaken.
VR4 Barn Farm, Stanboro Lane	This residential building sits 70m from the N/B carriageway of the M5 and 850m from the existing Junction 10 bridge. The property is orientated parallel with the M5 and there are two ground floor windows directly looking towards the M5, with ground and upper windows having more oblique views. The existing trees and shrubs along the M5 provide some screening for both direct and oblique views towards the M5, but there are glimpses through the vegetation, particularly in winter. There are slightly longer range views towards Junction 10 and although largely filtered by existing roadside and field vegetation, there are expected to be views of traffic especially along the more open bridge section.	It is likely that due to the works required to tie in the existing motorway with the new slip road much of the roadside vegetation along the M5 adjacent to Barn Farm would be removed, opening up views. In addition, extensive vegetation removal further south and around Junction 10 itself would enable much more open views would therefore be possible. An attenuation basin is proposed in a field to the south-west of Barn Farm, and this may be visible. Existing field boundary vegetation provides some screening, however, if designed appropriately the basin area may be considered a beneficial effect upon the view. The greatest impacts would be during construction. Upon completion effects would reduce a little as the intrusive activities and plant is replaced with standard traffic. Replacement planting to the

Visual Receptor	Baseline	Potential Impacts
		<p>junction and roadside would, over time, help to integrate the Scheme back into views although, the junction bridges are likely to remain visible over the planting.</p> <p>A significant effect is however not anticipated in the long term.</p>
VR5 Travellers Site adjacent to S/B M5	This site sits in close proximity to the M5 with dense roadside and field boundary vegetation providing screening.	<p>It is understood that this site would be closed upon completion of this Scheme.</p> <p>Therefore, no further assessment has been undertaken.</p>
VR6 Butler's Court complex	<p>These two and three storey residential and business properties are set within fields surrounded by mature vegetation.</p> <p>Views towards the M5 are largely restricted by garden vegetation and the dense roadside woodland vegetation, although glimpses of traffic are possible through the trees, particularly during winter.</p> <p>Views east, towards the new link road, are largely prevented by intervening buildings and vegetation in gardens, along Withybridge Lane and to field boundaries.</p> <p>To the north, properties on Withybridge Gardens can just be glimpsed through intervening vegetation.</p> <p>Both near and long-range views are attractive, of a working farm environment, with the hills of the Cotswolds visible to the south. Although the pylons towards the south are slightly detractive features.</p>	<p>The Scheme would impact on views towards the M5 and Junction 10, the A4019 and over Withybridge Lane.</p> <p>It is anticipated that there would be quite substantial clearance of vegetation along the M5, although retention of some of this woodland block is expected thus retaining some screening value.</p> <p>Replacement planting to the new M5 verge would strengthen this in the longer term.</p> <p>Clearance of vegetation and the demolition of the properties on Withybridge Gardens would open up views towards the A4019 and construction works here. The intervening field is also proposed to be reprofiled to create a flood compensation area.</p> <p>Replacement planting to the base of the new J10 embankment and along the A4019 would go some way to help embed the Scheme into the view over the longer term. The reprofiled field should not be overly noticeable in the view once reinstated to grass.</p> <p>Views over Withybridge Lane are likely to be impacted by the visibility of the new link road bridge over the River Chelt and potentially the new link road itself from upper floors of the properties.</p>

Visual Receptor	Baseline	Potential Impacts
		<p>However, intervening existing roadside and field vegetation should filter much of the view. New planting to the link road embankments will also help integrate the road into the view in the longer term.</p> <p>It will be important to retain as much vegetation as possible along the M5 to limit the initial effect on this receptor.</p> <p>A significant effect is not anticipated in the long term.</p>
<p>VR7 PRoWs between Boddington/Hayden crossing M5 FPAB013/FPAB015/FPAB016/FPAB024/FPAUC11</p>	<p>Walking from Boddington towards the M5, FPAB013/15&16 generally follow the tributaries of the River Chelt with attractive rural views. Field, road and stream side vegetation curtail views to short/mid-range although the Cotswold Hills can occasionally be seen over the vegetation. Pylons are a dominant presence in many views. The M5 and A4019 are largely screened from view by the dense verge vegetation and, apart from the noise, the presence of the M5 is only really noticeable, particularly in summer, as the paths start to converge at the motorway crossing.</p> <p>East of the M5 the views east are again of fields and linear belts of trees or hedges with the Cotswold Hills in the far distance.</p> <p>Looking West from Withybridge Lane, the M5 is very well screened by verge vegetation and intervening buildings and field hedges.</p> <p>FPAB024 heads past the outbuildings of Millhouse Farm and across open fields bordered by hedges and trees with the occasional isolated field tree. Glimpses of properties on Hayden Hill can be seen with the Cotswold Hills beyond. Views West are similar and the M5 Junction 10 and associated roads are well screened by vegetation and intervening buildings.</p>	<p>The Scheme would initially open up views towards the M5 and A4019 from these PRoW due to removal of existing verge vegetation. Effects would be particularly apparent on the west side of the M5 as there is limited intervening field vegetation. The new attenuation basin adjacent to the west side of the M5 would be noticeable in views but, if designed well this could be a beneficial effect upon the view once planting is established.</p> <p>East of the M5 and particularly east of Withybridge Lane, the new link road would present a new feature in the landscape and, given its height above the ground, would be in views most of these routes, except when closer to the Cheltenham Circular where topography and existing vegetation intervene.</p> <p>Initially the routes are likely to be stopped up or diverted to enable safe construction, however, access would be provided beneath the new link road bridge upon completion.</p> <p>FPAUC11 would have additional impacts since it runs almost parallel with the link road for some part and would have views of the new junction onto the A4019 and widening works along the A4019, although for the most part these would be partly screened by intervening existing vegetation and the</p>

Visual Receptor	Baseline	Potential Impacts
	<p>Pylons and telegraph poles “intrude” on views near Withy Bridge. The footpath then joins the Cheltenham Circular (see VR12).</p> <p>Similar views are possible from FPAUC11 which heads slightly further north into Uckington.</p>	<p>buildings of Uckington. The route would also run alongside the new road between Cooks Lane and Moat Lane; as well as being diverted under the new link road..</p> <p>Replacement planting along the M5 verges would rescreen the motorway once mature. New planting along the proposed link road, A4019 and to the Cooks/Moat Lane link would also help integrate these features.</p> <p>A significant effect for any route is not anticipated in the long term.</p>
<p>VR8 Withybridge/Mill House Farm</p>	<p>These properties at Withybridge include Butlers Court Cottages on the west of Withybridge Lane and properties at Mill House Farm to the east.</p> <p>All have similar but slightly differing views across to the M5 junction and towards the location of the new link road. Views of the M5 junction are largely screened by vegetation. Views east are relatively well screened by vegetation close to the properties, particularly in the summer. Where available views are of open fields bordered by hedges and trees with the occasional isolated field tree. Glimpses of properties on Hayden Hill can be seen with the Cotswolds Hills beyond.</p>	<p>The Scheme would initially open up views towards the M5 and A4019 and the properties around Mill House Farm would be particularly affected by the new link road given its proximity and elevated position, as well as having views of the construction compound.</p> <p>To reduce longer term effects, mitigation planting would be required to the M5 and A4019 verges and northwest of the new river bridge. Views south are less apparent, especially if existing river vegetation is retained as much as possible, but planting around the new bridge and hedge planting along the road would further reduce effects in the longer term. A significant effect is therefore not anticipated in the long term.</p>
<p>VR9 The House in the Tree public house, Elm Cottage and Orchard House And PRoW FPAB026</p>	<p>This pub and residential properties on B4063 have views directly over this road and towards the location of the proposed link road and its junction with the B4063.</p> <p>Existing vegetation in the grounds of each property provides some good screening. There are glimpses of the M5 traffic over intervening hedges, but otherwise views are of fields and linear vegetation.</p>	<p>Retention of some existing intervening field and garden vegetation would provide some filtering of views of the proposed link road.</p> <p>However, during construction the new road is likely to be visible from all these properties, as well as the B4634 being opened up through loss of roadside hedge and trees.</p>

Visual Receptor	Baseline	Potential Impacts
	<p>The line of double pylons are obvious features in the views.</p> <p>FPAB026 path appears currently very unused with no obvious link off the B4063, although signed off the road opposite Hayden Farm.</p>	<p>The House in the Tree pub would also lose some of its frontage grounds.</p> <p>Replacement hedge and tree planting to the B4634 as well as planting along the new link road and the proposed attenuation basin area, would help to integrate the road into the view over the longer term.</p> <p>The proposed lighting at the B4063 junction would be a new feature in this area as the existing road is unlit. Consideration should be given to alternative solutions to lighting columns to limit nighttime effects here. A significant effect is not anticipated in the long term.</p>
<p>VR10 Hayden Hill Fruit Farm</p>	<p>The farmhouse itself appears to be a bungalow with potential, but limited, views over fields with hedgerows and trees and oblique views over the B4063. Garden vegetation and outbuildings, as well as the low level house, restricts wider views.</p>	<p>The garden and boundary vegetation restricts views, but it is likely that the new link road will be visible, as well as the B4634 being opened up through loss of roadside hedge and trees.</p> <p>Replacement hedge and tree planting to the B4634 as well as planting along the new link road and the proposed attenuation basin area, would help to integrate the road into the view over the longer term.</p> <p>The proposed lighting at the B4063 junction would be a new feature in this area as the existing road is unlit. Consideration should be given to alternative solutions to lighting columns to limit nighttime effects here, however a significant effect is not anticipated in the long term.</p>
<p>VR11 Properties at Hayden Hill and Pilgrove Farm</p>	<p>Many of these properties have views towards the proposed link road screened by intervening buildings, orientation of view or intervening garden or field vegetation. However, given that they sit on a ridgeline, there are likely to be views either through vegetation or more open from upper floors of the</p>	<p>The new link road would present an additional road feature in the view and the vegetation clearance would open up views of the M5. Effects would be greatest during construction and immediately upon completion.</p>

Visual Receptor	Baseline	Potential Impacts
	existing fields, trees and hedgerows, with glimpses of Withybridge Lane and the M5 beyond. On a clear day the horizon line is formed by the Malvern Hills	Hedgerow along the new road with occasional tree blocks would help embed this into the view, whilst replanting along the M5 would also help to reduce effects. The effect of the bridge in particular cannot be fully mitigated, but it is considered that the Scheme can be integrated into the view and not appear incongruous. A significant effect is therefore not anticipated in the long term.
VR12 Cheltenham Circular PRow	Due to topography and intervening buildings and vegetation, the impacts for this route would only be realised for the section of route through the field north of A4019 and along both the A4019 and Moat Lane. Moat Lane is an attractive relatively peaceful single-track lane. The A4019 here is less tranquil than Moat Lane, but non the less rural in feel with hedgerows to verges and views over fields. The Line of poplars at the field gate north of A4019 is a distinctive feature for walkers in the field north of the A4019 and those heading east along the A4019.	There would be quite a change to this section through loss of vegetation and buildings and widening of the A4019. The retention of as much as possible of the landmark feature line of poplars is recommended. Despite the change, given the overall length of this PRow and the existing aspects of the A4019 it is considered that the proposed Scheme with appropriate mitigative planting would not significantly impact on this PRow.
VR13 Properties at Boddington	Following a site visit it was considered that views of the Scheme from these properties are heavily screened by intervening buildings and mature vegetation and trees along the River Chelt and field boundaries and within gardens. However, as a precautionary principle it is assumed that upper floors may have views of the vegetation on Junction 10.	It is possible that upper floor views from some receptors would be able to make out the initial loss of vegetation. However, given both the distance and retained intervening vegetation, this is anticipated to not be a significant effect.
VR14 PRow FPAB014 (Boddington to Stanboro)	Field, road and stream side vegetation curtail views to short/mid-range although the Cotswold Hills can occasionally be seen over the vegetation. Pylons are a dominant presence. The M5 and A4019 are largely screened from view by the dense verge vegetation and, apart from the noise, the presence of these	The Scheme would initially open up views towards the M5 and A4019 and junction 10 and the access from the A4019 would be diverted, potentially its permanent route would be along the new access road.

Visual Receptor	Baseline	Potential Impacts
	roads are only really noticeable when close to them, although in winter there are filtered views of vehicles.	There would be a new attenuation basin adjacent to the M5, if designed well this could be a beneficial effect upon the view once planting is established. Replacement woodland planting to the amended junction 10 and road verges would embed the Scheme back in to the view. Although there may be a significant impact initially, in the long term the effect is not expected to be significant.
VR15 Stanboro and Stanboro Lodge (VR15a) Stanboro Cottage and Grasmere (VR15b)	VR15a both have quite dense garden vegetation but there are views over this onto the woodland planting along the A4019 giving a great sense of enclosure. VR15b: Grasmere also has dense evergreen garden vegetation largely restricting its views out. Stanboro Cottage is more open- with a low wall and hedge fronting the property. There are therefore wide and long ranging views over the A4019 punctuated by field vegetation.	Designed in mitigation has ensured that the existing vegetation fronting VR15a properties will be retained and as much of the woodland plot opposite is also retained. However, there will be some removal of this vegetation which may be noticeable in winter months. There is also loss of perimeter vegetation further towards Junction 10 which may alter views, especially from within gardens. For VR15b, although there may be some loss of vegetation to the southern verge of the A4019 and loss of vegetation along the M5 may be noticeable from Stanboro Cottage, it is not anticipated that these would result in significant effects.
VR16 PRoW BWAUC1	Existing views for this bridleway include open views over the A4019 and filtered views of the M5. Otherwise views are of open fields bordered by hedgerows and trees with the mounds of Cleeve Hill on the north eastern horizon and Cotswold Hills to the south.	The Scheme would impact on the views towards the M5 and over the A4019, opening up views of the motorway traffic and the junction, and over the construction works for the new link road and basins, due to the loss of vegetation and buildings along the A4019. The route would be diverted as it joins the A4109, with a probable permanent diversion along the new farm access track. Effects would be greatest during construction however, with appropriate mitigation and given the existing context it is not anticipated that short term

Visual Receptor	Baseline	Potential Impacts
		or long term effects would be significant for this receptor.
VR17 Properties at Colmore Farm and along road to Elmstone Hardwicke	Where garden vegetation allows these properties have long views south over fields towards the M5 and the A4019. Intervening and verge vegetation filters views of traffic and the Cotswold Hills can be seen on the southern horizon.	The Scheme would impact on the views towards the M5 and over the A4019, with vegetation removal opening up views of the motorway traffic and the junction. Effects would be greatest during construction however given the existing context and distance of the view, it is not anticipated that short term or long term effects would be significant for this receptor.
VR18 Properties in north Uckington (The Green/Holly Bank)	Due to intervening buildings and dense evergreen vegetation, only the properties at the junction with the A4019 and Pigeon Farm are likely to have views towards the Scheme. Pigeon Farm has wide open views west over fields towards the M5 with the A4019 to the south. Views east are largely blocked by evergreen vegetation and the buildings along The Green. Nos 1-6 The Green potentially have long range views west over the intervening vegetation and buildings. Nos 1&2 Holly Bank sit directly on the A4019. Views are blocked to short range by road and garden vegetation. The five properties just east of The Green on the A4019 have either glimpsed views through vegetation over the A4019 or views blocked by dense evergreen hedges.	The Scheme would impact on the views towards the M5 and over the A4019, for Pigeon Farm with vegetation removal opening up views of the motorway traffic and junction 10 and the widened A4019 encroaching on the view. Nos 1-6 would be similar but more constrained by the intervening vegetation, plus they will have views of the new access road at Holly Bank. Nos 1-2 Holly Bank would be affected by the widening and loss of vegetation along the A4019 and the construction of the road to their rear. The proposed noise barrier needs to be carefully designed to ensure it can provide both noise and visual amenity benefits for these properties. Consultation with the residents is suggested. There is potential for there to be significant effects for Holly Bank properties due to proximity of works, however with sensitive design the change in view may not necessarily be adverse. The properties just east of The Green, where views are available, would be impacted by the A4019 road widening, with loss of vegetation from the existing southern verge. Elton Lawn would be additionally affected due to direct loss of garden

Visual Receptor	Baseline	Potential Impacts
		vegetation. It is not anticipated that these effects would be significant with appropriate mitigation.
VR19 Properties in south Uckington (Moat Lane/Cooks Lane)	<p>The majority of properties have views heavily screened by garden vegetation or intervening buildings.</p> <p>However for properties such as Cooks Farmhouse and Manor Farm and rear views for the properties along the A4019 by the Smithy, there are relatively open rural views west and south over fields and boundary hedges with trees.</p> <p>There are also views towards the A4019 from Moat Lane and close proximity views for properties around the Smithy.</p>	<p>The Scheme would present a change to the south/west views with the new link road likely to be noticeable during construction and immediately upon completion, albeit over field hedgerows.</p> <p>Mitigation hedge along the road would however begin to embed the road in to the view.</p> <p>As long as existing vegetation is retained, the proposed link between Cooks and Moat Lanes is likely to only affect views for Manor Farm.</p> <p>The A4019 widening would result in the demolition of the properties at The Row. There is potential for there to be significant effects for the properties around the Smithy due to proximity of works and proposed noise barrier, however with sensitive design the change in view may not necessarily be adverse.</p>
VR20 Properties fronting A4019 from Uckington to Gallagher Retail Park (inc Kingsditch)	<p>The majority of properties on the north side of the A4019 have views filtered or screened by quite dense roadside or garden vegetation.</p> <p>Properties on the southern side tend to have more open views over low garden vegetation but are occasionally fully screened with dense tall garden vegetation.</p> <p>It is anticipated that there may be upper floor views over fields from properties on the west of Homecroft Drive.</p>	<p>All properties east of Uckington to the north of the A4019 will be demolished due to the road widening.</p> <p>There is potential for there to be significant effects for the properties to the south of the A4019 due to proximity of works, loss of vegetation and buildings to the north and the proposed noise barrier; however with sensitive design the change in view may not necessarily be adverse in the longer term.</p> <p>Properties in Kingsditch with views over the A4019 would be impacted by the widening works. The end property at Kingsditch on the Gallagher junction, would be most impacted by the works, but given the</p>

Visual Receptor	Baseline	Potential Impacts
		<p>existing context the effect is unlikely to be significant.</p> <p>Homecroft Drive properties with views west may have their views impacted due to the A4019 widening and presence of the attenuation basin near the fire station. There may also be possible glimpses towards the link road, although topography and vegetation are likely to restrict this. However, the effect on these properties is not anticipated to be significant.</p>
VR21 PRoW in AONB	Where vegetation and topography allow there are long wide ranging views from within the AONB (Cleeve Hill/ Crickley Hill) over the relatively flat lands of western Cheltenham. The view is a mix of fields and woodland/hedges interspersed with blocks of settlements. The distinctive building of GCHQ can be made out in most views.	Initial vegetation loss may potentially be discernible to a keen eye, however, it is considered that the Scheme is unlikely to result in significant effects given the viewing distance and existing context.

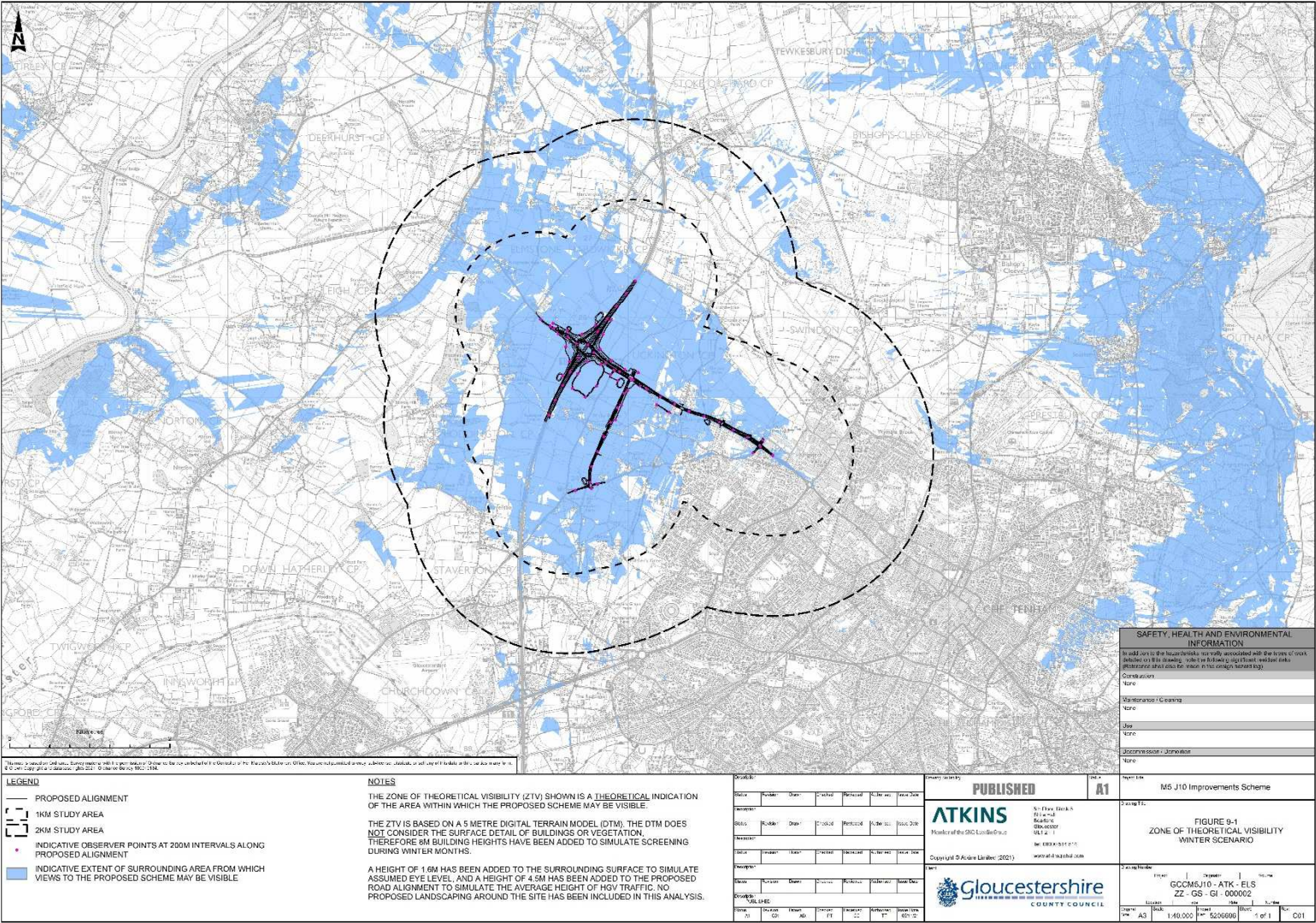


Figure 9-1 - Zone of Theoretical Visibility

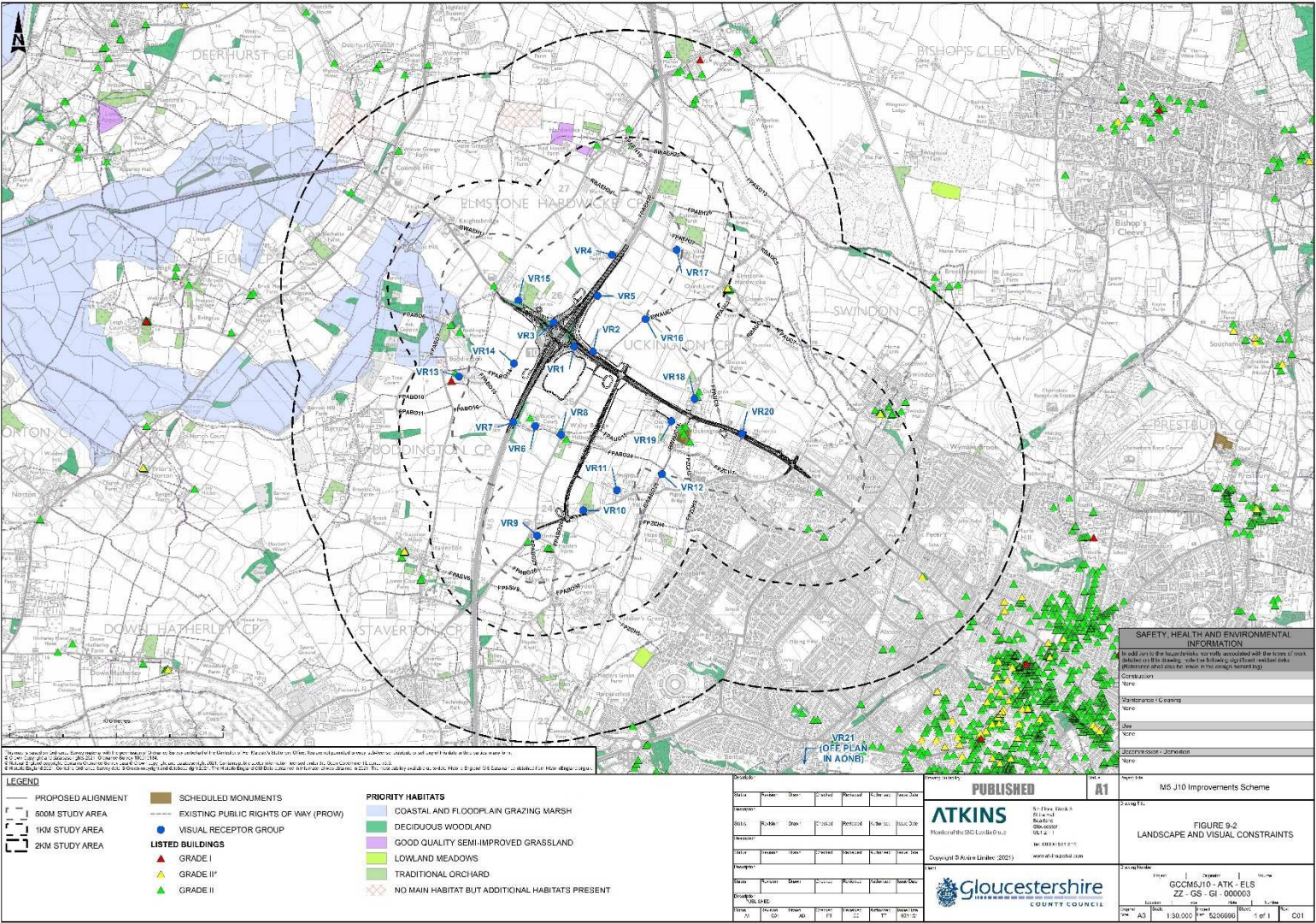


Figure 9-2 - Location of the visual receptors within the study area

9.13. Lighting Impacts

- 9.13.1. The majority of the roads within the Scheme area are not currently lit at night. There is one lighting column on Junction 10 at the entrance to the north-bound offslip and there are lighting columns to both sides of the A4019 adjacent to the fire station and on the approach to Gallagher retail park. Elsewhere the roads are unlit.
- 9.13.2. Figure 9-1 below, illustrates the Campaign for Rural England's (CPRE) Dark Sky mapping for the Scheme area. The colours indicate that the Scheme is largely within an area of a light level between 0.5 – 1 which is typical of a rural area. The lighting intensity increases from Uckington towards Cheltenham.

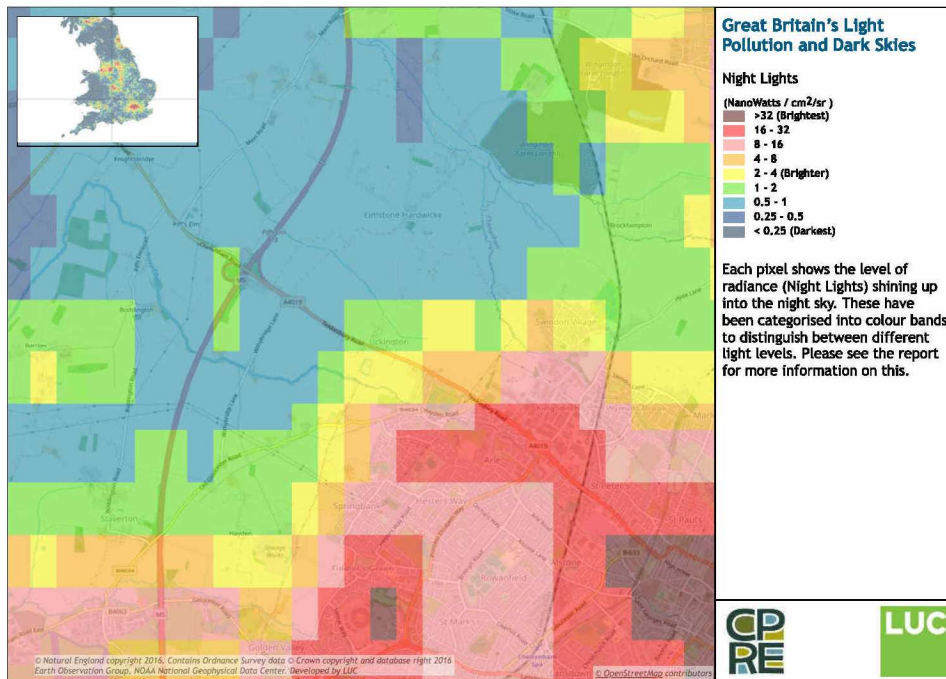


Figure 9-3 - GB's Light Pollution and Dark Skies Map

- 9.13.3. The current design proposed to light both sides of the A4019 between Junction 10 and the Gallagher retail park; and at the junction of the new link road with the B4643. The link road itself will not be lit.
- 9.13.4. The proposed lighting is likely to result in an increase in light pollution, affecting both visual receptors in close proximity and further away due to light spill effects. This has both visual amenity impacts and impacts on the night-time character of the area, potentially reducing its rural feel, but will also result in increased "street clutter" in the day-time views.
- 9.13.5. Given the distance and the intervening effect of Cheltenham, it is not considered that the lighting would have a significant effect upon the AONB.
- 9.13.6. A full light pollution impact assessment will be undertaken for the ES and innovative and alternative options during detail design will be considered to help limit light pollution.

9.14. Potential mitigation measures

- 9.14.1. The potential mitigation measures for the Scheme includes a range of measures designed to mitigate for potential effects on landscape character and visual amenity.

Construction

- 9.14.2. Recommended mitigation measures to reduce disruption, visual intrusion and to assist in landscape integration during the construction period are summarised as:
- Construction programme to be kept to the minimum practicable time to reduce the duration of any landscape and visual impacts.
 - Construction plant and materials storage areas to be appropriately sited to minimise their landscape and visual impact.
 - Work during hours of darkness to be avoided as far as practicable, and where necessary directed lighting would be used to minimise light pollution/glare.
 - Retaining and protecting existing mature trees and hedges and other vegetation wherever possible, maintaining important visual screening, landscape features and biodiversity habitat;
 - Construction to be managed such that removal of existing vegetation is minimised as much as possible.
 - Advanced or early planting of mitigation vegetation where possible given the Scheme program and phasing.
 - Links to PRoW and footpaths to be reinstated and created (where severance or diversion has resulted from the Scheme construction).
 - The lighting design would seek to minimise obtrusive light pollution. The design of the lighting would also consider potential landscape and ecological effects.

Operation

- 9.14.3. The preliminary Landscape and Environmental Mitigation Plan encompasses mitigation requirements and potential enhancements for ecology, noise and landscape assets.
- 9.14.4. The indicative proposals are illustrated on the Environmental Design Figures - Landscape Plan (Figures 1- 14, Appendix 2.2 GCCM5J10-ATK-EGN-ZZ-RP-LM-000015).
- 9.14.5. The proposed Landscape and Visual mitigation focuses on the following principles:
- Replacing any habitat losses as a minimum to ensure no net loss of biodiversity;
 - Retaining the natural character and planting local native species;
 - Replacement linear woodland along M5 and around new junction;
 - Hedgerow along link road with supplementary blocks of trees/wood particularly around bridge to reflect local character of roads and provide some screening for visual receptors, whilst creating an attractive route for users;
 - Species rich grass to embankments and verges, supplemented with bulb planting in some areas;
 - Wetland grass and planting to attenuation basins, which themselves will be designed to sit naturally within the landscape;
 - Replacement planting as appropriate along A4019 to help embed the widened route back into the landscape as well as ensure visual amenity for receptor; typically this may include roadside hedgerows and trees to central reserves and verges;
 - Sensitive design of noise barriers to ensure they provide visual as well as noise amenity; and
 - Earth contouring and appropriate planting in the flood compensation zone to the south-east area of M5 Junction 10.
- 9.14.6. Wherever possible, additional enhancement measures will be proposed to provide further improvements to the Scheme and the existing retained features within. These may include infilling existing hedgerows or improving water courses for the benefit of wildlife.

9.15. Residual impacts

- 9.15.1. The potential mitigation measures taken during the construction stage would reduce the effects from construction, however the effects cannot entirely be mitigated due to the nature and extent of construction and some adverse impacts would be experienced.
- 9.15.2. Mitigation measures for the vegetation loss and character change cannot easily be mitigated in the short term, although advance mitigation planting could be considered since this would aid the reduction of adverse effects more quickly.
- 9.15.3. Although there would be increased presence of roads and associated infrastructure, these would essentially be in keeping with the existing landscape character of the area. Similarly, adjustments to the M5 Junction itself would not be out of place in the existing landscape character context.
- 9.15.4. The widening of the A4019 would affect quite a change due to extensive loss of mature vegetation and buildings along the northern side especially. However, it is considered that in the long term the widening would sit comfortably in the landscape and views and provide an enhancement of the environment to improve the experience for residents, pedestrians, cyclists and vehicles users.
- 9.15.5. In the long term, assuming a well-considered design and following establishment of mitigation and enhancement planting is considered likely that residual effects would not be significantly adverse for landscape character or visual amenity. However, it should be noted that this is a preliminary observation and subject to a full assessment and consideration of the final detail design and mitigation.

9.16. Cumulative effects

- 9.16.1. Cumulative effects can arise intra-Scheme from interactions between the various topics, and inter-project, where more than one development is under construction at the same time that has the potential to impact on the same receptor.
- 9.16.2. The RFFP in Chapter 15 provides a list of the current potential developments relevant for the inter-project effects assessment and these will be updated and assessed in detail as part of the EIA process. As an indication, the Scheme and housing developments allocated by the Local Plan are the most likely to have large-scale impacts on the landscape environment, with additional vegetation loss, loss of open fields and increased built elements.
- 9.16.3. The LVIA by its nature is cumulative, considering the effects of topics intra-Scheme. For instance the effect of proposed noise barriers, attenuation basins, loss of habitats and the setting of heritage features are considered as part of an LVIA.

9.17. NPS compliance

- 9.17.1. The following text provides a summary of compliance with the key policy requirements in the NPS NN in relation to Landscape:
- Para 5.144 – requires reference to landscape character assessments and relevant policies., as well as visibility and conspicuousness of the Scheme. This assessment has considered these.
 - Para 5.151 refers to development within AONBs. This assessment has considered effects on the AONB setting.
 - Para 4.29 relates to criteria for ‘good design’. The proposed landscape mitigation measures seek to ensure an attractive visual appearance of the Scheme.
 - Paras 5.162-185 relate to mitigation of adverse effects on green infrastructure. It is considered that the potential mitigation and compensation options being proposed for this Scheme demonstrate a strong effort to provide opportunities to conserve and advance landscape value. Effort has been made to conserve as much of the landscape features that offer landscape value as possible, for example avoiding unnecessary loss of woodland and protected trees. Where the landscape value has

been degraded then potential mitigation measures have been proposed that aim to either replace or replicate features lost as a consequence of the Scheme.

9.18. Assumptions and limitations

- 9.18.1. The LVIA is based on, and limited to, the baseline conditions observed at the time of the site surveys and additional desktop information. Surveys cover the summer and winter to provide an indication of effect during a worst case and best case scenario.
- 9.18.2. Landscape is formed by the interplay between the natural, physical and cultural components of the environment and as such the assessment of landscape and visual effects is a process closely linked with other topics, notably ecology and the historic environment.
- 9.18.3. The LVIA considers the contribution heritage and ecological feature make to the character and value of the landscape and visual receptors, along with an assessment of the likely effect of the Scheme on the landscape character and views associated with heritage features. The LVIA is carried out in landscape and visual terms only, as an assessment of effects on heritage assets and their wider cultural setting (e.g. impacts on cultural and historic associations) are considered in other chapters. The LVIA does not assess direct or any other indirect effects on heritage or ecological resources.
- 9.18.4. The LVIA is based on views from publicly accessible locations. Where an impact on residential and other private views (e.g. commercial properties) is noted, this is necessarily estimated. The viewpoints that are illustrative of the worst-case potential impact from a representative range of receptors including residences, rights of way, public open spaces, private open space, commercial operations, the road and rail network etc. The LVIA does not necessarily identify all locations from where the proposed development would potentially be visible.
- 9.18.5. A full LVIA is yet to be carried out - once baseline information, detail design and any outcomes from the consultation process are confirmed, the full assessment of effects will be carried out.
- 9.18.6. Photography work has yet to be carried out, the scope of photography work and any requirements for photomontages will be confirmed and carried out as part of stakeholder consultation.
- 9.18.7. The ZTV is a tool to aid assessment and shows the theoretical visibility of the proposed design (at the time of writing), including projections for vehicular movements (cars at 1.9m and lorries at 4.7m).
- 9.18.8. The proposed mitigation measures are a working draft and will be subject to changes throughout the consultation process and more detailed engineering and environmental design work.
- 9.18.9. An arboricultural survey and impact assessment will be used to further inform assessments and mitigation measures.
- 9.18.10. For the ES LVIA, It is assumed that annual tree and shrub height growth is assumed to be between approximately 0.3-0.5m per year, so that if a mix of mature and immature tree and shrub planting was implemented with mature trees planted at 5m tall and whips or transplants at 0.6m – 0.8m high, by year 15 the tree height will be between approximately 9.2m – 12m.

The discipline specific chapters of this PEIR have been produced as separate documents.

10. Geology and Soils

11. Cultural Heritage

12. Materials and Waste

13. Population and Human Health

14. Climate

15. Cumulative Effects Assessment



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