

# M3 Junction 9 Improvement

**Scheme Number: TR010055**

## 8.18 Design Principles Report

**(Rev 1)**  
**Tracked**

APFP Regulations 5(2)(q)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and  
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## Infrastructure Planning

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## 8.18 Design Principles Report

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## 1 Summary

- 1.1.1 This document describes the Design Principles that are to be secured through a Requirement of the **draft Development Consent Order (3.1, Rev 4)** and to be certified within Schedule 11.
- 1.1.2 These principles are set out in the Applicant's **Design and Access Statement (7.9, APP-162)**. However, to ensure that the Scheme which is the subject of the Development Consent Order is delivered to the high environmental standards set out in the application documents it is considered that consolidating Design Principles into a single document would secure this.

## 2 Introduction

### 2.1 The Purpose of this document

2.1.1 The purpose of this document is twofold. Firstly, to define the Design Principles that are to be incorporated into the detailed design of the Scheme. Secondly, to ensure that these detailed design elements have a clear design language, taking into consideration the local context and characteristics of each area within the application boundary.

2.1.2 The **Design and Access Statement (7.9, APP-162)** provides an explanation of the rationale behind Scheme design, including compliance with planning policy and consideration of stakeholder feedback, and the Design Principles provide commitments that will be secured through the **draft Development Consent Order (3.1, Rev 4)**.

### 2.2 The Design principles

2.2.1 The Design Principles are written to capture the key principles (documented in the **Design and Access Statement (7.9, APP-162)**) that have shaped the preliminary design submitted, and to make a commitment that these will be maintained and developed in the future detailed design and delivery phases of the Scheme in accordance with *National Policy Statement for National Networks (NPS NN)* (Department for Transport, 2014) requirements for 'good design'.

2.2.2 The Design Principles apply only to the Scheme's permanent works and do not apply to the temporary construction works. Design-related considerations that relate to managing the construction works are included within the **first iteration Environmental Management Plan (fiEMP) (7.3, Rev 5)**.

2.2.3 The Design Principles are commitments that will be secured through a Requirement of the **draft Development Consent Order (3.1, Rev 4)** and this document will be one of those certified in Schedule 11.

2.2.4 This Design Principles document is one of a suite of documents that capture the Scheme's design and environmental commitments. These documents include:

- The **Environmental Statement (6.1, 6.2 and 6.3, APP-042 - APP-152)**, including **Figure 2.3** in **Chapter 2 (The Scheme and its Surroundings - Figures (Part 2 of 4))** of the **ES (6.2, Rev 1)** which defines the spatial layout of physical mitigation proposals.
- The **first iteration Environmental Management Plan (fiEMP) (7.3, Rev 5)**, including the Register of Environmental Actions and Commitments (REAC) which defines commitments on the processes that need to be used in the delivery, management, monitoring and maintenance of the works.
- **Figure 2.3** in **Chapter 2 (The Scheme and its Surroundings - Figures (Part 2 of 4))** of the **ES (6.2, Rev 1)** which provides a spatial representation

of the proposed environmental mitigation measures and commitments and demonstrates the application of relevant design principles.

- Engineering and environmental (principally landscape) drawings and sections, and the general arrangement drawings, which together illustrate the preliminary Scheme design.

## 2.3 Scheme objectives

2.3.1 The Scheme has five objectives as outlined in the Executive Summary of the **Case for the Scheme (7.1, Rev 1)**. These are as follows:

- To reduce delays at M3 Junction 9 on all links M3, A33 and A34.
- Smooth the flow of traffic by improving journey time reliability and reducing delays (time lost per vehicle mile) at M3 Junction 9 and the exit and entry roads for the A33 and A34.
- Improve the safety for all road users and reduce the annual collision frequency and severity ratio on the M3 Junction 9.
- Support economic growth and ensure the Junction can accommodate additional traffic.
- To generate improvements for walkers and cyclists including connecting the National Cycle Network Route 23 which is severed by the current Junction layout.

## 2.4 Proposed development

2.4.1 As outlined in the Executive Summary of the **Case for the Scheme (7.1, Rev 1)** the improvements proposed as part of the Scheme seek to maintain existing connectivity on the road network, whilst providing enhanced capacity, simplified routing, improved facilities for walkers, cyclists and horse-riders and landscaping enhancements. The Scheme would provide new free-flowing links between the M3 and A34, as well as a dedicated new A33 alignment. The Scheme elements are as follows:

- Widening of the M3 from a dual two-lane motorway (two-lane motorway with hard shoulders) to a four-lane motorway (with hard shoulders) between the proposed M3 Junction 9 gyratory north and south slip roads.
- A new smaller grade separated gyratory roundabout arrangement within the footprint of the existing roundabout, incorporating new connections over the M3 with improved walking, cycling and horse-riding routes.
- Connector roads from and to the new gyratory roundabout.
- Improved slip roads to/from the M3.

- New structures (in the form of gyratory bridges, underpasses, retaining walls, subway and a new cycle and footbridge over the River Itchen).
  - A new surface water runoff system with associated drainage and infiltration features.
  - New signage and gantries.
  - Utility diversions.
  - New lighting (subways, underpasses and gantries).
  - Modifications to topography through cuttings and false cuttings as well as re-profiling of existing landform.
  - New walking, cycling and horse-riding provision.
  - Creation of new areas of chalk grassland, woodland, scrub planting and species-rich grassland.
- 2.4.2 The Application Boundary covers an area of approximately 109 hectares (ha). This includes the proposed land required for gantries, signage, temporary construction compound areas, areas for environmental mitigation, areas for drainage requirements (some of which would be temporary) and traffic management.
- 2.4.3 The Scheme includes a package of environmental mitigation and enhancement measures to reduce the impacts from the Scheme on the environment where possible.
- 2.4.4 Bridleways, footpaths and cycleways have been designed to comply with Department for Transport's (DfT) inclusive mobility for impaired users. Also, the walking, cycling and horse-riding routes are designed for cyclists, and therefore all horizontal radii are suitable for cyclists, and acceptable for mobility impaired users. The range of opportunities and barriers to all forms of movements have been given due consideration in the design of the Scheme.
- 2.4.5 A number of new structures are required to be constructed and some existing structures demolished to facilitate the Scheme. Some of the main features are as follows:
- The existing bridges at the M3 Junction 9 gyratory roundabout are proposed to be demolished and replaced by the two new bridge structures with a wider span, carrying the new gyratory.
  - A new underpass is proposed to carry the A34 southbound under the new A33 link road and the existing M3. The A34 northbound underpass would carry the new A34 northbound over the new A33 link.
  - The existing subways (Winnall Subway East and Winnall Subway West) located under the existing gyratory are proposed to be demolished to

facilitate the construction of the reconfigured roundabout. New subways are proposed along the proposed footpath and cycleway.

- A new bridge to accommodate the footpath and cycle track over the River Itchen is proposed between the existing Itchen Bridge, (which carries the A34 northbound carriageway), and the existing Kings Worthy Bridge, which would carry the A33 north and southbound carriageways and the A34 southbound carriageway, respectively.

2.4.6 The walking, cycling and horse-riding facilities around and within the Scheme are to be upgraded. This includes an improvement to the National Cycle Network (NCN) Route 23. An additional footpath, cycleway and bridleway is proposed on the eastern side of the Scheme to link Easton Lane with Long Walk. Such a route would provide a circular leisure path for those using the South Downs National Park with a link to the other paths around Long Walk with their links to local villages. A new combined footpath and cycle track for the western side of the Scheme is proposed to link the A33 / B3047 Junction to Winnall Industrial Estate situated on Easton Lane.

## 2.5 Good design

2.5.1 Paragraphs 4.28 - 4.35 of the *National Policy Statement for National Networks (NPS NN)* set out the criteria for 'good design' noting that design shall be an integral consideration from the outset. In Paragraph 4.29 it states:

*'Visual appearance should be a key factor in considering the design of new infrastructure, as well as functionality, fitness for purpose, sustainability and cost. Applying "good design" to national network projects should therefore produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction, matched by an appearance that demonstrates good aesthetics as far as possible'*

2.5.2 National Highways (the Applicant) has published '*The Road to Good Design*' (Highways England, 2018), and this document alongside other relevant design guidance materials are summarised in the **Design and Access Statement (7.9, APP-162)**. The **Design and Access Statement (7.9, APP-162)** provides an overview of the how the Scheme has been developed to accord and respond to these strategic principles.

2.5.3 The **National Policy Statement for National Networks Accordance Table (7.2, Rev 2)**, sets out how the Scheme complies with the *National Policy Statement for National Networks (NPS NN)* criteria for good design outlined in paragraphs 4.28 – 4.35 of the *NPS NN*.



### 3 Design principles

#### 3.1 Introduction

3.1.1 This section sets out the Scheme-specific Design Principles that must be complied with and how they will be applied to the detailed design of the Scheme as a whole.

3.1.2 **Section 5 of the Design and Access Statement (7.9, APP-162)** sets out a series of high-level design principles. These principles respond to industry-recognised principles of good design. For ease of reference and understanding the Design Principles are set out under the following headings:

- Collaborative approach to design.
- A landscape-led strategy – considering the wider context and respecting the National Park.
- Enhancing user experience – transport and community benefits and creating an accessible and connected network.
- Placemaking – creating an identity for the Scheme, within a challenging landscape.
- Sustainable design (including minimising impacts on carbon and maximising climate resilience).

3.1.3 The Scheme is focused on improvement works associated with the existing M3 Junction 9 and is partially located within the South Down National Park. A landscape-led strategy is a key principle of the Scheme, and it accordingly respects the special qualities of the South Downs and ensures that its statutory purposes are not compromised. Reference to the Landscape Character Areas in which the Scheme is located is included with respect to reinforcing and enhancing the key characteristics of those areas. Examples of how this has been achieved and how the design strategy has responded to the special qualities of the designation are also set out. Furthermore, the principle of placemaking recognises the need to create an identity for the Scheme within the designated landscape and principles relating to how the Scheme responds to each Landscape Character Area are set out.

3.1.4 The Applicant considers that the Scheme design, whilst building new highway infrastructure partially within the South Downs National Park, seeks to conserve and where possible enhance existing landscape character features which contribute to its distinctive character. The landscape-led strategy has been based on a thorough understanding of the environmental baseline and character of all Landscape Character Areas to create a Scheme which responds to local character and is entirely appropriate to its environment.

### 3.2 Collaborative approach to design

3.2.1 The Scheme has been designed using a collaborative, multi-disciplinary approach to ensure a thorough and inclusive design process. This has been achieved through provision of inputs from key external stakeholders including the South Downs National Park, Hampshire County Council, Winchester City Council, Natural England, Historic England and the Environment Agency.

3.2.2 As set out by National Highways Road to Good Design:

*‘Collaboration ensures roads are useful to and accepted by the communities they serve. Collaborative working requires a rigorous process that identifies dependencies and wider opportunities and facilitates effective communication and engagement from the start.’* (National Highways, 2018).

3.2.3 Adopting this key, high-level principle has ensured that considerations that are important to the Scheme’s stakeholders will give rise to designs that respond to stakeholder and user needs.

Table 3.1: Collaborative Design Principles

Design Principle ID	Design Principle name	Design Principle
CA.01	Design review	The Scheme has engaged with the National Highways Design Review Panel on the development of the detailed design.
CA.02	Integrated design	The detailed design will be developed through a multi-disciplinary collaborative design process such that all features of the highway, maintenance access, its integration with the surroundings, and environmental mitigation are coordinated as a cohesive project.
CA.03	Design Champion	In accordance with the National Infrastructure Strategy (2020) a Project-wide Design Champion will be designated by National Highways to protect and promote good design and

		these Project Design Principles throughout the detail design and delivery phases of the Project.
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### 3.3 A landscape-led strategy

3.3.1 The Design Principles incorporate a landscape-led strategy. This high-level principle provides for the consideration of appropriate protection, design and management of the landscape and historic environment assets. This ensures that consideration is given to the integration of the Scheme with the environmental and landscape context in which it is located, including the South Downs National Park, and specifically the identified Landscape Character Areas.

3.3.2 As set out in National Highways Road to Good Design:

*'Good road design demands a deep understanding and response to place, to create a quality aesthetic experience for the user and wider community. This is restrained and environmentally sustainable design, in fitting with the context' (Highways England, 2018).*

3.3.3 In addition, *'The aesthetic quality of a road and its design in relation to the places through which it passes, is integral to its function and the experience of those that use it. Good road design demonstrates sensitivity to the landscape, heritage and local community, seeking to enhance the place while being true to structural necessities. It builds a legacy for the future' (Highways England, 2018).*

Table 3.2: Landscape-Led Design Principles

Design principle ID	Design principle name	Design principle
LL.01	Respecting the South Downs National Park	<p>The Scheme will give consideration to the statutory purpose of the South Downs National Park, which is to conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park and to promote opportunities for the public understanding and enjoyment of the Special Qualities of the Park.</p> <p>The detailed design of the Scheme will have regard to the Special Qualities of the designated landscape. <del>Opportunities will be explored through t</del>The detailed design <u>will seek</u> to further reduce impacts upon designated and valued landscapes <u>where opportunities arise, for example through reduction in anticipated vegetation loss, and reducing the size and scale of engineering structures.</u></p>
LL.02	Existing vegetation	<p>Existing vegetation will be retained by the Scheme as far as reasonably practicable. Minimum areas of retained woodland and hedges are shown in <b>Figure 2.3 in Chapter 2 (The Scheme and its Surroundings - Figures (Part 2 of 4))</b> of the <b>ES (6.2, Rev 1)</b> Measures for the protection of retained vegetation during site clearance works are provided for in item LV8 of <b>Table 3.2</b> of the <b>first iteration Environmental Management Plan (fiEMP) (7.3, Rev 5)</b>.</p> <p>The detailed design will minimise impacts on mature trees, root protection zones and mature tree canopy cover and so far as is reasonably practicable carry out the detailed design in order to retain mature and established trees as valued landscape features.</p>
LL.03	Planting strategy	<p>The planting strategy for the Scheme will include the use of native species of local provenance, to reflect the character and be appropriate to its locality. The planting species mix will be as diverse as reasonably practicable to ensure resilience against potential future diseases. Where reasonable, practicable and appropriate to local context, species will be</p>

Design principle ID	Design principle name	Design principle
		selected with enhanced climate resilience properties to maximise tolerance to future extreme events, such as drought and flooding.
LL.04	Biodiversity No Net Loss	<p>The Scheme is committed to achieving no net loss for biodiversity and will seek further opportunities for improving biodiversity where possible.</p> <p>Opportunities for maximising biodiversity benefit will be provided through delivery of a range of habitats / planting typologies including scrub planting, species-rich grasslands (including chalk grassland), and broadleaved woodland.</p>
LL.05	Habitat connectivity	The Scheme will prioritise improving connectivity between existing habitats wherever reasonably practicable, as defined within <b>Figure 2.3 in Chapter 2 (The Scheme and its Surroundings - Figures (Part 2 of 4))</b> of the <b>ES (6.2, Rev 1)</b> . Fragmentation of habitats will be reduced as far as reasonably practicable by avoiding unnecessary barriers to movement and, where necessary, including design features which allow safe passage of animals, and colonisation by plants to enhance biodiversity.
LL.06	Landscape reinstatement	<del>The Scheme will retain the character of the landscape.</del> Where temporary land is utilised during construction and is not required for permanent measures including mitigation, it will be reinstated to its original use as far as reasonably practicable <u>to minimise harm to the landscape.</u>
LL.07	Planting densities	Planting densities will <u>be defined to</u> comply with environmental functions as set out in <b>Figure 2.3 in Chapter 2 (The Scheme and its Surroundings - Figures (Part 2 of 4))</b> of the <b>ES (6.2, Rev 1)</b> .

Design principle ID	Design principle name	Design principle
LL.08	Integration of attenuation and infiltration basins	<p>Drainage basins and swales should avoid appearing utilitarian or as engineered features and where practicable will be designed to appear as naturalistic elements within the wider setting.</p> <p>Designs will take account of existing topography, gradients and field boundaries as far as reasonably possible, whilst balancing the need for minimising land take. Planting will be provided to soften edges where this is appropriate to the local context, taking into account their presence within identified Landscape Character Areas.</p>
LL.09	Advanced planting	<p>Where reasonably practicable, planting will be undertaken early in the construction programme to maximise the maturity of the planting scheme at road opening.</p>
LL.10	Lighting - underpasses	<p>Given the context of the Scheme's location which is partially within the South Downs National Park, avoiding and minimising light pollution is a key consideration for the Scheme. Accordingly the new carriageways, junction and the slip roads will not be illuminated.</p> <p>Lighting will be required within the underpasses and subways and will be designed in accordance with the <i>South Downs National Park Authority's Dark Skies Technical Advice Note</i>. The M3 and A34 underpasses will be lit to 50% of full daytime lighting level. The exit portals of the underpasses will be unlit during the day and night-time.</p> <p>The existing street lighting on Easton Lane by Tesco's will remain in place.</p>
LL.11	Lighting - Gantries and variable message signs	<p>Given the context of the Scheme's location which is partially within the South Downs National Park, avoiding and minimising light pollution is a key consideration for the Scheme. Accordingly the new carriageways, junction and the slip roads will not be illuminated.</p>

Design principle ID	Design principle name	Design principle
		<p>The gantry-mounted signage will be lit and designed in accordance with the <i>South Downs National Park Authority's Dark Skies Technical Advice Note</i>. The gantries are located outside of the South Downs National Park; however, lighting should be within the parameters for requirements of Environmental Light Zone in which the gantries are located (E2 / E1b) as set out in the <i>South Downs National Park Authority's Dark Skies Technical Advice Note</i>.</p>



### 3.4 Enhancing user experience

3.4.1 The Design Principles detail how user experience will be enhanced, including the experience of road users and those using local footpaths and bridleways.

3.4.2 According to National Highways Road to Good Design, good road design should be;

*-‘Easy to read, a good road is intuitive to use so as to be safe and efficient for all. ‘Self-explaining roads’ focus on the essentials and eliminate unnecessary and confusing clutter to make them legible, while responding to place and enhancing both environmental and economic outcomes’ (National Highways, 2018).*

3.4.3 National Highways states: *‘An inter-disciplinary design process involves, and places people’s needs and views at its heart, nurturing well-being and creating a shared sense of ownership of the road.’ (National Highways, 2018).*

3.4.4 In addition, an important consideration of enhancing user experience, is safety. *‘Safety is fundamental to good road design; it is integral to both the usefulness of its function and the confidence of road users and their well-being. Good design creates safe roads which support and link to other wider imperatives, both nationally and locally, and that are fundamentally useful, meeting users’ need for mobility effectively’ (National Highways, 2018).*

Table 3.3: User Experience Design Principles

Design principle ID	Design principle name	Design principle
EU.01	User Experience	The Scheme will consider the experience of drivers travelling along the highway, and observers on foot, bicycle or riding horses on the walking, cycling and horse-riding routes, including crossings. This will include where relevant minimising harm to effects on tranquillity (where this is a recognised quality) and ensuring that the aesthetic quality and safety of proposed routes is maximised.

Design principle ID	Design principle name	Design principle
<b>EU.02</b>	Walking, cycling and Horse-riding – Accessibility	<p>The walking, cycling and horse-riding (WCH) facilities within the Scheme will be upgraded. The Scheme would retain the current provisions and introduce new routes and connections. All routes have been designed to allow all footway /cycleway gradients to be no more than 1:20 to comply with DfT’s inclusive mobility for impaired users.</p> <p>The use of tactile paving (both blister and corduroy types) is also proposed to cater for the visually impaired, and wayfinding signage will also be provided along the footway/cycleway/bridleway routes as part of the Scheme proposal.</p>
<b>EU.03</b>	Access to the South Downs National Park	The Scheme will improve accessibility to the South Downs National Park through improvements to the route across the M3 Junction 9, the provision of a new bridleway between Easton Lane and Long Walk and connection of the Itchen Way to the new WCH route from Kings Worthy to Winnall.
<b>EU.04</b>	New Walking Cycling and Horse-Riding Route – Kings Worthy to Winnall	The Scheme will improve walking and cycling access through a dedicated route linking Kings Worthy to Easton Lane, with careful siting of the proposed (sympathetically designed) River Itchen pedestrian bridge to minimise visual impact, and impact of existing features and designations. The Scheme will maximise opportunities for achieving a high-quality aesthetic for users.
<b>EU.05</b>	New Walking cycling and Horse-riding route – Easton Lane to Long Walk	The Scheme will improve walking, cycling and horse-riding access through a dedicated bridleway linking Easton Lane to Long Walk. The route will be positioned / designed to maximise visual screening of the M3 and the Scheme and maximise opportunities for achieving a high-quality aesthetic and experiencing tranquillity within the designated landscape, whilst promoting opportunities for views of Winchester where possible.

Design principle ID	Design principle name	Design principle
EU.06	Walking cycling and Horse riding - Surfacing	Surfacing for walking, cycling and horse-riding routes will be appropriate to context and anticipated type and level of use. Gates and boundary fences for such routes will be sensitive to local context in terms of materials and style, and will avoid duplication with other similar features, to avoid clutter in the landscape.
<u>EU.07</u>	<u>Walking Cycling and Horse Riding - Route Widths and Surfacing</u>	<p><u>All routes to accord with the following minimum widths and surface treatments:</u></p> <ul style="list-style-type: none"> <li>• <u>2.0m wide Controlled Pedestrian Crossing Footpath across the A33 with a bound asphalt surface (work No.1(a)).</u></li> <li>• <u>3.0m wide Cycle Track* between the Cart and Horses junction and M3 Junction 9 with a bound asphalt (work No. 2).</u></li> <li>• <u>2.0m wide Footpath to realign the existing Public Right Of Way (REF. 111/6/1) to connect to the proposed Cycle Track with a bound asphalt surface (work No. 2(a)).</u></li> <li>• <u>2.0m wide Footpath to provide a new pedestrian link from the proposed Cycle Track to the existing Public Right Of Way (REF. 111/749/1) with a bound asphalt surface (work No. 2(c)).</u></li> <li>• <u>4.0m wide Cycle Track* as a subway under the proposed A34 northbound slip road with a bound asphalt surface (work No. 2(e)).</u></li> <li>• <u>3.5m wide Cycle Track* on a bridge over the River Itchen with a bound asphalt surface (work No. 4).</u></li> <li>• <u>3.0m wide Maintenance Footway adjacent to drainage basin 3A with an unbound surface (work No. 6(e)).</u></li> </ul>

Design principle ID	Design principle name	Design principle
		<u>*cycle track includes right of way on foot.</u>

### 3.5 Placemaking

3.5.1 Functionality is a key consideration, but the requirement to be responsive to context and place is equally important. The placemaking Design Principles therefore provide for the consideration of how the design will respond not only to character and place but will also how it strengthen the connections between people and these places.

3.5.2 As set out in National Highways Road to Good Design,

*'good road design allows for the expression of the character and identity of the places and communities through which a road passes. Good road design can enhance a sense of place and add to what we have inherited, particularly through the use of appropriate materials and traditions, but does not make unnecessary superficial or superfluous visual statements.'* (National Highways, 2018).

3.5.3 National Highways also sets out that,

*'The design of all elements of the road environment are considered together and integrated into a responsive design'* (National Highways, 2018).

3.5.4 The design of the Scheme is influenced by its environment beyond the extent of the Application Boundary as well as its local setting. The design principles draw on the character of the existing landscape including the South Downs National Park and its setting, as well as its biodiversity and heritage assets.

3.5.5 The Scheme lies within two principal Landscape Character Areas, the East Winchester Downs, and the Itchen Valley. Within the South Downs National Park, the Itchen Valley is subdivided into the Itchen Valley Floor and Itchen Valley Sides. These areas and their key characteristics have informed a series of principles as set out below.

Table 3.4: Placemaking Design Principles

Design principle ID	Design principle name	Design principle
P.01	Cutting/Embankment profiles	All earthworks will have rounded crests and profiles where possible to tie in with local landform and avoid the appearance of engineered solutions.
P.02	Blending of earthworks	Where false cuttings and embankments associated with the Scheme meet other landscape earthworks or landscape features, the earthworks will be designed to integrate and merge with them in a naturalistic way. Earthworks will maintain a consistent level of screening with no gaps, and not appear stepped or terraced, unless appropriate to the location.
P.03	Drainage features	Vegetated drainage features will be designed to integrate with the landscape and enhance and complement the wider landscape beyond the immediate limits of the individual vegetated drainage system. This may be achieved through planting of hedgerows, woodland areas tying into the surrounding landscape context, and/or creation of a shrub/woodland edge and species-rich/wildflower grassland. These will be integrated as appropriate, with proposals to restore and enhance surrounding habitats where reasonably practicable.
P.04	Bridge structures	<p>All bridges will share a consistent design approach in the following respects:</p> <ul style="list-style-type: none"> <li>▪ The visual complexity of structures will be minimised.</li> <li>▪ A consistent material palette will be used for all structures.</li> <li>▪ The surrounding landscape, earthworks and abutments will provide a coordinated integrated solution resulting in a site-led coordinated engineered landscape.</li> <li>▪ The natural light under bridge structures will be maximised as much as is reasonably practicable.</li> </ul>

Design principle ID	Design principle name	Design principle
		<ul style="list-style-type: none"> <li>▪ Bridge-supporting structures such as earth-retaining structures and parapets will seamlessly integrate within the landscape, avoiding the need for exposed wing walls and concrete retaining structures where reasonably practicable.</li> <li>▪ Where exposed engineered structures are required, these will be designed and constructed to support the principles of a landscape-led approach and mitigate the impact on the existing green infrastructure.</li> <li>▪ Any utility requirements will be integrated within the structural outline (e.g., not hung and exposed).</li> <li>▪ Access requirements of structures during construction, future inspection and maintenance will be considered as an integral part of overbridge design and must not be compromised when developing the design and aesthetic appearance.</li> </ul>
<b>P.05</b>	Underpasses	<p>All underpasses will share a consistent approach in the following respects:</p> <ul style="list-style-type: none"> <li>▪ Lighting to be sensitively integrated with the underpass design.</li> <li>▪ Other utility requirements will be integrated within the structural outline (e.g., not hung and exposed).</li> <li>▪ Materiality to consist of a plain concrete finish.</li> </ul>
<b>P.06</b>	Fencing	<p>Boundary treatments and fencing will be provided to demarcate the extent of highways authority ownership. The boundary treatment will comprise timber post and wire fence at a height of up to 1.35m (recognising this as a typical feature found within the South Downs National Park), or a post and four rail fence at a height of up to 1.3m. Where necessary, a post and rail fence would be provided with the attachment of a wire mesh for the purpose of animal management.</p>

Design principle ID	Design principle name	Design principle
P.07	Highways furniture	To avoid visual clutter, the amount of roadside furniture and signage will be reduced (or combined) as far as reasonably practicable, while promoting safety requirements/targets through its location, mounting and provision of lighting. Materials and appearance will be selected with consideration given to the surrounding landscape context.
P.08	Responding to landscape character - Structures	The design will be led by the existing landscape, incorporating and integrating the structures so that they appear to be fully and seamlessly integrated components within that landscape; for example, placing structures at low elevations and avoiding the introduction of elevated features wherever reasonably practicable. <del>The design will achieve</del> <u>sStructures will be designed so that they</u> are not overbearing or obtrusive in the landscape <u>where reasonably practicable</u> , thereby reducing impact on the local character and environment.
P.09	Responding to landscape character	The Scheme will draw on the character of the existing landscape. The Scheme lies within two principal Landscape Character Areas, the East Winchester Downs, and the Itchen Valley (subdivided into the Itchen Valley Floor and Itchen Valley Sides).
P.10	Responding to landscape character – Itchen Valley 1	The Scheme will deliver woodland, scrub, and linear planting within the internal islands and periphery of the highway corridor. This will be designed to replace lost features, strengthen the green infrastructure network and habitat connectivity, and provide visual screening of highway and motorway infrastructure.
P.11	Responding to landscape character – Itchen Valley 2	The Scheme will utilise site-gained chalk material / cut chalk slopes as the basis for creation of species rich grassland (with chalk grassland characteristics) on proposed embankment / cutting slopes adjacent to proposed woodland / linear planting elements. In accordance with Highways England policy (MPI 85) the use of low nutrient materials



Design principle ID	Design principle name	Design principle
		adjacent to the highway estate as part of new infrastructure will be followed, which will also provide biodiversity benefit.
<b>P.12</b>	Responding to landscape character – Itchen Valley Floor 1	The Scheme will utilise existing highway bridge structures to minimise impacts on the River Itchen SAC / SSSI and retain woodland features.
<b>P.13</b>	Responding to landscape character – Itchen Valley Sides 1	The Scheme will reinforce existing character through definition of transitional landscape with woodland / scrub woodland planting on the steep / lower slopes of the proposed earthworks. This would create a strong woodland edge to M3 corridor.
<b>P.14</b>	Responding to landscape character – East Winchester Open Downland 1	The Scheme will maximise use of deposition materials to aid screening adjacent to the highway corridor. <del>Sympathetically designed</del> <b>Sympathetically designed</b> earthworks will reflect the existing landform wherever possible to support visual screening and integration of the highway corridor into its landscape context.
<b>P.15</b>	Responding to landscape character – East Winchester Open Downland 2	Site-gained chalk material will be utilised as much as possible for the basis for creation of chalk grassland.
<b>P.16</b>	Responding to landscape character – East Winchester Open Downland 3	The Scheme will be integrated into the open rolling chalk download landscape. Woodland will be planted on steep slopes, and there will be subtle landform creation with open boundaries which will serve to reinforce the open character with chalk grassland creation on the upper slopes.
<b>P.17</b>	Responding to landscape character	False cuttings will provide additional visual screening of the M3 from the South Downs National Park.

Design principle ID	Design principle name	Design principle
	– East Winchester Open Downland 4	
<b>P.18</b>	Responding to landscape character – East Winchester Open Downland 5	The Scheme will promote excellent views through considering placing site-gained materials and location of the proposed bridleway on the eastern slopes. This will both screen views of the highway and maximise views towards Winchester and the South Downs National Park where possible.
<b>P.19</b>	Responding to landscape character – East Winchester Open Downland 6	The Scheme will promote large open skies and distant panoramic views through retaining the open characteristics of the open downland, and careful placement of landscape screening woodland features on steep and lower slopes combined with sympathetic landform reprofiling.
<b>P.20</b>	Responding to landscape character – East Winchester Open Downland 7	The drainage infiltration feature on the eastern slopes (Basin 6) will be seeded with an appropriate chalk grassland (LE1.3) mix.
<b>P.21</b>	Responding to landscape character – East Winchester Open Downland 8	Siting and profiling of the drainage infiltration feature adjacent to Easton Lane (Basin 5) will serve to integrate into its natural surroundings

### 3.6 Sustainable design

3.6.1 Climate-resilient design and carbon and resource efficiency are important considerations of the Scheme, alongside ensuring opportunities for a design which is environmentally-led and responsive to local and contextual constraints.

3.6.2 As set out in National Highways Road to Good Design:

*‘good road design captures opportunities for betterment and develops in tandem with emerging new technologies’ and ‘With quality materials and careful detailing, good road design brings lasting value. The design process requires sufficient time for challenges to be resolved before delivery and is adaptable to future needs and technologies as part of the commitment to whole-life operation, management and maintenance’ (National Highways, 2018).*

3.6.3 In addition, *‘Making an important contribution to the conservation and enhancement of the natural, built and historic environment, good road design seeks to achieve net environmental gain. It is multi-functional, resilient and sustainable, allowing for future adaptation and technical requirements, while minimising waste and the need for new materials’ (National Highways, 2018).*

Table 3.5: Sustainable Design Principles

Design principle ID	Design principle name	Design principle
SD.01	Site-Gained Materials	The Scheme seeks to provide a multi-functional and resilient design which minimises waste and the use of new or raw material. The Scheme will maximise use of site-gained materials, <del>to minimise impacts which would otherwise be imported or exported, instead</del> using these in a positive way to reinforce character and identity.
SD.02	Highway Materials	The Scheme will use a warm mix asphalt for the proposed pavement construction where reasonably practicable.

Design principle ID	Design principle name	Design principle
<b>SD.03</b>	Drainage Strategy – Climate Change	All proposed carriageway drainage for the Scheme will be designed to accommodate for 40% climate change.
<b>SD.04</b>	Drainage Strategy – SUDS	<p>The Scheme’s proposed highway drainage will be designed in accordance with the hierarchy of drainage whereby surface water will be discharged to ground and/or to the River Itchen where discharge to ground is exceeded or not suitable.</p> <p>Sustainable Urban Drainage Systems (SuDs) including extended detention basins, swales and grassed channels will be employed where practical to capture, convey and attenuate surface water flows for all of the designed events. SuDs systems will be designed to treat surface water flows and to remove hydrocarbons, heavy metals and other materials, thus providing an improvement in water quality at the point of discharge compared to the current surface water drainage network.</p>
<b>SD.05</b>	Carbon reduction	The Scheme’s design will be developed in accordance with Publicly Available Specification (PAS 2080): Carbon Management in Infrastructure, to reduce carbon emissions as much as possible. Efficient, low carbon-emission designs, low-carbon materials, energy supply and construction processes) will be specified wherever reasonably practicable and economical within the Scheme’s life cycle.
<b>SD.06</b>	Chalk Grassland / Species Rich Grassland creation	Grassland on roadside verges and earthworks including embankments, cuttings and false cuts will be managed to become species-rich chalk grassland suitable to underlying soil type comprising chalk (LE1.3) as indicated <b>Figure 2.3 in Chapter 2 (The Scheme and its Surroundings - Figures (Part 2 of 4))</b> of the <b>ES (6.2, Rev 1) (6.2, Rev 1))</b> and detailed within <b>Appendix 7.6 (Outline Landscape and Ecological Management Plan)</b> of the <b>ES (6.3, APP-102)</b> .

Design principle ID	Design principle name	Design principle
<b>SD.07</b>	Materials and durability	Material selection will be optimised in all areas to balance capital and maintenance costs, and to reduce the frequency of maintenance and replacement.
<b>SD.08</b>	Barriers and fences	In order to avoid duplication leading to the creation of visual clutter, environmental and boundary fences will be combined into a single structure as much as reasonably practicable. Materials and appearance will be selected with consideration of the surrounding landscape context where appropriate, such as the inclusion of post and wire fencing.
<b>SD.09</b>	Retaining Wall	Material selection of retaining walls to comprise the following: <ul style="list-style-type: none"> <li>▪ concrete with a vertical fluted finish either side of the A34 underpass.</li> <li>▪ sheet piled finish adjacent to highways with a max height of 3m.</li> <li>▪ concrete with a cobbled finish to the A34 Southbound (Itchen retaining wall).</li> </ul>