A417 Missing Link
TR010056

6.2 Chapter 7 Landscape and Visual Effects

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Chapter 7 Landscape and Visual Effects

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7 Landscape and visual

7.1 Introduction

7.1.1 This Environmental Statement (ES) chapter reports the potential effects from the construction and operation of the A417 Missing Link (the scheme, as detailed in ES Chapter 2 The project (Document Reference 6.2)) on landscape and visual amenity, following the methodology set out in Design Manual for Roads and Bridges (DMRB) *LA 107 Landscape and visual effects*[1].

7.1.2 This chapter details the methodology followed for the assessment, summarises the regulatory and policy framework related to landscape character and visual amenity, and describes the existing environment in the area surrounding the scheme. Following this, the design, essential mitigation and residual effects of the scheme are discussed, along with the limitations of the assessment.

7.1.3 This Landscape and Visual Impact Assessment (LVIA) (referred to throughout as this assessment or this chapter) was undertaken in the context of Highways England's (the Applicant) scheme vision, which looks to create "*a landscape-led highways scheme that would conserve and enhance the special character of the Cotswolds AONB*". This includes "*reconnecting the landscape*" and "*bring about landscape benefits*"[2]. To help understand what effects the scheme would have on the Cotswolds Area of Outstanding Natural Beauty (AONB), each of the AONB's special qualities are assessed against the scheme proposals, in addition to the landscape assessment. For further information on the landscape-led design approach please refer to the Case for the Scheme (Document Reference 7.1), the Design Summary Document (Document Reference 7.7) and the Design Summary Report.

7.1.4 Although closely related, landscape and visual effects are assessed separately. The landscape assessment assesses the likely changes to the features and characteristics of the landscape, while the visual assessment assesses changes to views and the visual amenity experienced by people.

Definitions of landscape and visual receptors

7.1.5 The Landscape Institute and Institute of Environmental Management and Assessment's *Guidelines for Landscape and Visual Impact Assessment* (GLVIA3) Third Edition[3] state:

- "Landscape as a resource: "*landscape receptors, including the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape in different areas.*"
- Visual amenity: "*visual receptors, that is, the people who would be affected by changes in views or visual amenity at different places*."

7.1.6 DMRB *LA 107* defines landscape character and visual amenity as:

- landscape character: "*a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse*."
- visual amenity: "*overall enjoyment of a particular area, surroundings, or views in terms of people's activities - living, recreating, travelling through, visiting, or working*."

7.2 Competent expert evidence

7.2.1 The landscape and visual specialist holds a BSc in Landscape Design and Ecology and a Master's in Landscape Architecture. They have worked as a professional landscape architect for 11 years and are a chartered member of the Landscape Institute. Full details of relevant project experience are provided in ES Appendix 1.2 Competent expert evidence (Document Reference 6.4).

7.3 Legislative and policy framework

Legislation

7.3.1 There is no legislation of direct relevance to the landscape and visual assessment scope and methodology.

Policy framework

7.3.2 As discussed in ES Chapter 1 Introduction (Document Reference 6.2), the primary basis for deciding whether to grant a Development Consent Order (DCO), not all DCOs, is the *National Policy Statement for National Networks* (NPSNN)[4], which sets out policies to guide how DCO applications should be decided and how the effects of national networks infrastructure are considered. Table 7-1 NPSNN policies relevant to LVIA identifies and then specifies where in this chapter information is provided to address the policy.

Table 7-1 NPSNN policies relevant to LVIA

Relevant NPSNN paragraph reference	Requirement of the NPSNN	Where in the chapter is information provided to address this policy.
5.144	The NPSNN notes that where a development is subject to an Environmental Impact Assessment (EIA), an assessment of any significant landscape and visual impacts should be undertaken by the applicant within the EIA and described within the ES.	This policy is addressed by the assessment of landscape and visual effects within this chapter.
5.145	The applicant's assessment should include any significant effects during construction of the project and/or the significant effects of the completed development and its operation on landscape components and landscape character (including historic landscape characterisation).	Significant effects for both the construction and operation stages of the scheme have been assessed within this chapter. Refer to sections 7.8 Potential impacts and 7.10 Assessment of likely significant effects.
5.146	The Applicant's assessment should consider any relevant national and local development policies, significant effects during construction and operation, and visibility and conspicuousness.	This policy is addressed by the inclusion and consideration of existing relevant policies in the LVIA Policy and Guidance (ES Appendix 7.1 LVIA policy and guidance (Document Reference 6.4)).
5.147	Compliance with the respective duties in section 11A of the National Parks and Access to Countryside Act 1949[5] and section 85 of the Countryside and Rights of Way Act 2000[6] is required.	Section 11A of the National Parks and Access to Countryside Act 1949 states that "*fostering the economic and social well-being of local communities within the National Park*…" while also conserving and enhancing the natural beauty, wildlife, and

Relevant NPSNN paragraph reference	Requirement of the NPSNN	Where in the chapter is information provided to address this policy.
		cultural heritage of the area. If a conflict arises, the greater weight shall be attached to conserving and enhancing the area. This is addressed in the landscape led ES Figure 7.11 Environmental Masterplan (Document Reference 6.3). Section 85 of the Countryside and Rights of Way Act 2000[7] is addressed by conserving and enhancing the natural beauty of the Area of Outstanding Natural Beauty (AONB) through the design enhancements as part of the scheme. See ES Figure 7.11 Environmental Masterplan (Document Reference 6.3).
5.148	*"For significant road widening or the building of new roads in National Parks and the Broads applicants also need to fulfil the requirements set out in Defra's English national parks and the broads: UK government vision and circular 2010 or successor documents. These requirements should also be complied with for significant road widening or the building of new roads in Areas of Outstanding Natural Beauty."*	These requirements link to s5(1) of the National Parks and Access to Countryside Act 1949 (conserving and enhancing the natural beauty, wildlife, and cultural heritage). See ES Figure 7.11 Environmental Masterplan (Document Reference 6.3) and section 7.9 Design, mitigation, and enhancement measures.
5.149	The NPSNN seeks careful design, having regard to siting, operational and other constraints, in order to avoid or reduce landscape harm and to provide reasonable mitigation where possible and appropriate.	The design of the scheme is landscape led, as set out in ES Chapter 2 The project (Document Reference 6.2) and the Design Summary Document (Document Reference 7.7). See ES Figure 7.11 Environmental Masterplan (Document Reference 6.3) and section 7.9 Design mitigation and enhancement measures.
5.150-153	Great weight should be given to conserving landscape and scenic beauty in nationally designated areas. These areas have the highest status of protection in relation to landscape and scenic beauty. In decisions, the Secretary of State has a statutory duty to have regard to the statutory purposes which help ensure their continued protection. The Secretary of State should refuse development consent except in exceptional circumstances and where it can be demonstrated that it is in the public interest. There is a strong presumption against any significant road widening or the building of new roads in these areas, compelling reasons for the new or enhanced capacity are required, and with any benefits outweighing the costs significantly. The applicant should ensure the project would be carried out	All design decisions have been taken in the context of the scheme design being landscape-led, giving due consideration to special qualities of the Cotswolds AONB. See ES Figure 7.11 Environmental Masterplan (Document Reference 6.3) and section 7.9 Design mitigation and enhancement measures.

Relevant NPSNN paragraph reference	Requirement of the NPSNN	Where in the chapter is information provided to address this policy.
	to high environmental standards and where possible include measures to enhance other aspects of the environment. Where necessary, the Secretary of State should consider the imposition of appropriate requirements to ensure these standards are delivered.	
5.154 and 5.155	Paragraphs 5.154 and 5.155 are to do with "*developments outside nationally designated areas which might affect them.*"	The scheme is located wholly within the Cotswolds AONB, paragraphs 5.154 and 5.155 do not apply.
5.156	The NPSNN states that local landscape designations should not be used in themselves as reasons to refuse consent.	There are no relevant local landscape designations within the 3 kilometre study area, so these have not been considered within the assessment.
5.157	The NPSNN states: "*In taking decisions, the Secretary of State should consider whether the project has been designed carefully, taking account of environmental effects on the landscape and siting, operational and other relevant constraints, to avoid adverse effects on landscape or to minimise harm to the landscape, including by reasonable mitigation*."	The scheme design vision and landscape-led approach, as agreed with stakeholders and consultees sets out how the scheme should be judged, taking into account its setting within a designated landscape. The scheme vision (refer to ES Chapter 2) has informed the design process throughout, and is the reason for including features such as the Cotswold Way crossing (Ch 2+100) and Gloucestershire Way crossing (Ch 2+690), overbridges planted with hedgerows, the Air Balloon Way, landscape bunding and wider planting than would be expected on a typical road project, see ES Chapter 2 The project for details on Embedded mitigation and ES Figure 7.11 Environmental Masterplan (Document Reference 6.3) and section 7.9 Design mitigation and enhancement measures.
5.158	The NPSNN states: "*The Secretary of State would have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the development*."	Communities and other sensitive visual receptors have been assessed in a transparent way to help the Planning Inspectorate (PINS) make an informed decision about the visual effects of the scheme.
5.159	With regard to mitigation, the NPSNN states: "*Reducing the scale of a project or making changes to its operation can help to avoid or mitigate the visual and landscape effects of a proposed project. However, reducing the scale or otherwise amending the design or changing the operation of a proposed development may result in a significant operational constraint and reduction in*	Two tiers of mitigation have been designed into the scheme including, embedded mitigation that are design principles adopted to avoid or prevent adverse environmental effects and essential mitigation which are measures required to reduce and if possible offset likely significant adverse environmental effects, in support of the reported significance of effects in the environmental assessment.

Relevant NPSNN paragraph reference	Requirement of the NPSNN	Where in the chapter is information provided to address this policy.
	function. There may, be exceptional circumstances, where mitigation could have a very significant benefit and warrant a small reduction in scale or function. In these circumstances, the Secretary of State may decide that the benefits of the mitigation to reduce the landscape effects outweigh the marginal loss of scale or function."	Please refer to Chapter 2 of the ES for details on embedded mitigation and section 7.9 of this assessment for details on essential mitigation.
5.160	The NPSNN states: "*Adverse landscape and visual effects may be minimised through appropriate siting of infrastructure, design (including choice of materials), and landscaping schemes, depending on the size and type of proposed project. Materials and designs for infrastructure should always be given careful consideration*."	DMRB *LA 107* acknowledges that road infrastructure can have environmental effects. Using the scheme vision to inform the design process has resulted in a scheme that would have measurably reduced effects on the landscape and visual resource.
5.161	The NPSNN states: "*Depending on the topography of the surrounding terrain and areas of population it may be appropriate to undertake landscaping off site, although if such landscaping was proposed to be consented by the development consent order, it would have to be included within the order limits for that application. For example, filling in gaps in existing tree and hedge lines would mitigate the impact when viewed from a more distant vista.*"	No offsite planting is being proposed with all mitigation is located within the order limits to be considered as part of the DCO.
5.84	The NPSNN states: "*Where the development is subject to an Environmental Impact Assessment, the applicant should assess any likely significant effects on amenity from emissions of…artificial light and describe these in the Environmental Statement*."	Responding to the scheme's setting within the Cotswolds AONB and associated dark skies aspiration, the scheme is unlit. Commentary on changes to night-time lighting has also been carried out as part of the assessment.
5.86	The NPSNN advises the applicant to consult the relevant local planning authority about the scope and methodology of the assessment.	The local authorities and statutory consultees have been consulted on the scope and methodology of the assessment through a series of Technical Working Groups, during the 2019 statutory consultation, the 2020 supplementary consultation and in some circumstances on a one to one basis via technical specialist calls, email or meeting.

7.3.3 For a full description of how the scheme meets and addresses the NPSNN Policy tests please refer to the DCO Case for the Scheme (Document Reference 7.1). This describes the need for the scheme, any exceptional circumstances that support the need for the scheme and where it can be demonstrated that it is in the

public interest. It also describes how the design of the scheme has been developed to moderate detrimental effects of the scheme and how the design has been developed to high environmental standards and where possible includes measures to enhance other aspects of the environment.

7.3.4 Given the context of the scheme situated within a designated landscape, the Applicant adopted a landscape-led approach to highways design with a focus on conserving and enhancing the special character of the Cotswolds AONB; reconnecting landscape and ecology; bringing about landscape, wildlife and heritage benefits, including enhanced residents' and visitors' enjoyment of the area; improving quality of life for local communities; and contributing to the health of the economy and local businesses.

7.3.5 Landscape-led means that landscape was a primary consideration in every design decision made, with an understanding of how the design should meet the character of the surrounding area, rather than changing the landscape to fit our proposals.

7.3.6 Details of the landscape-led design approach can also be found in the Case for the Scheme (Document Reference 7.1) and the Design Summary Document (Document Reference 7.7).

National and local policy

7.3.7 Other relevant national and local policies have been considered as part of the assessment where these have helped identify receptors and their sensitivity; the assessment methodology; the potential for significant environmental effects; and required mitigation. These policies include:

- The *National Planning Policy Framework* (NPPF)[8] –outlines how development should contribute to conserving, protecting, and enhancing the natural, built, and historic environment. The NPPF states that developments should protect and enhance public rights of way (PRoW) and access (paragraph 98) and how developments should ensure that they are sympathetic to local character and history including the environment and landscape setting, should establish or maintain a strong sense of place (paragraph 127). Section 15 of the NPPF sets out how planning policies and decisions should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes and recognising the intrinsic character and beauty of the countryside (paragraph 170). On promoting sustainable transport, great weight is to be given to conserving landscape and scenic beauty (paragraph 172).
- A *Green Future: Our 25-year plan to improve the environment*[9] – introduces the goals for thriving wildlife and plants, enhanced beauty and engagement with the natural environment and mitigating climate change.
- Forestry Commission and Natural England, November 2018. *Ancient woodland, ancient trees, and veteran trees: protecting them from development*[10]. Guidance (known as standing advice) on how to conserve and enhance irreplaceable landscape features like ancient woodland and ancient or veteran trees and reduce the level of impact of proposed development.
- *Cotswold District Council*[11] *Local Plan 2011 – 2031* – Policy EN4 The Wider Natural and Historic Landscape, policy EN5 Cotswolds AONB, and policy EN6 Special Landscape Areas. These policies outline where development should be sensitive to their surroundings and enhance significant landscape features including key views, settlement patterns and the special qualities of the AONB.

- *Joint Core Strategy*[12] – Policy SD4 outlines design requirements so that material choice enhance local distinctiveness and establish a strong sense of place. Policy SD5 ensures the green belt continues to serve its function. Policies SD6, SD7, SD8 and INF3 combine to state that development should seek to protect the landscape character and environment.
- *Pre-submission Tewkesbury Borough Plan*[13] - provides site options for future development and draft policies for those areas not covered by national guidance or the Joint Core Strategy [14].
- *Cotswolds AONB Management Plan 2018 – 2023*[15] – sets out the Cotswolds Conservation Board (CCB) vision and the outcomes to achieve these.

7.3.8 ES Appendix 7.1 LVIA policy and guidance (Document Reference 6.4) provides details of relevant policies and guidance.

7.4 Assessment methodology

7.4.1 The method for assessing landscape and visual effects is based on the principles set out in the DMRB *LA 107* Landscape and Visual Effects, Rev 2. Guidance was also taken from the Landscape Institute's *GLVIA3*. A summary of the combined method is as follows:

- Defining the purpose and scope of assessment, including the study area.
- Setting out assumptions and limitation, including Limits of Deviation (LoD).
- Establishing the baseline.
  - undertaking a desk-based study.
  - undertaking a field study - photographic record and landscape survey.
- Identification of receptors - classification/description of landscape character types/areas, establishing the visual amenity and view as experienced by people.
- Identification and description of likely significant effects on the receptors (landscape character, visual amenity, and views).
- Making judgements on receptor sensitivity and likely magnitude of effect (change) as a result of the scheme.
- Identification of design (including embedded mitigation), essential mitigation and enhancement measures.
- Combining the mitigation with the scheme proposals to systematically and transparently assess the level (and significance) of landscape and visual effects, by combining the receptor's sensitivity (its susceptibility and value) and the magnitude of effect (a combination of the size/scale of effect, geographical extent, duration and reversibility).
- Making judgements on the likely significance of effects identifying them as either adverse or beneficial.

7.4.2 In addition to DMRB *LA 107* and *GLVIA3*, the assessment also follows guidance set out in the following documents:

- Highways England, July 2019. The Design Manual for Roads and Bridges LA 101 Introduction to environmental assessment, Rev 0.
- Highways England, August 2020. The Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring, Rev 1.
- Highways England, March 2020. The Design Manual for Roads and Bridges LA 120 Environmental management plans, Rev 1.

- Highways England, March 2020. The Design Manual for Roads and Bridges LD 117 Landscape design, Rev 0.
- Highways England, March 2020. The Design Manual for Roads and Bridges LD 118 Biodiversity design, Rev 0.
- Highways England, March 2020. The Design Manual for Roads and Bridges LD 119 Roadside environmental mitigation and enhancement, Rev 0.
- Landscape Institute (2017) Visual representation of development proposals, Technical Guidance Note 06/19.
- Natural England (2014). An approach to Landscape Character Assessment.

7.4.3 ES Appendix 4.5 Changes to scope and methodology (Document Reference 6.4) outlines the changes in scope and methodology since the submission of the Scoping Report in May 2019.

Approach to identification of the study area

7.4.4 DMRB *LA 107* states that in establishing the study area, it should be suitable and proportionate for this specific scheme.

7.4.5 To establish the study area, a desk study was undertaken to review mapping and literature to gain an understanding of the landscape and visual context which surrounds the scheme – the landscape character, visual resources, key features or views, and who or what might be affected by the scheme. This included a review of Ordnance Survey mapping, relevant Landscape Character Assessments at a regional and local level, and the identification of any key landscape designations that may be impacted by the scheme.

7.4.6 Digital data was collected for a wide area around the scheme including topography, woodland cover, landscape, ecological and heritage designations, historic landscape characterisation, landscape character and land uses.

7.4.7 The topographic data, in the form of a digital surface model was used in combination with a 3D model of the scheme to establish the extent of areas where views of the scheme might be experienced. This process, known as the Zone of Theoretical Visibility (ZTV) helped to identify areas that may experience visibility of the scheme. This analysis informed the extent of the study area, as illustrated in ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with Vehicles) and Viewpoints (Document Reference 6.3). Using the ZTV, in addition to field knowledge gained thorough desk-study and field work, it was determined that significant effects would more likely occur within approximately 3 kilometres of the scheme. Beyond this distance, significant effects are unlikely to arise due to the nature of the development, the distance between receptor and effect, topography, and existing vegetation. This approach was discussed and agreed with stakeholders.

7.4.8 The study area includes the scheme and the wider landscape around it, up to 3 kilometres from the mainline carriageway of the scheme, which may potentially be influenced in a significant manner. The carriageway was chosen as this is where the greatest change is likely to arise as a result of the scheme. Refer to landscape figures ES Figure 7.1 Visibility (ZTV no vehicles) (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with Vehicles) (Document Reference 6.3) which shows the extent of the 3km study area.

Approach to identification of baseline conditions

7.4.9 The landscape and visual baseline were established by initially undertaking a literature review of relevant legislation, policy, guidelines, and published landscape character assessments, along with developing a ZTV for the 3 kilometre study area, based on the topography of the receiving landscape and the scheme proposals. The ZTV highlighted areas within the landscape which were likely to experience the greatest visual change as a result of the scheme. This allowed representative, specific, and illustrative viewpoints to be selected in consultation with the scheme stakeholders and statutory consultees.

7.4.10 A programme of site visits was undertaken to establish and confirm the baseline condition for both landscape and visual receptors. This involved site surveys recording landscape character descriptions and features of importance using digital survey sheets linked to a database and recording the available visual resource from the selected viewpoints.

7.4.11 Refer to section 7.7 Baseline conditions for full details of the baseline conditions.

7.4.12 The following baseline studies have been carried out to inform the assessment:

- Desk study and computer based visual analysis (ZTV as detailed in section 7.6 Study area).
- Consultation with statutory consultees, stakeholders, and members of the public (refer to section 1.6 Stakeholder engagement of ES Chapter 1 Introduction (Document Reference 6.2) for further information).
- Field studies to familiarise and record existing site conditions (landscape character, views and visual amenity), establish and identify receptors and characterise the landscape within the study area, including identifying constituent elements, condition of landscape features, experience, and geographical extent and value of the landscape and visual resource.
- Preparation of figures, based on data obtained during both the desk and field studies, including:
  - ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints.
  - ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints.
  - ES Figure 7.3 Designations.
  - ES Figure 7.4 AONB Landscape Character Types.
  - ES Figure 7.5 Historic Landscape Characterisation.
  - ES Figure 7.6 Landscape Features and Topography.
  - ES Figure 7.7 Campaign to Protect Rural England (CPRE) Dark Skies Mapping.
  - ES Figure 7.8 CPRE Tranquillity Mapping.
  - ES Figure 7.9 Retained Vegetation.
  - ES Figure 7.10 Photosheets and Visualisations.
  - ES Figure 7.11 Environmental Masterplan.

Zone of Theoretical Visibility Methodology

7.4.13 To help determine the study area and the extent of visibility, a ZTV was created using a 3D model of the scheme, refer to ES Figure 7.1 Visibility and Viewpoints and ES Figure 7.2 Visibility (including HGVs) and Viewpoints (both Document Reference 6.3).

7.4.14 Following consultation, the ZTV was further refined and is based on two metres Digital Surface Map (DSM) data to identify areas from which the scheme would

theoretically be visible. The DSM data reflects the 'surface' condition with heights data on two metres grid, picking up existing features such as buildings and woodland. Small individual buildings, hedgerows and individual trees are not included in the model, but these features would provide additional local screening. DSM data was chosen over Digital Terrain Model (DTM) as DTM only provides height data for the ground topography and does not include addition landscape features (woodland and buildings). Therefore, it is considered that the ZTV shows the best representation in terms of the theoretical extent of visibility. A limitation associated with DSM, is that the Geographic Information Software (ArcGIS) assumes that a person could be stood on top of tree canopy or on top of building, which in reality would not be possible or typical.

7.4.15 Using GIS, the main features of the Scheme (carriageway edge, central reservation, retaining walls, structures, drainage ponds, noise barriers and stone walls) are translated into point data and depicted by a total of 77,170 points at two metre spacings. The road surface is also mapped at two metre centres using offset from edge of carriageway with an additional applied height of 4.7 metres to these points to account for Heavy Goods Vehicles (HGVs). HGVs were not simulated for the sideroad or on top of bridges.

7.4.16 Output raster image (grid of individual pixels that form an image) presents how many of these points can be seen from each two metre grid square. This is then used to calculate the percentage of the total scheme which is visible. Output pixels underneath the scheme footprint were removed from the analysis, as these locations will have high visibility and their inclusion would have skewed the results.

7.4.17 The methodology to create the ZTV using modelling software ArcGIS was to imprint the scheme onto the existing DSM data (by extracting all the 3D values) to create a modified DSM. The points from the model were then overlaid and analysed using the 'Viewshed' analysis tool (computational algorithm that delineates a viewshed – area of potential visibility) to assess the visibility from the DSM of all these points.

7.4.18 Two ZTVs were generated by ArcGIS computer software. The first ZTV places the 3D scheme design model (landscape proposals not included), into the DSM and scheme the theoretical extent of visibility of the scheme from an average person's eye level (average assumed height of 1.6 metres). The second ZTV uses the 3D scheme design model and extends the base topographic points by 4.7 metres height above the layout of the scheme to represent lorries and HGVs, projecting a worst-case scenario for any vehicle or structure included within the scheme. In both scenarios, points are allocated along the layout at two metres intervals. Both ZTVs were used to inform the assessment.

Landscape assessment methodology

7.4.19 In order to make judgments on the likely significance of an effect on landscape receptors, the nature of the receptor (sensitivity) and the nature of the effect on those receptors (magnitude of effect) need to be considered. These judgements then have to be combined with regard to how they interrelate to form a professional judgement on the overall level of effect and if this is judged to be adversely or beneficially significant or not.

Landscape sensitivity

7.4.20 As stated in DMRB LA 107, sensitivity is a combination of a landscape receptor's susceptibility to accommodate the specific proposed change without negative consequences and the value attributed to the receptor.

7.4.21 The assessment reports the sensitivity of landscape receptors by combining judgements of the receptor's susceptibility to the proposed change from the baseline situation and the value attached to that receptor.

7.4.22 To determine the degree of sensitivity that a receptor has to the type of change being proposed upon it, each composite landscape element or characteristic or receptor must be considered. This judgement of each receptor is informed by a study of the individual landscape element, feature or set of characteristics and in particular its:

- Importance
- Quality/condition
- Rarity
- Value
- Scale of contribution to the landscape character
- Degree to which it can be protected, mitigated, replaced, or substituted

Susceptibility of landscape receptors

7.4.23 DMRB *LA 107* comments that the assessment of susceptibility to change should be tailored to the scheme. *GLVIA3* defines susceptibility as:

"the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the scheme without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies" (GLVIA3 paragraph 5.40).

7.4.24 The assessment focuses on the landscape receptor's ability to accommodate construction activities and operational effects of large-scale road infrastructure, including a multi-lane dual carriageway, junctions, overbridges, underpasses, sideroads, and the loss of existing landscape features including woodland, hedgerows, field boundaries, as well as the A436 link road and associated features. Effects of decommissioning are not assessed as the road infrastructure would be present for 60 years and is therefore considered permanent.

Landscape value

7.4.25 The second part of judging a receptor's sensitivity is to determine its value. This has been done with reference to designation and the level of policy importance that they signify and the application of criteria that indicates value, such as landscape or scenic quality, conservation interest, recreational value, or perceptual and cultural associations.

Combining susceptibility and value

7.4.26 Once the level of susceptibility and value for each landscape receptor has been established, they can be combined to provide a judgement on their level of sensitivity to the scheme. These are reported as either very high, high, medium, low or negligible, as per Table 7-2.

Table 7-2 Landscape sensitivity

Landscape sensitivity (susceptibility and value) of receptor/resource	Typical description
Very high	Landscapes of international/national importance and rarity or value with no or very limited ability to accommodate change without substantial loss/gain of unique or rare features (i.e. national parks, AONB, internationally acclaimed landscapes - UNESCO World Heritage Sites), such as the Cotswolds AONB, or irreplaceable features which cannot be mitigated for or substituted.
High	Landscapes of national importance containing distinctive features/elements with limited ability to accommodate change without incurring large loss/gain of special or rare features (i.e. designated areas, areas of strong sense of place - registered parks and gardens (RPG), country parks), including Crickley Hill Country Park and Cowley Manor RPG, or features which cannot be protected and have limited opportunity for replacement or substitution.
Medium	Landscapes of local or regional recognition of medium importance able to accommodate some change (i.e. features worthy of conservation, some sense of place or value through use/perception) or features which can be partially protected or have some opportunity to be replaced and overtime effectively substitute for the loss, or parts of designated landscapes which have degrading features, are in poor quality, or where parts of the landscape do not fit with the key characteristics of the wider area.
Low	Local landscape areas or receptors of low importance with ability to accommodate change (i.e. non-designated areas of local recognition or areas of little sense of place) or features which to some extent can be protected or similar replaced to match the baseline.
Negligible	Landscapes of very low importance and rarity able to accommodate change, such as brownfield sites or area of existing development, or features which can be protected or if lost be easily replaced or substituted (e.g. stone walls, fencing or other man-made features).

Table taken from DMRB *LA 107* – Landscape sensitivity and typical descriptions and amended to reflect the local context

Magnitude of landscape effect

7.4.27 To report on the magnitude of effect (change), for each landscape receptor judgements are made in terms of the size and scale of effect of the proposed change, the geographical extent over which change would be experienced, duration, and reversibility. Magnitude of effect is determined for each phase of the scheme during construction and operation years 1 and year 15.

Size/scale of landscape change

7.4.28 The size and scale of change depends on the degree to which a landscape receptor is changed by the scheme, such as the alteration, removal, or addition of new features within the landscape, and whether these are perceived as typical. Geographical extent of landscape effect

7.4.29 To establish the geographical extent of an effect, a judgement about how far ranging the effect is made, in terms of its area where an effect can be experienced. This can be judged on both the length of the scheme and the area it covers, and the distance the effect extends out from the scheme.

Duration of landscape effect

7.4.30 The duration is reported against each of the scheme stages which may give rise to effects construction phase (overall construction period of 42 months), opening year (year 1) and design year (year 15), refer to 'Temporal scope' in paragraph 7.4.71.

Reversibility of landscape effect

7.4.31 Reversibility relates to whether the change is likely to be reversed, such as construction effects which could mostly be recorded as 'reversible'. Where this is achieved through the replanting of vegetation or rebuilding a stone wall, the landscape may be restored to something similar. However, as it is not directly equivalent to the original, this could be recorded as 'partially reversible'. The permanent presence or removal of built structures or the loss of ancient woodland or veteran trees would be considered 'not reversible'.

7.4.32 Levels of magnitude of effect (change) and nature of effect are set out in Table 7-3. Note that a receptor's magnitude of effect can be attributed to any of the typical descriptions below and do not need to meet all within the category.

Table 7-3 Magnitude of effect - landscape

Magnitude of effect (change)		Typical description
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 (i.e. extensive woodland planting or earthworks which integrate/fit with the local landscape character).
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 (i.e. small-scale tree and shrub planting or earthworks which at some degree fit with the local landscape character).
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 (i.e. individual tree planting or minor changes to field boundaries such as gapping up of hedgerows or rebuilding of stone walls).
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.

Table taken from DMRB *LA 107* (Table 3.24 Magnitude and nature of effect on the landscape and typical descriptions).

7.4.33 The susceptibility and value (sensitivity) of each receptor to the proposed changes are then combined with judgements on size and scale, geographical extent, duration, and reversibility of effects (magnitude of effect) to provide an overall judgement for each identified effect. This involves making an informed professional assessment of the overall level of each effect, as set out in *GLVIA3* and following the significance criteria in Table 'Significance categories and typical descriptions' set out in Table 7-6.

Significance of effect on landscape receptors

7.4.34 Significance of effect is assessed in the same way for both landscape and visual receptors. Refer to paragraph 7.4.61 where this approach is set out.

7.4.35 A full list of landscape receptors that have been assessed can be found in section 7.7 Baseline conditions and section 7.10 Assessment of likely significant effects.

Judgements on likely changes to the special qualities of the Cotswolds AONB

7.4.36 In addition to the landscape assessment which considers how the scheme would likely affect landscape features and characteristics, consideration has also been given to how the scheme is likely to change the special qualities of the Cotswolds AONB. These are reported in Table 7-13 with a description of the likely changes, whether they are adverse or beneficial and a judgement on how important these changes would be to the special qualities. This table is presented in a form that does not follow the methodology for the rest of the assessment and does not report significant effects for each of the special qualities. This because these are based on qualitative judgements, which are intended to give the decision maker and stakeholders additional information on how the scheme specifically may affect the special qualities of the Cotswolds AONB.

Visual assessment methodology

7.4.37 The section below sets out the methodology used for the visual assessment, following similar principles to the landscape methodology.

7.4.38 The visual baseline is recorded in terms of the different groups of people (receptors) who may experience views of the scheme. The nature of their existing views and visual amenity is described.

7.4.39 To aid with the visual assessment, viewpoints have been selected (including representative viewpoints, specific viewpoints, and illustrative viewpoints), in consultation with stakeholders, from where the proposal would be seen by the receptor group. These include public viewing points, transport or recreational routes and places where people visit.

7.4.40 Panoramic photography was undertaken for each viewpoint (47 locations in total), refer to ES Figure 7.10 Photosheets and Visualisations (Document Reference 6.3) and ES Appendix 7.3 Visual Baseline (Document Reference 6.4). This records the baseline situation and details a judgement on the extent of likely visibility of the scheme, as experienced by people at these locations. At a number of these viewpoint locations, verified photography and survey information was also undertaken, to aid in the production of photomontages of the scheme. The methodology for the production of photomontages can be referred to in ES Appendix 7.7 Visually Verifiable Montage Methodology (Document Reference 6.4). These locations were discussed with stakeholders at Technical Working

Groups (TWG). TWGs were set up with key stakeholders to discuss discipline or topic specific issues such as landscape or biodiversity.

7.4.41 As with assessing landscape effects, making judgements on the likely significance of an effect on visual receptors requires consideration of the nature of the receptor (sensitivity) and the nature of the effect on those receptors (magnitude of effect (change)), which are combined using professional judgement.

Visual sensitivity

7.4.42 Visual sensitivity is a combination of a visual receptor's susceptibility to change and the value associated with a view (DMRB LA 107, paragraph 3.4).

Susceptibility of visual receptor

7.4.43 DMRB *LA 107* comments that the assessment of susceptibility to change should be tailored to the scheme. *GLVIA3* states that the susceptibility of different visual receptors to changes in views and visual amenity relates to:

"*the occupation or activity of people experiencing the view at particular locations; and the extent to which their attention or interest may therefore be focused on the views and the visual amenity they experience at particular locations*" (*GLVIA3* paragraph 6.32).

7.4.44 The assessment focuses on a visual receptor's ability to accommodate changes as a result of the construction and operation of large-scale road infrastructure in their view or visual resource. These changes include a multi-lane dual carriageway, junctions, loss of existing features, or changes in the composition of the view or visual resource, such as through the loss of woodland and hedgerows, changes in topography or inclusion of new features such as the A417 dual carriageway, the A436 link road and associated features such as overbridges and junctions.

7.4.45 *GLVIA3* (paragraph 6.33) sets out that visual receptors most susceptible to change include residents or communities where views contribute to the landscape setting enjoyed by residents in the area, people engaging in outdoor recreation (such as users of PRoW or special category land (Open Access Land). Particularly where their attention or interest is likely to be focused on the landscape and on particular views, and visitors to heritage assets, or other attractions where views of the surrounding are an important contributor to their outdoor experience.

7.4.46 Visual receptors with lower susceptibility to change include travellers on roads, rail and other transport routes, people engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape, and people at their place of work.

7.4.47 A residential amenity assessment has not been carried out as part of this assessment. This type of assessment is normally undertaken separately from the LVIA and is not a requirement of DMRB *LA 107* or *GLVIA3*. Therefore, views or the visual amenity from individual residential properties (private viewpoints) have not been assessed. In addition, a residential amenity assessment was not requested by the PINS in their Scoping Opinion or by stakeholders during the 2019 statutory consultation or 2020 supplementary consultation. The combined effects on several properties have been considered by aggregating properties within settlements and reported against community groups.

7.4.48 It is notable that there is no right in planning law to a private view. This has been accepted by various appeal decisions determined by PINS. Therefore, views from individual private properties do not form part of the assessment.

Visual value

7.4.49 The second part of judging a receptor's sensitivity is to determine its value. *GLVIA3* (paragraph 6.37) suggests that this is done with reference to designated views, identified viewpoints on maps such as Ordnances Survey (OS) 1:25,000 mapping, or where mentioned in local policy documents or management plans that indicate value, such as aesthetic or scenic quality, special qualities or key characteristics of the AONB or landscape, recreational value and cultural associations, such as the Cotswold Way National Trail and Gloucestershire Way long distance footpath.

7.4.50 Other indicators of visual value include the inclusion of viewpoints in guidebooks or tourist maps, or through the provision of facilities for their enjoyment (such as parking places, sign boards and interpretive materials) or reference to them in literature or art.

7.4.51 Once the level of susceptibility and value for each visual receptor has been established, they can be combined to provide a judgement on their level of sensitivity to the scheme. This is reported as either very high, high, medium, low or negligible, as set out in Table 7-4. Note that a receptor's sensitivity can be attributed to any of the typical descriptions and do not need to meet all within the category.

Table 7-4 Visual sensitivity

Visual sensitivity (susceptibility and value) of receptor/resource	Typical description
Very high	i. static views from and of major tourist attractions; ii. views from and of very important national/international landscapes, cultural/historical sites (e.g. National Parks, Areas of Outstanding Natural Beauty (AONB), UNESCO World Heritage sites) such as from the Cotswolds AONB; and iii. receptors engaged in specific activities for enjoyment of dark skies or scheduled monuments which have specific value related to views towards or from the monument, including Crickley Hill, Great Witcombe Romano-British villa, Coopers Hill and Leckhampton Hill.
High	i. views experienced by users of nationally important PRoW/recreational trails (e.g. national trails, long distance footpaths), such as the Cotswold Way National Trail or Gloucestershire Way long distance footpath; ii. views by users of Open Access Land or Common Land (e.g. Barrow Wake) and public open spaces for enjoyment of the countryside (e.g. country parks), including Crickley Hill Country Park; iii. static views from dense residential areas, longer transient views from designated public open space or recreational areas, such as from Brockworth; and iv. views from and of rare designated landscapes of national importance (e.g. Registered Parks and Gardens), such as Cowley Manor.
Medium	i. views experienced by uses of local PRoW network; ii. static views from less populated residential areas, schools and other institutional buildings and their outdoor areas, such as Birdlip, Stockwell and Cowley or National Star College;

Visual sensitivity (susceptibility and value) of receptor/resource	Typical description
	iii. views by outdoor workers, such as farm workers; iv. 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 v. views from and of landscapes of regional importance.
Low	i. views by users of main roads or passengers in public transport on main arterial routes; ii. views by indoor workers; iii. views by users of recreational/formal sports facilities where the landscape is secondary to enjoyment of the sport; and iv. views by users of local public open spaces of limited importance with limited variety or distinctiveness.
Negligible	i. quick transient views such as from fast moving vehicles on motorways or trunk roads, such as the A417; ii. views from industrial area or land awaiting re-development; and iii. views from landscapes of no importance with no variety or distinctiveness.

Table taken from DMRB *LA 107* – Visual sensitivity and typical descriptions, with minor amendments to reflect scheme specific context.

Magnitude of visual effect

7.4.52 To report on the magnitude of effect, for each visual receptor judgements are made in terms of the size and scale of effect, its geographical extent, duration, and reversibility.

7.4.53 DMRB *LA 107* states that when reporting on the magnitude of visual effects, judgements should be informed by the following:

- Scale of change.
- Nature of change.
- Duration of change.
- Distance.
- Screening.
- Direction and focus of the view.
- Year 1 (opening year) and year 15 (design year, 15 years after opening) including summer and winter.
- Removal of past mitigation or existing vegetation.
- Whether the receptor is static or moving.

Size/scale of visual change

7.4.54 The size and scale of change depends on the degree to which the view or visual amenity is changed by the scheme, such as through the removal or addition of new features and whether these are perceived as typical.

Geographical extent of visual effect

7.4.55 To establish a geographical extent for an effect, a judgement is made about how far ranging the effects are likely to be. These are described as where there are only a few locations from where the scheme can be glimpsed, or changes are experienced by few people; where there are several locations where similar views can be gained, or changes are experienced by a moderate number of people;

where there are many locations where similar views can be gained, or changes are experienced by a large number of people.

7.4.56 For this scheme, the assumption is that a large number of people could be users of an A road (A436 or A417), medium number of people could be visitors to a popular beauty spot (Barrow Wake or Crickley Hill) with a small number of people could be users of PRoW.

Duration of visual effect

7.4.57 Duration is reported against each stage of the scheme including construction phase (42 months), opening year (year 1) and design year (year 15), refer to 'Temporal scope' in paragraph 7.4.71.

Reversibility of visual effect

7.4.58 Reversibility relates to whether the change is likely to be reversed, for instance most construction effects could be recorded as 'reversible'. Where this is achieved through the replanting of vegetation or the rebuilding of a stone wall, these may restore typical features within a view or return the view to something similar as the baseline. However, as this would not be equivalent to the original, this could be recorded as 'partially reversible'. The permanent presence or removal of built structures would be considered 'not reversible'.

7.4.59 Levels of magnitude of effect (change) are set out in Table 7-5. Note that a receptor's magnitude of effect can be attributed to any of the typical descriptions below and do not need to meet all within the category.

Table 7-5 Magnitude of effect - visual

Magnitude of effect (change)		Typical description
Major	Adverse	The scheme, or a part of it, would become the dominant feature or focal point of the view, resulting in an obvious change in the view, and/or affecting a valued view. Likely to affect a relatively large part of the receptor or affect a large number of people.
	Beneficial	
Moderate	Adverse	The scheme, or a part of it, would form a noticeable feature or element of the view, which is readily apparent to the receptor, or one that is valued locally. This level of effect may also occur when a smaller scale of effect acts on a more widely valued view, or a larger scale of effect acting on a view valued at a more local level. This level of effect may also occur when an obvious effect occurs over a relatively short period or over a small area.
	Beneficial	
Minor	Adverse	The scheme, or a part of it, would be perceptible but not alter the overall balance of features and elements that comprise the existing view, resulting in a small change in a relatively lower value view. This level of effect may also occur when a larger scale of effect is of short duration or affects a small part of the visual receptor/affects few people.
	Beneficial	
Negligible	Adverse	Only a very small part of the scheme or activity would be discernible or would be at such a distance it would form a barely noticeable feature or element of the view.
	Beneficial	
No change		No part of the scheme or activity would be discernible.

Table taken from DMRB *LA 107* (Table 3.43 Magnitude of visual effect and typical descriptions) with amendments made to the typical descriptions to make it relevant for this scheme.

7.4.60 Finally, the nature of effect is determined in relation to whether the change is typical or whether it is deemed to fit with the baseline character or view, this judgement is recorded as either adverse, beneficial, or neutral.

Significance of effect

7.4.61 Significance of effect is assessed in the same way for both landscape and visual receptors and is set out in this section.

7.4.62 The susceptibility and value (sensitivity) of each receptor to the proposed changes are combined with judgements on size and scale, geographical extent, duration, and reversibility of effects (magnitude of effect) to provide an overall judgement for each identified effect. This involves making an informed professional assessment of the overall level of each effect, as set out in DMRB LA 107.

7.4.63 Significance of effect are identified as either neutral, slight, moderate, large, or very large. Moderate, large, and very large effects are judged to be significant and any effect assessed to have a level of effect less than moderate is considered not to be significant.

7.4.64 DMRB *LA 107* states that the approach to deriving impact significance should be "*based on the significance matrix included in the Environmental assessment methodology section of LA 104 and include evidence to support any professional judgements that have been made".* This table has been replicated in Table 7-6. Where it refers to 'magnitude of impact', this is taken to mean magnitude of effect (change) in the assessment.

Table 7-6 Significance matrix

		Magnitude of impact/effect (degree of change)				
Landscape/visual sensitivity (susceptibility and value)		**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
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

Table taken from DMRB LA 104 (Table 3.8.1 Significance Matrix).

7.4.65 DMRB LA104, paragraph 3.8.1, states that where Table 7-6 indicates two significance categories, evidence should be provided to support the reporting of a single significance category.

7.4.66 For this report, the significance matrix is used to illustrate and report the overall final judgement of significance based on the overall judgement of sensitivity and magnitude of effects supported by the evidence to support any professional judgement.

Night-time 'darkness' assessment

7.4.67 The scheme is not proposed to be lit. However, the visual assessment includes a qualitative assessment of the predicted changes in light levels/light pollution due to traffic movement along the route of the scheme.

7.4.68 DMRB *LA 107* requires both day and night-time situation to be documented as part of the baseline studies, using Campaign to Protect Rural England (CPRE) published Night Blight: Mapping England's light pollution and dark skies report (2016)[16]. Light pollution includes skyglow, glare and light intrusion. Refer to ES Figure 7.7 CPRE Dark Skies Mapping (Document Reference 6.3).

7.4.69 A night-time 'darkness' survey was undertaken to establish the effects of the Existing A417 and other sources of light pollution on visual receptors within the 3 kilometre study area. Night-time photography was undertaken for 10 viewpoint locations that people would visit or be present at during the hours of darkness.

7.4.70 Night-time 'darkness' photography was undertaken in January and February 2020 to record the baseline condition and document extent of light pollution as a result of the Existing A417 road infrastructure. The visual assessment includes a qualitative assessment of the predicted changes in light levels/light pollution as a result of traffic moving along the route of the scheme at during the hours of darkness.

Temporal scope

7.4.71 The landscape and visual effects of the scheme would vary through time. The assessment therefore considers the effects on landscape character and visual amenity arising over the life of the scheme, through its construction and operation:

- Construction phase: short-term temporary effects during the construction phase, (33 months including any standard construction mitigation measures, and nine months of environmental mitigation works) giving an estimated overall construction period of 42 months. Refer to section 7.9 for full details of design, mitigation and enhancements taken.
- Operational phase at opening year (year 1): medium-term operational effects which would occur at completion in the winter of the first year of operation before landscape mitigation would have established (without mitigation, but considering measures designed into the scheme to reduce effects at source).
- Operational phase at design year (year 15): long-term residual effects with mitigation from the 15th year after opening, in accordance with *GLVIA3* and the Landscape Institute Technical Guidance Note 06/19. However, once the scheme is operational it would be permanent. This allows the assessment to take account of the mitigating effect of the proposed landscape mitigation once established. Refer to section 7.9 for full details of design, mitigation and enhancements taken.

Site surveys and fieldwork

7.4.72 The assessment is based on a worst-case scenario in terms of visibility, but also considers the more 'visually-contained' landscape during summer months, as a result of trees being in full leaf, restricting visibility in some instances.

7.4.73 Field survey work was carried out to record landscape character, the existing visual resource including the availability and opportunity to gain views towards the scheme.

7.4.74 Initial site visit walkovers were undertaken to focus on familiarisation of the area around the scheme, identification of possible viewpoint locations, determine extent of visibility and verification of information provided. In addition, visits were undertaken to gain an understanding of the scheme in the context of the landscape and to check viewpoint locations.

7.4.75 Further site work included visits to capture viewpoint photography, to record the visual baseline and landscape character and assess potential landscape and visual effects of the scheme throughout the 3 kilometre study area.

7.4.76 Information was recorded using digital survey sheets linked to a scheme database. Details of the existing landscape features and characteristics were recorded in addition to the available visual resource.

7.4.77 Summer and winter site visits were undertaken by Chartered Landscape Architects on the dates set out below. Verified viewpoint photography and surveys were carried out on 15 and 23 January, 4 February and 11 March 2020. The baseline was also informed by consultation with stakeholders.

7.4.78 Dates of summer visits:

- 23 May 2019
- 24 May 2019
- 4 June 2019
- 28 June 2019
- 9 September 2019
- 19 September 2019
- 26 September 2019
- 22 September 2020
- 7 May 2021

7.4.79 Dates of winter visits:

- 21 November 2019
- 28 November 2019
- 28 January 2020
- 25 February 2020
- 11 March 2020

7.4.80 The Applicant's landscape architect consultants accompanied Natural England on a site visit on 28 January 2020 to explore the availability of views from key viewpoints.

Stakeholder engagement

7.4.81 The scope and content of the assessment has been consulted-on during the screening and scoping stages, with details discussed at stakeholder events such as the TWG. The scope and content of the assessment was then further consulted on during the pre-application stage, during both the statutory consultation and supplementary consultation. TWG workshops were attended by representatives from Gloucestershire County Council, Cotswold District Council, Tewkesbury Borough Council, Environmental Agency, Historic England, Natural England, the National Trust, Gloucestershire Wildlife Trust and CCB. These discussions were particularly helpful in the development of planting on the overbridges, the de-trunked route and proposed landscape mitigation, along with the selection of representative viewpoints. Further details of the stakeholder

engagement undertaken are available in ES Chapter 1 Introduction (Document Reference 6.2), section 1.6 and the Consultation Report (Document Reference 5.1).

7.4.82 The scope of the landscape and visual assessment was set out in the EIA Scoping Report[17] for which PINS provided a Scoping Opinion, refer to ES Appendix 4.1 The Planning Inspectorate Scoping Opinion (Document Reference 6.4). Key aspects of the Scoping Opinion relevant to landscape and visual effects include reporting on:

- Any significant effects associated with the drainage and the removal of existing vegetation.
- Any significant effects associated with the removal and repurposing of the A417 between Stockwell and the Cotswold Way crossing.
- Effects beyond 1km to include potential far reaching receptors, being sufficiently wide to enable the assessment of potentially significant effects to key features, designation, landscape character and views.
- Combined effects across different environmental topics, such as Cultural Heritage or Biodiversity.
- Visual impacts that may arise from temporary or permanent diversion of PRoW.
- The negative or beneficial effects of each element of the scheme.
- The potential impact to the Cotswolds AONB, local residents and effects on dark night skies of scheme lighting, if proposed.

7.4.83 A consultation meeting was held with CCB and the Applicant in July 2019 to discuss the most appropriate methodology that the assessment should follow and to share thoughts on indicative viewpoint locations.

7.4.84 The assessment viewpoint locations were agreed with key stakeholders via attendance at TWGs and exchange of emails.

7.4.85 Further consultation between the Applicant and the stakeholder groups took place between July 2019 and submission of the DCO Application, including collaborative planning sessions; Strategic Stakeholder Panel virtual meetings; Gloucestershire Way crossing design workshop (with the National Trust); Statement of Common Ground meetings; and topic specialist meetings. Details of this engagement are documented in the Statement of Commonality (Document Reference 7.3).

7.4.86 The purpose of these meetings was to positively engage with stakeholders, to provide them with regularly updates on design changes and progress on relevant topic matters. For example, the Gloucestershire Way crossing design workshop and Strategic Stakeholder Panel meetings were held with stakeholders to find a suitable location for this overbridge. Once a suitable location was agreed, the layout and design of the structure was developed with their input. This resulted in two key design changes. These were the inclusion of a wide ‘steppingstones’ habitat connection between Barrow Wake and the crossing and the increased width of the overbridge. The planting proposals on the Gloucestershire Way crossing were also adapted to reflect the change in purpose of the crossing to include a wider strip of calcareous grassland.

7.4.87 All the stakeholders were consulted with as part of the 2020 supplementary consultation, with comments collated and responded to as part of the preparation of the assessment presented in this chapter. Full details are provided in Consultation Report (Document Reference 5.1).

7.4.88 Post consultation follow up calls were held with Natural England and CCB to discuss technical queries and comments raised by the stakeholders during the supplementary consultation feedback. Refer to the Consultation Report (Document Reference 5.1) for full details.

7.5 Assessment assumptions and limitations

7.5.1 The assessment is based on the scheme description in ES Chapter 2 The project (Document Reference 6.2) and the authors understanding of the design information of the scheme proposals which form the DCO Application. However, the photomontages and ZTV were based on an earlier iteration of the design information. This means late design changes and scheme features are not included or represented as part of these digital tools as the design changes were deemed not large enough to give rise to noticeable changes in either the ZTV or the photomontages and would not affect the assessment judgements. The photomontages and ZTV are only digital representation of the scheme used as tools to help inform the decision-making process, but are not fully relied upon for the assessment. They cannot provide an accurate prediction of how vegetation would mature and other wider changes outside the remit of the scheme. Features or changes not included are the:

- Gloucestershire Way crossing (Ch 2+690) change in width, increase from 25 to 37 metres.
- ‘Steppingstone’ calcareous habitat connectivity between Barrow Wake and the Gloucestershire Way crossing.
- Revised location and design of drainage basin two located on the western extent of the scheme, and the associated earthworks.
- Revised locations of drainage channels, ditches and other features, minor amendments post Design Fix 2d, including across private land north of laybys at western extent of the scheme.
- Design and layout of drainage basins north of Ullenwood junction.
- Redesigned route of the Air Balloon Way to avoid Barrow Way SSSI habitat.
- Revised location of additional car, disabled and horsebox parking to southern end of Air Balloon Way, with disabled parking at junction to Stockwell and car and horsebox parking at the Golden Hart Inn.

7.5.2 One limitation of the ZTV is that in using digital surface model data, the projections pick out areas of tree cover or buildings as having higher visibility than would be expected or experienced on the ground such as Viewpoint 7 (VP7) The Peak. This is as a result of the 3D model assuming that a visual receptor (i.e. a person) could be stood at 1.6 metres on top of the trees or buildings. This has been reflected in the descriptions in the visual assessment in section 7.10 below and in ES Appendix 7.5 Visual Assessment Tables (Document Reference 6.4). To overcome this, woodland blocks could have been cut out or excluded from the model but may have resulted in inconsistencies across the projected ZTV making it more difficult to interpret. The approach taken overestimates the likely extent of visibility, resulting in a worst-case scenario.

7.5.3 Photomontages were prepared for the ES using verified photography and based on the 3D digital scheme design information, an earlier iteration (one stage before final) of the design submitted as part of the DCO Application. This means that some scheme features will not be evident in the photomontages. These include changes to the location and orientation of drainage basins and features, the

increased width of the Gloucestershire Way crossing and changes relating to ongoing landowner consultation.

7.5.4 Diverted PRoW as a result of the scheme, including the Cotswold Way National Trail and the Gloucestershire Way long distance footpath, have been assessed from representative viewpoints which might not be located on the exact alignment of the diverted route. This applies where the diversion cross areas of private land that the survey team were not able to gain access to.

7.5.5 The ZTV is a tool to aid assessment and shows the theoretical visibility of the scheme including projections for the effects of vehicular movements (cars at 1.9 metres and lorries at 4.7 metres) across the scheme. Additional vertical structures such as gantries or signage have not been included in the projected ZTV because their location or number are not known at this stage. Their final location, design and number would be confirmed as part of the detailed design of the scheme. It is unlikely that the addition of these features would materially alter the findings of the assessment, given their size compared to the overbridges which have been included as part of the ZTV and assessment.

7.5.6 The ZTV does include the main structures, such as the Cotswold Way crossing, Gloucestershire Way crossing, Shab Hill and Cowley junctions, Stockwell and Cowley overbridges, adjoining roads (B4070 and A436 as amended by the scheme), cut slopes and landscape embankments. It also includes new stonewall boundaries to fields and the edge of the scheme.

7.5.7 Field work and photography have been undertaken from publicly accessible areas i.e. PRoW or pavements adjacent to residential properties or roads.

7.5.8 Viewpoint photography has not been undertaken from private properties, the combined effects on several properties have been considered by aggregating properties within settlements and reported against community receptor groups.

7.5.9 Field work has been carried out during daylight for summer and winter, with trees in and out of leaf, with a selection visited during hours of darkness. The assessment has therefore been carried out with a robust understanding of the landscape through the seasons and at different times of the day. Viewpoint photography figures present a complete set of baseline views, available for all viewpoints, refer to ES Figure 7.10 Photosheets and Visualisations (Document Reference 6.3)**.** Eleven viewpoint locations were selected as suitable locations for photomontages of the scheme. From these ten locations verified photography and surveys were carried out for day and night-time scenarios.

7.5.10 The assessment of night-time landscape and visual effects within the chapter is based on the scheme being unlit.

7.5.11 The assessment has been informed using an arboricultural survey and impact assessment which can be referred to in ES Appendix 7.6 Arboricultural Impact Assessment (Document Reference 6.4). In addition, an understanding of the landscape through field work and the use of Google Earth has enabled a robust assessment to be carried out on the effects on existing vegetation.

7.5.12 The construction assumptions are set out in section 2.9 of ES Chapter 2 The project (Document Reference 6.2), with additional landscape and visual specific assumptions listed below:

- Topsoil stockpiles would be two metres in height, subsoil and geological stockpiles would be 10-15 metres in height. Contractor to follow current best practice for the movement, storage, and management of top and subsoil.
- The main office compounds and site offices, with porta cabins, would be one to two storeys in height.

7.5.13 At opening year (year 1) of operation and with the establishment of the new planting:

- New tree planting would range in height between 0.6 to 0.8 metres for whips/transplants and hedgerow planting, three to five metres for feathered and standard trees, and seven to ten metres for extra-heavy standard and semi-mature trees.
- In locations where visual screening is critical, woodland mixes would contain a high percentage of feathered trees with a percentage of larger species to boost this function. Faster growing species would also be included in some mixes that can provide earlier visual screening. These species would then be managed out as the dominant climax species develop in height.
- New calcareous grassland areas would be in the establishment phase, and some areas may not yet have full grassland coverage.
- Areas returned to agriculture would consist of agricultural topsoil.
- Materiality of structures would be Cotswold stone or similar.

7.5.14 At design year (year 15) of operation and with the establishment of the new planting:

- With an approximate annual tree and shrub growth likely to be between 0.3-0.5 metres per year (although this would vary from species to species), trees are likely to range in height between five metres to 15 metres with the potential for some species to be taller.
- Hedgerows would reach heights between 1.2 metre and two metres, to appear a similar height to existing hedges and form that would complement the character of existing field boundaries within the AONB landscape.
- The calcareous grassland would have established such that overall, the sward would be successfully knitted together. The exception may be where the design intention for specific areas of ecological management would retain exposed limestone or support a thinner sward to create habitat diversity. Areas returned to agriculture would be fully established and in regular use.

7.5.15 All LoD are within the Rochdale Envelope approach as set out in paragraphs 7.5.16 - 7.5.17.

Limits of deviation

7.5.16 This assessment has been conducted within the LoD outlined within ES Chapter 2 The project (Document Reference 6.2).

7.5.17 The worst-case scenario has been considered within the assessment in accordance with the approach laid out in section 4.4 General assessment assumptions and limitations (Dealing with uncertainty) of ES Chapter 4 Environmental assessment methodology (Document Reference 6.2). The proposed LoD might lead to negligible changes to the composition of views or incrementally increase or decrease the loss or retention of landscape features immediately adjacent to the scheme. These potential changes are not considered likely to give rise to any new effects, or to any materially worse adverse or better beneficial landscape or visual effects, from those predicted in the assessment.

7.6 Study area

7.6.1 DMRB *LA 107* states that in establishing the study area, it should be suitable and proportionate for this specific scheme - the following was considered:

- DCO Boundary (area of scheme including temporary construction compounds and activities), shown as a red line boundary in ES Figure 7.11 Environmental Masterplan (Document Reference 6.3).
- The wider landscape setting and extent where visibility of the scheme may be gained as shown on ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (both Document Reference 6.3).
- Full extent of landscape and visual receptors of special value whose setting may be influenced by the scheme.
- The wider visual envelope of influence from the scheme.

7.6.2 The study area covers an area up to 3 kilometres from the mainline of the scheme, including the scheme and the wider landscape around it, which may be potentially influenced in a significant manner. A desk study review helped to establish the baseline conditions of the study area. These include land use data and policies detailed in relevant documents, sources cited above, and the additional sources listed:

- National Landscape Character Assessment, Character Area 106 - Severn and Avon Vales[18], (Natural England).
- National Landscape Character Assessment, Character Area 107 – Cotswolds[19] (Natural England).
- Joint Core Strategy (2013) The Gloucester-Cheltenham-Tewkesbury Joint Core Strategy Landscape Characterisation Assessment and Sensitivity Analysis.
- Gloucestershire County Council (2006) Gloucestershire Vales Landscape Character Assessment[20].
- Gloucestershire County Council (2002) Gloucestershire Landscape Character Typology[21].
- Cotswolds AONB Management Plan, supporting guidance for the Cotswolds AONB Character Assessment.
- Cotswolds AONB Character Assessment[22].
- Cotswolds AONB Landscape Strategy and Guidelines[23], supporting guidance for the Cotswolds AONB Landscape Character Assessment.
- Cotswolds AONB Local Distinctiveness and Landscape Change[24].
- The Landscape of the Cotswolds[25].
- Cotswolds Conservation Board's Position Statements - Tranquillity, Dark Skies, and artificial light.
- Ordnance Survey – 1:50,000 and 1:25,000 scale maps.
- Digital surface model.
- Google Earth Pro and Street View.
- Bing Maps.
- GIS designation data sets.

7.6.3 To help determine the study area, a ZTV was created to establish the extent of likely visibility of the scheme, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3). Using the ZTV, in addition to

thorough desk-study and field work, it was determined that significant effects would more likely occur within 3 kilometres from the scheme.

7.6.4 It is accepted that visual effect decreases with increased distance between the receptor and source of impact, DMRB *LA 107* states: "*Actual visibility can depend on such visual obstructions as buildings, topography, tree cover, as well as elevation, direction and distance of views and light and weather conditions, GLVIA3 (reference 2.I).*"

7.6.5 It may be possible that sensitive features lie beyond 3 kilometres; however, visual receptors from this distance are unlikely to be significantly affected by the scheme because of the size and scale of change being experienced to a small part of a wider view such as to make it perceptible or discernible but not dominant or obvious. The receptor's perception of the change is not as immediate given the distance between the scheme and the receptor. Therefore, receptors beyond 3 kilometres are not assessed as part of this chapter. This approach was agreed with stakeholders.

7.6.6 Having identified the visual receptors, suitable viewpoint locations were selected in consultation with stakeholders for each receptor group, using the ZTV and supported by field work. The locations of the selected representative viewpoints and the ZTV are shown on ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3).

7.6.7 The viewpoint locations have been visited to record the baseline photography, with viewpoint photographs presented in ES Appendix 7.3 Visual Baseline (Document Reference 6.4).

7.6.8 The desk-based assessment identified areas within the study area of higher ground along the escarpment including Leckhampton Hill (VP18 and VP19), Crickley Hill (VP15 and VP16), Barrow Wake (VPs 9-11), The Peak (VP7) Shab Hill (VP31-35) and Coopers Hill (VP2). These areas are located within the Cotswolds AONB and are subject to a number of landscape and heritage designations including Open Access Land at Crickley Hill Country Park, or Common Land at Barrow Wake and the Cotswold Way National Trail which traverses the escarpment. In addition, several scheduled monuments are located on these high points at Leckhampton Hill, Shurdington Hill, Crickley Hill, Copper's Hill and Barrow Wake. Additional areas of high ground within the AONB include Brimpsfield (VP43 and 44), Cowley Wood (VP42) and Coberley (VP29).

7.7 Baseline conditions

Current baseline

7.7.1 The current baseline years are taken to be between 2018 - 2021 when the desk-based studies and field survey work were carried out.

Nationally designated sites

7.7.2 Nationally designated sites which are located within the three kilometre study area are considered as part of the assessment. The scheme is situated entirely within the Cotswolds AONB, an area characterised by the presence of low-lying vales, steep escarpment, high wolds, and valleys. The escarpment also provides the setting for the Cotswold Way National Trail. A small part to the west of the study area is not within the AONB.

7.7.3 Within the study area, there are also ecological and heritage assets which contribute to the character of the landscape. Adjacent to the Existing A417, on the slopes of the escarpment is Crickley Hill and Barrow Wake Special Site of Scientific Interest (SSSI). South-west of the study area is Cotswold Beechwood Special Area of Conservation (SAC). Further south on the high wold is Bushley Muzzard SSSI at Brimpsfield and to the east is Cowley Manor, a Grade II* Registered Park and Garden (RPG). Several scheduled monuments are dotted throughout the 3 kilometre study area including Crickley Hill Camp, Emma's Grove, Brimpsfield Castle and mound, Coberley Long Barrow, Coberley Roman Villa, Cotswold Beechwoods, Bowl Barrow and Great Witcombe Roman Villa. The features listed above are considered as part of the landscape assessment within this chapter, as they contribute to the value and character of the study area.

7.7.4 These designations reflect the conservation value of the region and its rich heritage of human settlement. Heritage and ecological designations are assessed separately in ES Chapter 6 Cultural heritage (Document Reference 6.2) and ES Chapter 8 Biodiversity (Document Reference 6.2).

7.7.5 Of particular interest to the assessment are the special qualities of the Cotswolds AONB as listed in the Cotswolds AONB Management Plan 2018 – 2023:

- The unifying character of the limestone geology – its visible presence in the landscape and use as a building material.
- The Cotswold escarpment, including views from and to the AONB.
- The high wold – a large open, elevated predominately arable landscape with commons, 'big' skies, and long-distance views.
- River valleys, the majority forming the headwaters of the Thames, with high-quality water.
- Distinctive dry-stone walls.
- Internationally important flower-rich grasslands, particularly limestone grasslands.
- Internationally important ancient broadleaved woodland, particularly along the crest of the escarpment.
- Variations in the colour of the stone from one part of the AONB to another which add a vital element of local distinctiveness.
- The tranquillity of the area, away from major sources of inappropriate noise, development, visual clutter, and pollution.
- Extensive dark sky areas.
- Distinctive settlements, developed in the Cotswold vernacular, high architectural quality, and integrity.
- An accessible landscape for quiet recreation for both rural and urban users, with numerous walking and riding routes, including the Cotswold Way National Trail.
- Significant archaeological, prehistoric, and historic associations dating back 6,000 years, including Neolithic stone monuments, ancient drove roads, Iron Age forts, Roman villas, ridge and furrow fields, medieval wool churches and country estates and parks.
- A vibrant heritage of cultural associations, including the Arts and Crafts movement of the 19th and 20th centuries, famous composers and authors and traditional events such as the Cotswolds Olimpicks, cheese rolling and woolsack races.

7.7.6 Each of the AONB's special qualities are assessed to establish the likely change or level of effect they may experience as a result of the scheme proposals. Refer

to the assessment of Cotswolds AONB special qualities in section 7.10 Assessment of likely significant effects.

Landscape character

7.7.7 This section provides a description of landscape character drawing on published studies and previous work and was supplemented and verified during multiple site visits. Further detail of relevant landscape character is available in ES Appendix 7.2 Published Landscape Character Assessments (Document Reference 6.4).

7.7.8 Landscape character is defined as the *"distinct, recognisable and consistent pattern of elements in the landscape that* makes *one landscape different from another"*[26]*.* Landscape character type/area boundaries generally represent transitional zones and, where the scheme is located close to/on/across the boundary between character areas, the 'key characteristics' of adjacent areas would also be considered.

7.7.9 Landscape character assessments are a method of identifying and describing variations in the character of the landscape, and *'seek to identify and explain the unique combination of elements and features (*characteristics*) that make landscapes distinctive*'[27]. They can be carried out at several scales, from national (National Character Areas), to regional and local (landscape character types (LCT) or areas (LCA)).

7.7.10 The principal sources of information about the landscape character of the three kilometre wide study area are the same as those set out in section 7.6.2, above.

7.7.11 Table 7-7 lists the seven Cotswolds AONB LCAs and one Gloucestershire LCA which cover the three-kilometre wide study area and have been used to inform the landscape assessment. The Cotswolds and Gloucestershire character assessments cover overlapping areas of the same landscape typologies. This assessment uses the Cotswolds AONB landscape character types, with the corresponding Gloucestershire Vale landscape character types included for reference and completeness.

Table 7-7 Landscape character types and related landscape character areas

Cotswolds AONB landscape character type	Cotswolds AONB landscape character area	Source	Corresponding Gloucestershire Vales landscape character type
LCT 2 Escarpment	LCA 2D Coopers Hill to Winchcombe	Cotswolds AONB Landscape Character Assessment	LCT 26 Escarpment
LCT 7 High Wold	LCA 7B Bisley Plateau	Cotswolds AONB Landscape Character Assessment	LCT 22 High Wold
	LCA 7C Cotswold High Wold Plateau	Cotswolds AONB Landscape Character Assessment	
LCT 8 High Wold Valley	LCA 8A Toadsmoor, Holy Brook and Upper Frome Valleys	Cotswolds AONB Landscape Character Assessment	LCT 27 Secluded Valleys
	LCA 8C Upper Churn Valley	Cotswolds AONB Landscape Character Assessment	LCT 27 Secluded Valleys

Cotswolds AONB landscape character type	Cotswolds AONB landscape character area	Source	Corresponding Gloucestershire Vales landscape character type
LCT 10 High Wold Dip-Slope Valley	LCA 10A Middle Churn Valley	Cotswolds AONB Landscape Character Assessment	LCT 22 High Wold
LCT 18 Settled Unwooded Vale	LCA 18A Vale of Gloucester Fringe	Cotswolds AONB Landscape Character Assessment	LCT 18 Settled Unwooded Vale
	SV6B Vale of Gloucester	Gloucestershire Vales Landscape Character Assessment	

7.7.12 Key characteristics of the LCTs relevant to this assessment are set out below in sections 7.7.20-7.7.29 have been replicated from published landscape character assessments. This literature review is supplemented with field surveys and follows the 2019 statutory consultation and 2020 supplementary consultation with statutory and non-statutory consultees. These have been used to identify important characteristics which have been considered as part of the landscape assessment such as elements and features of the landscape, key characteristics and the value attached to the landscape, as per DMRB LA 107.

Dark skies

7.7.13 In 2016, Campaign to Protect Rural England (CPRE) published their Night Blight: Mapping England's light pollution and dark skies[28] report and created detailed interactive maps to present the levels of light pollution across England. Light pollution covers skyglow, glare and light intrusion. With CPRE's permission their data was used to reproduce ES Figure 7.7 CPRE Dark Skies Mapping for the study area (Document Reference 6.3). This highlights the Existing A417 which can be picked out at the Air Balloon roundabout and Cowley junction roundabout, as areas of 1-2 and 2-4 brightness value (nanowatts/CMs/SR) respectively, compared to the darker rural landscape.

7.7.14 CCB has prepared a position statement to promote common standards and help establish practical measures to reduce light pollution and enhance the Dark Skies of the Cotswolds AONB. Dark skies within the AONB contribute to its special character. It is acknowledged that inappropriate lighting associated with new development can negatively affect an area's dark skies. Currently, within the study area the A417 has two lit junctions at Air Balloon roundabout and Cowley junction roundabout which contribute to reducing areas with dark skies within the AONB.

7.7.15 A night-time assessment was undertaken to establish the existing sources of lighting, including the current effect of car headlights along the Existing A417.

Tranquillity

7.7.16 CPRE's Tranquillity mapping[29] (2007 dataset) was used to establish baseline levels of tranquillity across the study area, refer to ES Figure 7.9 Tranquillity Mapping (Document Reference 6.3). As with dark skies, the Existing A417 can be located within areas of increased disturbance compared to the surrounding rural landscape, areas away from the main roads and settlements. The least tranquil part of the scheme is currently the uphill section of the A417 south of Crickley Hill.

Lower levels of tranquillity exist at Nettleton Bottom, Cowley junction roundabout, Birdlip and towards the edge of Brockworth and Gloucester. The highest levels of tranquillity are within Cold Well Bottom and at Shab Hill and Cowley Wood.

7.7.17 CCB has published a position statement on Tranquillity within the AONB, as this characteristic contributes to the area's special qualities. It sets out how tranquillity should be conserved and enhanced with fewer areas being affected by noise pollution and other aural and visual disturbance. The position statement makes reference to the current effect of the Existing A417 on the area's level of tranquillity, particularly around the existing Air Balloon roundabout, with an acknowledgement that "th*e proposed upgrading of this road provides an opportunity to reduce noise levels* (increase tranquillity) *along this section of the A417*" (text in brackets added).

7.7.18 *"For such schemes, specific consideration should be given to the fact that the AONB is an area that is particularly valued for its tranquillity."*

7.7.19 Site visits confirmed that the Existing A417 negatively effects levels of perceived tranquillity across the study area. This is particularly noticeable at Barrow Wake, Crickley Hill, Shab Hill, Stockwell and Nettleton Bottom where road noise is noticeable. Locations south of the A417 were audibly quieter due to prevailing winds pushing sounds from the road northeast away from the receptor. The A417 was most noticeable where visual and audible disturbance combine such as at Crickley Hill, Barrow Wake and Stockwell. For further information on changes to noise levels please refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2).

Landscape character summary

7.7.20 ES Figure 7.4 AONB Landscape Character Types (Document Reference 6.3) illustrates the landscape character types (LCTs) that are included in this section, with full detailed descriptions located in the Published Landscape Character Assessment.

LCT 2 escarpment

7.7.21 The escarpment LCT (LCT 2) is formed by a steep elevated west facing landform that runs north-east to south-west. Semi natural broadleaved woodland partially covers the upper escarpment slopes, defining the skyline when viewed from the west. The woodlands, hedgerows, scrub, and individual trees present a well treed landscape. Calcareous grassland is present on steeper scarp slopes and isolated sections such as at Barrow Wake, an Area of Registered Common Land. Small scale settlement is confined to lower and shallower slopes of the escarpment, like those at Cold Slad.

7.7.22 Transport links through the escarpment are limited, however the presence of the existing road at key points along the escarpment utilise natural breaks in the steep topography such as with the A417, which was likely a historic drovers' route.

7.7.23 The dramatic rise in topography from the neighbouring vale offers spectacular views out to the west, reaching as far as the Malvern Hills AONB and the Forest of Dean. The Cotswold Way National Trail follows the escarpment along most of its length.

LCT 7 high wold

7.7.24 The high wold LCT (LCT 7) comprises a dramatic expanse of gently undulating plateau, characterised by frequent open long-distance views. The land use is primarily arable farming with large regular fields, bounded by degraded stone walls and hedgerows. Woodland cover is limited on the plateau except where the plateau is crossed by valleys where low lying woodland is present. Settlement is sparse. Radio masts are dominant man-made features on the western side of the LCT. The area is rich in human history, reflected in the landscape such as Cowley Manor RPG and Emma's Grove.

7.7.25 Part of the high wold within the study area, located between Air Balloon roundabout and Stockwell, is not typical of the wider LCT, due to a combination of lower quality, detracting features such as conifer belts, degraded field boundaries and enclosed character, particularly north of Shab Hill. The area has tall hedgerows and tree belts which enclose this part of the wold, reducing opportunities for intervisibility, compared to the more typical open, expansive character of the wider LCT, between Stockwell and Cowley.

LCT 8 high wold valleys

7.7.26 The high wold valleys LCT (LCT 8) comprises shallow and broad valleys with extensive areas of mostly broadleaved woodland on valley sides. Areas of pastoral farmland extend between wooded slopes. The area is sparsely populated with only occasional farmsteads and isolated buildings and limited road network. These isolated and sheltered valleys are visually contained and have very little noise pollution penetrating within. Historic human elements in the landscape such as Coberley long barrow, in addition to historic field patterns, ridge and furrow, and historic tracks provide time depth and cultural richness to the landscape.

7.7.27 This LCT is sparsely developed with secluded villages within the valley bottoms. The confined landform, together with the lack of development, offer a high sense of seclusion and remoteness that contribute to the area's high level of tranquillity.

LCT 10 High Wold Dip Slope Valley

7.7.28 The high wold dip slope valleys LCT forms a broad valley with intermittently very steep valley sides. The areas are visually contained and intimate in nature. The area is intermittently populated with stone-built villages in the valley bottoms. Transport links are limited to a single bottom valley road connecting to principal wider routes.

LCT 18 settled unwooded vale

7.7.29 The settled unwooded vale (LCT 18) forms the transitional area between the western escarpment fringe of the Cotswolds AONB and the vale landscape of the River Severn. The unwooded vale is low-lying and virtually flat, with land cover of large scale arable and smaller pasture fields neighbouring rural communities. Fields are bound with well-maintained hedgerows and some remnant dry-stone walls. There is limited woodland cover and occasional orchards. Transport links present themselves as rural lanes that terminate at the escarpment, except for several main A and B classified roads, including the A417 which cross the escarpment along historic routes.

Summary of landscape receptors

7.7.30 The published landscape receptors are summarised in Table 7-8. Landscape character types and key components are considered and assessed within the chapter.

Table 7-8 Summary of landscape receptors

Landscape character type	Landscape character area	Key landscape components *(considers, landform, field boundaries, field pattern, land use (woodland, development, arable and pasture), heritage and conservation assets)*
AONB LCT 2 Escarpment	AONB LCA 2D Coopers Hill to Winchcombe	Steep sloping escarpment and foot slopes. Forms the highest stretch of the Cotswold escarpment at over 300m above ordnance datum (AOD). Freshwater springs. Crickley Hill Camp. Crickley Hill Country Park. The Scrubbs woodland. Cooper's Hill and wood. Barrow Wake. Leckhampton Camp and Tumulus. Beech hangers. High Brotheridge Camp. Buckholt Wood. Great Witcombe Roman Villa. Cotswold Way National Trail. Gloucestershire Way long distance footpath. Common Land and Open Access Land at Barrow Wake. Dryhill Roman Villa. Crippet's Wood barrows. Historic routes/tracks e.g. Greenway Lane. Crossed by main roads. Disused quarries. Dispersed farms. Predominantly woodland with some rough pasture. Significant areas of calcareous grassland. Small scale fields bound by a mix of fence, remnant hedgerows and broken drystone walls.
AONB LCT 7 High Wold	AONB LCA 7B Bisley Plateau	Upland plateau with complex and convoluted form. 'Fingers' of elevated landform. Gently undulating and expansive upland plateau landform, dissected by dry valleys. Open character and sparsely settled. Brimpsfield Castle. Brimpsfield Mound. Brimpsfield conservation area. Drystone wall field boundaries. Large-scale open fields of predominately arable, intensively managed. Infrequent woodland on steeper slopes or surrounding properties.

Landscape character type	Landscape character area	Key landscape components *(considers, landform, field boundaries, field pattern, land use (woodland, development, arable and pasture), heritage and conservation assets)*
		Scattered farmsteads and isolated residential properties.
	AONB LCA 7C Cotswold High Wold Plateau	Emma's Grove. Gloucestershire Way long distance footpath. Open character. Large-scale open fields of predominately arable, intensively managed. Hedge loss and dereliction of stretches of walls - neglected appearance. Other development includes telecommunication masts at Shab Hill.
AONB LCT 8 High Wold Valley	AONB LCA 8A Toadsmoor, Holy Brook and Upper Frome Valleys	Deeply incised river valley sides. Freshwater springs. Slopes covered in deciduous woodland, with some coniferous stands. Lack of development (roads or settlement).
	AONB LCA 8C Upper Churn Valley	Steep sloping river and dry valleys. Open and with a gentle valley form. Freshwater springs feed into the river Churn, and ornamental lakes at Cowley. Frequent roads cross and run along the valley slopes. Large-scale open arable of flatter land, with some pasture in smaller fields next to settlement. Attractive stone-built settlements of Seven Springs, Coberley and Cowley, with other development including National Star College and Cotswold Hills Golf Course. Woodland, including conifer plantation on upper slopes, particularly noticeable in Cold Well Bottom. Coberley Long Barrow and conservation area. Cowley Manor RPG, conservation area and wood. Elevated levels of tranquillity within the valleys.
AONB LCT 10 High Wold Dip Slope Valley	AONB LCA 10A Middle Churn Valley	Broad valley form with shallow slope profiles. Predominantly pasture with occasional areas of arable. Sparse woodland cover with some riparian vegetation. Main roads cross or run along the valley.
AONB LCT 18 Settled Unwooded Vale	AONB LCA 18A Vale of Gloucester Fringe	Gently undulating landform, and lower escarpment slopes. Mixed arable and pasture farmland. Strong field pattern with well-maintained hedgerows. Limited woodland cover. Relatively well settled. Major transport corridors through the vale.
	GLCA SV6B Vale of Gloucester	Moat and fishpond at Bentham Manor.

Table 7-9 Summary of AONB special qualities and CPRE tranquillity and dark skies data

Special qualities of the Cotswolds AONB	**Cotswolds AONB special qualities:** • The unifying character of the limestone geology – its visible presence in the landscape and use as a building material. • The Cotswold escarpment, including views from and to the AONB. • The high wold – a large open, elevated predominately arable landscape with commons, 'big' skies, and long-distance views. • River valleys, the majority forming the headwaters of the Thames, with high-quality water. • Distinctive dry-stone walls. • Internationally important flower-rich grasslands, particularly limestone grasslands. • Internationally important ancient broadleaved woodland, particularly along the crest of the escarpment. • Variations in the colour of the stone from one part of the AONB to another which add a vital element of local distinctiveness. • The tranquillity of the area, away from major sources of inappropriate noise, development, visual clutter, and pollution. • Extensive dark sky areas. • Distinctive settlements, developed in the Cotswold vernacular, high architectural quality, and integrity. • An accessible landscape for quiet recreation for both rural and urban users, with numerous walking and riding routes, including the Cotswold Way National Trail. • Significant archaeological, prehistoric, and historic associations dating back 6,000 years, including Neolithic stone monuments, ancient drove roads, Iron Age forts, Roman villas, ridge and furrow fields, medieval wool churches and country estates and parks. • A vibrant heritage of cultural associations, including the Arts and Crafts movement of the 19th and 20th centuries, famous composers and authors and traditional events such as the Cotswolds Olimpicks, cheese rolling and woolsack races.
Tranquillity Position Statement (June 2019) and CPRE Tranquillity Map	• Tranquillity is a special quality of the AONB. • Calm and quietude associated with peace. • Natural or historic features with little modern influence. • Free of man-made noise and other aural and visual disturbance. • Areas of greatest disturbance on A417 south of Crickley Hill and on edge of settlements. • Highest levels of tranquillity within rural valleys. • Development should seek to avoid and reduce noise pollution and visual disturbance and remove or reduce existing sources of noise pollution and visual disturbance.
Cotswolds Dark Skies & Artificial Light Position Statement (Adopted March 2019) and observations taken from CPRE Dark Skies Map	• A special quality of the AONB. • Large areas of naturally dark night skies. • Roads and settlement greatly increase light pollution, particularly around Birdlip, A417 junctions at Air Balloon roundabout and Cowley junction roundabout. • Darker valleys and isolated rural locations away from main roads. • The dark skies of the Cotswolds AONB would have been conserved and enhanced, with fewer areas being affected by light pollution. • Development should avoid and reduce light pollution and remove or reduce existing sources of light pollution.

Visual context

7.7.31 Visibility across the study area varies from dramatic views from the upper slopes of the escarpment and open high wold, to more enclosed, contained views within the wold valleys or where strong field boundaries or woodland limit views on the wold, such as at Shab Hill. The views are described in ES Appendix 7.3 Visual Baseline (Document Reference 6.4).

7.7.32 47 baseline viewpoints have been identified, in consultation with statutory consultees, to record the visual context of the 3 kilometre wide study area and views towards the scheme. The locations of these are shown in ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3).

7.7.33 Summer and winter photography are presented in ES Figure 7.10 Photosheets and Visualisations (Document Reference 6.3).

Visual receptors

7.7.34 The ZTV was used to help identify visual receptors (people), indicating areas of potential visibility of the scheme. The ZTV highlights elevated landform such as The Peak, Barrow Wake, Crickley Hill, Shab Hill, Leckhampton Hill and the upper slopes of the Churn Valley, particularly at Hill Barn. The extent of visibility is reduced due to sharp changes in topography such as in steep sided valleys of the River Frome Valley at Nettleton Bottom or on the far side of high points such as north of Crickley Hill or south-west of The Peak, or where woodland and settlement prevent views.

7.7.35 People visit the Cotswolds AONB to enjoy recreational activities such as walking, cycling and horse riding. The visual assessment considers users of the recreational routes and visitors to publicly accessible areas as set out below.

National Trails, long distance paths and PRoW

7.7.36 Within the study area there is an extensive network of PRoW, ranging from infrequently used footpaths connecting historic villages to the local church through to the Cotswold Way National Trail, which is visited by walkers and runners from all over the country with specialist events are held annually.

7.7.37 Guidance documents produced by CCB on PRoW[30] provide development advice on enhancing the PRoW network. CCB's position statement states that:

"The public rights of way network is the main way for residents and visitors to explore and enjoy the Cotswolds and is important to the area's economy."

PRoW

7.7.38 An extensive network of other PRoW traverses the three kilometre study area. This chapter assesses changes to the users' experience focused around the vale settlements of Little and Great Witcombe, across the escarpment at Birdlip and on the wold at Shab Hill, Stockwell, Upper Coberley, Nettleton Bottom, Brimpsfield and Elkstone. During site visits the surveyors noted that it was evident that several PRoW are less frequently used with paths overgrown or ploughed over.

Cotswold Way National Trail

7.7.39 The Cotswold Way National Trail is 102 miles (164 kilometres) long and runs for most of its length along the Cotswold escarpment. A large section of the National Trial crosses the western side of the study area, south to north, between Cooper's Hill and Leckhampton Hill. Along this section, the route traverses the escarpment, transitioning from dense beech woodland to open pastures, rich with calcareous wildflowers, passing locally valued landmarks such as The Peak, Barrow Wake and Crickley Hill. The scheme would be intermittently visible from elevated advantage points for a shorter section of the Cotswold Way, between The Peak and Crickley Hill (1.6% of the total trail), with some longer distance views available from Coopers Hill and Leckhampton Hill. Between Barrow Wake and Crickley Hill users of the trail must come off the escarpment edge to cross the busy Existing A417, before ascending back to the trail on the escarpment. The experience for users here is more intimidating compared to the otherwise tranquil, rural setting of the trail. This chapter assesses the changes to its setting as experienced by walkers and runners and how views from the users' perspective is likely to change as a result of temporary and permanent diversions or changes to its alignment.

Gloucestershire Way long distance footpath

7.7.40 The Gloucestershire Way long distance footpath is a long-distance walking path that runs east to west through the three kilometre wide study area, between the settlements of Badgeworth and Upper Coberley. This section of the route, within the study area, passes through contrasting landscapes from the low-lying vale between Gloucester and Cheltenham, across the steep escarpment edge at Crickley Hill where it temporarily aligns with the Cotswold Way National Trial following the same route down to the Ullenwood junction before diverging east towards Shab Hill over the wolds. The Gloucestershire Way long distance footpath is not as popular as the Cotswold Way National Trail, with some sections not as well used, particularly east of the Existing A417. Users of the footpath would experience a variety of views along this section of the route, from large-scale arable farmland with views of busy roads in the east, to dramatic panoramic views from Crickley Hill, to enclosed rural scenery in the west.

7.7.41 This chapter assesses effects on people using the Cotswold Way National Trail and Gloucestershire Way long distance footpath, as agreed during the 2019 statutory consultation with key stakeholders.

Common Land and Open Access land

7.7.42 Registered Common Land and Open Access land made publicly accessible under the Countryside and Rights of Way Act 2000 (CROW Act) and with the right to roam on foot, within the study area are:

- Crickley Hill
- Cold Slad
- Barrow Wake
- South Hill
- Brimpsfield Common
- Leckhampton Hill
- Bucklewood Common
- Buckle Wood, Cranham Wood and Cranham Common
- Buckholt Wood

- Brockworth Wood, Upton Wood and Coopers Hill

7.7.43 Not all areas of Open Access Land were visited due to the lack of intervisibility with the scheme because of intervening landform, vegetation, or buildings, including Cold Slad, Brimpsfield Common, Cranham Wood/Common or Brockworth Wood, Upton Wood.

7.7.44 A description of Crickley Hill is provided in paragraph 7.7.47 under Country Parks. Barrow Wake is a popular location with visitors and the local community to park up and take in the dramatic views from the edge of the escarpment. Views from Barrow Wake are of a similar nature to Crickley Hill.

7.7.45 South Hill is an area of woodland which is managed by the Woodland Trust and can be accessed on foot via the Gloucestershire Way long distance footpath or Byway, west of Coberley, or via the Woodland Trust car park at Ullen Wood. Given its location on the northern and western side of the hill, views are predominantly focused to the north and west along the narrow stream valley away from the scheme.

7.7.46 Leckhampton Hill provides opportunities for informal recreation and can be accessed via the Cotswold Way National Trail or from several car parks and an extensive network of PRoW. From the top of the hill, wide panoramic views can be gained in all directions, including to the north towards the scheme. From several locations, distant, intermitted views can be gained of the Existing A417.

Other recreational spaces

Country Park

7.7.47 Crickley Hill Country Park is designated for people to visit and enjoy recreation in a countryside environment. Part of the country park is also designated as a scheduled monument for its archaeological interest due to human occupation since Neolithic times, as well as being a SSSI for its species rich grassland, scrub, and semi-natural woodland, together with nationally important rock exposures. The scheme runs just south of the Crickley Hill, on the same alignment as the Existing A417.

7.7.48 Ullen Wood (Ullenwood) Cricket ground is an open sports ground located by the existing Air Balloon roundabout.

National Cycle Network

7.7.49 The nearest National Cycle Network route is route 41, which is located outside of the three kilometre study area and connects Gloucester to Cheltenham north of M5 Junction 11.

Representative viewpoints

7.7.50 A range of representative viewpoints were visited with viewpoint photography taken from points on PRoW and within Open Access Land. Each viewpoint was visited during field surveys with the existing character and features of the view recorded. For the assessment, individual viewpoints have been grouped together to represent receptor groups such as recreational users (walkers, cyclists, and horse riders), communities, visitors, and road users. These are set out in Table 7-10.

Table 7-10 Summary of surveyed viewpoints and visual receptors

Receptor group	Representative viewpoint number	Receptor
Outdoor recreation	VP1, VP7; VP8; VP9; VP10; VP11; VP15; VP16; VP17; VP18; VP19; and VP23	Walkers on the Cotswold Way National Trail
	VP15, VP16, VP23, VP25, VP27 and VP28	Walkers on the Gloucestershire Way long distance footpath
	VP1, VP2, VP5, VP6, VP7, VP8, VP9, VP15, VP16, VP18, VP19, VP23, VP25, VP27, VP28, VP32, VP33, VP35, VP36, VP37, VP40, VP41, VP42 and VP44	Walkers on the local public rights of way network.
	N/A	Cyclists on National Cycle Network Route 41 – (scoped out as outside of the study area)
	VP17, VP24, VP45 and VP46	Cyclists and horse riders on the local bridleway network
	VP5, VP12	Cyclists using the FlyUp Downhill trails (scoped out – see Table 7-12)
	VP26, VP30, VP31, VP34, and VP38	Users of (restricted) byway or green lanes
Community	VP4	Brockworth (scoped out – see Table 7-12)
	VP3, VP4, VP5 and VP6	Little Witcombe and Great Witcombe
	VP39	Birdlip
	VP43 and VP44	Brimpsfield
	VP41 and VP44	Nettleton Bottom
	VP34	Cowley (scoped out – see Table 7-12)
	VP35, VP36, VP37 and VP38	Stockwell
	VP24, VP25, VP26, VP27, VP31, VP32 and VP33	Shab Hill
	VP29	Coberley and Upper Coberley (scoped out – see Table 7-12)
	VP21	Ullenwood (scoped out– see Table 7-12)
	VP6	Bentham (scoped out – see Table 7-12)
	VP13 and VP14	Cold Slad Lane
	VP46	Elkstone (scoped out – see Table 7-12)
Visitor attraction or place of interest	All VPs	Visitors to the Cotswolds AONB.
	VP15, VP16, VP20, VP21 and VP22	Visitors to Crickley Hill Country
	VP1 and VP2	Visitors to Great Witcombe Roman Villa
	VP8, VP9, VP10 and VP11	Visitors to Barrow Wake car park - Visitors to Barrow Wake (including the car park and viewing point as marked on a 1:25k OS map)
	VP17	Visitors to Dryhill roman villa and Crippet's Wood round barrows scheduled monument (scoped out – see Table 7-12)
	VP18 and VP19	Visitors to Leckhampton Hill, Devil's Chimney, Leckhampton camp scheduled monument -
	VP23 and VP25	Visitors to Emma's Grove round barrows scheduled monument

Receptor group	Representative viewpoint number	Receptor
	VP28 and VP29	Visitors to Coberley long barrow and Coberley roman villa scheduled monuments
	VP43 and VP44	Visitors to Brimpsfield Castle scheduled monument (scoped out – see Table 7-12)
	VP42	Visitors to Cowley Manor Registered Park and Garden (scoped out – see Table 7-12)
	VP47	Students and visitors to National Star College
Transport	VP6, VP13, VP23, VP41 and VP46	Motorists travelling on the A417, A436 and B4070
	VP21	Motorists on the A436
	VP4	Motorists on the A46 (scoped out – see Table 7-12)
	VP28 and VP29	Motorists on the A435 (scoped out – see Table 7-12)
	N/A	Motorists on the B4070
	VP3, VP6, VP13, VP14, VP21, VP38, VP39 and VP42	Motorists on the minor road

7.7.51 Full details for each viewpoint are recorded in ES Appendix 7.3 Visual Baseline (Document Reference 6.4), including information on their location, elevation, and brief description of the view.

Future baseline

7.7.52 ES Chapter 4 Environmental assessment methodology (Document Reference 6.2) sets out the 'Do-Minimum' and 'Do-Something' scenarios, with the 'Do-Minimum' scenario representing the future baseline with minimal interventions and without new infrastructure.

7.7.53 Although changes to the landscape and visual receptors in the future year scenario (year 2040) are possible, particularly with changing farming practices, they are not easily predictable or certain. Therefore, for this assessment, it is assumed that any changes would not be noticeable i.e. tree and vegetation growth would not be extensive, landscape pattern or topography is unlikely to change, and the receptor groups are unlikely to be different to those whose identified in the baseline text.

Construction year baseline (2023) and opening year baseline (2026)

7.7.54 Given the relatively short period of time between the baseline study and proposed construction (two years) and opening year baseline (five years) the features and characteristics of the landscape would remain as set out above. There would likely be no perceivable change to the landform, land cover, field pattern or vegetation presence during this time.

7.8 Potential impacts

7.8.1 Mitigation measures incorporated in the design and construction of the scheme are reported as embedded mitigation in ES Chapter 2 The project (Document Reference 6.2) and essential mitigation in Section 9.9 Design, mitigation, and enhancement measures. Prior to the implementation of mitigation, the scheme

has the potential to affect landscape and the visual amenity during construction and operation, both beneficially and adversely.

Sources of landscape and visual impact

7.8.2 This section sets out the potential sources of landscape and visual impact that may arise as a result of the scheme. The impacts from the scheme are considered with embedded mitigation and enhancements included, refer to section 7.9 design, mitigation and enhancement measures and section 7.10 for details if the assessment of likely significant effects to understand how the sources of impact translate into landscape and visual effects.

Sources of demolition and construction impact

7.8.3 Construction and demolition activities associated with the scheme are expected take place between 2023 to 2026 over a period of at least 33 months, commencing nine months after the start of environmental mitigation works, giving an estimated overall construction period of 42 months.

7.8.4 To avoid double counting of effects, the assessment of landscape and visual construction effects identifies and assesses only temporary effects which arise because of activities and elements that are unique to the construction phase.

7.8.5 For example, the permanent removal of built form or vegetation is assessed as part of the operational phase, but the works, such as the disruption caused by construction plant used during demolition and site clearance are assessed as part of the construction phase. A further example would be proposed landscape bunds, earthworks or structures, which would form permanent features, and have been assessed as part of the operational phase, but the earthworks required to form them, including excavation, aggregate, earth movements and stock piling are assessed as construction effects.

7.8.6 As the scheme is gradually built throughout the construction phase, permanent effects would increasingly become part of the landscape and features in views. These effects are assessed as part of the operational phase. They include, for example, gradual introduction of transport infrastructure and the presence of the proposed built elements, such as the main structures up to completion.

7.8.7 Sources of temporary construction impacts (the construction activities and processes) on landscape and visual receptors include:

- Construction compounds with associated fencing, cabins, and welfare facilities.
- Temporary haul roads.
- Partially constructed structures, including the mainline highway (four and five lanes dual carriageway) on embankments or in cutting, junctions, overbridges, and underpasses (Grove Farm (Ch 1+680) and bat (Ch 1+100) underpasses).
- Partially constructed new section of the A436 and B4070, including junctions and roundabouts.
- Movement, stockpiling and storage of materials.
- Excavation, large-scale earthworks, and handling of materials, including partially constructed embankments, drainage basins and large cutting through the escarpment, up to 17 metres deep.
- Temporary diversion of PRoW.
- Temporary diversion of water courses, including the Tributary of Norman’s Brook (permanent diversion assessed as part of the operational assessment).

- Erection of new fencing (acoustic, badger and highways), hedgerows and stonewall.
- Removal and processing of existing vegetation.
- Planting of trees, shrubs, and preparation of soil for seeding of grassland.
- Removal of existing road surfacing and infrastructure and changes to repurposing of the Existing A417 between Cowley junction (Ch 5+470), Stockwell Farm A417 junction and the Cotswold Way crossing (Ch 2+100), measuring approximately 1.7 miles (2.7 kilometres) to provide a 'purpose built' route for non-motorised users, known as the Air Balloon Way.
- Alteration works to the entrance and pedestrian access arrangements at Barrow Wake car park, and minor work to car park.
- Installation of new disabled, horsebox and car parking at Stockwell Farm junction and the Golden Heart Inn.
- Presence of on-site and off-site construction traffic.
- Presence and movement of on-site plant, such as:
  - Demolition plant and excavators for site clearance.
  - Articulated dump trucks, excavators, dozers, and rollers for bulk earthworks.
  - Cranes, telescopic boom lifts, piling rigs and telescopic forklifts for construction of structures.
- Night-time lighting, such as:
  - Security lighting.
  - Isolated task lighting would be provided intermittently where required during the winter months only.
  - Lighting of construction site compounds.

7.8.8 A description of the construction phase is provided in ES Chapter 2 The project (Document Reference 6.2).

Sources of operational impacts

7.8.9 The scheme description can be found within ES Chapter 2 The project (Document Reference 6.2).

7.8.10 Sources of landscape and visual effects are likely to occur because of the loss of or changes to existing landscape features or characteristics, or the addition of new infrastructure or features within the landscape or view, including:

- The presence of the widened operational road (four and five lanes dual carriageway), and change of vertical and horizontal alignment of the mainline along the Crickley Hill section (Ch 1+000 to 1+400), and new offline section between Ullenwood and Cowley junctions (Ch 5+000 to Ch 5+470).
- Movement of vehicles on the scheme.
- Alteration or addition of junctions at Shab Hill (Ch 3+200), Ullenwood, Barrow Wake and Cowley (Ch 5+000 to Ch 5+470), in some cases with the inclusion of roundabouts. Ullenwood would be a four-arm roundabout, Shab Hill a half clover-leaf arrangement junction and Cowley would be a local grade separated junction.
- Altered road access arrangements to accommodate the new road infrastructure, including sideroads, changes to Cowley Wood Lane and upgrading of road between Shab Hill, Barrow Wake and Birdlip.

- The realigned A436 between Shab Hill and Ullenwood junction and the rerouting of the B4070 between Shab Hill, Barrow Wake and Birdlip.
- The Cotswold Way crossing (Ch 2+100) five metre wide pedestrian overbridge linking the Cotswold Way National Trail between Crickley Hill and Barrow Wake providing a traffic free provision for walkers, cyclists, and horse riders (WCH), including disabled users over the scheme.
- The presence of newly replacement or enhancement vegetation, particularly along the southern side of the A417 between Brockworth bypass and Ullenwood junction.
- A Bat underpass east of Fly-up (Ch 1+100) and access underpass to Grove Farm (Ch 1+680).
- The loss of the Air Balloon public house and associated grounds.
- A deep section of road cutting (up to 17 metres) across the escarpment and through Shab Hill, creating exposed rock faces to accommodate five lanes of traffic, and three lanes along the A436.
- Presence of earthworks and embankments up to 20 metres high at Shab Hill junction (Ch 3+200), some covered with crushed Cotswold stone appearing bright yellow.
- Series of landscape banks or bunds, known as ‘false cuttings’, particularly along the Crickley Hill section (Ch 1+000 to 1+400) and across the high wold between Shab Hill junction (Ch 3+200) and Cowley junction (Ch 5+470). Some sections include Cotswold stonewalling on top to provide further acoustic and visual screening. Slope angle within false cuttings to be typically 1:2 with back slopes sensitively integrated into existing local topography, some covered with crushed Cotswold stone appearing bright yellow.
- The Gloucestershire Way crossing (Ch 2+690), a 37 metres wide multi-purpose crossing linking the long distance footpath over the scheme, providing a traffic free route for walkers, cyclists and horse riders, and a wide habitat and safe route for wildlife.
- Changes to access arrangement, Cotswold stone walling and surface treatment at Barrow Wake car park.
- Proposing to plant hedgerows on the proposed Stockwell (Ch 4+725) and Cowley (Ch 4+040) overbridges, which will help connect habitats and integrate them into the landscape.
- Changes in the layout of Cowley junction (Ch 5+000 to Ch 5+470) with the removal of the existing roundabout and lighting, including the downgrading of the rural lane to residential access only and WCH route.
- Upgrading of farm/property access tracks or points of egress.
- Loss of trees and vegetation resulting in changes to landscape character and views, including some veteran trees and woodland.
- The presence of drainage basins, cascade ponds, filtration strips, bioswales drainage channels and culverts associated with the drainage proposals, particularly where these are typical engineered solutions e.g. regular shaped ponds, slope angle and location on steep gradients and any associated earthworks, culverts, or other features.
- Permanent diversion of the tributary of Norman’s Brook, with some sections culverted.
- Conversion of surfacing and additional planting along the proposed detrunked and repurposed section of the Existing A417 (to be known as the Air Balloon Way) between Stockwell Farm junction and the Cotswold Way crossing,

approximately 1.7 miles (2.7 kilometres) of 'purpose built' 'greenway' and restricted byway route for WCH including disabled users and carriages.
- Additional disabled, horsebox and car parking at Stockwell Farm junction and the Golden Heart Inn.
- Permanent changes to existing field pattern, including the removal, relocation, or provision of new field boundaries, including fencing, hedgerows, and stonewalling. New permanent timber post and rail fencing, acting to demarcate new land ownership boundaries, badger proof fencing or highway fencing.
- Addition of acoustic fencing in association with residential properties in close proximity to the scheme.
- New sections of drystone walling or hedgerow boundaries, planting of hedgerow trees resulting from the proposed landscape, heritage or ecological mitigation or enhancements.
- Permanent diversions and stopping up of PRoW.
- Changes to land cover from arable to rough/calcareous grassland or tree and woodland planting, including the restoration of areas post construction. Vegetation re-establishment would vary in timescale with calcareous grassland and scrub taking up to two to three years post construction, with trees taking around 15 years to reach a height, form and canopy size that would provide visual screening and filtering of views.

7.9 Design, mitigation and enhancement measures

7.9.1 In accordance with DMRB LA 107, the landscape design shall seek:

- *"to deliver excellence in design quality that responds to the needs of people and places…; and*
- *to deliver an inclusive, resilient and sustainable design solution."*

7.9.2 The scheme seeks to deliver excellence in design quality through the Scheme Vision and the iterative and collaborative approaches taken to engage with discipline specialists and stakeholders. The Applicant adopted a landscape-led approach to the design which sets landscape is a primary consideration in every design decision. As stated in sections 7.3.3 to 7.3.6 full details of Highways England's Scheme Vision and landscape-led design approach can be found in the Design Summary Document (Document Reference 7.7).

7.9.3 As part of the landscape-led design approach careful consideration has been given to how best to integrate the scheme into the Cotswolds AONB landscape, seeking to avoid or remove impacts before reducing them through appropriate mitigation. Set out below is the landscape relevant mitigation for the construction phase, and the embedded and essential mitigation for the operational phase.

7.9.4 Given the scheme's location within the Cotswolds AONB and the NPSNN Policy which sets the requirement of any highways scheme located within a designated landscape to ensure the scheme would be "*carried out to high environmental standards and where possible include measures to enhance other aspects of the environment*", paragraph 5.153 of the NPSNN. Section 7.9.12 below sets out how the scheme would deliver landscape and visual enhancements.

Embedded mitigation

7.9.5 The scheme has been designed, to avoid and prevent adverse environmental effects on landscape and the visual amenity through the process of design development and consideration of good design principles. Embedded mitigation

measures for landscape and visual amenity are reported as part of the scheme description in ES Chapter 2 The project (Document Reference 6.2).

Essential mitigation

7.9.6 Essential mitigation is defined by DMRB LA 104 as "m*easures required to reduce and if possible offset likely significant adverse environmental effects, in support of the reported significance of effects in the environmental assessment*". Full details are set out in ES Figure 7.11 Environmental Masterplan (Document Reference 6.3) and including the lists bellow, with descriptions of specific construction mitigation, then operational mitigation with descriptions divided into different types of mitigation (i.e. planting, structures etc.).

Construction mitigation

7.9.7 Adherence to the measures set out within the Environmental Management Plan (EMP), presented within ES Appendix 2.1 EMP (Document Reference 6.4), supported by the arboricultural impact assessment in accordance with BS 5837:2012, presented within ES Appendix 7.6 Arboricultural Impact Assessment (Document Reference 6.4), to retain and protect trees during the construction period in accordance with the recommendations made, refer to the Trees and Hedgerows to be Removed or Managed Plans (Document Reference 2.13).

7.9.8 Compounds and other construction facilities would be sited with temporary fencing and facilities would be rendered in appropriate tonal colours to reflect the AONB landscape as well as screened in part by solid hoardings.

7.9.9 Soil structures would be protected where land would be used temporarily, such as for compounds, haul roads, re-grading areas, so that when it is returned to the existing land use, it is in a suitable condition, with any soil remediation work strictly following soil management plan.

7.9.10 Advanced planting, where practical, would be established prior to main construction works for softening and filtering views of the construction and subsequent operational phase, as well as part of the wider visual mitigation if land is not required for other construction activities.

Operational mitigation – carriageway

7.9.11 A landscape bund, or 'false cutting', would be provided along the Crickley Hill section (Ch 1+000 to 1+400) and across the high wold, helping to reduce light pollution by visually screening the road from the wider landscape. Bunds would be constructed as early as practicable to provide screening of the construction work and would reduce the visual prominence of the scheme and traffic movements, post construction between year 1 and year 15.

7.9.12 In addition, proposed woodland planting on the bund would provide a continuous woodland belt/green corridor south of the Crickley Hill section compared to previous design options. The slope gradient of the landscape bund has been designed to reduce its landscape and visual effect, changing it from a 1:2 engineered slope to 1:3 or 1:4 slope to provide better fit with local topography.

Operational mitigation – structures and drainage

7.9.13 The Gloucestershire Way crossing (Ch 2+690) vegetated structure would be provided to help integrate the scheme into the landscape. It would also help to

reduce the visual presence of the scheme for users of the Gloucestershire Way long distance footpath, compared to the baseline.

7.9.14 Cowley junction (Ch 5+000 to Ch 5+470) would be enclosed by stone walling to integrate it into the local landscape, reducing its landscape and visual effects.

7.9.15 Light spill and effects on the dark skies of the AONB would be reduced through the provision of landscape bunding, which would enclose the scheme and traffic movements, including car lights during hours of darkness, making them less visually prominent.

Operational mitigation – planting

7.9.16 A new area of woodland would be planted next to Ullen Wood to help reduce the visual effect of the scheme and to protect the ancient woodland, providing a buffer between the scheme and Ullen Wood.

7.9.17 Woodland planting would be provided at Ullenwood junction, adjacent to drainage basins to screen views of the scheme from sensitive receptor groups, including National Star College.

7.9.18 On the approach to Cowley overbridge (Ch 4+040), tree avenue planting would be included along the new route to replicate the existing character of the area and offset the loss of existing trees.

7.9.19 The proposed woodland planting across the whole scheme has been extended to reflect the wooded character of this part of the AONB.

7.9.20 The proposed planting strategy sensitively responds to the surrounding landscape character, with woodland planting focused to the west of the scheme within the vale, on the escarpment and at Ullen Wood, complemented with the use of landscape bunds with stone walling across the more open high wold.

7.9.21 The scheme has been designed to protect and retain existing woodland and trees wherever possible. This has been achieved through regular design meetings and workshops with the engineering team to optimise and refine the scheme design.

7.9.22 New tree planting would take place across the wider scheme to complement the local character, using local province and climate change resilient species. Planting would pick up on existing local features such as avenues, groves, coppices and hanging woodland.

7.9.23 Linear tree planting would be extended across the detrunked and demolished section of the Existing A417 to increase biodiversity, creating additional wildlife habitat and for landscape integration.

7.9.24 Calcareous grassland and woodland would be restored and created to replace habitat lost during construction of the scheme. See ES Figure 7.6 Landscape Features and Topography (Document Reference 6.3) for landscape features within the DCO Boundary.

7.9.25 New woodland blocks and/or hedgerow planting would be introduced as appropriate to create new field boundaries to visually screen the scheme. New planting areas would link with existing woodland and hedgerows to unify and link habitats in the area.

Operational mitigation – boundary features

7.9.26 Cotswold stone walling would be used to form field boundaries and along parts of the scheme boundary to match and complement the local character. Stone

walling would also be used to visually screen and integrate the scheme into the surrounding landscape.

7.9.27 Boundary features would be rationalised by combining fencing and Cotswold walling to reduce the visual effect of the fencing, which is uncharacteristic within the AONB.

7.9.28 New hedgerows would be provided along the length of access tracks to reduce their visual prominence and better integrate them into the landscape.

7.9.29 The landscape planting design includes a range of measures including;

- Native species woodland
- Woodland edge (ecotone with shrub and scrub vegetation)
- Linear belts of native trees and shrubs
- Individual and scattered trees
- Scrub
- Native species rich hedgerows
- Hedgerows with trees
- Species rich calcareous grassland
- Locally prominent rock and scree specialist flora species

7.9.30 Increased woodland cover and new areas of planting would provide habitat and biodiversity value (refer to ES Chapter 8 Biodiversity (Document reference 6.2)) and contribute to carbon sequestration (refer to ES Chapter 14 Climate Change (Document reference 6.4)). These elements are supported and described within the Landscape and Ecological Management Plan (LEMP), included as Annex D of ES Appendix 2.1 EMP (Document Reference 6.4).

7.9.31 The landscape earthworks would also act to increase acoustic mitigation to reduce the noise levels and spread of noise pollution across the AONB and increase levels of tranquillity, refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2).

7.9.32 Towards the end of the construction period the EMP (construction stage) would be revised to become the EMP (end of construction) and would contain essential environmental information required by the body appointed for the future maintenance and operation of the soft estate and environmental mitigation measures.

Enhancements

7.9.33 Enhancement is defined by DMRB LA 104 as "*a measure that is over and above what is required to mitigate the adverse effects of a project*". Please refer to General Arrangement and Section Plans (Document Reference 2.6) and ES Figure 7.11 Environmental Masterplan (Document Reference 6.3) for locations and further details of the proposed enhancements.

7.9.34 Enhancements to the landscape character and visual amenity of the study area would include the introduction of the Cotswold Way (Ch 2+100) and Gloucestershire Way crossings (Ch 2+690) because they provide better recreational access across the landscape and improving the visual experience for users of the PRoW.

7.9.35 The Gloucestershire Way crossing would provide a traffic free recreational crossing for visual receptors using the Gloucestershire Way long distance footpath, along with quieter areas to facilitate wildlife corridors. Wildlife corridors will consist of planting on the crossing to replicate a mosaic of habitats including a

strip of calcareous grassland (25 metres in width), groundcover shrub and two small tree/scrub hedgerows, three metres in width, to support wildlife movement between Ullen Wood, Shab Hill, Barrow Wake and the wider landscape. The same vegetation would provide connectivity of landscape features, including woodland, helping to reduce severance and loss/changes to local field pattern.

7.9.36 Further vegetated crossings would be introduced at Cowley and Stockwell overbridges. Cowley overbridge (Ch 4+040) would provide one hedgerow, three metres in width, on the south side of the crossing, with two hedgerows, both three metres in width, provided on Stockwell overbridge (Ch 4+725), enhancing vegetated connectivity and linking landscape features across the scheme, which are not present on the Existing A417.

7.9.37 The design and finish of the cutting through the escarpment would be of a naturalistic appearance, with exposed rock, terraces, and steep slopes to replicate the natural rock exposures. This would be designed to be sympathetic to the character of the Cotswolds AONB, using suitable facing materials such as local sourced materials to fit existing vernacular and exposed rock faces. Facings would have a higher aesthetic appeal with no 'hard engineered' solutions such as rock catch netting and retaining walls. Rock exposures would be left to naturally colonise to provide opportunities for local plant species to visually break up the surfaces, enhancing these local populations and enhancing the visual quality and character of the scheme.

7.9.38 The Existing A417 would be repurposed between Stockwell Farm junction and the Cotswold Way crossing (Ch 2+100). Reducing the width of the former carriageway would provide a wide strip of land, which would be planted with woodland and sown to establish calcareous grassland. Signage in a style in keeping with the AONB would be provided along the route, these will be developed at detailed design. Enhancements as described above would be realised in addition to the removal of the existing road infrastructure and vehicle movements through this part of the AONB.

7.9.39 As part of detrunking the Existing A417 between Stockwell Farm junction and existing Cowley junction roundabout, the existing carriageway would be narrowed, and excessive hardstanding would be removed and replaced by calcareous grassland and native species trees.

7.9.40 An area of native deciduous woodland would be provided adjacent to Ullen Wood (ancient woodland) to increase the size and opportunity to improve this area of woodland.

7.9.41 Additional areas of deciduous woodland would be planted to provide an increase in woodland area compared to the baseline situation. Thick woodland buffer planting along the Crickley Hill section (Ch 1+000 to 1+400) would enhance the woodland character and provide a substantial woodland habitat along this section of the scheme, in addition to visual screening provided as part of the essential mitigation.

7.9.42 Woodland pasture and parkland tree planting would be provided across the scheme, in response to stakeholder consultation, particularly at Ullenwood junction, between Ullen Wood and the Gloucestershire Way crossing (Ch 2+690), in the large temporary construction compound site (as part of site restoration) at the western extent of the scheme and at Cowley junction (Ch 5+000 to Ch 5+470).

7.9.43 Scrub would be provided adjacent to existing and proposed woodland edge to provide an ecotone habitat (gradual change from one habitat type to another i.e. woodland to scrub edge to grassland), creating a richer and more diverse landscape.

7.9.44 Scrub and woodland clearance at Emma's Grove round barrows scheduled monument would enhance their setting, providing visual connectivity to neighbouring heritage assets of a similar period.

7.9.45 Extensive areas of calcareous grassland would be created across the scheme, with large arable fields being permanently converted to calcareous grassland and extensive planting to the roadside verges, which would provide increased opportunities and connectivity of this nationally rare habitat. Overall, there would be a large increase in calcareous grassland compared to the baseline situation, providing an enhancement to landscape character by this change of land use.

7.9.46 The replacement Common Land at Barrow Wake would link and provide an opportunity to increase and improve the SSSI habitat, creating more naturalistic land cover and improving the landscape character and aesthetic value compared to the baseline situation.

7.9.47 "Stepping stone" habitat would be provided, including a continuous calcareous grassland strip, connection between Barrow Wake, the Gloucestershire Way crossing and woodland pasture at Ullen Wood.

7.9.48 Existing field boundaries would be strengthened and enhanced, with gaps to hedgerows being filled in (to fields west of Barrow Wake) and Cotswolds stone walls that are in a current state of disrepair being rebuilt (particularly on the escarpment dip slopes, south of Crickley Hill, across the high wold and around Shab Hill and Stockwell) to match existing, enhancing the special qualities of the AONB. The extensive Cotswold stone walling would improve the pattern and aesthetics of the area, provide high quality new landscape features characteristic to this part of the AONB.

7.9.49 The proposed vegetation would create new landscape features providing a better connected vegetated network across the scheme.

7.9.50 The scheme layout and design would enhance the tranquillity and dark skies of the AONB (two of the special qualities) as the road carriageway would be sunk into the landscape removing the visual disturbance of vehicles moving through the landscape.

7.9.51 Further improvements to the dark skies of the AONB would be afforded through the removal of the existing lighting at Cowley and Air Balloon junctions, enhancing the character and special qualities of the AONB. No permanent lighting is proposed within the scheme.

7.9.52 The entrance and layout of Barrow Wake car park would be improved to discourage antisocial behaviour and provide a more family friendly environment. Cotswolds stone walling would be provided along the edge of the car park to obscure direct views of the car park, improving views towards the escarpment.

7.9.53 Interpretation boards explaining the scheme, and the important character, geology, heritage, and ecology of the AONB, would be provided as part of the scheme, adjacent to the Cotswold Way crossing. These will be developed at detailed design.

7.10 Assessment of likely significant effects

7.10.1 This section presents the assessment of likely significant effects on landscape and visual amenity resulting from the construction and operation of the scheme.

7.10.2 The assessment of effects takes into account the potential impacts to each receptor following the implementation of embedded and essential mitigation measures to determine the significance of the residual effects.

Receptors scoped in and out of the assessment

7.10.3 *GLVIA3* sets out that LVIA should be proportional and focus on the likely significant effects. To reflect this, the chapter undertakes several mini rounds to scope receptors in or out of the assessment based on the likelihood of them experiencing significant effects as a result of the scheme. This is presented in Tables 7-11 and 7-12 below. This is undertaken separately and independently from the EIA scoping opinion and scoping report, with the aim of provided a proportional assessment that focuses of the likely significant effects.

7.10.4 Tables 7-11 and 7-12 below provide lists of all the landscape and visual receptors located within the study area that have been considered as part of this chapter and which ones have been scoped in or out, with a brief justification why.

7.10.5 Receptors which were assessed and reported to not experience significant effects due to construction or operation impacts were moved into ES Appendix 7.4 Landscape Assessment Tables or ES Appendix 7.5 Visual Assessment Tables. Justification is provided in the Reason column of Tables 7-11 and 7-12 (both Document Reference 6.4).

7.10.6 The assessment does not assess likely effects of the scheme on any landscape or visual receptors located outside the 3 kilometre study area. Sensitive receptors outside the study area have not been identified using the ZTV, with final viewpoint locations agreed with statutory consultees and confirmed through discussions with the TWG/Strategic Stakeholder Panel and via statutory consultation on the 2019 Preliminary Environmental Information (PEI) Report and 2020 Supplementary Consultation.

7.10.7 It is notable that there is no right in law to a view. This has been accepted by various appeal decisions determined by PINS. Therefore, views from individual private properties do not form part of the assessment. As stated in section 7.4.25 Assessment Methodology, most viewpoints are representative of communities and PRoW.

7.10.8 Permanent lighting is not proposed within the scheme, therefore the chapter does not include an assessment on permanent lighting. Temporary construction lighting is likely, which would be intermittently used throughout the construction phase for select operations in isolated locations only and the effects of these construction operations have been assessed. Commentary has been provided within the visual assessment for receptors which would experience change to their visual amenity as a result of car headlights. General observations have also been made in relation to changes in light levels within the landscape assessment, particularly in relation to the AONB's Dark Skies.

Landscape receptors scoped in and out

7.10.9 The following landscape receptors have been scoped out of the assessment after site visits established that they were unlikely to receive changes which would

significantly affect their features or alter their characteristics: AONB LCA 7B Bisley Plateau, AONB LCT 10 High Wold Dip Slope Valley and AONB LCA 10A Middle Churn Valley. Significant effects are unlikely to arise for these landscape receptors due to either their distance from the scheme, lack of intervisibility, or low likelihood of receiving direct effects as a result of the scheme.

7.10.10 Given the comparable scale of the LCTs and LCAs and the linear nature of the scheme, it was determined to use the LCTs as the landscape receptors for the assessment. The LCAs were considered as part of the assessment but to avoid double counting only the likely effect have been reported against the LCTs. This approach was consulted on and agreed with stakeholders as part of the 2019 Statutory Consultation and 2020 Supplementary Consultation.

Table 7-11 Landscape receptors scoped in and out of assessment

Receptor	Receptor scoped in/out	Reason
AONB LCT 2 Escarpment	Scoped in	The proposed scheme is likely to give rise to direct landscape effects, such as the loss or damage to existing landscape character or distinctive features or elements; and/or addition of new uncharacteristic, features or elements.
AONB LCA 2D Coopers Hill to Winchcombe	Scoped out	Likely landscape effect as a result of the scheme have been assessed under AONB LCT 2 Escarpment.
AONB LCT 7 High Wold	Scoped in	The proposed scheme is likely to give rise to direct landscape effects, such as the loss or damage to existing landscape character or distinctive features or elements; and/or addition of new uncharacteristic, features or elements.
AONB LCA 7B Bisley Plateau	Scoped out	The scheme would not directly affect this LCA and the visual relationship between LCA 7B and the scheme in construction and operation is limited to the detrunked section of the Existing A417 on its northern edge (the proposed Air Balloon Way) and the key characteristics of its distinctive open character with a number of higher summit areas would not be impacted.
AONB LCA 7C Cotswold High Wold Plateau	Scoped out	Likely landscape effect as a result of the scheme have been assessed under AONB LCT 7 High Wold.
AONB LCT 8 High Wold Valley	Scoped in	The proposed scheme is likely to give rise to direct landscape effects, such as the loss or damage to existing landscape character or distinctive features or elements; and/or addition of new uncharacteristic, features or elements.
AONB LCA 8A Toadsmoor, Holy Brook and Upper Frome Valleys	Scoped out	Likely landscape effect as a result of the scheme have been assessed under AONB LCT 8 High Wold Valley.
AONB LCA 8C Upper Churn Valley	Scoped out	Likely landscape effect as a result of the scheme have been assessed under AONB LCT 8 High Wold Valley.
AONB LCT 10 High Wold Dip Slope Valley	Scoped out	The scheme is situated outside the LCT 10 boundary and would not directly affect its character. There is no visual connection between the intimate, visually enclosed LCT and the scheme in either construction and operation and would therefore not result in significant landscape effects.

Receptor	Receptor scoped in/out	Reason
AONB LCA 10A Middle Churn Valley	Scoped out	The scheme would not directly affect this LCA and there is no visual connection between the intimate, visually enclosed LCA 10A and the scheme in either construction and operation and would therefore not result in significant landscape effects.
AONB LCT 18 Settled Unwooded Vale	Scoped out	Likely effects on this LCT would be of a similar nature to the existing road infrastructure present within this LCT, with minor changes being proposed which would give rise to direct landscape effects, but that would be similar to the existing landscape character.
AONB LCA 18A Vale of Gloucester Fringe	Scoped out	Likely effects on this LCA would be of a similar nature to the existing road infrastructure present within this LCA, with minor changes being proposed which would give rise to direct landscape effects, but that would be similar to the existing landscape character.

7.10.11 In addition to the LCTs, the special qualities of the AONB including the CPRE tranquillity and dark skies have been considered in relation to how the scheme is likely to affect the AONBs special qualities. Please refer to ES Figure 7.7 CPRE Dark Skies Mapping and ES Figure 7.8 CPRE Tranquillity Mapping (both Document Reference 6.3).

Visual receptors scoped in and out

7.10.12 Views from private properties have not been assessed, however the extent of visual change has been assessed for groups of residential receptors in communities from publicly accessible locations, as per Table 7-12. Refer to paragraph 7.4.25 for further details.

Table 7-12 Visual receptors scoped in and out of assessment

Receptor	Representative viewpoint number	Receptor scoped in/out	Reason
Walkers on the Cotswold Way National Trail	VP1, VP7; VP8; VP9; VP10; VP11; VP15; VP16; VP17; VP18; VP19; and VP23	Scoped in	Walkers may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource along a short section of the trail, which at times may be in close proximity from the scheme.
Walkers on the Gloucestershire Way long distance footpath	VP15, VP16, VP23, VP25, VP27 and VP28	Scoped in	Walkers may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource from some locations at close proximity to the scheme.
Walkers on the local public rights of way network	VP1, VP2, VP5, VP6, VP7, VP8, VP9, VP15, VP16, VP18, VP19, VP23, VP25, VP27, VP28, VP32, VP33, VP35, VP36, VP37, VP40, VP41, VP42 and VP44	Scoped in	Walkers may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource from locations immediately adjacent to or in close proximity to the scheme.
Cyclists on National Cycle Network Route 41	N/A	Scoped out	Cyclists unlikely to experience large changes in views or their visual resource at this distance from the scheme.
Cyclists and horse riders on the local bridleway network	VP17, VP24, VP45 and VP46	Scoped in	Cyclists and horse riders may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource from some locations which are adjacent to or at close proximity to the scheme.
Cyclists using the FlyUp Downhill trails	VP5, VP12	Scoped out	Cyclists' focus is likely to be on the course and not the wider landscape.
Users of (restricted) byway or green lanes	VP26, VP30, VP31, VP34, and VP38	Scoped in	Users may experience direct views, or large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from limited locations along the byway network.
Community of Brockworth	VP4	Scoped out	The community is unlikely to experience large changes in views or their visual resource from this distance and due to intervening vegetation and landform.

Receptor	Representative viewpoint number	Receptor scoped in/out	Reason
Communities of Little Witcombe and Great Witcombe	VP3, VP4, VP5 and VP6	Scoped in	The communities may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from some locations to the north and east of the settlements. The visual amenity for the Communities of Little Witcombe and Great Witcombe was assessed. The assessment determined that there would be no significant visual effects during construction or operation for the Communities of Little Witcombe and Great Witcombe. The content of the visual assessment has been moved to ES Appendix 7.5 Visual Assessment Tables (Document Reference 6.4).
Community of Birdlip	VP39	Scoped out	Parts of the community may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from locations to the north and east of Birdlip. The visual amenity for the Community of Birdlip was assessed. The assessment determined that there would be no significant visual effects during construction or operation for the Community of Birdlip. The content of the visual assessment has been moved to ES Appendix 7.5 Visual Assessment Tables (Document Reference 6.4).
Community of Brimpsfield	VP43 and VP44	Scoped out	The community is unlikely to experience large changes which may appear dominant or form a noticeable feature in views or their visual resource due to intervening vegetation.
Community of Nettleton Bottom	VP41 and VP44	Scoped in	Parts of the community may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from some locations within Nettleton Bottom.
Community of Cowley	VP34	Scoped out	The community is unlikely to experience large changes which may appear dominant or form a noticeable feature in views or their visual resource from this distance and as a result of intervening vegetation and landform.
Community of Stockwell	VP35, VP36, VP37 and VP38	Scoped in	The community may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from locations at Stockwell, predominately north-east of the farmstead.
Community of Shab Hill	VP24, VP25, VP26, VP27, VP31, VP32 and VP33	Scoped in	Parts of the Community may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from locations at Shab Hill.
Communities Coberley and Upper Coberley	VP29	Scoped out	The communities are unlikely to experience large changes in views or their visual resource from this distance and as a result of intervening vegetation and landform.

Receptor	Representative viewpoint number	Receptor scoped in/out	Reason
Community of Ullenwood	VP21	Scoped out	The community is unlikely to experience large changes in views or their visual resource from this distance and as a result of intervening vegetation and landform.
Community of Bentham	VP6	Scoped out	The Community is unlikely to experience large changes in views or their visual resource from this distance and as a result of intervening vegetation and landform.
Community of Cold Slad	VP13 and VP14	Scoped in	The community may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from locations along Cold Slad lane, limited to gaps in vegetation and between properties. The visual amenity for the Community of Cold Slad was assessed. The assessment determined that there would be no significant visual effects during construction or operation for the Community of Cold Slad. The content of the visual assessment has been moved to ES Appendix 7.5 Visual Assessment Tables (Document Reference 6.4).
Community of Elkstone	VP46	Scoped out	The community is unlikely to experience large changes in views or their visual resource from this distance and as a result of intervening vegetation and landform.
Visitors to the Cotswolds AONB	All VPs	Scoped in	Visitors may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from limited locations within the AONB.
Visitors to Crickley Hill Country Park	VP15, VP16, VP20, VP21 and VP22	Scoped in	Visitors may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource from some locations within the Open Access Land, mostly limited to the escarpment edge.
Visitors to Great Witcombe Roman Villa	VP1 and VP2	Scoped in	Visitors may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource from limited locations on the approach to the villa ruins.
Visitors to Barrow Wake and car park	VP8, VP9, VP10 and VP11	Scoped in	Visitors may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from locations towards the escarpment edge at Barrow Wake.
Visitors to Dryhill roman villa and Crippet's Wood round barrows scheduled monument	VP17	Scoped out	Visitors are unlikely to experience large changes in views or their visual resource from this distance and as a result of intervening vegetation and landform.
Visitors to Leckhampton Hill/Leckhampton camp scheduled monument	VP18 and VP19	Scoped in	Visitors may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from some locations within the area of Open Access Land, excluding the Devil's Chimney.

Receptor	Representative viewpoint number	Receptor scoped in/out	Reason
Visitors to Emma's Grove round barrows scheduled monument	VP23 and VP25	Scoped in	Visitors may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from limited locations within or immediately adjacent to the woodland.
Visitors to Coberley long barrow and Coberley roman villa scheduled monuments	VP28 and VP29	Scoped out	Visitors are unlikely to experience large changes in views or their visual resource from this distance and as a result of intervening vegetation and landform.
Visitors to Brimpsfield Castle scheduled monument	VP43 and VP44	Scoped out	Visitors are unlikely to experience large changes in views or their visual resource as a result of intervening vegetation.
Visitors to Cowley Manor Registered Park and Garden	VP42	Scoped out	Visitors are unlikely to experience large changes in views or their visual resource from this distance and as a result of intervening vegetation and landform.
Motorists on the A417	VP6, VP13, VP23, VP41 and VP46	Scoped out	Motorists may experience direct views or large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from some locations while travelling on the A417. The visual amenity for the Motorists on the A417 was assessed. The assessment determined that there would be no significant visual effects during construction or operation for the Motorists on the A417. The content of the visual assessment has been moved to ES Appendix 7.5 Visual Assessment Tables (Document Reference 6.4).
Motorists on the A436	VP21	Scoped out	Motorists are unlikely to experience large changes to their views or their visual resource for extended sections of their journey due to changes only taking place near the junction with the A417.
Motorists on the A46	VP4	Scoped out	Motorists are unlikely to experience large changes to their views or their visual resource for extended sections of their journey from this distance and as a result of intervening vegetation and landform.
Motorists on the A435	VP28 and VP29	Scoped out	Motorists are unlikely to experience large changes to their views or their visual resource for extended sections of their journey views from this distance and as a result of intervening vegetation and landform.
Motorists on the B4070	N/A	Scoped out	Motorists may experience direct views, large changes which may appear dominant or form a noticeable feature in views or their visual resource at close proximity from some locations on the road network.

Receptor	Representative viewpoint number	Receptor scoped in/out	Reason
			The visual amenity for the Motorists on the B4070 was assessed. The assessment determined that there would be no significant visual effects during construction or operation for the Motorists on the B4070. The content of the visual assessment has been moved to ES Appendix 7.5 Visual Assessment Tables (Document Reference 6.4).
Motorists on the minor road network	VP3, VP6, VP13, VP14, VP21, VP38, VP39 and VP42	Scoped out	Motorists may experience direct views, large changes in views or their visual resource at close proximity from some locations on the road network. The visual amenity for the Motorists on the minor road network was assessed. The assessment determined that there would be no significant visual effects during construction or operation for the Motorists on the minor road network. The content of the visual assessment has been moved to ES Appendix 7.5 Visual Assessment Tables (Document Reference 6.4).

Assessment of landscape effects

7.10.13 The landscape assessment is provided in Table 7-13 to Table 7-16. The assessment of effects on the landscape is reported in terms of effects on the overall character of the landscape and its important features. Receptors for the assessment are therefore defined as areas of landscape with consistent character types within the Cotswolds AONB. These receptors include AONB LCT 2 Escarpment, AONB LCT 7 High Wold, and AONB LCT 8 High Wold Valley.

7.10.14 In order to describe and understand the schemes impacts on the AONB, this assessment also considers how the scheme is likely to change the special qualities of the Cotswolds AONB. Changes to the AONB special qualities are reported in table 7.13 with a description of the likely changes, their importance and whether they are adverse or beneficial.

Cotswolds AONB – special qualities

7.10.15 The special qualities of the AONB are valued as they are the features that contribute to the unique character and high aesthetic quality on which the area has been designated. Each one has a high susceptibility or limited ability to accommodate change as a result of the scheme during both construction and operational phases. As a result, they are judged to have a very high sensitivity to the scheme. The table below provides commentary on how each relevant special quality may be subject to change as a result of the scheme and a judgement on whether these are considered to enhance or adversely affect the special qualities, and whether the changes are considered to be important or not.

7.10.16 Section 7.4.34 above sets out the methodology for how the special qualities of the Cotswolds AONB have been considered in relation to likely changes as a result of the scheme proposals. Qualitative judgements are reported below in Table 7-13. To reiterate, these judgements are not intended to align with EIA Regulations or DMRB, providing supplementary information to the decision maker and stakeholders.

7.10.17 A description of likely effects has been provided for CPRE tranquillity and dark skies mapping to help inform how the scheme is likely to affect these AONBs special qualities. Please refer to ES Figure 7.7 CPRE Dark Skies Mapping and Figure 7.8 CPRE Tranquillity Mapping (both Document Reference 6.3).

Table 7-13 Likely changes to the special qualities of the Cotswolds AONB, including CPRE Tranquillity and Dark Skies as a result of the scheme (special qualities taken from the Cotswolds AONB Management Plan 2018 – 2023)

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
Unifying character of the limestone geology – its visible presence in the landscape and use as a building material	Construction	Exposure of underlying geology would be more prominent as the result of extensive excavation to widen the existing cut through the Cotswold escarpment as far as Shab Hill. Areas where top and sub soil stripping would take place, these would also appear prominent during the construction phase, with large areas of disturbed ground being visible across the scheme. A stone crusher situated within the construction compound at Emma's Grove would be used to process excavated material to be reused on-site for Cotswold stone walls and building material. Newly constructed landscape bunds and highway verges would be topped with crushed Cotswold stone to

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
		provide nutrient deficient substrate, allowing opportunities for rare and protected flora and fauna. These features would be highly visible during construction due to the bright colour of the stone. The construction works would give rise to an adverse change to a small part of the AONB. Overall, the construction activity would have a temporary and important change on this special quality of the Cotswolds AONB.
	Operational – year 1	During the first year of operation the exposed rock faces and freshly laid material would appear bright yellow and prominent in the surrounding landscape. Scarring from the recently completed and removed construction activities would be present until these areas have recovered, and vegetation has established. However, the unifying character of the local geology would be more visually prominent in both the recently completed excavation and earthworks and as a building material on the structures of the scheme. New stone walling and cladding to structures would positively contribute to the character and special qualities of the AONB. Overall, there would be a permanent beneficial and important change on this special quality of the AONB, in the local area to the scheme.
	Operational – year 15	Rock exposures through the cut section of the escarpment and between the A417 and A436, as far as Shab Hill would remain visible. The rock would have weathered by year 15, becoming greyer in colour, and locally prominent flora would have established, softening the appearance of the slopes, helping to integrate them into the surrounding landscape. The rock exposures would appear similar to the neighbouring natural exposures at Crickley Hill. As with at year 1, the unifying character of the local geology would remain visually prominent, particularly along the cutting between the escarpment and Shab Hill. As a result, there would be a permanent benefit and important change to the visibility of the local limestone geology and unifying character of the rock exposures, Further benefits would be realised with the visual presence of locally sourced stone across the scheme with extensive sections of new Cotswold stone walling and architectural features on highway structures, particularly the crossings. These changes would be beneficial, permanent, and important to this special quality in the local area.
Cotswold escarpment, including views from and to the AONB	Construction	There would be a prominent visual presence of construction activity on and adjacent to the escarpment during the construction phase to widen the carriageway through the escarpment cutting, altering the appearance and prominence of the road. This would have an adverse change on views from and to the AONB. The construction activity would also be visible at Barrow Wake, where works to reconfigure the entrance and access arrangement to Barrow Wake car park and realigned B4070 with a new roundabout, would take place. This activity would give rise to an adverse and important change on this special quality due to the increased width of the cut and visual presence of construction vehicles and activities on the escarpment and along the proposed B4070 realignment at Barrow Wake.

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
	Operational – year 1	The increased depth and width of the cut compared to baseline would be more visually prominent as a result of the loss of roadside vegetation (woodland south of Existing A417, at Crickley Hill). The five lane dual carriageway, on embankment, on a Crickley Hill section (Ch 1+000 to 1+400) would be clearly visible with vehicle movements more apparent in views to and from the escarpment. In addition, there would be an increased likelihood of obtaining glimpsed views of vehicle movements on the realigned B4070, south of Barrow Wake. However, cars parked at Barrow Wake would be less prominent, compared to the baseline, with the introduction of the Cotswold stone wall around the edge of the car park. Overall, there would be an adverse change as a result of the deeper and wider cutting, despite it being of a similar nature to the existing cutting. Changes would be localised to this small part of the escarpment and the immediate surrounding area, including at high points between The Peak and Crickley Hill and from within the vale, where it would be possible to obtain views of the recently completed cutting and elevated section of the carriageway. The realigned B4070 and changes to the access arrangements at Barrow Wake would not be as readily available in views as they would be concealed by existing vegetation, being set back slightly from the escarpment edge. The scheme would therefore give rise to an adverse and important change on this special quality at year 1.
	Operational – year 15	Mitigation planting in combination with the proposed landscape bund would help to screen views of the scheme once vegetation had matured to a sufficient height. Woodland planting, once mature, would help integrate the scheme into the landscape, reducing its impact on the landscape character of the escarpment and in views to and from the escarpment. At year 15, views to the scheme from the escarpment would appear similar to the baseline situation. Vehicles moving along the escarpment south of Barrow Wake along the realigned B4070 would be less visible as adjacent vegetation would have further matured to help screen views of this part of the scheme. Overall, the scheme would likely have an adverse change on this special quality at year 15 but is not considered important as it would be of a similar nature to the baseline scenario.
High wold – a large open, elevated predominately arable landscape with commons, ‘big’ skies, and long-distance views	Construction	Construction activity on the high wold would likely have an adverse change on the area’s character, given the openness of the wolds and likely visual prominence of construction activities. The scheme would appear in long-distance views and look at odds with the otherwise rural and predominately arable landscape. Changes would arise from the large volume of earthworks that would be needed to construct Shab Hill and Cowley junctions and the landscape bunds which would enclose the scheme as it crosses the high wold. Further changes would arise from the construction of the overbridges, crossings, and drainage basins. Construction work would also take place along the Existing A417 road corridor to remove highways infrastructure and repurpose it as a purpose built green recreational route. These changes would be short-term and would be removed when the construction activity is complete.

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
		This special quality would experience an adverse and important change as a result of the proposed construction activity to a small part of the high wold.
	Operational – year 1	At year 1, the recently completed landscape bunds would initially appear at odds with surrounding landscape as they would be formed of locally excavated Cotswold stone which would appear bright for the first year, despite them being designed to tie in with the existing landform and topography of the area. The bunds would only be partially covered with topsoil where they would become part of the surrounding arable farmland. Other sections of the bunds would be left as crushed bedrock to allow the natural colonisation of locally important flora, initially appearing at odd with the surrounding landscape. Along the top of the bunds would be extensive sections of new Cotswold stone walling to match and integrate with the existing network of field boundaries. Proposed walling would appear bright in the landscape until the rock has weathered. Shab Hill and Cowley junctions, along with the crossings and drainage basins would appear at odds, adversely affecting this special quality, with changes likely to be important at year 1. However, the removal of and repurposing of the Existing A417 along the Air Balloon Way would provide locally important benefits with the creation of a 'greened' route through the landscape, planted with calcareous grassland, scrub, trees and woodland. This planting would provide important landscape connectivity with adjacent features like Emma's Grove woodland, Barrow Wake calcareous grassland and the wider field boundary network. Overall, there would be both adverse and beneficial changes at year 1.
	Operational – year 15	At year 15, landscape bunds would appear as part of the natural undulations of the high wold. The extensive network of proposed Cotswold stone wall field boundaries would now have weathered to complement the existing local character and would help to screen views to the scheme from the wider wold landscape. Maturing woodland and vegetated crossings would further help to integrate the scheme into the high wolds, making it less visually prominent than the Existing A417. At year 15, the scheme would provide a benefit to this special quality, providing an important improvement over the long-term.
River valleys, the majority forming the headwaters of the Thames, with high-quality water	Construction	Construction activity would take place at the head of Coldwell Bottom valley to accommodate Shab Hill junction (Ch 3+200) and associated infrastructure, including drainage basins, access tracks and on/off ramps. This would involve extensive changes to the local landform to fill in the head of the valley. This would change the natural topography, cover up nationally valued rock exposures and remove a small coppice of beech-hangers. The construction activity would have an adverse and important change to this part of the valley, with limited effect to the wider river valley.
	Operational – year 1	At year 1, the recently completed earthworks, drainage basins and access tracks along with the on/off slip road, roundabouts, underpass and mainline forming Shab Hill junction (Ch 3+200) would appear out of character with the surrounding wooded valley sides and otherwise tranquil valley, as the proposed woodland

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
		planting would not yet have matured to a mitigate the changes of the scheme, notwithstanding the inclusion of large landscape and noise bunds. At year 1, the scheme would give rise to an adverse and not important change to the wider river valleys.
	Operational – year 15	At year 15, the proposed woodland planting would provide mitigation as it continues to mature for the changes of the new junction and changes in local landform. The long-term changes of the scheme would result in a minor, adverse, and not important change to the head of the valley, while conserving the wider wooded and tranquil character of the river valley to the east.
Distinctive dry-stone walls	Construction	Constructing the scheme would require some sections of existing stone walling to be removed. However, a substantial amount of new walling would be constructed along the tops of landscape bunds that flank the southern part of the scheme. Sections of poor-quality walling in disrepair would be rebuilt. Stone wall building is considered a traditional craft which has taken place in the Cotswolds for a long time. Overall, the scheme would provide a beneficial and important change to this special quality of the AONB.
	Operational – year 1	As stated above, new, and rebuilt Cotswolds stone walling would form a prominent part of the scheme, providing an important benefit with the walling forming new field boundaries and where repaired and rebuilt, improving the quality and character of the area.
	Operational – year 15	As stated above. The scheme would provide an important benefit.
Internationally important flower-rich grasslands, particularly limestone grasslands	Construction	During construction areas of existing flower rich grassland would be disturbed or removed to accommodate the scheme, including construction compounds and associated activities. However, large areas of proposed calcareous grassland would be established towards the end of the construction period, as part of the post construction restoration. These areas would be suitably maintained to ensure the habitat would successfully establish and thrive. During the construction phase the scheme would give rise to an adverse and not important change to this special quality.
	Operational – year 1	At year 1, large areas of proposed calcareous grassland would be established, creating greatly more calcareous grassland compared to the baseline situation. To achieve this, arable farmland would be permanently converted to calcareous grassland and manged to ensure its success. At year one, there would be limited benefit despite the large area of new calcareous grassland because it would take more than a year to successfully establish high quality calcareous grassland. Overall, there would be a benefit, but at this stage would not be important.
	Operational – year 15	At year 15, large areas of high value calcareous grassland would have established, creating a diverse network of habitat across the scheme, positively contributing to the wider character and special qualities of the AONB. Overall, there would be an important benefit to this special quality as a result of the scheme.

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
Internationally important ancient broadleaved woodland, particularly along the crest of the escarpment	Construction	Construction of the scheme would permanently remove areas of existing deciduous woodland along with a number of veteran trees. No ancient woodland would be lost as shown on ES Figure 7.9 Retained Vegetation (Document Reference 6.3). Construction activities to remove woodland and veteran trees to accommodate the scheme would give rise to an adverse and important change. However, Ullen Wood (ancient woodland) would be maintained by a 15 metres buffer between the woodland edge and proposed construction activities.
	Operational – year 1	New woodland, tree and hedgerow planting would provide an increase of woodland area compared to the baseline situation. The scheme focuses woodland planting to the south of the carriageway, south of Crickley Hill and between the escarpment and Shab Hill junction (Ch 3+200). This would include a large area of deciduous woodland adjacent to Ullen Wood (ancient woodland), providing an opportunity for key indicator species to colonise a greater area and create a better-connected woodland network. At year 1, beneficial changes would be achieved, but these would not be important as the proposed woodland planting would be immature and not yet functional.
	Operational – year 15	At year 15, as trees and woodland continue to mature, they would provide an extensive and connected network of landscape features that positively contribute to the AONB's landscape character. Once the proposed mitigation and enhancement planting has matured to a point where it starts functioning as landscape and ecological features, there would be an overall important benefit to the AONB's broadleaved woodland and this special quality. The setting to Ullen Wood ancient woodland would benefit as a result of the proposed woodland planting, increasing the size and diversity of structure of native species deciduous woodland in the area.
Variations in the colour of the stone from one part of the AONB to another which add a vital element of local distinctiveness	Construction	Construction activity would create rock exposures through the escarpment and deliver substantial new sections of Cotswold stone walling and structures clad in locally sourced materials. Similar to the unifying geology, the area's local distinctiveness (character) would be enhanced by the creation of the cutting, erection of Cotswold stone walling and architectural detailing on the proposed structures, resulting in an important benefit to this special quality of the AONB and would improve the aesthetic appeal of the scheme.
	Operational – year 1	At year 1, the recently completed excavations would provide a rare opportunity to understand the local geology of this part of the AONB. Cut slopes would appear bright yellow in contrast to the natural rock exposures at Crickley Hill but would weather over time. Cotswold stone walling to field boundaries and along new landscape bunds would further celebrate the local distinctiveness and complement the landscape character of the AONB. Overall, there would be an important benefit to this Special quality.
	Operational – year 15	At year 15, rock exposures, stone walling and structures would have weathered to a more subtle colour, matching, and complementing existing natural features and the local buildings. The scheme would provide the opportunity for an important benefit to this special quality of the AONB.

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
The tranquillity of the area, away from major sources of inappropriate noise, development, visual clutter, and pollution And, Tranquillity Position Statement (June 2019) and CPRE Tranquillity Map Tranquillity Position Statement (June 2019) and CPRE Tranquillity Map	Construction	Activities would include a large number of vehicle movements with safe beacons and warning signals. Further visual disturbance would be caused by large-scale earthworks and introduction of overbridges as part of the scheme. Constructing the scheme would have important adverse changes on tranquillity in a localised area of the AONB, as a result of the noisy, dusty, and visually prominent nature of the construction activity. Refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2) for further details on changes to noise levels.
	Operational – year 1	Landscape bunds have been designed to include Cotswold stone walling on top that contain visual and auditory disturbance related to the scheme and vehicles moving along it. These structures would help reduce the level of change, providing benefits by improving perceived levels of tranquillity across the AONB. Refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2) for further details on changes to noise levels. The operational scheme at year 1 would provide a combination of adverse and beneficial changes. Adverse changes would result from the introduction of new visual clutter and prominent features until mitigation planting and disturbed ground has recovered. Important benefits would be realised as a result of vehicle movements and the road infrastructure being screened in views from across the high wold. Overall, there would be a reduction in auditory and visual disturbance across the wider AONB, compared to the baseline scenario. For further information on the acoustic changes of the scheme, refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2). In line with the AONB's position statement the scheme seeks to avoid and reduce noise pollution and visual disturbance and remove or reduce existing sources of noise pollution and visual disturbance. The majority of scheme has been designed to sit low in the landscape, enclosed by landscape bunds and false cuttings with extensive stone walling on top. All of which is intended to reduce noise pollution and visual disturbance by containing it within the road corridor.
	Operational – year 15	In addition to the benefits as described at year 1, at year 15 mitigation planting would have matured to a sufficient height to provide visual screening of the scheme, including at Ullenwood, Shab Hill and Cowley junctions. Maturing woodland, tree, and hedgerow planting with extensive sections of proposed Cotswold stone walling would help visually contain the scheme, including vehicle movements, reducing its change on the AONB's tranquillity by greatly reducing visual disturbance compared to the baseline situation. Refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2) for further details on changes to noise levels. Overall, there would be a permanent change and important benefit for this special quality of the AONB. For further information on the acoustic effects of the scheme, refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2). In line with the AONB's position statement the scheme seeks to avoid and reduce noise pollution and visual disturbance and remove or reduce existing sources of noise pollution and visual

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
		disturbance. The majority of scheme has been designed to sit low in the landscape, enclosed by landscape bunds and false cuttings with extensive stone walling on top. Prominent features have been surrounded in woodland planting and planting on structures. All of which is intended to reduce noise pollution and visual disturbance by containing it within the road corridor.
Extensive dark sky areas And, Cotswolds Dark Skies & Artificial Light Position Statement (Adopted March 2019) and observations taken from CPRE Dark Skies Map	Construction	During the construction phase, temporary high-intensity lighting would be used to allow safe working practice during hours of darkness. The removal of roadside vegetation to facilitate construction activities would open up views of the existing road network, increasing light spill from vehicles at night. This would give rise to an adverse change and important change on the dark skies of the AONB as a result of the construction activity.
	Operational – year 1	The scheme would not be lit and with the removal of the existing lit junctions at Air Balloon roundabout and Cowley junction roundabout, there would be a large reduction in light pollution as a result of the scheme when compared to the baseline situation. Landscape bunds have been designed to include Cotswold stone walling on top to visually contain the scheme and vehicles moving along it. At night, bunds would prevent light spill from vehicles travelling along the road, providing further improvements compared to the baseline situation. There may be a slight increase in light spill and lighthouse effect as a result of traffic travelling north-east, navigating the Barrow Wake roundabout on the realigned B4070. The scheme would provide an important benefit on the dark skies of the AONB with the removal of the road lighting associated with the scheme and reduced visual prominence of light spill from traffic lighting moving through the landscape. In line with the AONB's position statement the scheme avoids and reduce light pollution and remove or reduce existing sources of light pollution.
	Operational – year 15	In addition to the benefits explained at year 1, at year 15, mitigation planting would have matured to a sufficient height to provide visual screening of the scheme, including junctions at Ullenwood, Shab Hill and Cowley. Maturing woodland, tree and hedgerow planting would help visually contain the scheme, including vehicle movements at night, reducing its change on the AONB's dark skies. As at year 1, there would be an important benefit on the dark skies of the AONB with the removal of the road lighting associated with the scheme and reduced visual prominence of light spill from traffic lighting moving through the landscape. In line with the AONB's position statement the scheme avoids and reduce light pollution and remove or reduce existing sources of light pollution.
Distinctive settlements, developed in the Cotswold vernacular, high architectural quality, and integrity	Construction	This special quality would not be affected by the scheme.
	Operational – year 1	This special quality would not be affected by the scheme.
	Operational – year 15	This special quality would not be affected by the scheme.
Accessible landscape for quiet	Construction	During the construction phase, the scheme would have an adverse change on people using the local PRoW network, including the

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
recreation for both rural and urban users, with numerous walking and riding routes, including the Cotswold Way National Trail		Cotswold Way National Trail and Gloucestershire Way long distance footpath. It would permanently divert several footpaths, bridleways, and byways, severing other routes at Stockwell farm and Harding's Barn with construction activity greatly reducing the opportunity for quiet recreation in close proximity to the construction works. Construction activities would adversely affect the visual and auditory enjoyment of the AONB for the duration of the construction phase. Construction activity would give rise to an important adverse change on users of the walking and riding routes for quiet recreation.
	Operational – year 1	The Cotswold Way crossing (Ch 2+100) would provide a new pedestrian crossing over the scheme between Emma's Grove and Crickley Hill to accommodate the Cotswold Way National Trail and the Gloucestershire Way crossing (Ch 2+690) would provide a new multipurpose crossing north of Shab Hill to accommodate walkers, cyclists, horse riders and the Gloucestershire Way long distance footpath. Grove Farm underpass would be provided between Crickley Farm and Grove Way, with further crossings at Stockwell overbridge (Ch 4+725) and Cowley overbridge (Ch 4+040). All proposed structures would provide improved permeability and recreational access across the scheme, compared to the baseline situation. The detrunked and repurposed section of the Existing A417 would become the Air Balloon Way, providing traffic free recreational access between the Golden Heart Inn to Barrow Wake and the Cotswolds Way crossing for walkers, cyclists, and horse riders. Further new sections of PRoW would be added to the network, providing greater recreational benefits within the AONB. The proposed realignment of the B4070 to make use of the existing road infrastructure at Barrow Wake would increase the opportunity of natural surveillance, making this area more family friendly. At year 1, the scheme would provide important benefits to this special quality.
	Operational – year 15	Same benefits as described above, the scheme would give rise to important benefits to this special quality.
Significant archaeological, prehistoric, and historic associations dating back 6,000 years, including Neolithic stone monuments, ancient drove roads, Iron Age forts, Roman villas, ridge and furrow fields, medieval wool churches and country estates and parks	Construction	Likely impacts on specific assets have been assessed within ES Chapter 6 Cultural Heritage (Document Reference 6.2).
	Operational – year 1	Likely impacts on specific assets have been assessed within ES Chapter 6 Cultural Heritage (Document Reference 6.2).
	Operational – year 15	Likely impacts on specific assets have been assessed within ES Chapter 6 Cultural Heritage (Document Reference 6.2).

AONB special qualities and CPRE Tranquillity and Dark Skies	Construction or operational phase	Likely change as a result of construction or operational activities
Vibrant heritage of cultural associations, including the Arts and Crafts movement of the 19th and 20th centuries, famous composers and authors and traditional events such as the Cotswolds Olimpicks, cheese rolling and woolsack races	Construction	Likely impacts on the AONB's vibrant heritage have not been assessed within this chapter.
	Operational – year 1	Likely impacts on the AONB's vibrant heritage have not been assessed within this chapter.
	Operational – year 15	Likely impacts on the AONB's vibrant heritage have not been assessed within this chapter.

7.10.18 The scheme would have a range of changes on the character and special qualities of the Cotswolds AONB. In the short to medium term (up to the intended design year - year 15) these would generally be adverse in nature before the embedded and essential mitigation takes effect and the proposed enhancements are realised. In the long-term the scheme would help to conserve and enhance the natural beauty of the AONB, providing enhancements to some of the special qualities.

7.10.19 Overall, the scheme would provide several opportunities to enhance the character and benefit the special qualities of the Cotswolds AONB in the long-term by removing some of the historic impacts of the Existing A417. However, the scheme would give rise to temporary adverse changes as a result of the construction phase to a number of special qualities as set out above. A number of these adverse changes would continue into the early operational years. Benefits would be realised as the proposed landscape planting matures to a sufficient level and features of the scheme weather, becoming more integrated with the landscape, at operational design year (year 15), more of the adverse changes would be mitigated and further benefits realised.

Assessment of effects on landscape character types

Table 7-14 Assessment of effects on landscape receptors

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
AONB LCT 2 Escarpment, including sub area LCA 2D Cooper's Hill to Winchcombe			
Likely changes as a result of the construction activities: Construction activities would directly affect landscape characteristics of the escarpment LCT. These include the extensive loss of roadside vegetation (see ES Figure 7.9 Retained Vegetation (Document Reference 6.3)) along both the north and south side of the A417 between Crickley Farm and Grove Farm to construct a five lane dual carriageway, with central reservation, hardstanding and maintenance strip. Substantial earthworks would take place to create the designed 8% gradient and supporting embankments. A landscape bund would be erected extending south into pasture fields (parts under ridge and furrow), requiring realignment works to the Tributary of Norman's Brook, including short sections of culverting. To the north of the scheme, Dog Lane and Cold Slad lane would be realigned, separated from the scheme by a narrow verge on a short slope, planted with grass and trees. A PRoW would follow the realigned route of Dog Lane and Cold Slad Lane to connect into the Cotswold Way National Trail. In the same location, slope stabilisation works would be carried out to the lower slopes of Crickley Hill, requiring a small area of vegetation clearance and directional drilling. South of the scheme, PRoW would be diverted and temporarily stopped up during the construction phase, with the main construction access, via a haul route, being provided along the route south of the carriageway to connect to the construction compound in the neighbouring Settled Unwooded Vale LCT to the wider construction operations. During construction phase 2, the haul route would follow the watercourse diversion, changing in phase 3 to along the new road lane. A bat underpass east of Fly-up (Ch 1+100) would be excavated to provide a safe crossing point for bats under the scheme. At Grove Farm, a second underpass (Ch 1+680) would be provided for access to the farm. Here, farm buildings would require demolition and trees would be felled to accommodate the construction of drainage basin 3c, in addition to the realigned Tributary of Norman's Brook, with stepped cascades down the escarpment slope. A bat roost structure would be constructed in this location to provide mitigation for the loss of bat roosts in buildings and trees on the farm. East of Grove Farm, the steeper slope of the escarpment would be excavated and reprofiled to cut through the escarpment at approximately the same depth as existing (15 metres), widening the cut south of Crickley Hill to accommodate the five lane carriageway. Excavation works would reprofile the escarpment slope on south side of the cutting to a 1:35 degree slope, with benching and cut slopes at 65 degrees. East of the escarpment edge, the Cotswold Way crossing (Ch 2+100) would be erected, requiring the excavation of deep foundations and installation of the bridge deck using lifting equipment and cranes. On the LCT's eastern boundary, the Air Balloon public house and Ullenwood junction would be demolished. Extensive tree planting would take place across the LCT adjacent to the scheme, including on the proposed landscape bund, between properties and the proposed carriageway. Hedgerows would be planted in fields adjacent to the scheme, south of Crickley Hill, with extensive Cotswolds stone walling erected across the scheme to match the existing. A combination of post and rail, highway, badger, and acoustic fencing would also be erected across this area. Post and rail and highway fencing would be used to mark boundaries between different landowners and to prevent access to the mainline carriageway. Where			

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
appropriate, fencing would be rationalised to combine badger and highway fencing or post and rail fencing with acoustic fencing. Stone walling would be used as the preferred boundary treatment where possible. On the very eastern extent of the LCT, the Existing A417 forms part of the LCT's eastern boundary. Here, the redundant road would be repurposed and restored to a green lane WCH route, named the Air Balloon Way. This would be achieved by removing the existing carriageway and removal of signage and lighting, followed by infilling areas and planting along its length with calcareous grassland and deciduous trees. The WCH route would be formed of a hard-permeable finish, suitable for a range of users. In the same area of the LCT, construction works would take place at Barrow Wake to accommodate the realigned B4070 roundabout and to resurface and alter the car park layout, opening up the entrance to provide better natural surveillance by removing existing overgrown vegetation. Tree planting would be provided to break up the car parking areas and a Cotswold stone wall would be erected to enclose the area. The escarpment's steep slopes would elevate the construction activity above the surrounding landscape of the vale, dispersing noise, and visual disturbance across a wide area, lowering the baseline levels of tranquillity, adversely affecting the special qualities of the AONB (the tranquillity of the area). For further information on the acoustic effects of the scheme, refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2).			
Construction	**Very high sensitivity** As the landscape type with the most striking character within the AONB, a high scenic quality, with a high volume of designated landscape features. The LCT is valued as part of a designated landscape and is considered to have a limited ability to accommodate change of the type proposed within close proximity and on the alignment of the existing road infrastructure, is assessed as having a **very high sensitivity** to the type of development being proposed.	**Moderate magnitude of effect** Likely changes as described would result in a noticeable of change (presence of construction activities to increased width of cut from baseline situation) over a small area with limited direct effects on the wider LCT and a duration of 42 months. Construction activities would be partially reversible with the removal of construction traffic and personnel, resulting in a **moderate magnitude of effect**.	**Large, adverse significance of effect.** The construction works are predicted to result in a **large and adverse significance of effect** on AONB LCT 2 Escarpment due to a **moderate magnitude of effect** on a **very high sensitivity** landscape receptor. The significance of effect would not be very large due to only a small part of the wider LCT being affected by construction activities within the context of the existing road corridor and cut slopes already present in the escarpment. Therefore, there would not be a total loss or large-scale change to the LCT.
Likely changes as a result of the operational activities at year 1: During the first year of operation, the recently completed scheme would be prominent in the landscape. New features like the landscape bund would appear out of character next to the naturalistic slopes of the escarpment, highlighted further by extensive areas of newly planted woodland, with individual tree guards standing out against the natural colours of the surrounding landscape. Post and rail, highways, badger, and acoustic fencing would appear at odds and as uncharacteristic of the area, extending across the new landscape bund and along the highway, marking boundaries between different landowners and to provide badger and acoustic mitigation.			

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
The scheme would be located on the same alignment as the Existing A417, with a larger footprint, sitting elevated on embankments, increasing its dominance in the landscape. Other new and uncharacteristic features include the Cotswold Way crossing, drainage basins and drainage features, which would be present in the landscape. This part of the LCT would temporarily be more open in character with the planned removal of woodland, opening up long distance views across the escarpment foot slopes to Barrow Wake, The Peak and over the vale to the edge of Gloucester. The Cotswolds Way crossing, pedestrian overbridge, would be constructed of weathered steel, appearing bright in colour during the opening months, gradually darkening over the year. This new feature and dynamic architectural style would at first appear out of character compared to the baseline situation, with no overbridges present on this part of the Existing A417. At year 1, vehicles travelling along the road corridor would be very prominent in the landscape, both visually and auditorily, with five lanes of traffic on the Crickley Hill section (Ch 1+000 to 1+400), being elevated above the landscape. The landscape bund in combination with the mainline would appear large and at odds with the otherwise rural and wooded character of the escarpment slopes. Drainage basin 3C, the cascade drainage channel and the realigned Tributary of Norman's Brook would appear at odds due to their engineered appearance and because open water and drainage features are not characteristic of the escarpment edge. Tree and grassland planting would not offer any screening or integrating benefits to new highway features of the scheme at this stage. However, new woodland, tree, hedgerow, and species rich grassland planting would start to link previously isolated and disconnected landscape features, providing long-term benefit and positively contributing to the local landscape character and the special qualities of the AONB. Benefits of additional rock exposures would start to be realised with increased opportunities for the natural regeneration of locally rare plant communities, with the exposed rock adding to the special quality of the AONB (unifying character of the limestone geology). Other benefits would begin to be realised with the recently removed farm buildings at Grove Farm, removing built structures from the escarpment edge. The new roundabout at Barrow Wake would introduce a new feature to this part of the LCT and would bring vehicle movements back onto a small part of the escarpment.			
Operation – year 1	**Very high sensitivity** The LCT is valued as part of a designated landscape and is considered to have a limited ability to accommodate change of the type proposed. Therefore, the escarpment LCT is judged to have a **very high sensitivity**.	**Minor magnitude of effect** Noticeable change over a small area over a period between 1 to 15 years, with the proposed infrastructure present for the life of the operational period. Changes would be direct and not be reversible (permanent) resulting in a **minor magnitude of effect**.	Year 1: **Large, adverse significance of effect.** For this LCT, the operation of the scheme is predicted to result in a **large, adverse and significant effect** at year 1 on AONB LCT 2 Escarpment, due to a **minor magnitude of effect** on a landscape receptor of **very high sensitivity**. The significance of effect would not be moderate at this stage because the proposed planting would not be at a sufficient height to provide any mitigation. In addition, the rock exposures and post construction scarring

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
			would be fresh and still evident in the landscape, contrasting with the LCT key characteristics.
Likely changes as a result of the operational activities at year 15: At year 15, woodland and tree planting across the LCT would have matured, helping to integrate the highway infrastructure and associated drainage basins, cascades, and channels into the landscape and would positively contributing to the special qualities of the AONB (internationally important broadleaved woodland). The visual and auditory dominance of the scheme, with vehicles moving at high speed along the increased five lane dual carriageway would have noticeably reduced and would be similar to the baseline situation. The large drainage basin (3C) would remain a feature of the scheme at year 15 but would be enclosed in maturing woodland. Historic field boundaries would be restored and reinstated, better connecting landscape features, including woodland blocks and along the wooded highway corridor and Air Balloon Way. Post and rail and highway fencing would be removed as parcels of land are handed back to landowners, removing the need for this fencing. Badger and acoustic fencing would remain a feature of the scheme but would be enclosed within maturing woodland and hedgerows. The Crickley Hill section (Ch 1+000 to 1+400) with landscape bund and the cutting would be of a similar character to the baseline situation, with natural regeneration of local plant communities being well established on the cut slopes. The width of the cut would remain a feature at odds with the surrounding topography of the escarpment but would become better integrated into the landscape due to maturing woodland planting, as would the Cotswold Way crossing (Ch 2+100). The materials of the crossing would now be patinated and weathered to a softened texture and appearance compared to at year 1 of operation, becoming much darker and richer in colour. Improvements at Barrow Wake would now be part of the landscape, with a reduced presence of the car park on the escarpment edge compared to the baseline situation, although the roundabout as part of the realigned B4070 would remain at odds compared to the baseline situation. Green features through the landscape, with areas of extensive tree and calcareous grassland planting would help reduce the long-term effect of the road infrastructure and positively contribute to the special qualities of the AONB.			
Operation - year 15	**Very high sensitivity** The LCT is valued as part of a designated landscape and is considered to have a limited ability to accommodate change of the type proposed. Therefore, the escarpment LCT is judged to have a **very high sensitivity**.	**Minor magnitude of effect** By year 15, the scheme, cutting through the escarpment, would be enclosed by maturing woodland. Benefits would begin to be realised with planting providing connectivity between existing woodland and field boundaries, integrating the scheme into the landscape. This would reduce the scale of change further, with only slight changes to characteristic landscape features, resulting in a **minor magnitude of effect**.	Year 15: **Moderate, adverse significance of effect.** The level of significance would reduce from those experienced at year 1 (large) as a result of maturing vegetation, weathering rock exposures that would provide some benefits to this part of the LCT, such as providing opportunities for rare plant species on opened up rock exposures and connecting up landscape features. Combining the receptors **very high sensitivity** with a **minor magnitude of effect**, there will be a

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
			moderate, **adverse significance of effect** on AONB LCT 2 Escarpment**.** The significance of effect would not be large as the proposed changes would at this stage begin to replicate the character of the baseline landscape, with the scheme set within maturing woodland and hedgerow planting will now tie in with existing field boundaries. After approximately 30 years the effects of the scheme would continue to reduce as the mitigation vegetation matures to provide a greater level of screening with more plant communities become established on the rock exposures with the road infrastructure becoming embedded into the landscape, further reducing the level of significance.
AONB LCT 7 High Wold, including sub areas LCA 7C Cotswolds High Plateau			
Likely changes as a result of the construction activities: Construction activity would take place along a relatively long section of this large LCT, between Emma's Grove (existing Air Balloon public house) at Ullenwood junction and Cowley junction (Ch 5+000 to Ch 5+470). North of the A436 and at the southern extent of Leckhampton Hill Road, changes would take place to the entrance of Crickley Hill Country Park and within the grounds of National Star College. These include the alteration of the existing highway alignment with new layout to the entrance of Crickley Hill Country Park with improved sight lines. There would be temporary road works and a traffic management system present throughout the construction period, which would change as the programme of construction works progressed. Drainage basins 5a, b and c would be excavated at Ullenwood, between the new A436, Ullenwood junction and A417 and within the pasture field on National Star College land. To screen construction activity from the residents of the college, temporary bunding would be erected and the area would be used to store topsoil. At the end of the construction period the area would be planted with woodland and restored to woodland pasture. The drainage system would extend across National Star College land to connect into a local watercourse within the golf course. This would require a drainage channel to be trench dug across arable/pasture fields, with removal of trees where it connects into the local watercourse on the golf course. South of Ullen Wood, the existing pasture field would be partially converted to woodland and wood pasture. The remaining area would be improved to species rich/calcareous grassland, positively contributing to the special qualities of the AONB (internationally important flower rich grassland). North of Shab Hill, the scheme would be cut into the hillside, with earthworks dramatically altering local topography. The proposed alignment of both the A417 and A436 would be a large presence in this LCT, with deep excavation and rock exposed cut to form steep slopes. This would result in the loss of woodland at Emma's Grove. Between the two roads, on islanded land, drainage basin 3a would be located next to an area of exposed rock.			

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
On the western side of the scheme, a main construction compound would be located east of Emma's Grove, comprising a stone crusher, portacabins and material storage area. To install the Gloucestershire Way crossing (Ch 2+690), north-west of Rushwood Kennels, foundations would be excavated and formed, before lifting the deck into place using cranes. In the same area, the rural lane and access tracks to private properties at Rushwood Kennels and Cuckoopen Farm would be altered, installing a new section of road between Shab Hill junction and the properties. Landscape bunds and woodland planting would be installed along the alignment of the new track to help mitigate the effects of the scheme for these properties. Constructing Shab Hill junction (Ch 3+200) would require a programme of high intensity construction activities with large earthworks to stop up/fill in the valley to accommodate the drainage basin, access track, A436, roundabout, realigned public right of way, on/off slip roads and mainline, including underpass. This would result in the loss of sensitive rock exposure and mature beech coppice, as well as the large alteration to local topography, effecting the special quality of the AONB (unifying character of the limestone geology) West of Shab Hill, near the Birdlip Radio Station and The Barn, Shab Hill junction would be constructed at close proximity, which would include the use of earthmoving vehicles, excavators, and cranes. New road access to the properties would be constructed with a section of the existing rural lane being permanently stopped up. South of Shab Hill, as the scheme crosses the more open part of the wold, the construction of the mainline would require excavation and large-scale earthworks to install long sections of landscape bunds through the wold landscape. Cotswold dry-stone walling would be erected along newly created field boundaries and on top of bunds, with small coppices planted. A combination of acoustic, badger and highway fencing would also be erected to prevent access to the highway by badgers and people, and to mitigate noise of the construction activities and operational noise. Other features in this part of the wold include the excavation of drainage basins no. 6, 7b, 8, 9 and 10 and associated access and drainage channels, and the installation of Cowley and Stockwell overbridges. Installing Cowley overbridge (Ch 4+040) would require the alignment of the rural lane to be altered to facilitate building an offline section of road and the erection of the overbridge using cranes. Several mature avenue trees and a small area of woodland would be felled to accommodate the works. Erecting Stockwell overbridge (Ch 4+725) would require the partial offline construction and realignment of the farm track. Proposed new tree planting would take place adjacent to the road and overbridges, with hedgerow planting on the bridge to help integrate the structures into the surrounding landscape. Long sections of landscape and acoustic bunding would be created to screen the road from viewpoints within the wider wold landscape. Proposed Cotswolds stone walling and woodland planting would be created along embankments and bunding. Large embankments are proposed at a gradient of approximately 1:12 to 1:20 to slacken out the slope and help integrate it into the surrounding landscape by tying into the existing topography. Areas of new woodland planting would be implemented south of the farm access track. A main construction compound would be located in an arable field on a rural lane south-west of Cowley Wood. Cowley junction would require deep excavation of on/off slip roads, creating a large footprint as the junction cuts through the hillside to the east of the mainline. Tree planting and a large area of wildflower meadow would be implemented within the area of islanded land. The existing rural lane access to the village of Cowley would be downgraded to residential access and WCH route only. New trees and hedgerow would be planted on the south side of the scheme. South of Cowley junction three new drainage basins would be excavated, within on/off slip roads and a new roundabout connecting the scheme back into the local road network (historic Roman road). The area would be planted with woodland and calcareous grassland. Repurposing and restoration of the Existing A417 carriageway would take place by removing the existing carriageway and removing signage and lighting, benefiting the special qualities of the AONB (extensive dark skies). This route, Air Balloon Way, would form a footpath and WCH link between the Golden Heart Inn car parking, with additional disabled and horsebox parking east of Birdlip, to Barrow Wake. Large sections of the old road surface would be			

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
removed and restored to allow the area to become a WCH route with calcareous grassland and tree planting, positively contributing to the special qualities of the AONB (internationally important flower rich grassland and important broadleaved woodland). West of the scheme, a rural lane access to Shab Hill would be upgraded to accommodate B4070, with roundabouts at both ends (Shab Hill and Barrow Wake) to allow free flow of traffic. On the western edge of the LCT, the Cotswold Way crossing (Ch 2+100) would be erected in the neighbouring LCT, with short-term localised effects caused by the presence of cranes. The proposed construction activities, as described above, would impact the perceived tranquillity of this otherwise rural area of the AONB and special qualities of the AONB.			
Construction	**Very high sensitivity** The Cotswolds High Wold is a key component of the Cotswolds AONB, valued nationally due to the presence of special qualities, including the area's gently undulating plateau, opportunity to gain long distance views over a predominately arable landscape of large scale, regular fields enclosed by dry-stone walls. The majority of this LCT has a limited ability to accommodate large-scale road infrastructure due to its high intervisibility across the large scale, open landscape which contributes to the LCT's characteristics. However, part of the LCT which falls within the north of the study area tends to be more enclosed, particularly around Shab Hill, with strong field boundaries, conifer belts and mature woodland, locally reducing its susceptibility. Combining the LCT's value as part of a nationally designated landscape with its limited ability to change, the LCT is	**Major adverse magnitude of effect** The LCT is likely to experience a obvious change over a medium sized area within the study area, where construction activities would add new uncharacteristic and conspicuous features over a wider area of this LCT. The duration of construction activity is likely to be 42 months between 2023 to 2026. These effects would be direct and partially reversible as the construction equipment and activity would be removed at the end of the construction phase and areas of disturbed ground would recover quickly, particularly within arable farmland. Combining judgements of a large size/scale of change over a medium sized area, a period of 42 months, and partially reversible and direct effects, there would be a **major adverse magnitude of effect** on the landscape within the study area.	**Very large, adverse significance of effect.** The High Wold LCT is likely to experience a very large and adverse significance of effect to a localised area within the larger LCT. This is as a result of a major magnitude of effect to a landscape receptor of very high sensitivity.

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
	assessed as having a **very high sensitivity** to the type of change being proposed during the construction phase.		

Likely changes as a result of the operational activities at year 1:

There would likely be long-term effects from the Gloucestershire Way crossing - a new structure would provide some limited landscape connectivity and integration, at opening year (year 1), linking landscape features between Ullen Wood and Barrow Wake.

Works to improve the setting of Emma's Grove scheduled monument would have been completed, opening up the monuments and reconnecting them with neighbouring historic features at Crickley Hill, Barrow Wake and The Peak. Refer to ES Chapter 6 Cultural Heritage (Document Reference 6.2) for further information. To compensate for the loss of a small area of scrub and woodland at Emma's Grove, the woodland would be extended along its eastern boundary to link and reconnect with proposed woodland along Air Balloon Way and with new roadside planting adjacent the scheme. There would be long-term benefits from woodland, hedgerow planting and species rich grassland to this area of the LCT. New native species deciduous woodland would be planted adjacent to Ullen Wood (ancient woodland) extending and better connecting it with surrounding field boundaries and coppices, providing opportunities for wildlife to cross the scheme. Large areas of calcareous grassland would be established to provide steppingstone connectivity between Barrow Wake to the Gloucestershire Way crossing, Ullen Wood and beyond, positively contributing to the special qualities of the AONB (internationally important flower rich grassland).

There would be long-term presence of large drainage basins spread across this LCT, remaining uncharacteristic and apparent at year 1. These would be located at Ullenwood junction basins 5a, b and c and between the A436 and new A417 basin 3a, Shab Hill junction basins 6, 7b and 8, and further south basins 9 and 10. The depth of cut/height of exposed slope, with benching and planting, would remain a stark feature appearing bright in colour compared to neighbouring natural rock exposures at Crickley Hill. New structures in the landscape, Shab Hill junction, Stockwell (Ch 4+725) and Cowley (Ch 4+040) overbridges would be visually dominant when travelling along the new road. There would be potential to gain views of the Gloucestershire Way crossing from Ullen Wood, the entrance to Crickley Hill Country Park and further north from PRoW off Cotswold Way and at Leckhampton Hill. Woodland planting at year 1 would not screen road infrastructure, providing limited integration of the structures, crossings, and drainage basins in the landscape, although in time this would provide visual connectivity with Ullen Wood.

New sections of Cotswold stone walling, although characteristic of the area, would appear bright and contrasting to neighbouring existing, more weathered, walling, positively contributing to the special qualities of the AONB (unifying character of the limestone geology and distinctive dry-stone walls). Badger, highway, and acoustic fencing would be visually prominent at this stage, being uncharacteristic of the high wold.

At Shab Hill and Cowley junctions there would be large-scale alterations to the landscape in the localised area, large permanent changes to landform, loss of woodland and changes to field patterns. Further elements of the scheme include engineered embankments and bunding, drainage basins, maintenance access tracks, roundabouts, underpass, and drainage channels would all appear out of character in this part of the high wold.

Highway structures, including the Gloucestershire Way crossing, Cowley, and Stockwell overbridges and Shab Hill junction would form permanent features within the LCT. Other permanent changes would include the alteration of entrances to private properties at The Barn and Cuckoopen Farm access, with proposed woodland belt and bunding at the edge of the property and new field access. The openness and outlook from Rushwood Kennels would be permanently altered, with a new landscape bund and woodland planting replacing a thick conifer belt, remaining open at year 1. It would be possible to perceive the A436, Shab Hill junction and the A417 mainline despite the combination of false cuttings and embankments.

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
There would be altered topography across a large area to construct landscape bunding. Landscape bunds would replicate the surrounding topography of this part of the AONB. New woodland around drainage basins would not yet help to integrate these uncharacteristic features into this open landscape. Proposed new tree planting adjacent to the road, hedgerow planting on the crossing and bridge embankments would be prominent as trees would be planted in rows and protected by tree guards making them stand out against the neighbouring more naturalistic woodland. Proposed Cotswolds stone walling along embankments and bunding would match and complement existing landscape features but would appear bright in colour at this stage. Parts of the wider landscape, in fields neighbouring the scheme, would be restored to arable farmland, and enclosed with Cotswold stone walling. Air Balloon Way would improve and restore landscape severance, making use of existing features to create a green route through the landscape with improved access. The route would be planted with trees and calcareous grassland to help reduce the long-term effect of previous road infrastructure.			
Operation – year 1	**Very high sensitivity** Combining the LCT's value as part of a nationally designated landscape with its limited ability to change, the LCT is assessed as having a **very high sensitivity** to the type of change being proposed.	**Major magnitude of effect** There would likely be an obvious change with large scale damage to existing landscape character with the addition of new uncharacteristic and conspicuous features as a result of road infrastructure and associated features, including junctions, structures, and drainage basins. This part of the High Wold LCT would experience effects over a medium sized area. Effects would be direct and not reversible over a period between 1 to 15 years, resulting in a **major adverse magnitude of effect** on this LCT.	Year 1: **Very large significance of effect** The scheme is predicted to result in a very large significance of effect at year 1 on AONB LCT 7 High Wold due to a **major** and adverse **magnitude of effect** on **very high sensitivity** receptors.
Likely changes as a result of the operational activities at year 15: By year 15, the scheme would be better integrated into the high wold LCT, being generally enclosed by landscape bunding and maturing woodland vegetation, with woodland positively contributing to the special qualities of the AONB (internationally important broadleaved woodland). The bunding would complement the characteristic rolling landform, covered with calcareous grassland, and lined with Cotswold stone walls and a small copses of trees. This would reinforce local landcover patterns and improve opportunities for landscape connectivity compared to treatment of landscape in intensive agricultural use, with new sections of walling positively contributing to the special qualities of the AONB (unifying character of the limestone geology and distinctive dry-stone walls). These beneficial changes would be balanced with the permanent presence of a major highway, overbridges (Gloucestershire Way crossing, Stockwell (Ch 4+725) and Cowley (Ch 4+040) overbridges), Shab Hill and Cowley junctions (Ch 5+000 to Ch 5+470) and large drainage basins. Vehicles would remain visible and audible to exposed parts of the Shab Hill junction (Ch 3+200) and along the realigned B4070 and A436 roads, locally affecting the LCT. However, the majority of the road infrastructure would be set into the landscape using extensive landscape bunding, topped with Cotswolds stone walling, providing some local enhancements to the local character. These features would screen the road and vehicle movements in wider views across the high wold.			

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
Operation - year 15	**Very high sensitivity** Combining the LCT's value as part of a nationally designated landscape with its limited ability to change, the LCT is assessed as having a **very high sensitivity** to the type of change being proposed.	**Minor magnitude of effect** At year 15, the integration of the scheme and establishment of calcareous grassland, landscape bunds, woodland and extensive sections of Cotswold stone walling would reduce the magnitude of effect from those experienced at year 1. Combining judgements of a medium size/scale of change that would be experienced over a medium sized area, for a period of more than 15 years, with direct and permanent effects, a **minor magnitude of effect** to this LCT would occur.	Year 15: **moderate, adverse, and significance of effect** The significance of effect on the AONB LCT 7 High Wold would reduce from very large to moderate as the proposed mitigation measures would have bedded in, with proposed tree and hedgerow planting continuing to mature. Extensive landscape bunds covered with calcareous grassland and topped with Cotswold stone walling would integrate the scheme into the wider landscape, complementing local characteristics. This would result in a **minor** and adverse **magnitude of effect** on a landscape affecting **very high sensitivity** receptors. The significance of effect would not be large to the minor change with maturing mitigation vegetation that would reduce level of significance at year 15. Beyond year 15 the effects of the scheme would continue to reduce as the mitigation vegetation matures to provide a greater level of screening (after approximately 30 years) with calcareous grassland positively contributing to the area's characteristics with road infrastructure and landscape bunding becoming embedded into the landscape, further reducing the level of significance.
AONB LCT 8 High Wold Valleys, including sub areas LCA 8A Toadsmoor, Holy Brook and Upper Frome Valleys and LCA 8C Upper Churn Valley			
Likely changes as a result of the construction activities:			

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
Erection of the Gloucestershire Way crossing (Ch 2+690), use of cranes, temporary closure of roads, and excavation for foundations in the visually enclosed perimeter of neighbouring AONB LCT 7 would indirectly affect a very small part of AONB LCT 8, with construction activity (noise, movement and light) likely to reduce the levels of perceived tranquillity and areas of dark skies, both valued as special qualities of the AONB. For further information on the acoustic effects of the scheme, refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2). Construction of altered access tracks to private properties at Rushwood Kennels and Cuckoopen within the neighbouring LCT, including bunding and woodland planting and the removal of evergreen screening vegetation from Rushwood Kennels property boundary, would increase the sense of openness, allowing intervisibility between the two LCTs. The construction of Shab Hill junction (Ch 3+200) would require a series of intensive construction activities, with large earthworks to fill in the head of the valley at Coldwell Bottom dramatically altering the local landform to accommodate a drainage basins, access tracks, A436, on/off slip roads, realigned public rights of way, roundabout and mainline, including underpass connection to Birdlip. This would cause a permanent loss of sensitive/important rock exposures and removal of mature beech coppice at Shab Hill and filling in the head of the valley with extensive earthworks, effecting the special quality of the AONB (unifying character of the limestone geology). The construction of Cowley junction (Ch 5+000 to Ch 5+470) and the presence of a large construction compound would indirectly affect a small part of this LCT at Nettleton Bottom. Additional works in the surrounding area, at Cowley junction, would include the excavation of on/off slip roads, three drainage basins to the west of the scheme and a new roundabout connecting the scheme into the local road network (partly along the historic Roman road). To help mitigate the effect of the scheme new woodland planting and landscape earthworks would take place at the junction.			
Construction	**Very high sensitivity** There are extensive areas of broadleaved woodland on steep valley slopes and a high volume of nationally important landscape and ecological features. It is valued as part of the Cotswolds AONB. The High Wold Valley LCT is an area with high perceived levels of remoteness and tranquillity within incised valleys. The confined landform, together with a lack of development offer a high sense of seclusion that results in a limited ability to accommodate this type of development. Combining the LCT's value as a designated landscape with its limited ability to	**Minor magnitude of effect** The construction of Shab Hill junction would cause a large-scale change to the top of Coldwell Bottom dry valley with the loss of beech (hanger) woodland and rock exposure and localised earthworks to reprofile the valley topography. However, this scale of change would only be obvious in the immediate locality, but slight in the wider LCT, due to the enclosed nature of the local landform and very low intervisibility with the wider valley network. Construction activities would be within a small area, taking place for approximately 42 months between 2023 and 2026. Likely effects would be direct and partially reversible, in that the construction equipment/activity would be removed at the end of the	**Moderate, adverse, and significant effect** The construction works are predicted to result in a **moderate adverse effect** on AONB LCT 8 High Wold Valleys, due to a **minor and adverse magnitude of effect** on a landscape of **very high sensitivity**. This would result in a **significant effect**. The significance of effect would not be large due to the slight change on a small area and relationship with the wider LCT, which would remain unaffected by the scheme.

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
	accommodate the changes being proposed, gives a **very high sensitivity**.	construction phase and areas of disturbed ground would recover quickly, particularly within arable farmland. However, the extensive earthwork movements would result in a permanent change to the local landform. Combining judgements of a slight change over a small area, with a duration of 42 months and direct but partially reversible effect, a **minor magnitude of effect** to the landscape would be likely to occur.	
Likely changes as a result of the operational activities at year 1: The proposed embankments at Shab Hill junction (Ch 3+200), along with the on/off ramps and link to B4070, drainage basins (6, 7b and 8) and access roads would create permanent new features in this part of the landscape. The open character present during construction would remain at year 1 until mitigation planting matures to a sufficient height to screen views to the scheme. The A436, junction and mainline would be readily apparent in the landscape, appearing incongruous. There would be a complete alteration to the landscape in this localised area, noticeable permanent changes to landform and loss of woodland and rock exposure (special qualities of the AONB). The new woodland planting on engineered embankments, the presence of drainage basins and associated maintenance access tracks, and new embankments/bunding would all remain prominent and uncharacteristic at year 1. The recently completed earthworks at the head of Coldwell Bottom valley would be readily evident, affecting the area's characteristics. The now operational road with fast moving traffic would lower the perceived tranquillity of a localised part of this LCT, effecting the special qualities of the AONB (the tranquillity of the area). Trees and coppices would be planted between road infrastructure to provide connectivity with existing landscape features but would not yet be functional. Neighbouring land would be restored to arable or pasture and enclosed by Cotswold stone walling and local land uses would include new green features with tree and calcareous grassland planting to help reduce the long-term effect of the scheme, with new sections of stone walling, calcareous grassland and broadleaved woodland all positively contributing to the special qualities of the AONB.			
Operation – year 1	**Very high sensitivity** Combining the LCT's value as a designated landscape with its limited ability to accommodate the changes being proposed, gives a **very high sensitivity**.	**Minor magnitude of effect** Slight change to an isolated and localised area of this LCT with effects predicted to the head of Cold Well Bottom valley only and not the wider LCT. Effects would be experience between 1 to 15 years and not reversible, resulting in a **minor magnitude of effect**.	Year 1: **Moderate, adverse, significance of effect.** Due to the **very high** sensitivity of this part of the AONB LCT 8 High Wold Valleys to the type of change being proposed that would give rise to a **minor magnitude of effect**, resulting in a **moderate adverse and**

Construction or operational phase	Sensitivity	Magnitude of effect	Significance of effect
			significant effect at year 1 of operation on this LCT. The significance of effect would not be large due to the likely effects taking place over a small area.
Likely changes as a result of the operational activities at year 15: The presence of Shab Hill junction and associated embankments, attenuation features and access tracks would now be integrated into the landscape, enclosed by tall landscape bunds and maturing tree planting. It would still be possible to perceive the scheme with lasting effects on the area's tranquillity – refer to ES Chapter 11 Noise and Vibration (Document Reference 6.2) for more information on predicted changes to noise levels in this area. Visual openness that was present during construction and year 1 of operation would now be more enclosed to a similar extent as the baseline situation. Intervisibility with the neighbouring LCTs would be limited.			
Operation - year 15	**Very high sensitivity** Combining the LCT's value as a designated landscape with its limited ability to accommodate the changes being proposed, gives a **very high sensitivity**.	**Negligible magnitude of effect** At year 15, the size and scale of the likely change would be negligible, affecting a small area. Effects would be experience over +15 year and not reversible. Overall, this would result in a **negligible magnitude of effect** to a small part of this LCT.	Year 15: **Slight, adverse, and not significant.** Combining the LCT's **very high sensitivity** to the type of change as described and **negligible magnitude of effect**, this would result in a **slight**, **adverse**, and **not significant** effect on the High Wold Valleys LCT.
AONB LCT 18 Settled Unwooded Vale/LCA 18A Vale of Gloucestershire Fringe			
It was assessed that there would be no significant landscape effects during construction or operation. The content of this landscape assessment has been moved to ES Appendix 7.4 Landscape Assessment Tables (Document Reference 6.4).			

7.10.20 Table 7-15 lists the likely effects in relation to landscape receptors as assessed during the construction phase of the scheme.

Summary of landscape effects during construction and operation

Table 7-15 Summary of landscape effects during construction

Receptor	Sensitivity	Magnitude of effect	Construction significance of effect
AONB LCT 2 Escarpment	Very high	Moderate	Large adverse and significant
AONB LCT 7 High Wold	Very high	Major	Very large adverse and significant
AONB LCT 8 High Wold Valleys	Very high	Minor	Moderate adverse and significant

7.10.21 Table 7-16 lists the likely effects in relation to landscape receptors as assessed during operational phase opening year (year 1) of the scheme.

Table 7-16 Summary of landscape effects at operation year 1

Receptor	Sensitivity	Magnitude of effect	Operation year 1 significance of effect
AONB LCT 2 Escarpment	Very high	Minor	Large adverse and significant
AONB LCT 7 High Wold	Very high	Major	Very large adverse and significant
AONB LCT 8 High Wold Valleys	Very high	Minor	Moderate adverse and significant

7.10.22 Table 7-17 lists the likely effects in relation to landscape receptors as assessed during operational phase design year (year 15) of the scheme.

Table 7-17 Summary of landscape effects at operation year 15

Receptor	Sensitivity	Magnitude of effect	Operation year 15 significance of effect
AONB LCT 2 Escarpment	Very high	Minor	Moderate adverse and significant
AONB LCT 7 High Wold	Very high	Minor	Moderate adverse and significant
AONB LCT 8 High Wold Valleys	Very high	Negligible	Slight adverse and not significant

Assessment of visual effects

7.10.23 The visual assessment for each receptor group that would likely experience significant visual effects as a result of the scheme proposals is provided in Table 7-18 to Table 7-40.

Recreational receptors

Cotswold Way National Trail

Table 7-18 Assessment of visual effects on users of the Cotswold Way National Trail

Receptor: Walkers on the Cotswold Way National Trail (includes visitors to Leckhampton Hill, Crickley Hill Country Park and visitors to Barrow Wake, The Peak and Coopers Hill)
Representative viewpoints: This receptor group is represented by the following viewpoints listed, refer ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location: • VP1 Cotswold Way National Trail at Coopers Hill. • VP7 The Peak. • VP8 Cotswold Way National Trail/Gustav Holst Way west of Barrow Wake. • VP9 Cotswold Way National Trail at Barrow Wake. • VP10 Barrow Wake Viewing Point. • VP11 Barrow Wake Car Park. • VP15 Crickley Hill camp scheduled monument. • VP16 Crickley Hill on Cotswold Way National Trail. • VP17 Bridleway off Cotswold Way National Trail. • VP18 Leckhampton Hill – visitor information board • VP19 Leckhampton camp and tumulus at trig point. • VP23 Gloucestershire Way on A417 at Air Balloon.
Baseline description The Cotswold Way National Trail is 102 miles (164 kilometres) in length, connecting Chipping Campden with Bath, with the majority of the route following the Cotswold escarpment, offering opportunities to gain extensive views of the surrounding landscape. The section between Coopers Hill and Leckhampton Hill is 8.8 miles (14.2 kilometres). This assessment focuses on a 1.8 mile (2.9 kilometres) section between The Peak and Crickley Hill. The baseline description is representative of sequential views that walkers can gain or the typical extent of visual resource experienced when travelling along the Cotswold Way National Trail between Coopers Hill and Leckhampton Hill. Views along the Cotswold Way National Trail vary with panoramic views available at high points such as Leckhampton Hill (VP18 and 19) or Crickley Hill (VP15 and 16), extensive views available to the west over the vale to Gloucester and beyond from along the escarpment edge (VP8 and 9), and enclosed or directional views from wooded sections of the trail between The Peak and Coopers Hill. The A417 in its existing form can be seen crossing the escarpment between Crickley Hill and Barrow Wake, as it descends the dip slopes onto the vale on the eastern edge of Gloucester. In the opposite direction, traffic can be seen traversing the upper escarpment behind Barrow Wake, particularly during winter. Barrow Wake and Crickley Hill are predominately open, covered with calcareous grassland, compared to adjacent slopes typically covered by 'beech hangers' - woodland on steep slopes. Barrow Wake car park forms a prominent, detracting feature on the edge, as sunlight glints off parked vehicles during the day and car headlights beam out at night. The radio masts at Shab Hill mark the otherwise wooded skyline, as seen from Crickley Hill (VP15 and 16) and within the vale (VP1, 3, 4, 5 and 6). At The Peak, views out from the trail are restricted by existing dense vegetation, preventing views of the scheme from this location. Following the trail towards Barrow Wake, part of the route remains within beech woodland at The Peak before exiting onto farmland. From this section, views out from the escarpment are filtered by trees on the upper escarpment slopes. Only at Barrow Wake (VP10 and 11) do views become more extensive, opening out across the vale as far as the Malvern Hills, Forest of

Receptor: Walkers on the Cotswold Way National Trail (includes visitors to Leckhampton Hill, Crickley Hill Country Park and visitors to Barrow Wake, The Peak and Coopers Hill)
Dean and, on clear days, the Black Mountains. Barrow Wake car park (VP10 and 11) is a popular location for people to enjoy the views, being marked as a viewing point on OS maps. North of Barrow Wake, the Cotswold Way National Trail leaves the escarpment edge and descends towards the Ullenwood junction and the A417 becomes an increasingly dominant focus (VP23). Here the Cotswold Way National Trail navigates the A417 at the roundabout for a short section, with views channelled along the road corridor, enclosed by the woodland at Emma's Grove and the tree cover on the upper slopes of the escarpment. The focus of the views is the road network, towards the Air Balloon public house. Entering Crickley Hill Country Park (VP20-22), walkers are enclosed by woodland of the Scrubbs, as the route ascends the escarpment edge before views open out towards the west of Crickley Hill (VP15 and 16). Here panoramic views can be gained, extending from Barrow Wake to The Peak, Coopers Hill, over Gloucester and Cheltenham. Views of the scheme are restricted to the area immediately adjacent to the Park's southern boundary wall (VP16) due to the steepness of the slope and existing dense vegetation. The current A417 is screened from view with only very small sections glimpsed through the tree canopy. North of Crickley Hill, it is not possible to gain views of the scheme due to intervening landform and vegetation. Only at Leckhampton Hill do views of the scheme become possible (VP18 and 19). From here long distance, panoramic views can be gained. Along this section between Crickley Hill and Leckhampton Hill, views are focused to the west across the vale, at times becoming enclosed by woodland (VP17). Long distance views back towards the scheme can be gained from Leckhampton Hill. At a distance of 1.4 miles (2.2 kilometres), it would form a small part of these extensive views to the south. For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity) Users of the PRoW between The Peak and Crickley Hill are considered to have a limited ability to accommodate visual change because users' interest is likely to be focussed on the landscape. The views from the trail are valued due to the Cotswold Way being a National Trail, with this section located within a landscape designated as an AONB. Overall, walkers on the Cotswold Way National Trail are considered to have a **high sensitivity** to the scheme.
Construction phase
Magnitude of effect Depending on the walkers' location on the route (including any temporary diversion) they would experience different scales of change. As described above, much of the Cotswold Way National Trail is set within wooded slopes with limited or filtered views out towards the scheme. The section of the trail between The Peak and Crickley Hill, is most likely to experience a high change, as it is open in nature with greater opportunity for extensive views. Focusing on this shorter section, walkers on the Cotswold Way National Trail would experience an obvious change as a result of the proposed construction activity, including the removal of existing vegetation, earthworks, partially built structures (such as the Cotswold Way crossing), earthworks movements to excavate drainage basins (2, 3a and c, 5a, b and c), realignment of the Tributary of Norman's Brook, the presence of construction vehicles and workers moving across the site, in addition to existing road traffic. It would also be possible to gain views of the construction compound, with site cabins, lay-down areas and storage of material and access/haulage routes alongside the widened road. Construction activities would provide contrast with the existing views and affect a substantial part of the visual resource. Fencing would be erected to mark changes in landownership, along with badger, highways and acoustic fencing appearing uncharacteristic in views of this part of the AONB and affecting its special qualities. Occasionally at night, the trail is used by walking and running groups but generally very few people use it. Night-time working would take place, requiring high intensity lighting which would be highly visible and spill out into this otherwise dark landscape, causing an obvious change for night-time users and adversely affecting the special qualities of the AONB (extensive dark skies).

Receptor: Walkers on the Cotswold Way National Trail (includes visitors to Leckhampton Hill, Crickley Hill Country Park and visitors to Barrow Wake, The Peak and Coopers Hill)
As a National Trail, it is popular with visitors to the AONB, affecting a relatively moderate number of people, compared to other local PRoW, over a relatively short section of this long-distance route affected by views of the construction activity. Taking into account the balance between lengths of path and number of people affected, the effects are likely to be experienced over a medium area. Sequential views of the scheme would be available between the eastern edge of The Peak and Crickley Hill. Walking south to north, glimpsed views of the construction work would be possible as the Cotswold Way National Trail follows the field boundary east from The Peak. Views of the scheme from The Peak (VP7) would be screened by existing vegetation. Views of the scheme become more readily available on the approach to Barrow Wake (VP8 and 9) where alteration of the car park would become prominent in near views. West out from the escarpment at Barrow Wake (VP10 and 11), construction activity would be obvious in views with large-scale changes taking place on the lower escarpment slopes and within the vale with the construction of the Crickley Hill section (Ch 1+000 to 1+400) with landscape bunds, felling of woodland, earthworks and drainage basins in combination with the Existing A417, which would remain operational during this time. It would also be possible to see the demolition of farm buildings at Grove Farm, the construction of drainage basin 3c and the realignment of the Tributary of Norman's Brook. Leaving Barrow Wake, the PRoW (VP23) would be diverted prior to installation of the Cotswold Way crossing (Ch 2+100). Entering Crickley Hill Country Park, it would be possible to gain glimpsed views of Ullenwood junction and the drainage basins at National Star college and some isolated tree removal on the edge of the park before entering woodland (The Scrubbs) on the south side of Crickley Hill. Views become contained by woodland on the approach to Crickley Hill, only becoming available again at the historic enclosure on the elevated plateau of Crickley Hill. From Crickley Hill (VPs 15 and 16) it would be possible to gain views of several different parts of the construction works. To the west, it would be possible to gain glimpsed views beyond The Scrubbs of the construction of the Cotswold Way crossing and the cutting through the escarpment. South of this, works to Barrow Wake car park, the realigned B4070 and along the Air Balloon Way would be visible. The area of felled roadside woodland, landscape bund earthworks along the Crickley Hill section (Ch 1+000 to 1+400) would also be visible from the very edge of Crickley Hill as the PRoW follows the boundary wall, being obvious and readily apparent. Further west, views open up over the vale, where it would be possible to see the construction compound, haul road, carriageway construction and excavation of drainage basin 2. North of here, views of the scheme would become screened by Crickley Hill. The duration of effect on views would be the construction phase (42 months) and would be partially reversible (because construction activities would be removed, however, felled trees and disturbed historic field patterns or landscape features would not be fully restored). Overall, walkers on the Cotswold Way National Trail between The Peak and Barrow Wake would experience **major** and **adverse** effects as a result of the scheme becoming a dominant feature in views and creating obvious change over a medium area.
Significance of effect For walkers using the Cotswold Way National Trail between The Peak and Crickley Hill, the construction works are predicted to result in a **very large and adverse significance of effect** on this short section of the longer National Trail, due to **major** magnitude of effect to views affecting **highly** sensitivity receptors, causing obvious change and introduce dominant features in views. The significance of effect cannot be reported as large as the visual changes would likely be dominant and obvious, not just noticeable, and readily apparent, being experienced by receptors of high sensitivity. The dominant changes would occur over an over a series of sequential views, including at a close proximity. Therefore, the significance of effect would be **very large**.
Operational phase (year 1 – opening year)
Magnitude of effect At year 1 of the operational phase, the newly introduced additional lanes of traffic and realignment (horizontal and vertical) of the scheme, including embankments, landscape bund, drainage channels, drainage basins, realignment of the Tributary of Norman's Brook, highways infrastructure (including fencing (highways, badger and acoustic), central reservation, signage) and mitigation planting to the south of Crickley Hill, would result in a large change to views from this section of the Cotswold Way National Trail, at times in close proximity and in direct line of view. Changes in views would also be

Receptor: Walkers on the Cotswold Way National Trail (includes visitors to Leckhampton Hill, Crickley Hill Country Park and visitors to Barrow Wake, The Peak and Coopers Hill)
experienced in relation to the altered access arrangements and car park improvements at Barrow Wake and the realigned B4070. Proposed mitigation would not be fully effective at year 1 with planting including tree guards and timber stakes on engineered embankments being visible, extending out into the landscape to connect broken hedgerows. The Cotswold Way crossing would also be seen from a shorter section of the trail, providing visual interest and an architectural focal point to views towards the escarpment, better connecting the landscape over the PRoW. Users of the Cotswold Way National Trail would be able to use the crossing as a safer and traffic free route over the scheme, compared to the baseline situation, benefiting the special qualities of the AONB (accessible landscape for quiet recreation). Walkers would benefit from extended opportunities to gain views out from the escarpment, which is one of the special qualities of the AONB, particularly at the purpose-built viewing platform. Wider benefits gained from the proposed mitigation planting would positively contributes to the wooded appearance of the slope and strengthening historic field boundaries. At this stage the proposed mitigation would contribute to the obvious visual change. The scheme would affect a substantial proportion of views which can be gained between The Peak and Barrow Wake, and would be more limited at Crickley Hill, affecting a moderate number of people over a medium sized area. As described for the construction phase, sequential views of the scheme would be possible between The Peak and Crickley Hill. Walking south to north, views of the recently completed scheme would only become available on the approach to Barrow Wake (VPs 8 and 9) with views open out to the west over the vale. Recently erected stone walling would enclose Barrow Wake preventing views of parked cars and the realigned B4070. However, within the vale and on the lower escarpment slopes (VPs 10 and 11), views of the new elevated carriageway, landscape bund and immature woodland planting would appear, creating a dominant feature in near views. New fencing and stone walling would stand out against the surrounding context. The construction compound would now be sown with calcareous grassland but would not yet be of continuous coverage. It would be possible to pick out drainage basin 2 and the altered access track to Crickley Farm with additional changes at Grove Farm with a new drainage basin and watercourse alignment altering the view. North of Barrow Wake, the realigned PRoW (VP23) would pick up the Air Balloon Way, with views along the green corridor to the Cotswold Way crossing and the recently opened up Emma's Grove barrows. On the approach to the crossing, the cutting slopes and mainline dual carriageway would be visible, becoming dominant in near views. The crossing would be backclothed by woodland vegetation of the Scrubbs on Crickley Hill but would contrast against it for the first year after being installed. Views out from the crossing would be restricted by tall parapets up to 2.5 metres. Coming off the crossing on the ramp, views of the cutting, Ullenwood junction and drainage basins at National Star College would be prominent in views. Entering Crickley Hill Country Park, views to the scheme would be screened by existing woodland up to the enclosure on Crickley Hill. From here (VP15), glimpsed views to the Cotswold Way crossing (Ch 2+100) and tops of cutting slopes would be possible. To the south, Barrow Wake car park would be visible but enclosed by Cotswold stone walling reducing the prominence of parked cars. It might be possible to gain glimpsed and partial views of vehicles travelling on the realigned B4070. However, there would be an improvement with the removal of vehicles from the Existing A417 along the recently completed Air Balloon Way. To the south (VP16), on the lower escarpment slopes and west over the vale, walkers would be able to gain views of the five lane dual carriageway on the Crickley Hill section (Ch 1+000 to 1+400) with landscape bunding and new woodland planting. Scarring from the construction compound would still be evident before the grassland had fully established. Drainage basin 2, the realigned Tributary of Norman's Brook and new access tracks to Crickley Farm would all be readily apparent in views. North of Crickley Hill, views to the scheme become screened by landform. Night-time effects of vehicle lights would be greater than, but of a similar nature to the baseline. Car lights would be visible, but with little spill into the wider landscape. However, light-housing of car lights would be visible as vehicles navigate the roundabout at Barrow Wake, shining along the car park towards Crickley Hill. The duration of effect on views over the operational phase would be between 1-15 years and would be not reversible. Combining judgements on visual change, geographical extent, duration and reversibility, the overall magnitude of effect would be **major** and **adverse**, due to the scheme remaining a dominant feature in views out from the escarpment, mainly at Barrow Wake.

Receptor: Walkers on the Cotswold Way National Trail (includes visitors to Leckhampton Hill, Crickley Hill Country Park and visitors to Barrow Wake, The Peak and Coopers Hill)
Significance of effect During operational phase (year 1), walkers would experience a **very large and adverse significance of effect**, as a result of the scheme becoming a dominant feature of the view causing an obvious change with a **major** magnitude of effect to views affecting receptors of a **high** sensitivity using this short section of the Cotswold Way National Trail. The significance of effect cannot be reported as large as the visual changes would likely be dominant and obvious, not just noticeable, and readily apparent, being experienced by receptors of high sensitivity. The dominant changes would occur over an over a series of sequential views, including at a close proximity. Therefore, the significance of effect would be **very large**.
Operational phase (year 15 – design year)
Magnitude of effect During the operational phase (at year 15 and beyond) the proposed mitigation planting would have grown to approximately nine metres in height[31], providing some screening of the road carriageway and vehicle movements, including Cold Slad Lane. The embankments and drainage basins would now be covered in maturing vegetation integrating them into the view of the wider landscape, reducing the visual change from large, to small. Vegetation would establish within and around drainage basins and along the realigned Tributary of Norman's Brook and perimeter drainage, making them less noticeable features in views. As the planting further matures beyond year 15, it would continue to screen these views to a similar level as the baseline situation, with only glimpsed and filtered views of the cut slopes remaining. Night-time effects of vehicle lights would be similar in extent and nature to the baseline, with vehicle lights being visible but with little spill into the wider landscape, with the exception of at Barrow Wake, where during the winter months vehicle headlights would be seen as they navigate the roundabout and short section of the realigned B4070. Visual effects of the Cotswold Way crossing would provide visually interesting feature, with walkers now being able to walk across the bridge without having to cross the mainline road, benefiting the special qualities of the AONB (accessible landscape for quiet recreation). There would be several locations along the Cotswold Way National Trail between The Peak and Crickley Hill where similar views could be gained by a moderate number of people over a medium sized area. Sequential views of the scheme would be possible between The Peak and Crickley Hill. Walking south to north, views of the scheme would only become available on the approach to Barrow Wake (VPs 8 and 9). Cotswold stone walling would enclose the car park, screening parked cars. Looking west out from the escarpment at Barrow Wake (VPs 10 and 11), maturing woodland would filter views of traffic using the five lane dual carriageway. New earthwork and the realigned watercourse would now be enclosed in woodland. Glimpsed views of the drainage basins (2 and 3c) would still be possible but only after periods of heavy rain when they hold water. At year 15, the view would be of a similar nature to the baseline. North of Barrow Wake (VP23), the PRoW would join the Air Balloon Way before crossing the scheme via the Cotswold Way crossing. The Cotswold Way crossing would also be seen from a shorter section of the trail on the approaches. It would be backclothed by woodland of The Scrubbs on Crickley Hill, appearing muted in colour, blending into the natural colours of the surrounding landscape. On the Cotswold Way crossing, views out would be restricted by tall parapets. Using the ramp to exit the bridge, Ullenwood junction would be visible, however, maturing woodland would screen views of the drainage basins at National Star College. On Crickley Hill (VPs15 and 16), it may still be possible to gain glimpsed views of the Cotswold Way crossing and the upper cutting slopes, but these would now appear integrated into the surrounding landscape. South and west from Crickley Hill, walkers might be able to gain filtered views of vehicles travelling on the five lane dual carriageway, but maturing woodland would screen the majority of the scheme, appearing similar to the baseline view. Features of the scheme, including drainage basins, the realigned watercourse and access tracks would still be visible but would now appear as part of the wider view. The duration of effect on views over the operational phase would be longer than 15 years and would be not reversible. Overall, there would be a **minor** and **adverse** magnitude of effect experienced by walkers on the Cotswolds AONB along this short section of the National Trail. Beyond year 15, the magnitude of effect

Receptor: Walkers on the Cotswold Way National Trail (includes visitors to Leckhampton Hill, Crickley Hill Country Park and visitors to Barrow Wake, The Peak and Coopers Hill)
would continue to reduce due to maturing vegetation, which would likely result in a negligible and neutral effect as views would become similar in nature to the baseline situation, with woodland situated on a landscape bund screening the road.
Significance of effect At Year 15, walkers using the Cotswold Way National Trail between The Peak and Barrow Wake, and a lesser extent at Crickley Hill, would experience a **minor** magnitude of effect to views affecting a receptor of **high** sensitivity, resulting in a **moderate and adverse significance of effect** due to part of the scheme being noticeable and readily apparent features in the view. The significance of effect cannot be reported as slight as the visual changes would likely be perceptible, not just discernible, being experienced by receptors of high sensitivity. The perceptible changes would occur over a series of sequential views, including at a close proximity. Therefore, the significance of effect would be moderate. After approximately 30 years the visual effects of the scheme would continue to reduce as the mitigation vegetation, on the landscape bunding, matures to provide a greater level of screening with the road infrastructure becoming embedded into the landscape appearing similar to the baseline. This would further reduce the level of significance.

Table 7-19 Cotswold Way National Trail summary of effects

Sensitivity	Very high	**High**	Medium	Low	Negligible
Construction					
Magnitude of effect	**Major**	Moderate	Minor	Negligible	No change
Significance of effect	**Very large**	Large	Moderate	Slight	Neutral
Operational phase (year 1 – opening year)					
Magnitude of effect	**Major**	Moderate	Minor	Negligible	No change
Significance of effect	**Very large**	Large	Moderate	Slight	Neutral
Operation year 15					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral

Gloucestershire Way long distance footpath

Table 7-20 Assessment of visual effects on users of the Gloucestershire Way long distance footpath

Receptor: Walker on the Gloucestershire Way long distance footpath (includes users of Crickley Hill Country Park, Emma's Grove unnamed lane at Rushwood Kennels, residents, and workers at Rushwood Kennels, Coberley long barrow, visitors to the AONB)
Representative viewpoints: This receptor is represented by the following viewpoints listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location:

Receptor: Walker on the Gloucestershire Way long distance footpath (includes users of Crickley Hill Country Park, Emma's Grove unnamed lane at Rushwood Kennels, residents, and workers at Rushwood Kennels, Coberley long barrow, visitors to the AONB)
• VP15 Crickley Hill camp scheduled monument. • VP16 Crickley Hill on Cotswold Way National Trail. • VP23 Gloucestershire Way on A417 at Air Balloon. • VP25 Gloucestershire Way at Shab Hill. • VP26 Cuckoopen Farm. • VP27 Gloucestershire Way at Rushwood Kennels. • VP28 Gloucestershire Way at Coldwell Bottom.
Baseline description The view is representative of walkers along the Gloucestershire Way long distance footpath between Crickley Hill and Coldwell Bottom and visitors to Emma's Grove. The visual resource varies along the Gloucestershire Way long distance footpath with panoramic views available from Crickley Hill (VP15 and 16) extending out over the low-lying vales as far reaching as to the Forest of the Dean, the Malvern Hills, and, on clear days, the Black Mountains. Glimpsed views of the Existing A417 can be gained from locations immediately adjacent to Crickley Hill Country Park's southern boundary wall (VP16), at the enclosure, similar views of the scheme would be possible for this location. The A417 is more prominent to the west on the edge of Gloucester at Brockworth, as it crosses the vale. Descending from Crickley Hill, the Gloucestershire Way long distance footpath (which links up with the Cotswold Way National Trail along this short section) traverses the wooded scarp edge at the Scrubbs to the Ullenwood junction. At the Ullenwood junction (VP23) views are enclosed by surrounding elevated ground covered with woodland. Channelled views can be gained along the road corridors, with moving traffic dominating views at close proximity. Walkers have to cross the busy road at Emma's Grove, before passing through the small wooded enclosure, passing the scheduled monuments. Leaving the A417, their views become more open but are still restricted to individual fields due to changes in topography and mature field boundary vegetation. Extensive views of the rolling landform, more typical of the wolds, are restricted by mature hedgerow field boundaries, belts of woodland and conifer screen planting (VP27). At Shab Hill, views of the scheme would be restricted to a very short section of the Gloucestershire Way long distance footpath west of Rushwood Kennels (VP27). East of Rushwood Kennels, a change in field boundaries to post and wire fencing provides more open views to the south-east to Cally Hill Plantation in the midground and views north-east towards Ullen Wood (VP26). The woodland creates a visual barrier, obscuring views to the north. Further east, within Coldwell Bottom (VP28), views become enclosed by steep landform, allowing views only to the east along the dry valley. Tree cover obscures views towards Shab Hill and the plantation at Cally Hill shortens the views to the west. For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity) Users of the long distance footpath (including visitors to Emma's Grove) are considered to have a limited ability to accommodate visual change because their interest is likely to be focussed on the landscape. The views from the paths are valued as part of the Gloucestershire Way long distance footpath which is located within a designated landscape. Overall, walkers on the Gloucestershire Way long distance footpath are considered to have **high sensitivity** to the scheme.
Construction phase
Magnitude of effect During construction, the Gloucestershire Way long distance footpath would be diverted around the construction site between Crickley Hill Country Park, at the Ullenwood junction, and Rushwood Kennels. At the Ullenwood junction, the diverted route would follow the alignment of the proposed A436 over Shab Hill connecting to PRoW ACO1 north of Rushwood Kennels. Once at the rural lane, it would cross the corner of the field north of Rushwood Kennels where it would connect back into the

Receptor: Walker on the Gloucestershire Way long distance footpath (includes users of Crickley Hill Country Park, Emma's Grove unnamed lane at Rushwood Kennels, residents, and workers at Rushwood Kennels, Coberley long barrow, visitors to the AONB)
existing Gloucestershire Way long distance footpath alignment on the Rushwood Kennels access track. This diversion would be permanent, forming a new PRoW between Crickley Hill and Rushwood Kennels. The temporarily stopped up section would be reopened on completion of the Gloucestershire Way crossing (Ch 2+690) east of Emma's Grove. Views of the construction works would be limited to a relatively small number of locations along the footpath, due to the rolling landform, field pattern and intact hedgerow field boundaries which would prevent more extensive opportunities to gain views. Along the short section at Shab Hill there would be an obvious change as a result of the diverted route and the construction activities taking place at close proximity. Construction activities include those to create Shab Hill junction (Ch 3+200), erect the Gloucestershire Way crossing using cranes and heavy lifting equipment and earthworks movements to create a large number of drainage basins and perimeter drains at Shab Hill. A smaller visual change would be experienced from the section of the route within Crickley Hill Country Park where there would be views towards the Gloucestershire Way crossing works, earthworks movements to create numerous drainage basins and cutting slopes to the A436 and the realignment of Ullenwood junction. The Gloucestershire Way long distance footpath is relatively popular with local groups and visitors to the AONB, however, the section between Crickley Hill and Coldwell Bottom appears not as well used, likely as a result of the Existing A417 severing the footpath at the Ullenwood junction. At night, very few people use the footpath, but night-time working is planned to take place. This would require high intensity lighting, which would be highly visible and spill out into this otherwise dark landscape, causing an obvious change and adversely affecting the special qualities of the AONB (extensive dark skies). Construction activities would affect a small number of people (compared to the Cotswold Way National Trail), over a relatively short section of this long distance footpath, as described below. Taking into account the balance between the length of path and number of people affected, the effect is likely to be experienced over a small area. Sequential views walking east to west would only be gained from between Rushwood Kennels and Crickley Hill. On the approach to Rushwood Kennels the scheme would be screened by existing woodland and the buildings within the property. Views of the scheme would only become available on the west side of Rushwood Kennels (VP27) where it would appear at close proximity, with construction activity being the dominant feature. Earthworks, tree planting and the construction of Shab Hill junction and the Gloucestershire Way crossing would be readily apparent in these near views. During the construction phase, the Gloucestershire Way long distance footpath would be diverted across fields to the north of the scheme and around the edge of Ullen Wood (VP24). Connecting back onto its original alignment within Crickley Hill Country Park. Along this diverted route, the scheme, including excavation works to create the cutting, earthworks and foundations for the crossing and the new road layout at Ullenwood junction, would be obvious and readily apparent in near views. Within Crickley Hill Country Park, views of the scheme would be as described for the Cotswold Way National Trail, as both routes confluence for a short distance on the approach up to Crickley Hill (VPs 15 and 16). Further east from Rushwood Kennels, views to the scheme would be screened by intervening landform due to changes in topography between the users on the route situated at a lower elevation than the scheme as well as how the footpath wraps around the valley sides further limiting views west to the scheme. Within Coldwell Bottom, on the Gloucestershire Way long distance footpath, views tend to be south-west facing when travelling west. The head of the valley and Shab Hill junction would be screened behind existing field boundaries and plantation woodland. On the PRoW west of Crickley Hill, views of the scheme would be screened by the high ground of Crickley Hill. The duration of effect on views would be within the construction phase which would be 42 months and would be partially reversible (because construction activities would be removed, however, felled trees and disturbed historic field patterns (ridge and furrow) or landscape features (historic tracks) would not be fully restored). Combining judgements on visual change, geographical extent, duration and reversibility, the overall magnitude of effect would be **moderate** and **adverse** as the scheme would form a noticeable and readily apparent feature, affecting walkers on this route at Shab Hill.
Significance of effect

Receptor: Walker on the Gloucestershire Way long distance footpath (includes users of Crickley Hill Country Park, Emma's Grove unnamed lane at Rushwood Kennels, residents, and workers at Rushwood Kennels, Coberley long barrow, visitors to the AONB)
Overall, the effect of construction upon **highly** sensitive recreational users of the Gloucestershire Way long distance footpath and visitors to Emma's Grove is considered to be **moderate** magnitude of effect due to the intermittent and varying scale of change to views, over a small area affecting receptors with a limited ability to accommodate changes even for a relatively short period, resulting in **large and adverse significance of effect**. The significance of effect would not be moderate at this phase due to the obvious visual change experienced at close proximity and affecting a receptor group of high sensitivity.
Operational phase (year 1 - opening year)
Magnitude of effect Compared to the baseline conditions, walkers on the diverted Gloucestershire Way long distance footpath would experience improved views of the road network, even at year 1 as a result of the Gloucestershire Way crossing which would provide them continuous traffic free access along the Gloucestershire Way long distance footpath, benefiting the special qualities of the AONB (accessible landscape for quiet recreation). At year 1, before mitigation planting has established, changes in near views would be prominent with large areas of woodland planting (with tree guards) and recent scarring as a result of earthworks, particularly at both ends of the crossing and from the nearby property of Rushwood Kennels, resulting in an obvious change. The crossing would appear in local views, forming a new feature on the skyline. The top of the cutting slope would be clearly visible at this phase and would appear bright yellow, dominating views from a very close proximity only. Features such as drainage basins and perimeter drains would be grassed over, however vegetation would not have established to a point of integrating these elements within views and would be incongruous features at year 1. However, views of the cutting and the scheme would generally be screened by intervening landform and existing vegetation from the wider area, from further west beyond Crickley Hill or east along the Gloucestershire Way long distance footpath from within Coldwell Bottom. Users of the Gloucestershire Way crossing would have an improved experience of the long distance path as the crossing would be multipurpose, being planted with calcareous grassland and hedgerows to provide habitat for wildlife, and positively contributing to the special qualities of the AONB (internationally important flower rich grassland). Night-time effects of vehicle lights would be greater than, but of a similar nature to the baseline, with car lights being visible but with little spill into the wider landscape. Landscape bunding, as part of the proposed mitigation, would be formed of crushed local stone with little soil and planting during the early operational years and would form a noticeable feature of the view which would be readily apparent to users of the Gloucestershire Way long distance footpath at Shab Hill. Improved access and connectivity across the A417/A436 at the Ullenwood junction would likely increase the user numbers, however the length of footpath affected would be similar. Overall, the effect is likely to be experienced over a small area. As described above for the construction phase, only a short section of the PRoW would be affected by the scheme - between Rushwood Kennels and Crickley Hill. Focusing on this section of the Gloucestershire Way long distance footpath, it would be possible to gain sequential views of the scheme walking east to west, with near views of recently completed earthworks and tree planting at Rushwood Kennels (VP27). Looking south-west, walkers would be able to see Shab Hill junction and vehicle movements, along with landscape bunds, stone walling and areas of immature planting. Travelling further west on the PRoW, walkers would be able to see the Gloucestershire Way crossing (Ch 2+690), its embankments as they approached the structure. Views towards the scheme and the tops of the cutting slopes would also be possible at either end of the crossing. On the Gloucestershire Way crossing, views out would be screened by tall parapets and fencing, preventing wide views over the landscape and down to the scheme below. On the western approach to the crossing, views west and north-west would be possible to Crickley Hill and Leckhampton Hill in the distance. Emma's Grove would become visible, as would the recently completed Air Balloon Way and the Cotswold Way crossing (Ch 2+100). Users of the PRoW would also be able to see a short section of the scheme and the cutting from this location. Views of the wider scheme, including the cutting through the escarpment and the Crickley hill section (Ch 1+000 to 1+400), would be screened by intervening landform and existing vegetation. Moving off the western extend of the crossing, picking up the original alignment of the Gloucestershire Way long distance footpath (VP25), views of the scheme would become glimpsed and partial in nature, being screened by

Receptor: Walker on the Gloucestershire Way long distance footpath (includes users of Crickley Hill Country Park, Emma's Grove unnamed lane at Rushwood Kennels, residents, and workers at Rushwood Kennels, Coberley long barrow, visitors to the AONB)
a subtle rise in landform and intervening field boundary vegetation. Only the very top of the cutting would be glimpsed through the field boundary. Improvements in the views west would now be apparent with the removal of vehicles and the Existing A417 at Emma's Grove, as the users approached the recently completed Air Balloon Way (VP23). From within Emma's Grove, views would now be possible out to the west as a result of the recently felled and cleared woodland, allowing intervisibility between Crickley Hill, Emma's Grove, Barrow Wake and The Peak. On the Air Balloon Way, the old carriageway would be a narrower, purpose built WCH route with calcareous grassland and woodland planting. Here, the Gloucestershire Way long distance footpath meets the Cotswold Way National Trail at the Cotswold Way crossing. Views along this section of the Gloucestershire Way long distance footpath would be the same as those described above for the Cotswold Way National Trail (VPs 15 and 16). The duration of effect on views over the operational phase would be between 1-15 years and would be not reversible. The magnitude of effect experienced by walkers on the Gloucestershire Way long distance footpath would be **moderate** and **adverse** as the scheme would remain noticeable and readily apparent in near views.
Significance of effect The overall effect of the operational scheme upon **highly** sensitive users of this section of the Gloucestershire Way long distance footpath and visitors to Emma's Grove is considered to be **moderate** magnitude of effect at Year 1 due to the small change to views over a small area affecting receptors with a limited ability to accommodate change, resulting in a **large** and **adverse** significance of effect. The significance of effect would not be moderate at this phase due to the obvious visual change experienced at close proximity and affecting a high sensitivity receptor group, before mitigation planting has matured to a sufficient level to screen and integrate the scheme into views.
Operational phase (year 15 – design year)
Magnitude of effect The visual change at year 15 would reduce to perceptible. Vegetation would establish within and around drainage basins and perimeter drainage making them less noticeable features in views. As with at year 1, users of the Gloucestershire Way crossing would have an improved experience walking along the long distance footpath (benefiting the special qualities of the AONB), as the crossing would be multipurpose, being planted with calcareous grassland and hedgerows to provide habitat for wildlife. The effect is likely to be experienced over a small area because, affecting the same length of the route and a similar number of people, as at year 1. Sequential views of the scheme at year 15 would again be limited to the short section of the PRoW between Rushwood Kennels and Crickley Hill. Walking east to west, users of the PRoW at Rushwood Kennels (VP27) would be able to gain views towards the mitigation woodland planting and landscape bunding, with wider views towards Shab Hill junction and the Gloucestershire Way crossing now enclosed and screened by the maturing woodland. Views of the Gloucestershire Way crossing would only become available on the approach to the structure with both ends of the crossing enclosed in woodland. Crossing the structure, views would be contained by maturing hedgerows and tall parapets with timber fencing, channelling the view west. Exiting the crossing on the western side (VP25), views would be enclosed by woodland until the route opens out into calcareous grassland fields. Views to the west and north would again be possible to Crickley Hill and Leckhampton Hill, however, views of the Cotswold Way crossing would now be screened by woodland. Through Emma's Grove, views to Crickley Hill, Barrow Wake and The Peak would be possible before meeting the Air Balloon Way (VP23) and the Cotswold Way crossing. Views from the remaining section of the Gloucestershire Way long distance footpath would be as described for the Cotswold Way National Trail (VPs 15 and 16). Night-time effects of vehicle lights would be of a similar extent and nature to the baseline, with car lights being visible but with little spill into the wider landscape. At year 15, the opened-up view from Emma's Grove would be maintained to allow visitors to Emma's Grove who are using the stopped up section of the footpath to experience a beneficial change to their

Receptor: Walker on the Gloucestershire Way long distance footpath (includes users of Crickley Hill Country Park, Emma's Grove unnamed lane at Rushwood Kennels, residents, and workers at Rushwood Kennels, Coberley long barrow, visitors to the AONB)
visual resource, visually connecting with Crickley Hill and Barrow Wake, as well as removing vehicles from near views. The duration of effect on views over the operational phase would be longer than 15 years and would be not reversible. Combining the judgements on scale, geographical extent, duration and reversibility, the magnitude of effect experienced by walkers on the Gloucestershire Way long distance footpath at year 15 would be **minor and beneficial**.
Significance of effect Considering the combined **high** sensitivity of the receptor and **minor** magnitude of effect , the users of the Gloucestershire Way would experience a moderate a **slight, beneficial and not significant effect**. The significance of effect would not be moderate at year 15 due to the predicated small visual change experienced by users of the Gloucestershire Way long distance footpath. The scheme, including the Gloucestershire Way crossing, would now be well integrated into the landscape with limited opportunity to gain views of the scheme. Woodland, tree, and shrub planting would continue to mature and be of sufficient height to screen views, helping to mitigating visual effects and would bring about benefits to the local landscape and visual amenity.

Table 7-21 Gloucestershire Way long distance footpath summary of effects

Sensitivity	Very high	**High**	Medium	Low	Negligible
Construction phase					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	**Large**	Moderate	Slight	Neutral
Operational phase (year 1 – opening year)					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	**Large**	Moderate	Slight	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral

Local PRoW, bridleway, and byway networks

Table 7-22 Assessment of visual effects on users of the local PRoW, bridleway and byway networks

Receptor: Users of the local PRoW, bridleway, and byway networks
Representative viewpoints: This receptor is represented by the following viewpoints listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location: • VP1 Roman villa car park.

Receptor: Users of the local PRoW, bridleway, and byway networks
• VP5 Little Wycombe PRoW. • VP6 Old Coach Road overbridge A417. • VP7 The Peak. • VP12 Grove Farm bridleway. • VP15 Crickley Hill camp scheduled monument. • VP17 Bridleway off Cotswold Way National Trail. • VP19 Leckhampton camp and tumulus at trig point. • VP24 Bridleway south of Ullen wood VP32 PRoW Shab Hill. • VP26 Cuckoopen Farm. • VP30 Coldwell Bottom permissive path. • VP31 Shab Hill permissive path. • VP33 PRoW west of Shab Hill. • VP34 Byway west of Hill Barn. • VP35 Shab Hill from footpath north of Stockwell farm. • VP36 PRoW north of Stockwell on junction with rural lane. • VP37 PRoW north of Stockwell. • VP38 Byway at Stockwell. • VP40 PRoW north of Birdlip Quarry. • VP41 Golden Heart Inn. • VP42 Rural lane west of Cowley Wood. • VP44 PRoW north of Brimpsfield. • VP45 Bridleway at Blacklains Farm. • VP46 Bridleway west of Elkstone
Baseline description Walkers, horse riders and cyclists using the PRoW, bridleway, and byway networks within the study area around the scheme would experience a wide range of views. Dividing the wider network into distinct areas focused around settlements, the baseline for each area is described separately. These include Little Witcombe and Great Witcombe, Shab Hill and Stockwell, Brimpsfield and Nettleton Bottom and Cowley Wood and Elkstone. There exists an extensive network of short, interconnected routes in the area surrounding the settlements of Little Witcombe and Great Witcombe. Views from within the Vale (VPs1, 5 and 6) landscape are dominated by the surrounding high ground of the Cotswold escarpment. The predominately wooded ridge wraps around this part of the study area from Coopers hill to Crickley Hill. Features including Barrow Wake car park, Birdlip radio masts and Crickley Hill stand out in views to the east. The edge of Brockworth is partly visible in western views but is filtered by multiple layers of field boundary vegetation. The Existing A417 can only been seen from short sections of the footpath closest to the road. The relatively flat topography, strong field boundary vegetation and existing built form all prevent wider ranging views of the road. Existing woodland planting along the length of the A417 provides an additional layer of screening vegetation. In contrast to the visual resource within the vale, views from Shab Hill (VPs 32, 33 and 35) on the wold are more enclosed. This character changes towards Stockwell (VPs 35-37) where there are few intact hedgerows and the field pattern becomes considerably larger, offering opportunities to gain long and more open views across the rolling landform. Topography plays an important role in where views can be gained from the footpath network, restricting open views to areas of higher elevation. At Shab Hill views are generally limited by hedgerows, conifers, and tree belts, which surround the farm properties. However, long distance views can be gained north to Crickley Hill Country Park and the elevated land at Barrow Piece Plantation. East of Cuckoopen Farm (VP26), open, panoramic views are gained from the byway over Coldwell Bottom and out to Coberley. At Stockwell, a combination of footpaths, bridleways, and byways (VP34 and 38) radiate out from the farmstead in all directions. To the west, the Existing A417 can be seen in the middle distance along the local skyline, with the movement of vehicles drawing the eye. The roadside vegetation and woodland at Barrow Wake prevent views further west. Roadside vegetation also screens views to the south. To the east of Stockwell, footpaths

Receptor: Users of the local PRoW, bridleway, and byway networks
tend to follow the lower slopes of a shallow valley (VP40) with higher ground enclosing views, channelling them to the south-east. The visual resource around Brimpsfield (VP44) and Nettleton Bottom (VP41) focuses on the attractive, narrow steep valley at the head of the Frome river. The area is frequently wooded, which, when combined with higher surrounding ground, restricts views. Brimpsfield is situated on the upper valley slopes to the south-east. Despite its elevation, views are contained within the settlement. From the footpaths north of Brimpsfield, views are restricted by hedgerows and small blocks of woodland. At field gates, views across the valley can be gained towards the scheme. From the Existing A417 road corridor, roadside vegetation limits views, except at the Golden Heart Inn, Nettleton Bottom. Here, views extend across to the higher ground to the north or across the valley to Brimpsfield. To the eastern extent of the study area are Cowley Wood and Elkstone (VP42). Cowley lies on the lower slopes of the River Churn valley, with views focused along the valley and out over open arable farmland to the east. No views to the scheme can be gained from Cowley. Cowley Wood covers the steep slopes west of Bubb's Hill and has several footpaths which cut through it. Adjacent to the Existing A417, footpaths connect rural lanes north of Highgate House/Highgate Farm. Only from footpath ACY40, that runs parallel east of the A417, are views of the scheme available. There are open views across a rolling agricultural landscape. Mature trees bounding Birdlip quarry shorten the view, preventing wider views and screening parts of the A417. There are partial and glimpsed views of the road network with movement from vehicles visible in the distance. Field boundaries are a mix of broken hedgerow with some post and wire fencing. Further south-west, the view consists primarily of large-scale pastoral fields. The view is wide but relatively foreshortened by the mature woodland lining the horizon to the south-west. These mature trees at Cowley junction roundabout obscure the traffic, however taller road infrastructure, including lighting columns, are clearly visible in the view. Field boundaries are a mix of post and wire fences, dry-stone walling, and scrappy hedgerow with some mature ash trees in field boundaries. For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity) Users of these public footpaths are considered to have a limited ability to accommodate visual change because users' interest is likely to be focussed on the landscape around them. These views are valued by visitors and local groups. Overall, and combining judgements on susceptibility with value, visual receptors are considered to have **high sensitivity** to visual change.
Construction phase
Magnitude of effect During construction, the visual change would vary across the rights of way network with the greatest changes being experienced by users on routes which cross the alignment of the scheme or are in close proximity to the scheme. At these locations, users of the PRoW would experience an obvious change in local views from the presence of construction associated with the road alignment and earthworks movements to create landscape earthworks and drainage basins. Construction activity at Barrow Wake would be visible from PRoW within the vale, with users of these routes being able to see the erection of a stone wall around the edge of the car park, and glimpsed views of work to the realigned B4070. At night, very few people would use the network. However, night-time working would take place, requiring high intensity lighting which would be highly visible and spill out into this otherwise dark landscape, causing an obvious change and adversely affecting the special qualities of the AONB (extensive dark skies). Short sections of local routes would experience visual changes in the immediate vicinity of the scheme, affecting a relatively small number of people over a small area. The duration of effect on views would be within the construction phase which would be 42 months and would be partially reversible (because construction activities would be removed, however, felled trees and disturbed historic field patterns (ridge and furrow) or landscape features (historic tracks) would not be fully restored). The scheme is therefore judged to result in a **moderate and adverse magnitude of effect** for walkers using the PRoW network.
Significance of effect

Receptor: Users of the local PRoW, bridleway, and byway networks
For receptors using the PRoW network across the study area the construction works are predicted to result in a **large and adverse significance of effect**, due to **moderate** magnitude of effect to views affecting **highly** sensitivity receptors. The significance of effect would not be moderate at this phase due to the obvious visual change experienced at close proximity and affecting a receptor group of high sensitivity.
Operational phase (year 1 - opening year)
Nature of effects (magnitude) Walkers, horse riders and cyclists using off-road routes within the study area would experience similar visual change to that experienced during construction, as proposed mitigation would not yet have matured. Recently completed structures such as crossings and embankments would be clearly visible, as would the newly aligned road and associated infrastructure, such as drainage basins and fencing (highways, badger and acoustic). Given the linear nature of the scheme, it would affect substantial parts of views at a close proximity, resulting in an obvious visual change. Landscape bunding, as part of the proposed mitigation, would be formed of crushed local stone with little soil and planting during the early operational years and would form a noticeable feature of the view which would be readily apparent to users of the PRoW network. Features such as drainage basins and perimeter drains would be grassed over, however vegetation would not have established to a point of integrating these elements within views and would be incongruous features at year 1. Night-time effects of vehicle lights would be greater than, but of a similar nature to the baseline, with car lights being visible but with little spill into the wider landscape. Near Little Witcombe and Great Witcombe, night-time effects of vehicle lights would be greater than the baseline situation as a result of the more open character along the scheme, until the proposed woodland had matured, with car lights being visible travelling along the highway. At Birdlip, Nettleton Bottom and Brimpsfield there would be reduced light pollution from the road network. The greatest change in night-time effects would be on bridleways and byways at Shab Hill and Stockwell, and between Shab Hill and Birdlip along the realigned B4070, with the introduction of vehicle lights crossing through this otherwise dark landscape. Short sections of local routes would experience visual changes in the immediate vicinity of the scheme but across the whole scheme, affecting a relatively small number of people over a small area. The duration of effect on views over the operational phase would be between 1-15 years and would be not reversible. The scheme would likely result in a **moderate and adverse** magnitude of effect for walkers using the PRoW and horse riders and cyclists on bridleway and byway networks.
Significance of effect The scheme would form noticeable features when seen from the PRoW network, being readily apparent, giving rise to a **moderate** magnitude of effect, to receptors with a **high** sensitivity. Although, views from these routes are valued by local groups and the community, the effects would occur across a small area. This would result in a **large and adverse significance of effect** for some short sections of the footpaths in close proximity to the scheme. The significance of effect would not be moderate at this phase due to the obvious visual change experienced at close proximity and affecting a receptor group of high sensitivity.
Operational phase (year 15 – design year)
Magnitude of effect At year 15, once mitigation planting has matured to provide some screening along the road south of Crickley Hill, footpaths around Little Witcombe and Great Witcombe would begin to experience a reduced change. In near views where vegetation filters the road and vehicles moving on it, the change would be small. Night-time effects of vehicle lights would be of a similar extent and nature to the baseline, with car lights being visible, but with little spill into the wider landscape. Except at Barrow Wake where vehicle headlights would be seen navigating the roundabout at Barrow Wake on the realigned B4070 and travelling along a short section to Birdlip. At Shab Hill junction, walkers on PRoW and users of the byway would experience a similar level of visual change (medium), even at year 15 the road infrastructure would form a noticeable feature in

Receptor: Users of the local PRoW, bridleway, and byway networks
views, affecting a visual receptor with a medium sensitivity at year 15. Vegetation would establish within and around drainage basins and perimeter drainage making them less dominant in views. Users of PRoW east, and south-east of Stockwell would experience negligible changes to their visual resource, as a result of the introduction of landscape bunds and new stone walling which would be in keeping with the baseline situation. This would be experienced over a small area, mainly affecting short sections of the routes immediately adjacent to the scheme. The duration of effect on views over the operational phase would be longer than 15 years and would be **not reversible**. Overall, the scheme would cause a **minor and adverse** magnitude of effect at year 15.
Significance of effect At year 15 there would be a **slight, adverse,** and **not significant effect** on users of the PRoW, bridleway, and byways, because of the combination of **minor** magnitude of effects being experienced by receptors of a **high** sensitivity. The significance of effect cannot be reported as moderate as the visual changes would likely be perceptible, not noticeable, being experienced by receptors of very high sensitivity. The perceptible changes would occur over an over a small area. Therefore, the significance of effect would be slight.

Table 7-23 Local PRoW network summary of effects

Sensitivity	Very high	**High**	Medium	Low	Negligible
Construction phase					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	**Large**	Moderate	Slight	Neutral
Operational phase (year 1 – opening year)					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	**Large**	Moderate	Slight	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral

Community receptors

Nettleton Bottom

Table 7-24 Assessment of visual effects on the community of Nettleton Bottom

Receptor: ***community of Nettleton Bottom*** *(includes users of local PRoW network west either side of the A417 at the Golden Heart Inn and the Golden Heart Inn)*
Representative viewpoints: This receptor is represented by the following viewpoint listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location: • VP41 Golden Heart Inn.

Receptor: *community of Nettleton Bottom*

(includes users of local PRoW network west either side of the A417 at the Golden Heart Inn and the Golden Heart Inn)

Baseline description

From the Golden Heart Inn car park (VP41), and from the carriageway, enclosed views of the road network and public house can be gain at close proximity. Views to the east are shortened by mature trees at Birdlip quarry. To the north, there are obscured views through gaps in hedgerows and trees bounding the A417 to large scale arable fields beyond. South of the road, views open out across an undulating and rolling agricultural landscape, with large-scale arable field and woodland blocks. In views towards Nettleton Bottom, the A417 can be seen as it follows the treed skyline (behind Hawcote hill), with moving vehicles clearly visible and noticeable on the road. Nettleton Bottom is barely visible surrounded by woodland and vegetation.

For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).

Nature of receptors (sensitivity)

The local communities of Nettleton Bottom on the alignment of the current A417, including visitors to the Golden Heart Inn, are considered to have a limited ability to accommodate visual change because views contribute to the landscape setting enjoyed by residents. The views are not documented as important in national or local documents but are nonetheless valued by the local community.

Overall, and combining judgements on susceptibility with value, visual receptors at this location are assessed as being of **medium sensitivity**.

Construction phase

Magnitude of effect

Construction activities to repurpose the Existing A417 road would create visual change in near views, with construction vehicles and activities associated with removing the existing road surface to narrow to carriageway, realign the route and provide new car and horsebox parking, with associated landscape planting. The carriageway would be reduced in width with the redundant part of the old road being broken up and planted with trees. The planting of trees would be visible. The greatest change would be the removal of the continuous fast-moving stream of vehicles and construction activities to create the parking facilities. De-trunking activities and movement of vehicles would only be seen from these small communities, creating a clearly perceptible change to the baseline conditions, resulting in an obvious change in views. Night-time working would take place requiring high intensity lighting, which would be highly visible and spill out into this otherwise dark landscape, causing an obvious change to this community and adversely affecting the special qualities of the AONB (extensive dark skies).

Due to the presence of existing built form and intervening vegetation it is only possible to gain this type of view from a few locations in the settlements, affecting a relatively small number of people. The effect is likely to be experienced over a small area. The duration of effect on views would be the construction phase which would be 42 months and would be reversible (because construction activities would be removed, and disturbed areas would be restored).

The overall effect of the construction work on these local communities is considered to be a **moderate** and **adverse magnitude of effect** due the noticeable change over a small area for a relatively short period, for receptors with a limited ability to accommodate change.

Significance of effect

For this receptor group, the construction activities are predicted to result in a **moderate and adverse significance of effect** due to **moderate** magnitude of effect to views affecting **medium** sensitivity receptors.

Operational phase (year 1 - opening year)

Magnitude of effect

At year 1, the majority of the community of Nettleton Bottom would experience a small visual change as result of the operational scheme, due to their location along the now minor road away from the scheme. The now detrunked A417, between Cowley junction and Stockwell access, would only receive a low number of local traffic movements with visitors using the car and horsebox parking

Receptor: *community of Nettleton Bottom* *(includes users of local PRoW network west either side of the A417 at the Golden Heart Inn and the Golden Heart Inn)*
facilities. The carriageway would be narrower than the baseline situation with the redundant part of the old road being broken up and planted with trees, with space for 10 car and three horsebox parking bays would now be visible. The operational road would affect a small community (few people) over a small area. The duration of effect on views would be the operational phase which would be medium (1-15 years) and would not be reversible. Overall, this would result in only a very small part of the scheme that would be perceptible, and a **minor** and **beneficial magnitude of effect**.
Significance of effect At year 1 of the operational phase the medium sensitivity receptors would experience a **minor** magnitude of effect to local views. This would result in a **slight, beneficial,** and **not significant effect** as only a very small number of people, with a **medium** sensitivity would experience a small level of visual change to only a small part of the much wider view.
Operational phase (year 15 – design year)
Magnitude of effect At year 15, the majority of the community of Nettleton Bottom would experience a small visual change as result of the operational scheme, due to their location along the now minor road away from the scheme. The now detrunked A417, between Cowley junction and Stockwell access, would only receive a low number of local traffic movements and the use of the car and horsebox parking. Vegetation at year 15 would now have matured to a suitable height to provide a greener setting to the public house, providing a visual improvement to the local visual amenity. The operational road would affect a small community (few people) over a small area. The duration of effect on views would be the operational phase which would be at year 15 and would not be reversible. Overall, this would result in only a very small part of the scheme that would be discernible, and a **minor** and **beneficial magnitude of effect**.
Significance of effect At year 15 of the operational phase the **medium** sensitivity receptors would experience a **minor** magnitude of effect to local views. This would result in a **slight, beneficial,** and **not significant effect**.

Table 7-25 Nettleton Bottom summary of effects

Sensitivity	Very high	High	**Medium**	Low	Negligible
Construction phase					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral
Operational phase (year 1 – opening year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral

Stockwell

Table 7-26 Assessment of visual effects on the community of Stockwell

Receptor: The community at Stockwell and users of the local PRoW network north of Stockwell (*Cowley footpath 44)*
Representative viewpoints: This receptor is represented by the following viewpoints listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location: • VP35 Shab Hill from footpath north of Stockwell farm. • VP36 PRoW north of Stockwell on junction with rural lane. • VP37 PRoW north of Stockwell. • VP38 Byway at Stockwell.
Baseline description Views predominately consist of large fields, bounded by a mix of dry-stone walling and post and wire fencing, over gently undulating arable farmland. Views around Stockwell (VPs 35-37) are generally open where there are few intact hedgerows and large-scale field patterns are present, offering opportunities to gain long and more open views across the rolling landform. Topography plays an important role in where views can be gained from the footpath network, restricting open views to areas of higher elevation. Striking views of and along tree lined avenues provide local interest in views. At Stockwell, footpaths radiate out from the farmstead in all directions. To the west, the Existing A417 can be seen in the middle distance along the local skyline, with the movement of vehicles drawing the eye. The roadside vegetation and woodland at Barrow Wake prevent views further west. Roadside vegetation also screens views to the south. To the east of Stockwell, views can be gained along the shallow valley channelling them to the south-east. For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity) The local community of Stockwell is considered to have a limited ability to accommodate visual change because views contribute to the landscape setting enjoyed by residents. The views are not documented as important in national or local documents but are nonetheless valued by the local community. Overall, and combining judgements on susceptibility with value, visual receptors at this location are assessed as being of **medium sensitivity**.
Construction phase
Magnitude of effect Construction activities would include the construction of the new road alignment (five lane dual carriageway), Stockwell overbridge (Ch 4+725), embankment, false cut landscape bunds, haul road, new sections and upgrading of the access track and minor road and presence of vehicle movements and personnel, along with the felling of mature avenue trees. The changes in the view would form noticeable features in near views which would be apparent to the community. Construction elements would provide a contrast with the existing rural view from the community of Stockwell, resulting in an noticeable change in views. Night-time working would take place, requiring high intensity lighting which would be highly visible and spill out into this otherwise dark landscape, causing an obvious change to the community and adversely affecting the special qualities of the AONB (extensive dark skies). Due to its slightly sunken position, it would only be possible to gain these types of view from a few locations to the north of the farmstead, affecting a relatively small number of people over a small area. The duration of effect on views would be within the construction phase which would be 42 months and would be partially reversible (because construction activities would be removed, however, felled trees along the minor road disrupting the avenue or landscape features (historic tracks) would not be fully restored).

Receptor: The community at Stockwell and users of the local PRoW network north of Stockwell (*Cowley footpath 44)*
The scheme is therefore predicted to result in a **moderate** and **adverse magnitude of effect** for the community of Stockwell.
Significance of effect For the receptor at this location, the construction works would form a noticeable feature in local views, which are readily apparent to receptors of a **medium** sensitivity over a small area, and are predicted to result in a **moderate** magnitude of effect, over a relatively short period of time. This would result in a **moderate and adverse significance of effect**.
Operational phase (year 1 - opening year)
Magnitude of effect At year 1, there would be large change due to large scale landscape bunding (false cutting) which would form noticeable features in the view, which would be readily apparent to the community of Stockwell. As part of the proposed mitigation, the bunds would be formed of crushed local stone with little soil and planting during the early operational years. The bunds would screen direct views of the road infrastructure and vehicle movements, reducing the otherwise very high change that would be experienced without the bunding. Change in night-time 'darkness' would be experienced by the community at Stockwell. Landscape bunding would screen direct views of vehicle lights, however there would likely be an increase in sky glow along the route of the scheme crossing through this otherwise dark landscape at close proximity. Changes in landform and intervening vegetation would limit where views of the operational scheme could be gained to only a few locations near the settlements, affecting a relatively small number of people over a small area. The duration of effect on views over the operational phase would be between 1-15 years and would be not reversible. Overall, receptors would experience a **moderate** and **adverse magnitude of effect**.
Significance of effect At year 1, the scheme, particularly the recently completed embankments and overbridge, would form noticeable features in views valued by the local community which would be readily apparent to receptors of a **medium** sensitivity. This is predicted to result in a **moderate** magnitude of effect, over a relatively short period of time and a small area. This would result in a **moderate and adverse significance of effect**.
Operational phase (year 15 – design year)
Magnitude of effect From Stockwell, visual change at year 15 would be limited to the false cut landscape bunding, Stockwell overbridge (Ch 4+725) and realignment of the minor road, with some elements of the scheme being seen on the local skyline. The mitigation, landscape bunds and maturing planting, would reduce the visual change at year 15 from noticeable to perceptible. Changes in landform and intervening vegetation would limit where views of the operational scheme could be gained to only a few locations near the settlements, affecting a relatively small number of people over a small area. Change in night-time 'darkness' would remain similar to those experienced at year 1. The duration of effect on views over the operational phase would be longer than 15 years and would be not reversible. Overall, there would be a **minor** and **adverse magnitude of effect** at year 15.
Significance of effect At year 15, the scheme would cause medium visual changes and minor adverse magnitude of effect to a small part of the local views, affecting a small number of people who have a **medium** sensitivity, resulting in a **slight, adverse** and **not significant effect** at year 15.

Table 7-27 Stockwell summary of effects

Sensitivity	Very high	High	Medium	Low	Negligible
Construction phase					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral
Operational phase (year 1 – opening year)					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral

Shab Hill

Table 7-28 Assessment of visual effects on the community of Shab Hill

Receptor: Community of Shab Hill and surrounding farms
Representative viewpoints: This receptor is represented by the following viewpoints listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location: • VP24 Bridleway south of Ullen wood. • VP25 Gloucestershire Way at Shab Hill. • VP26 Cuckoopen Farm. • VP27 Gloucestershire Way at Rushwood Kennels. • VP31 Shab Hill permissive path. • VP32 PRoW Shab Hill. • VP33 PRoW west of Shab Hill.
Baseline description At Shab Hill views are generally limited by hedgerows, conifers, and tree belts which surround the farm properties. However, long distance views can be gained north to Crickley Hill Country Park and the elevated land at Barrow Piece Plantation. Views at Shab Hill are generally short range, enclosed due to changes in topography and mature field boundary vegetation. Extensive views of the rolling landform, more typical of the wolds, are restricted by mature hedgerow field boundaries, belts of woodland and conifer screen planting (VP27), west of Rushwood Kennels (VP27). East of Rushwood Kennels, a change in field boundaries to post and wire fencing provides more open views to the south-east to Cally Hill Plantation in the midground and views north-east towards Ullen Wood (VP26). The woodland creates a visual barrier, obscuring views to the north. For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity) The local community of Shab Hill is considered to have a limited ability to accommodate visual change because views contribute to the landscape setting enjoyed by residents. The views are not

Receptor: Community of Shab Hill and surrounding farms
documented as important in national or local documents but nonetheless valued by the local population. Overall, and combining judgements on susceptibility with value, visual receptors at this location are assessed as being of **medium sensitivity**.
Construction phase
Magnitude of effect Construction activity would be highly visible, dominating local views, particularly from Rushwood Kennels, Shab Hill Barn and around the radio masts. The visual change as a result of the works on views from these settlements would be large, where views of the haul road, excavation for the junction and drainage basins (6, 7b and 8), stone crushing compound, the erection of Gloucestershire Way crossing (Ch 2+690) and major junction at Shab Hill would be seen at close proximity in a direct line of vision. To facilitate this work, existing boundary vegetation along with hedgerow and woodland would be felled and fencing would be erected along the edge of the works area. Night-time working would take place, requiring high intensity lighting which would be highly visible and spill out into this otherwise dark landscape, causing an obvious change for the community and adversely affecting the special qualities of the AONB (extensive dark skies). The presence of the existing built form, tree cover and intervening landform would prevent receptors from gaining views from a wide extent of this dispersed community, affecting a small number of people in this community (a small area). The duration of effect on views would be the construction phase which would be 42 months and would be partially reversible (because construction activities would be removed but it would be difficult to restore the landform, and landscape features (beech woodland and geological exposures) to the original state given the scale of the works required at this part of the scheme). The overall magnitude of effect as a result of the construction work upon the community of Shab Hill is considered to be **major** and **adverse** due to the obvious change over a small area, affecting medium sensitivity receptors for a relatively short period.
Significance of effect For the receptor at this location, the construction works would form a dominant feature of views valued by the local community, which have a **medium** sensitivity, and are predicted to result in a **moderate** magnitude of effect, over a relatively short period of time and a small area. This would result in a **large and adverse significance of effect**. The significance of effect cannot be reported as moderate at this stage due to the major adverse magnitude of effect dominating local views.
Operational phase (year 1 - opening year)
Magnitude of effect At year 1 there would be an obvious visual change as a result of the scheme, particularly where the road transitions from cut to embankment at Shab Hill junction (Ch 3+200). At the junction, road infrastructure and vehicle movements would be seen in close proximity, in direct line of vision, affecting a substantial part of the view, and would providing contrast with the existing view. Recently removed vegetation, field boundaries and conifer screen planting would open views across the areas. Landscape bunding, as part of the proposed mitigation, would be formed of crushed local stone with little soil and planting during the early operational years and would form a noticeable feature of the view, which would be readily apparent to the community of Shab Hill. Drainage basins (6, 7b and 8) within the junction would be new uncharacteristic features. Change in night-time 'darkness' would be experienced by the community at Shab Hill, with an increase in lighting associated with vehicle movements, adversely affecting the special qualities of the AONB (extensive dark skies). Landscape bunding would screen the majority of direct views of vehicle lights, however at Shab Hill junction directional light from vehicles would extend out over the local area. There would also likely be an increase in sky glow along the route of the scheme crossing through this otherwise dark landscape at close proximity. Open views, road infrastructure and vehicle movements on elevated sections of highway at the junction would offer opportunities to gain open views from a wider area at year 1, affecting most of the community at Shab Hill. However, only a relatively small number of people would be affected over a

Receptor: Community of Shab Hill and surrounding farms
small area. The duration of effect on views over the operational phase would be between 1-15 years and would be not reversible. Overall, receptors would experience a **major** and **adverse magnitude of effect**.
Significance of effect The scheme, particularly Shab Hill junction, would become a dominant feature in local views, resulting in an obvious change and **major** adverse effect in the medium-term and would affect a relatively large part of the community (**medium** sensitivity), resulting in a **large and adverse significance of effect**.
Operational phase (year 15 – design year)
Magnitude of effect At year 15, visual change would reduce from large to medium, as mitigation planting would now have established to an extent to provide some visual enclosure and would continue to mature. Planting would be of a sufficient height, approximately nine metres, to screen some of the scheme and vehicle movements with changes being perceptible. Change in night-time 'darkness' would reduce compared to those experienced at year 1, with maturing vegetation filtering and blocking light spill. However, sky glow would still be apparent around Shab Hill junction. Woodland and field boundary planting as part of the wider mitigation proposals would have established, enclosing open views, and reducing the area from where views of the scheme could be gained. The effect would likely be experienced over a small area. The duration of effect on views over the operational phase would be longer than 15 years and would be not reversible. Combining the judgements on visual change, geographical extent, duration and reversibility, the magnitude of effect experienced by the community of Shab Hill at year 15 would be **minor** and **adverse**.
Significance of effect The significance of effect at year 15 would be **slight and adverse**, as part of the scheme would form a perceptible feature of the view, which would be noticeable to the receptor, affecting a visual receptor with a **medium** sensitivity to road infrastructure over a small area.

Table 7-29 Shab Hill summary of effects

Sensitivity	Very high	High	**Medium**	Low	Negligible
Construction phase					
Magnitude of effect	**Major**	Moderate	Minor	Negligible	No change
Significance of effect	Very large	**Large**	Moderate	Slight	Neutral
Operational phase (year 1 – opening year)					
Magnitude of effect	**Major**	Moderate	Minor	Negligible	No change
Significance of effect	Very large	**Large**	Moderate	Slight	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral

Tourism receptors

7.10.24 The assessment of effects on visitors to Emma's Grove round barrows scheduled monument have been considered as part of the assessment on users on the

Gloucestershire Way long distance footpath as access to Emma's Grove is via this path.

Crickley Hill Country Park

Table 7-30 Assessment of visual effects on visitors to Crickley Hill Country Park

Receptor: visitors of Crickley Hill Country Park (including visitors to Cotswolds AONB, Crickley Hill camp scheduled monument, walkers on both the Cotswold Way National Trail and Gloucestershire Way long distance footpath, and users of the National Trust/Gloucestershire Wildlife Trust footpaths and Open Access Land, and visitors to the SSSI and Crickley Hill camp scheduled monument)
Representative viewpoints: This receptor is represented by the following viewpoints listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location: • VP15 Crickley Hill camp scheduled monument; • VP16 Crickley Hill on Cotswold Way National Trail; • VP17 Bridleway off Cotswold Way National Trail; • VP20 Ochala Wood Crickley Hill Country Park; • VP21 Entrance to Crickley Hill Country Park; and • VP22 Crickley Hill Country Park drive.
Baseline description The views are representative of visitors to Crickley Hill Country Park (this includes Crickley Hill camp scheduled monument and the Scrubbs (part of the Barrow Wake and Crickley Hill SSSI). There are open and panoramic long-distance views looking south across the low-lying vale of Gloucestershire with Coopers Hill in the middle distance and views over to the wooded valley slopes at Barrow wake and The Peak. Out to the west, the city of Gloucester is recognisable in the vale with far reaching views beyond to the Forest of Dean and the Malvern Hills. Intermittent and filtered views of the A417 can be gained from a few locations along the country park's southern boundary as the road crosses the low-lying vale and as it ascends the escarpment, skirting the edge of Crickey Hill. The road is mostly obscured by dense tree cover on the near steep slopes of Crickley Hill and garden vegetation surrounding residential properties. Views east across the country park can be gained of the near slopes of Shab Hill and its wooded horizon. Entering the park from Leckhampton Hill Road, local views are of a parkland landscape with mature parkland trees which limit and filter views to the wider landscape. From here, there are glimpsed views of the traffic as it moves along the Existing A417 at the Ullenwood junction and along the high ridge in the middle distance. Shab Hill radio masts are visible on the skyline. For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity) Visitors to Crickley Hill Country Park are considered to have a limited ability to accommodate visual change because views of surroundings are an important contributor to the visitors' experience at this location. The view from the Crickley Hill camp is valued because it is identified in the Cotswolds AONB Management Plan as a special quality of the AONB and marked on OS maps as a publicly accessible view from a scheduled monument. Overall, and combining judgements on susceptibility with value, visual receptors at this location are assessed as being of **very high sensitivity**.
Construction phase
Magnitude of effect Opportunities to gain views of construction activities from Crickley Hill would be limited to a few locations immediately adjacent to the country park's southern boundary wall. As described just above

Receptor: visitors of Crickley Hill Country Park (including visitors to Cotswolds AONB, Crickley Hill camp scheduled monument, walkers on both the Cotswold Way National Trail and Gloucestershire Way long distance footpath, and users of the National Trust/Gloucestershire Wildlife Trust footpaths and Open Access Land, and visitors to the SSSI and Crickley Hill camp scheduled monument)
in the 'baseline view' section, views of the Existing A417 are not readily available, or obvious in views, due to existing tree cover on the southern slopes of Crickley Hill. These trees would remain during the construction period and would screen a lot of the construction activities. However, visual change would arise with the removal of the woodland from the southern side of the carriageway and earthworks to widen and realign the A417 carriageway as it descends from the escarpment. Works to repurpose the Existing A417 along the ridge behind Barrow Wake would be visible, as would views of the car park improvements and realigned B4070, introducing construction activities on to the skyline. The cutting would be apparent in views as it passes Emma's Grove and the stone crusher. Tree felling, woodland clearance and construction activities associated with the erection of the Cotswold Way crossing (Ch 2+100) would be apparent at a close proximity, particularly the use of cranes. Earthworks movements to create numerous drainage basins across the road from the entrance (basins 3, 5a, b and c) to the Park would be visible through roadside vegetation. The entrance and access track to the Park would move to connect into the realigned Leckhampton Hill Road and altered Ullenwood junction. Overall, this would result in a noticeable visual change experienced by visitors to Crickley Hill. At night, the country park is closed to the public so night-time working would not likely be experienced by receptors at this location. Intermittent views could be gained from a small number of locations within the wider country park and would be experienced by a moderate number of people over a small area. The duration of effect on views would be the construction phase which would be 42 months and would be partially reversible (because construction activities would be removed, however, felled trees and disturbed historic field patterns (ridge and furrow), landscape features (historic tracks) and landform would not be fully restored). The scheme is therefore predicted to result in a **moderate and adverse** magnitude of effect on visitors to Crickley Hill Country Park.
Significance of effect For the receptors at this location, the construction works are predicted to result in a **large** and **adverse significant** effect due to a minor magnitude of effect to a view affecting very high sensitivity receptors. The significance of effect would not be very large as changes to views would only be experienced from a from a few locations within the wider country park, affecting a very high sensitivity receptor group.
Operational phase (year 1 – opening year)
Magnitude of effect The greatest level of change to views from Crickley Hill would be experienced from the western extent of the park, where the recently completed scheme would be noticeable with the Crickley Hill section appearing within the vale, as it connects into the Existing A417. The eastern side of the park would experience views towards numerous drainage basins (5a, b and c) within National Star college land and the altered road layout at Ullenwood junction (including basin 3a). Further change would be experienced to the southern extent of the park, where the recently completed scheme would be partially visible on the foot slopes of Crickley Hill between existing woodland. In particular, the widened carriageway, recently planted embankments, and exposed cutting slopes would be seen by people using this part of the park. Drainage basin 3c and changes to Grove Farm (demolished buildings) along with the realigned Tributary to Norman's Brook would also be visible, appearing as new features in the view. Vehicles parked at Barrow Wake car park would be less prominent in views with the addition of a sections of Cotswold stone walling around the edge of the car park. However, it would be possible to see glimpsed views of vehicles moving on the realigned B4070 for a short section of this route. The Cotswold Way crossing would be seen spanning the scheme between Cold Slad lane and Emma's Grove, introducing a feature of visual interest. From the southern extent of Crickley Hill, proposed mitigation would not be fully effective at year 1, with planting including tree guards and timber stakes on engineered embankments and post and rail fencing being visible, extending out into the landscape to connect broken hedgerows. At this stage, the proposed mitigation would contribute to the noticeable visual change.

Receptor: visitors of Crickley Hill Country Park (including visitors to Cotswolds AONB, Crickley Hill camp scheduled monument, walkers on both the Cotswold Way National Trail and Gloucestershire Way long distance footpath, and users of the National Trust/Gloucestershire Wildlife Trust footpaths and Open Access Land, and visitors to the SSSI and Crickley Hill camp scheduled monument)
Intermittent views could be gained from a small number of locations within the wider country park and would be experienced by a relevantly small to moderate number of people over a small area. The duration of effect on views over the operational phase would be between 1-15 years and would be not reversible. The scheme is therefore predicted to result in a **moderate and adverse** magnitude of effect for visitors to Crickley Hill Country Park.
Significance of effect Elements of the scheme would be readily apparent to very high sensitivity receptors, having a minor and adverse magnitude of effect at year 1, resulting in a **large and adverse significance of effect**. The significance of effect would not be very large as changes to views would be experienced from a from a few locations within the wider country park, affecting a very high sensitivity receptor group.
Operational phase (year 15 – design year)
Magnitude of effect At year 15, parts of the scheme would be partially visible from different locations within Crickley Hill Country Park, mainly the realigned Leckhampton Hill Road and altered Ullenwood junction. Views to Barrow Wake car park would remain but parked vehicles would be less prominent, as would glimpsed views of vehicles moving on the realigned B4070. In addition, the cut through Shab Hill, the Cotswold Way crossing and widened road south of Crickley Hill would also be visible in views from the southern extent of Crickley Hill. However, the scheme would now be mostly screened by the maturing mitigation vegetation and would start to appear similar to the baseline situation, resulting in a small but perceptible visual change. The Cotswold Way crossing would provide visually interesting feature to views of the escarpment, with wider benefits gained from the proposed mitigation planting, which would positively contribute to the wooded appearance of the slopes. Intermittent views can be gained from a small number of locations within the wider country park and would be experienced by a relatively small to moderate number of people over a small area. The duration of effect on views over the operational phase would be langer than 15 years and would be not reversible. Overall, this would result in a **minor and adverse magnitude of effect** to views from this location.
Significance of effect Parts of the scheme would be readily apparent to the **very high** sensitivity receptors, having a **minor** and **adverse** magnitude of effect at year 15, resulting in a **moderate and adverse significance of effect**. The significance of effect would not be large at year 15 due to the extent of maturing woodland cover at both the Ullenwood junction (entrance to Crickley Hill Country Park) and along the south side of the scheme south of Crickley Hill, which would screen and integrate the road infrastructure into the views, appearing similar to the baseline view. Between year 15 to approximately year 30, the mitigation vegetation would continue to mature to provide a greater level of screening, helping to integrate and embed the road infrastructure into views further reducing the level of significance.

Table 7-31 Crickley Hill Country Park summary of effects

Sensitivity	**Very high**	High	Medium	Low	Negligible
Construction phase					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	**Large**	Moderate	Slight	Neutral

Operational phase (year 1 – opening year)					
Magnitude of effect	Major	**Moderate**	Minor	Negligible	No change
Significance of effect	Very large	**Large**	Moderate	Slight	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral

Great Witcombe Roman Villa

Table 7-32 Assessment of visual effects on visitors to Great Witcombe Roman Villa

Receptor: Users of the Roman Villa car park and PRoW (Brockworth Footpath 16) visiting Great Witcombe Roman Villa scheduled monument (Includes residents and workers at Cooper's Hill Farm, and workers and residents at Droy's Court)
Representative viewpoints: This receptor is represented by the following viewpoints listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for their location: • VP1 Roman villa car park. • VP2 Cotswold Way National Trail at Coopers Hill. • VP3 Droy's Court.
Baseline description There are long and occasional wide views across the vale which rises in the distance to the well-wooded escarpment (VP1). Crickley Hill, Barrow Wake and The Peak are notable features along the skyline, particularly Barrow Wake car park which is clearly visible due to sunlight glinting off car windows. The foreground is dominated by large arable fields which are bounded by hedgerow. Hedgerow trees and tree clumps give the impression of a well wooded vale and prevent more panoramic views from being gained. They also limit open visibility to a relatively few locations. As the access road to the villa ascends to higher ground, low lying features including the reservoirs become visible and prominent in the view. The white roof at Bentham and the Eagle Tower in Cheltenham are prominent features to the north. The Existing A417 is also visible in the vale to the north but obscured by roadside vegetation as it climbs the escarpment (VP3). For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity) Visitors to the Great Witcombe Roman Villa scheduled monument are considered to have a limited ability to accommodate visual change because users' interest is likely to be focussed on the landscape and setting of the villa, in addition to the ruin. The views from the villa are obscured by vegetation, but views from the car park and approach to the villa along the PRoW are valued as a part of the experience of visiting the scheduled monument. Overall, and combining judgements on susceptibility with value, visual receptors at this location are assessed as being of **very high sensitivity**.
Construction phase
Magnitude of effect During the construction phase, visitors to the villa would experience a small visual change to their visual resource - from the car park and on the approach to the villa only. Views from the villa would be screened by vegetation. Glimpsed and partial views could be gained of the vegetation removal, road

Receptor: Users of the Roman Villa car park and PRoW (Brockworth Footpath 16) visiting Great Witcombe Roman Villa scheduled monument (Includes residents and workers at Cooper's Hill Farm, and workers and residents at Droy's Court)
widening, including new embankments, excavation through the escarpment, building of the Cotswold Way crossing (Ch 2+100), works to Barrow Wake car park and the realigned B4070. Proposed mitigation planting would be difficult to see from this distance. Despite the scheme being seen in combination with the existing and still operational A417, from this distance the visual change would be perceptible, affecting only a small part of a much wider series of views. The duration of effect on views would be the construction phase which would be 42 months and would be partially reversible (because construction activities would be removed, however, felled trees and altered topography would not be fully restored). The scheme is therefore predicted to result in a **minor and adverse magnitude of effect** for visitors to Great Witcombe Roman Villa.
Significance of effect For the receptor at this location, the construction works are predicted to result in a **moderate and adverse significance of effect** due to a **minor** magnitude of effect (small change) to views affecting few **very high** sensitivity receptors. The significance of effect would not be large given the distance between the receptor and the scheme with only a small of change to views being seen in the context of a much wider view.
Operational phase (year 1 - opening year)
Magnitude of effect At year 1, the recently completed road would be more visible than the baseline situation. Proposed mitigation planting would have not yet fully established and would not be visible from this distance. It would be possible to gain views of the Cotswold Way crossing extending across the escarpment providing architectural visual interest, with cars parked at Barrow Wake becoming less prominent. Views of vehicles travelling on the realigned B4070 may be visible for a short section of the new route. The south facing cut slope would appear bright, reflecting sunlight. However, from this distance a small, perceptible change to views would be experienced as a small part of much wider series of views. The duration of effect on views over the operational phase would be between 1-15 years and would be not reversible, resulting in an overall **minor and adverse magnitude of effect.**
Significance of effect Changes to views experienced by visitors to the scheduled monument are predicted to result in a **moderate and adverse significance of effect** at this location due to a **minor** magnitude of effect (small change) to views affecting few **very high** sensitivity receptors. The significance of effect would not be large given the distance between the receptor and the scheme, with only a small of change to views being seen in the context of a much wider view.
Operational phase (year 15 – design year)
Magnitude of effect Visual effects of the operational phase at year 15 are predicted to be of an discernible change as proposed mitigation planting would now have fully established and would continue to mature and appear in a similar nature to the baseline situation. Changes at Barrow Wake and the Cotswold Way crossing would still be visible crossing the escarpment but would now form a barely noticeable feature in a series of much wider views from a small number of locations. The duration of effect on views over the operational phase being experienced over +15 years and not reversible. The overall magnitude of effect would be **negligible and neutral**.
Significance of effect Only a very small part of the scheme would be discernible from this distance. It would form a barely noticeable feature or element of the view, resulting in a **slight, neutral, and not significant effect**.

Table 7-33 Great Witcombe Roman Villa summary of effects

Sensitivity	Very high	High	Medium	Low	Negligible

Construction phase					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral
Operational phase (year 1 – opening year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	Minor	**Negligible**	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral

Barrow Wake

Table 7-34 Assessment of visual effects on visitors to Barrow Wake

Receptor: users of Barrow Wake (includes visitors to the Cotswolds AONB and Common Land)
Representative viewpoints: This receptor is represented by the following viewpoints listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location: • VP8 Cotswold Way National Trail/Gustav Holst Way west of Barrow Wake. • VP9 Cotswold Way National Trail at Barrow Wake. • VP10 Barrow Wake Viewing Point. • VP11 Barrow Wake Car Park.
Baseline description Barrow Wake car park is a popular location for people to enjoy the views and is marked as a viewing point on OS maps. The view is representative of visitors to the Barrow Wake viewing point (VP10) and car park (VP11). From this elevated vantage point, open and panoramic long-distance views can be gained out across the low-lying vale to Gloucester extending over to the Forest of Dean and the Malvern Hills. On clear days it is possible to gain views of the Black Mountains. The escarpment ridge provides dramatic views towards Crickley Hill, The Peak and Coopers Hill, with contrasting wooded slopes and open calcareous grassland (VP8 and 9). Within the vale, small pasture fields are present on the steeper ground of the foot slopes with large arable fields closer to the settlement edge of Brockworth. The Witcombe reservoirs and tennis centre at Bentham stand out from the otherwise rural and peri-rural scenery. The A417 follows the natural fold in the landscape between Barrow Wake and Crickley Hill, where tree coverage obscures views of the road itself. The road becomes more apparent towards the outer edges of Gloucester. From the car park (VP11), the escarpment slope drops dramatically in the foreground with calcareous grassland and scrubby tree belts on the upper slopes. Grazed fields (remnant ridge and furrow in places) on slackened slopes in the midground lead to vast open views to the east. Woodland can be seen on top of hills and into the vale. Filtered views of the A417 to the east, along the escarpment and stationary vehicles at Barrow Wake itself, detract from the scenic qualities of the view. For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity)

Receptor: users of Barrow Wake (includes visitors to the Cotswolds AONB and Common Land)
Visitors to Barrow Wake (including the car park and viewing point as marked on a 1:25k OS map) are considered to have a **limited ability** to accommodate visual change because their attention is likely to be focussed on the landscape and this location offers opportunity to appreciate dramatic views from the escarpment edge. The views from the car park, viewing point and surrounding of Barrow Wake are valued as they are identified in the Cotswolds AONB Management Plan as a special quality of the AONB and marked on OS maps as a publicly accessible view. Overall, and combining judgements on susceptibility with value, visual receptors at this location are considered to have **very high sensitivity**.
Construction phase
Magnitude of effect Construction activity to alter the entrance and surfacing to Barrow Wake car park and the realigned B4070 would appear at close proximity dominating near views. During the construction phase, part of the car park would be closed to visitors to accommodate a construction compound. Excavation of the road surface, installation of the roundabout, woodland clearance and the erection of Cotswold stone walling would all give rise to visual change. Due to Barrow Wake's elevated position on the Cotswold escarpment, the construction site compound, removal of woodland along the existing road corridor, earthworks sculpting the drainage basin (3c) at Grove Farm and to the west of the scheme basin 2, and widening and realignment of the carriageway would be clearly visible in relatively near views within the vale. In addition, the construction compound, haul road and movement of vehicles on both the haul road and the Existing A417 would be seen at very close proximity as visitors at Barrow Wake would look out across the construction site and existing operational road. Works would appear in a direct line of vision, affecting a substantial part of the view, and creating a contrast with existing views for those visiting this area or walking the surrounding Open Access Land, resulting in an obvious change in views. At night, very few people use the car park, but night-time working would take place, requiring high intensity lighting which would be highly visible and spill out into this otherwise dark landscape, causing an obvious change and adversely affecting the special qualities of the AONB (extensive dark skies). Although this is a relatively small area from where this type of view could be gained by this receptor group, the car park and viewing point would be affected by the change. Barrow Wake is popular with visitors to the AONB, with changes affecting a moderate number of people over a small area. The duration of effect on views would be the construction phase, which would be 42 months and partially reversible (because construction activities would be removed, however, felled trees and disturbed historic field patterns (ridge and furrow) or landscape features (historic tracks) would not be fully restored). The overall effect of construction on visitors to Barrow Wake is considered to be a **major** and **adverse** magnitude of effect due to obvious change becoming dominant and experienced at close quarters. These changes would be experience over a small area, affecting a receptor with a limited ability to accommodate change, even for a relatively short period.
Significance of effect As summarised above, it is considered that construction activities would have a **major** and adverse magnitude of effect, affecting **very high** sensitivity receptors, resulting it a **very large and adverse significance of effect** on visitors to Barrow wake. The significance of effect would not be large during construction due to the predicated obvious visual change experienced by people visiting this valued view at Barrow Wake. The proposed construction activity would form a dominant feature and an obvious change in the view.
Operational phase (year 1 - opening year)
Magnitude of effect At year 1, the recently completed alteration to the car park entrance and installation of the roundabout on the realigned B4070 would be seen at close proximity as new features in near views. Traffic travelling on the B4070 would be dominant during peak travel times. New planting and a section of Cotswolds stone walling would also be seen.

Receptor: users of Barrow Wake (includes visitors to the Cotswolds AONB and Common Land)
At year 1, there would be an obvious change in views from this popular visitor location within the AONB due to dominant features as a result of the loss of woodland, altered road realignment and widening, associated earthworks and landscape bunds, and drainage basin. Recently completed cuttings and geological exposures would be obvious as a result of the brightness of the stone colour catching the sunlight on south facing walls within the cut. The Cotswold Way crossing (Ch 2+100) would also be partially visible from this location. Visitors to Barrow Wake would be able to use the Cotswold Way National Trail to walk across the Cotswold Way crossing (Ch 2+100), remaining on the escarpment edge, with extended opportunities to gain views out from the escarpment (a special quality of the AONB) as a continued experience from Barrow Wake. Night-time effects of vehicle lights would be greater than, but of a similar nature to the baseline, with car lights being visible but with little spill into the wider landscape. Proposed mitigation would not be fully effective at year 1 with planting including tree guards and timber stakes on engineered embankments being visible, extending out into the landscape to connect broken hedgerows. Although this is a 'point' viewpoint (rather than an extensive area from which the view can be experienced), a moderate number of people would experience the view over a small area. The duration of effect would be between 1-15 years and would be not reversible (as the scheme would be considered permanent). The magnitude of effect of the scheme during the operational phase upon visitors to Barrow Wake is considered to be **major and adverse** at Year 1.
Significance of effect The operational scheme at Year 1 would be clearly visible by visitors to Barrow Wake, resulting in a **very large and adverse significance of effect**. The significance of effect would not be large at year 1 due to the predicated obvious visual change experienced by people visiting this valued view at Barrow Wake. The scheme would remain dominant as an obvious change while the proposed planting is immature and not yet functioning as screening.
Operational phase (year 15 – design year)
Magnitude of effect At year 15, changes to the entrance of Barrow Wake car park and the realigned B4070 would remain obvious in near views, particularly vehicles travelling on the B4070 navigating the roundabout. Planting would now have matured to provide visual benefits, improving the character and appearance of the area. The visual change during the operational phase at year 15, upon visitors to Barrow Wake is considered to be small and a combination of beneficial (due to the matured mitigation planting adjacent to the road and neighbouring fields, reconnected field boundaries) and adverse (due to the increase in road infrastructure), resulting in a perceptible change. Vegetation would establish within and around the drainage basin (3c) at Grove Farm (Ch1+500) and drainage basin 2 (Ch0+000), making them less noticeable features in views from Barrow Wake. Visitors to Barrow Wake would be able to use the Cotswold Way National Trail to walk across the Cotswold Way crossing (Ch 2+100), remaining on the escarpment edge, with extended opportunities to gain views out from the escarpment (a special quality of the AONB) as a continued experience from Barrow Wake. A moderate number of people would experience the view from only a few locations (small area). Night-time effects of vehicle lights would be of a similar extent and nature to the baseline, with car lights being visible but with little spill into the wider landscape. The duration of effect on views over the operational phase would be longer than 15 years and would be not reversible. Overall, there would be a **minor** and **neutral** magnitude of effect experienced by visitors to Barrow Wake. Beyond year 15, the magnitude of effect would continue to reduce due to maturing vegetation which would likely result in a negligible and neutral effect as views become similar in nature to the baseline situation of woodland screening the road.
Significance of effect A **minor** magnitude of effect would be present at Year 15 and would be of a similar nature to the baseline conditions once the mitigation planting has matured, filtering views of the scheme at this location. The effect would be experienced by **very high** sensitivity receptors and is judged to be a **moderate significance of effect and neutral**.

Receptor: users of Barrow Wake (includes visitors to the Cotswolds AONB and Common Land)
The significance of effect would not be large once the woodland planting along the south side of the scheme, south of Crickley Hill has matured sufficiently to screen views to the road, appearing similar to the baseline situation. Between year 15 and year 30, the mitigation vegetation would continue to mature to provide a greater level of screening, helping to integrate and embed the road infrastructure further reducing the significance of effect to below moderate.

Table 7-35 Barrow Wake summary of effects

Sensitivity	Very high	High	Medium	Low	Negligible
Construction phase					
Magnitude of effect	**Major**	Moderate	Minor	Negligible	No change
Significance of effect	**Very large**	Large	Moderate	Slight	Neutral
Operation year 1					
Magnitude of effect	**Major**	Moderate	Minor	Negligible	No change
Significance of effect	**Very large**	Large	Moderate	Slight	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral

Leckhampton Hill

Table 7-36 Assessment of visual effects on visitors to Leckhampton Hill

Receptor: users of Leckhampton Hill (includes visitors to the Cotswolds AONB, Cotswold Way National Trail, Common Land and Leckhampton camp and tumulus scheduled monument)
Representative viewpoints: This receptor is represented by the following viewpoints listed, refer to ES Figure 7.1 Visibility (ZTV no vehicles) and Viewpoints (Document Reference 6.3) and ES Figure 7.2 Visibility (ZTV with vehicles) and Viewpoints (Document Reference 6.3) for its location: • VP18 Leckhampton Hill – visitor information board. • VP19 Leckhampton camp and tumulus at trig point.
Baseline description The view is representative of visitors to Leckhampton Camp scheduled monument (VP19), users of the Cotswold Way National Trail (VP18), local walkers and dog walkers. From its elevated position, open and panoramic long-distance views can be gained out across the surrounding landscape: south-east across the wold, south along the escarpment to Crickley Hill and west over the vale. The view is predominantly focused across the vale to Gloucester and Cheltenham, with the secondary focus over the undulating rolling agricultural landscape with woodland cover on the higher points of the wold. In the foreground (VP19), the hillfort is evidenced in the landscape by the mound and elevated footpath and forms the boundary to several large-scale arable fields. The landform drops away in the

Receptor: users of Leckhampton Hill (includes visitors to the Cotswolds AONB, Cotswold Way National Trail, Common Land and Leckhampton camp and tumulus scheduled monument)
middle distance and Ullen wood is visible in the distance. Emma's Grove is visible to the west of Ullen wood and here, the A417 becomes visible through a break in the tree cover, snaking down off the escarpment to the Ullenwood junction. The masts at Birdlip radio station, along with electricity pylons, are visible along the horizon and detract from the view. The scheme occupies a small section of the view across the wooded depression in the distance. For further details, please refer to ES Appendix 7.3 Visual Baseline (Document Reference 6.4).
Nature of receptors (sensitivity) Visitors to Leckhampton Hill are considered to have a limited ability to accommodate visual change because views of surroundings are an important contributor to the visitors' experience at this location. Views from the top of the camp are valued because they are identified in the Cotswolds AONB Management Plan as a special quality of the AONB and it is marked in OS maps as a publicly accessible view from a scheduled monument. Overall, and combining judgements on susceptibility with value, visual receptors at this location are assessed as being of **very high sensitivity**.
Construction phase
Magnitude of effect The construction work on the elevated wold at Shab Hill would be visible against the skyline in combination with the Existing A417, resulting in visibility of both the scheme and the Existing A417, which would still be in operation during the construction phase. Construction activities that would be seen from this location include the construction of Ullenwood junction, the cutting as it crosses Shab Hill, works to erect the Gloucestershire Way crossing (Ch 2+690) and the construction of Shab Hill junction (Ch 3+200), including its embankments and the landscape bunds. The crusher construction compound at Emma's Grove would also be visible from this distant viewpoint. At its nearest point it would be located 1.3 miles (2.1 kilometres) from the viewpoint and for this reason would only result in a small of change to the view. At night, very few people would visit Leckhampton Hill. However night-time working would take place across the scheme, requiring high intensity lighting which would be visible in distant views on the horizon, creating sky glow, and causing a noticeable change and adversely affecting the special qualities of the AONB (extensive dark skies).. As this is a 'specific' viewpoint (it is broadly representative for the local area from which the view can be experienced), visited by a moderate number of people over a small area. The duration of effect on views would be the construction phase which would be 42 months and would be partially reversible (because construction activities would be removed and disturbed areas would be restored). Overall, it is considered that the visual effect of the construction works on visitors to Leckhampton Hill would be a **minor** and **adverse magnitude of effect** due to a small change to a valued view affecting receptors with a limited ability to accommodate change, even over a relatively short time.
Significance of effect For people visiting the scheduled monument, Open Access Land, or walkers on the Cotswold Way National Trail (travelling south), the construction works are predicted to result in a small effect at this location, due to a **minor** adverse magnitude of effect to a distant view affecting **very high** sensitivity receptors. This would result in a **moderate and adverse significance of effect**. The significance of effect would not be large due to the distance between the receptor and the scheme, with changes taking place in only part of a much wider view. The significance of effect cannot be reported as large due to the distance between the receptor and the scheme with the change being perceptible in a small part of wider view.
Operational phase (year 1 - opening year)
Magnitude of effect At year 1, visitors to Leckhampton Hill would be able to pick up on recent changes to the view with the introduction of new built features. These would include Ullenwood junction, the cutting through Shab

Receptor: users of Leckhampton Hill (includes visitors to the Cotswolds AONB, Cotswold Way National Trail, Common Land and Leckhampton camp and tumulus scheduled monument)
Hill, the Gloucestershire Way crossing and large areas of recovering farmland and woodland planting on the western edge of Ullen Wood. Evergreen tree belts and field boundaries would now be removed with greater visibility of the radio mast. The embankments and part of Shab Hill junction would also be visible. Despite the number of changes described, due to the distance from the scheme, the level of change and geographical extent would be reduced from those recorded during construction to a discernible change over a small area. Visual effects of the proposed mitigation would not be perceived from this distance. The duration of effect on views over the operational phase would be between 1-15 years and would be not reversible, resulting in a **negligible and adverse** magnitude of effect.
Significance of effect **A slight, adverse,** and **not significant effect** would be experienced from this distance despite the **very high** sensitivity of the receptor experiencing a **negligible** magnitude of effect on views from this location.
Operational phase (year 15 – design year)
Magnitude of effect Over time, as the mitigation planting continues to mature, the scheme would become more embedded into the view, with proposed features becoming discernible from this distance. The cutting and Gloucestershire Way crossing would now be screened by maturing woodland next to Ullen Wood. Glimpsed and filtered views of Shab Hill junction would remain, with vehicles being seen during the winter months. The effect would be experienced over a small area. The duration of effect on views over the operational phase would be longer than 15 years and would be not reversible. Combining the scale of change, geographical extent, duration and reversibility, receptors at Leckhampton Hill would experience a **negligible** and **adverse** magnitude of effect.
Significance of effect At year 15 there would be a **slight, adverse,** and **not significant effect**.

Table 7-37 Leckhampton Hill summary of effects

Sensitivity	**Very high**	High	Medium	Low	Negligible
Construction phase					
Magnitude of effect	Major	Moderate	**Minor**	Negligible	No change
Significance of effect	Very large	Large	**Moderate**	Slight	Neutral
Operational phase (year 1 – opening year)					
Magnitude of effect	Major	Moderate	Minor	**Negligible**	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral
Operational phase (year 15 – design year)					
Magnitude of effect	Major	Moderate	Minor	**Negligible**	No change
Significance of effect	Very large	Large	Moderate	**Slight**	Neutral

Emma's Grove

7.10.25 See description and assessment for users on the Gloucestershire Way long distance footpath in Table 7-20.

Transport receptors

7.10.26 It was assessed that there would be no significant visual effects during construction or operation for Motorists on the A417, A436 and B4070 and Local minor road network. The content of this visual assessment has been moved to ES Appendix 7.5 Visual Assessment Tables (Document Reference 6.4) with a summary provided below.

7.10.27 Motorist on the A417, A436 and B4070, and the local minor road network would have a negligible sensitivity to the scheme as their attention is likely to be focused on the road as they travel along the network at speed. Construction activity would give rise to considerable visual change over a small to medium sized area for the 42 months construction phase, which are considered partially reversible. It is considered that motorists would experience a minor magnitude of effect and a slight, adverse significance of effect.

7.10.28 During operational phases year 1 and year 15, motorists would experience a reduction in visual change over a similar area as at construction. Visual effects would be considered permanent, over a medium to long term resulting in a minor magnitude of effect and slight, adverse significance of effect.

Summary of visual effects during construction and operation

7.10.29 Table 7-38 below provides a summary of receptors and judgement on their sensitivity, magnitude of effect and level of significance likely to be experienced by visual receptors during construction.

Table 7-38 Summary of visual effects during construction

Receptor	Sensitivity	Magnitude of effect	Construction significance of effect
Recreational receptors			
Walkers on the Cotswold Way National Trail	**High**	**Major**	Very large adverse and **significant**
Walkers on the Gloucestershire Way long distance footpath	**High**	**Moderate**	Large adverse and **significant**
Users of the local PRoW, bridleway, and byway networks	**High**	**Moderate**	Large adverse and **significant**
Community receptors			
Community of Nettleton Bottom	**Medium**	**Moderate**	Moderate adverse and **significant**
The community at Stockwell and users of	**Medium**	**Moderate**	Moderate adverse and **significant**

Receptor	Sensitivity	Magnitude of effect	Construction significance of effect
the local PRoW network north of Stockwell			
Community of Shab Hill and surrounding farms	**Medium**	**Major**	Large adverse and **significant**
Tourism receptors			
Visitors of Crickley Hill Country Park	**Very high**	**Moderate**	Large adverse and **significant**
Users of the Great Witcombe Roman Villa car park and PRoW (Brockworth Footpath 16) visiting Great Witcombe Roman Villa scheduled monument	**Very high**	**Minor**	Moderate adverse and **significant**
Users of Barrow Wake	**Very high**	**Major**	Very large adverse and **significant**
Users of Leckhampton Hill	**Very high**	**Minor**	Moderate adverse and **significant**

Assessment of visual effects during operational phase year 1

7.10.30 Table 7-39 below provides a summary of receptors and judgement on their sensitivity, magnitude of effect and level of significance likely to be experienced by visual receptors at operation year 1.

Table 7-39 Summary of visual effects during operation year 1

Receptor	Sensitivity	Magnitude of effect	Operation year 1 significance of effect
Recreational receptors			
Walkers on the Cotswold Way National Trail	**High**	**Major**	Very large adverse and **significant**
Walkers on the Gloucestershire Way long distance footpath	**High**	**Moderate**	Large adverse and **significant**
Users of the local PRoW, bridleway, and byway networks	**High**	**Moderate**	Large adverse and **significant**
Community receptors			
Community of Nettleton Bottom	**Medium**	**Minor**	Slight beneficial and **not significant**
The community at Stockwell and users of the	**Medium**	**Moderate**	Moderate adverse and **significant**

Receptor	Sensitivity	Magnitude of effect	Operation year 1 significance of effect
local PRoW network north of Stockwell			
Community of Shab Hill and surrounding farms	**Medium**	**Major**	Large adverse and **significant**
Tourism receptors			
Visitors of Crickley Hill Country Park	**Very high**	**Moderate**	Large adverse and **significant**
Users of the Great Witcombe Roman Villa car park and PRoW (Brockworth Footpath 16) visiting Great Witcombe Roman Villa scheduled monument	**Very high**	**Minor**	Moderate adverse and **significant**
Users of Barrow Wake	**Very high**	**Major**	Very large adverse and **significant**
Users of Leckhampton Hill	**Very high**	**Negligible**	Slight adverse and **not significant**

Assessment of visual effects during operational phase year 15

7.10.31 Table 7-40 below provides a summary of receptors and judgement on their sensitivity, magnitude of effect and level of significance likely to be experienced by visual receptors at operation year 15.

Table 7-40 Summary of visual effects during operation year 15

Receptor	Sensitivity	Magnitude of effect	Operation year 15 significance of effect
Recreational receptors			
Walkers on the Cotswold Way National Trail	**High**	**Minor**	Moderate adverse and **significant**
Walkers on the Gloucestershire Way long distance footpath	**High**	**Minor**	Slight beneficial and **not significant**
Users of the local PRoW, bridleway, and byway networks	**High**	**Minor**	Slight adverse and **not significant**
Community receptors			
Community of Nettleton Bottom	**Medium**	**Minor**	Slight beneficial and **not significant**
The community at Stockwell and users of	**Medium**	**Minor**	Slight adverse and **not significant**

Receptor	Sensitivity	Magnitude of effect	Operation year 15 significance of effect
the local PRoW network north of Stockwell			
Community of Shab Hill and surrounding farms	**Medium**	**Minor**	Slight adverse and **not significant**
Tourism receptors			
Visitors of Crickley Hill Country Park	**Very high**	**Minor**	Moderate adverse and **significant**
Users of the Great Witcombe Roman Villa car park and PRoW (Brockworth Footpath 16) visiting Great Witcombe Roman Villa scheduled monument	**Very high**	**Negligible**	Slight, neutral, and **not significant**
Users of Barrow Wake	**Very high**	**Minor**	Moderate, neutral, and **significant**
Users of Leckhampton Hill	**Very high**	**Negligible**	Slight adverse and **not significant**

7.11 Monitoring

7.11.1 DMRB LA104 states that where significant landscape and visual effects have been identified "*projects must undertake proportionate monitoring of associated mitigation measures"* in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

7.11.2 DMRB *LA 107* (Paragraph 4.1) states that monitoring "*shall determine the effectiveness of delivery of mitigation measures linked to the landscape or screening commitments agreed as part of the assessment process*."

7.11.3 All significant effects arising because of the scheme would be monitored for the length of the maintenance period. Proposed planting would be monitored every year for the first five years under a normal establishment phase to ensure successful establishment and then inspected every two to five years for the next 12 years, a total of eight inspections, to ensure the landscape mitigation is successful in mitigating the significant effects as predicted. These measures are secured by the EMP (End of Construction) in ES Appendix 2.1 Environmental Management Plan (Document Reference 6.4).

7.11.4 It is essential that the proposed planting establishes well and is monitored and maintained to ensure it thrives and grows to the desired extent, so that it becomes effective as mitigation during the long-term operation of the new road infrastructure.

7.11.5 Full details are to be provided in the EMP (construction stage) and EMP (End of Construction), and within the Landscape and Ecological Management Plan (LEMP) included as Annex D of ES Appendix 2.1 EMP (Document Reference 6.4), which sets out a framework in which the successful establishment of these measures would be managed and ensured.

7.12 Summary

7.12.1 This chapter provides information on the landscape and visual baseline conditions between 2018 to early 2021 when winter baseline photography was taken. It sets out the methodology used to assess the significant effects of the scheme on landscape character, views and the visual resources as experienced by people.

Construction assessment

7.12.2 Construction activities would have significant adverse temporary effects on the area of the AONB within the study area.

7.12.3 Landscape character types that would be significantly adversely affected by the scheme during the construction phase include:

- AONB LCT 2 Escarpment.
- AONB LCT 7 High Wold.
- AONB LCT 8 High Wold Valleys.

7.12.4 Construction activities would have a likely significant adverse temporary effect on the following visual receptors:

- Recreational users on the Cotswold Way National Trail, Gloucestershire Way long distance footpath, byways, bridleways, and PRoW including at Barrow Wake, Emma's Grove and Crickley Hill, and in relation to Shab Hill, Stockwell and Nettleton Bottom;
- Communities including Nettleton Bottom, Shab Hill and Stockwell; and
- Tourism receptors including visitors to the Cotswolds AONB, Great Witcombe roman villa, Crickley Hill Country Park, Barrow Wake, Emma' Grove and Leckhampton Hill.

Combining the landscape and visual effect for construction assessment, overall, the scheme will give rise to significant, adverse effects on both landscape and visual receptors.

Operational assessment

7.12.5 The operation of the scheme would have significant and adverse permanent effects for character areas directly affected.

7.12.6 Landscape character types that would be significantly affected by the scheme at year 1 of the operational phase include:

- AONB LCT 2 Escarpment (adverse).
- AONB LCT 7 High Wold (adverse).
- AONB LCT 8 High Wold Valleys (adverse).

7.12.7 Landscape character types that would be significantly affected by the scheme at year 15 of the operational phase include:

- AONB LCT 2 Escarpment (adverse).
- AONB LCT 7 High Wold (adverse).

7.12.8 As a result of the scheme at year 1, there would be adverse permanent significant effects experienced by the following visual receptors:

- Recreational users on the Cotswold Way National Trail, Gloucestershire Way long distance footpath, byways, bridleways, and PRoW including at Barrow Wake, Emma's Grove and Crickley Hill, and in relation to Shab Hill and Stockwell.

- Visitors to the Crickley Hill Country Park, Great Witcombe Roman Villa, and Barrow Wake.
- communities including Shab Hill and Stockwell.

7.12.9 As a result of the scheme at year 15, there would be adverse permanent significant effects experienced by the following visual receptors:

- Recreational users on the Cotswold Way National Trail.
- Visitors to the Crickley Hill Country Park and Barrow Wake.

7.12.10 Non-significant beneficial effects would be experienced at the following receptors:

- Communities at Birdlip and Nettleton Bottom.

7.12.11 Combining the landscape and visual effect for both operational assessments, overall, the scheme will give rise to significant, adverse effects on both landscape and visual receptors.

Special Qualities of the Cotswolds AONB

7.12.12 In addition to the construction and operational effects on landscape and visual receptors set out above, the operation of the scheme would have beneficial and adverse permanent effects on the special qualities of the AONB within the study area.

7.12.13 Permanent adverse effects on the special qualities of the Cotswolds AONB include:

- Cotswold escarpment, including views from and to the AONB – with the increased depth and width of cutting, and additional carriageway width.
- River valleys – due to infilling the head of the valley at Coldwell Bottom and the presence of Shab Hill junction.

7.12.14 Permanent beneficial effects on the special qualities of the Cotswolds AONB include:

- Unifying character of the limestone geology – increasing its visible presence in the landscape through the cutting and use as a building material on the structure and extensive stone walling.
- High wold long distance views – reducing the visual dominance of road infrastructure with the repurposing of the Existing A417 and setting the scheme into the landscape, enclosing it with landscape bunding and Cotswold stone walling.
- Distinctive dry-stone walls – provision of extensive, additional new sections of dry stone walling across the scheme.
- Internationally important flower-rich grasslands, particularly limestone grasslands – provision of large areas of calcareous grassland.
- Internationally important ancient broadleaved woodland, particularly along the crest of the escarpment – provision on additional areas of broadleaved woodland.
- Variations in the colour of the stone from one part of the AONB to another which add a vital element of local distinctiveness – positively contributing to local distinctiveness with the use of Cotswold stone walling and cladding on structures.
- Tranquillity of the area – with the removal of lit junctions and better integrated carriageway to reduce noise and visual disturbance.

- Extensive dark sky area – removal of lit junction and better integrated carriageway to reduce light spill from car headlights.
- Accessible landscape for quiet recreation – improved recreational access with the provision and upgrading of PRoW, traffic free WCH crossings via the Cotswold Way and Gloucestershire Way crossings.

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