

Lower Thames Crossing
7.4 Project Design Report
Part B: Policy Context and Project Design Process

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Infrastructure Planning
(Applications: Prescribed Forms and Procedure)
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Part 2

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Project Design Report Part B: Policy Context and Project Design Process

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1. Project Design Report – introduction

1.1. Document structure

1.1.1. This Project Design Report (PDR) covers the relevant policies and the design processes used across the Project.











1.1.2. It broadly covers the following areas:

- a. The national, regional, local and National Highways policies, relevant to the scheme
- b. The design process - including an overview of the public consultations undertaken, the National Highways Design Reviews and the role of both the Design Narrative and Green Infrastructure Study on the development of the Project

1.2. Navigation

1.2.1. This document, Project Design Report Part B: Policy Context and Project Design Process, is one of 10 parts that cover the preliminary design aspects of the Project.

1.2.2. Each part has been assigned a colour, as outlined below, to assist with navigation between documents and for further information on other preliminary design aspects of the Project.

-  Part A: Introduction and Project Background
-  **Part B: Policy Context and Project Design Process**
-  Part C: Design Rationale
-  Part D: General Design South of the River
-  Part D: General Design North of the River - Tilbury to the A13 Junction
-  Part D: General Design North of the River - North of the A13 Junction to the M25
-  Part E: Design for Walkers, Cyclists and Horse Riders
-  Part F: Structures and Architecture
-  Part G: Design Evolution
-  Part H: References and Glossary

2. Policy context

2.1. National Policies

National Policy Statement for National Networks

2.1.1. Good design is referenced within the National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014) in the following paragraphs:

2.1.2. Paragraph 4.28 of the NPSNN states that ‘*Applicants should include design as an integral consideration from the outset of a proposal*’.

2.1.3. Paragraph 4.29: ‘*... 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*’.

2.1.4. Paragraph 4.30 acknowledges that ‘*... there may be a limit on the extent to which it can contribute to the enhancement of the quality of the area*’.

2.1.5. Paragraph 4.31 states ‘*A good design should meet the principal objectives of the scheme by eliminating or substantially mitigating the identified problems by improving operational conditions and simultaneously minimising adverse impacts...*’.

2.1.6. Paragraph 4.32 states that ‘*Scheme design will be a material consideration in decision making. The Secretary of State needs to be satisfied that national networks infrastructure projects are sustainable and as aesthetically sensitive, durable, adaptable and resilient as they can reasonably be (having regard to regulatory and other constraints and including accounting for natural hazards such as flooding)*’.

2.1.7. Paragraph 4.33 requires the applicant to take into account ‘*... both functionality (including fitness for purpose and sustainability) and aesthetics (including the scheme’s contribution to the quality of the area in which it would be located)*’.

2.1.8. Paragraph 4.34 states ‘*Whilst the applicant may only have limited choice in the physical appearance of some national networks infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting and design measures relative to existing landscape and historical character and function,*

landscape permeability, landform and vegetation’.

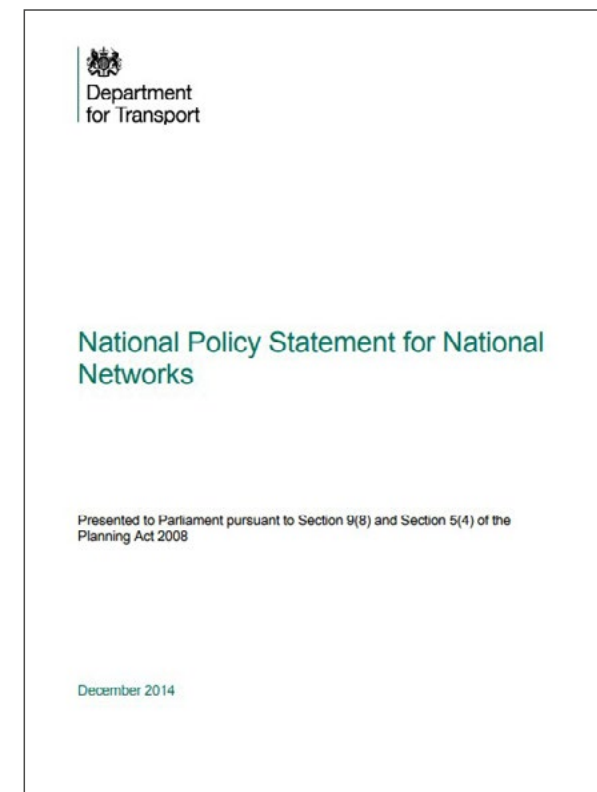
2.1.9. Paragraph 4.35 requires applicants to ‘*...demonstrate in their application how the design process was conducted and how the proposed design evolved*’.

2.1.10. Details of how the Project has been influenced and achieved compliance with these policies can be found in the Planning Statement (Application Document 7.2, Appendix A).

The National Infrastructure Strategy

2.1.11. The National Infrastructure Strategy (HM Treasury, 2020) sets out further guidance on good design including additional commitments under the heading ‘*Designing high-performing and beautiful infrastructure*’. The Strategy is mainly focused on reforms to the planning system to ensure that infrastructure projects are well-designed as set out in the National Infrastructure Design Commission (NIC) Design Principles. It also includes a requirement for “*all infrastructure projects to have a board level design champion in place by the end of 2021 at either project, programme or organisational level, supported where appropriate by design panels*”.

2.1.12. Though the strategy was published in late 2020, after the Projects’ preferred route announcement, statutory consultation and the majority of the Preliminary Design process, the Project has complied with the underlying rationale for these new commitments. Good design has been prioritised throughout the development process. The Project team reviewed the scheme against the NIC design principles and have found these to accord with National Highways’ 10 Principles of good design (see section 2.2). Further, the proposals have been reviewed by the National Highways (independent) Design Review Panel throughout its development and many individuals have championed issues of design throughout the development of the Preliminary Design. The definition of a ‘design champion’ continues to be developed with reference to emerging best practice guidance (*Defining and Developing the Design Champion Role* ICE 2022). Nonetheless, the Project has committed, through the Design Principles, to appointing a Design Champion in the next phase of the project to protect and promote good design in the delivery phase (see PRO.05 of the Project Design Principles (Application Document 7.5)).



National Policy Statement for National Networks document



National Infrastructure Strategy document

2.2. National Highways' commitment to good design

2.2.1. National Highways' licence includes a requirement that new schemes have due regard to relevant principles and guidance on good design. In response to the commitment, a Strategic Design Panel was established and in 2018, the Road to Good Design (National Highways, 2018) was published, setting out National Highways' design vision:

'We aim to put people at the heart of our work by designing an inclusive, resilient and sustainable road network; appreciated for its usefulness but also its elegance, reflecting in its design the beauty of the natural, built and historic environment through which it passes, and enhancing it where possible.'

2.2.2. This document set out three themes to be considered in the development of design:

- **Connecting people:** *People are at the heart of our design work, making good roads safe and useful, inclusive and understandable. Good road design reflects users' needs, engages with communities and works intuitively for all.*
- **Connecting places:** *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.*
- **Connecting processes:** *A successful outcome focussed on people and places requires good design processes. These are collaborative, thorough and innovative, generating long-lasting outcomes that are of benefit to users and the wider community.*

2.2.3. It also listed the 10 principles of good road design which have been taken into account in the design of the Project. It states:

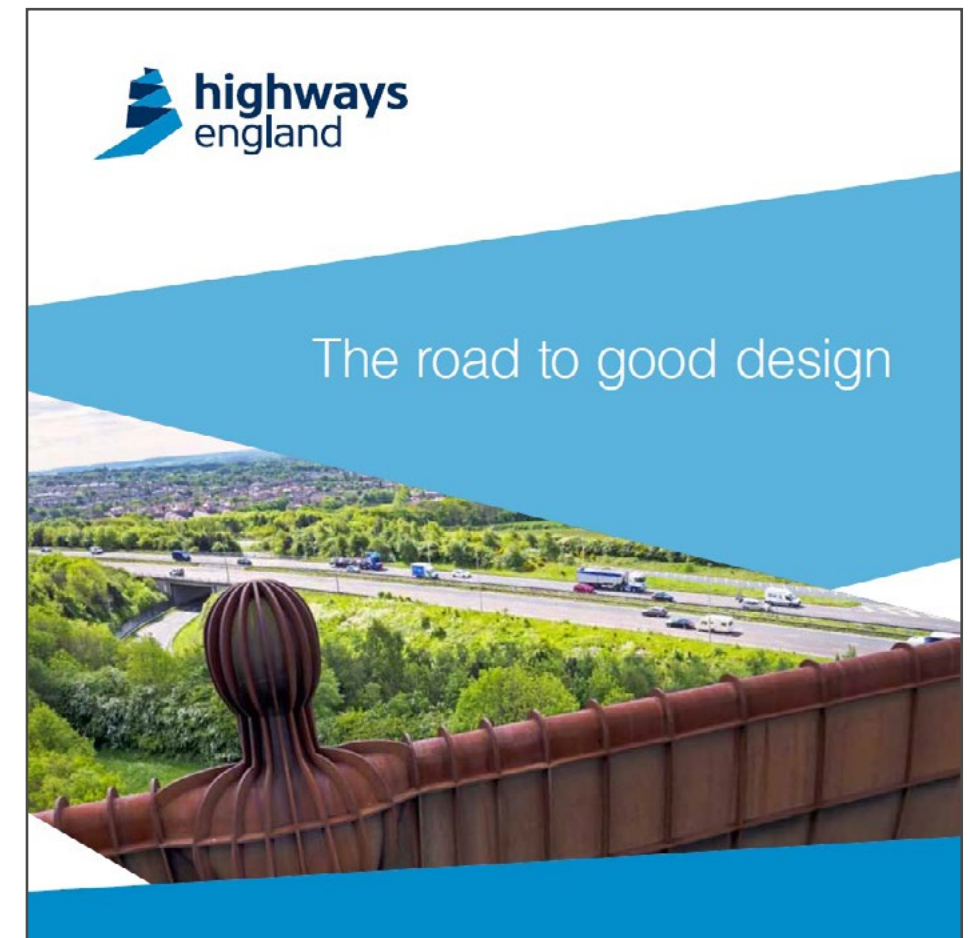
'Our 10 principles are based on universal ideas of good design. They are not instructions for how to design a road, but are prompts to improve design quality and outcomes... Universal good design is thus a balance and coordination of aesthetic, functional and technological considerations.'

1. *makes roads safe and useful*
2. *is inclusive*

3. *makes roads understandable*
4. *fits in context*
5. *is restrained*
6. *is environmentally sustainable*
7. *is thorough*
8. *is innovative*
9. *is collaborative*
10. *is long lasting*

2.2.4. These principles have subsequently become part of the Design Manual for Roads and Bridges (DMRB) (National Highways, 2019) and it is a project requirement to comply with them. Examples of how the Project has complied with these principles are included throughout the document.

2.2.5. In February 2020, The National Infrastructure Commission (NIC) published their Design Principles: Climate, People, Places, Value (National Infrastructure Commission, 2020). The NIC Design Principles are to be implemented wide range of different infrastructure types across Transport, Energy, Water. The use of these design principles on Nationally Significant Infrastructure Projects was subsequently mandated through the Government's National Infrastructure Strategy. We conducted a review of these principles against National Highways principles and concluded that National Highways' Principles of Good Design met the requirements of the NIC Design Principles, albeit with less emphasis on response to climate change. As National Highways has independently committed to lead the industry in the adoption of low carbon innovation and deliver the level of carbon reduction required on the Project to support the transition to Net Zero (see measures secured through the Carbon and Energy Management Plan), the Project complies with all aspects of the NIC Design Principles.



'The Road to Good Design' (National Highways, 2018)

	Climate	People	Places	Value
1: Good road design makes roads safe and useful		+		+
2: Good road design is inclusive		+		
3: Good road design makes roads understandable		+	+	
4: Good road design fits in context			+	+
5: Good road design is restrained			+	
6: Good road design is environmentally sustainable	+			+
7: Good road design is thorough		+	+	+
8: Good road design is innovative				+
9: Good road design is collaborative		+	+	
10: Good road design is long-lasting				+

Table showing how National Highways' 10 principles of good road design map against the NIC Design Principles

2.3. Regional and local policy context

2.3.1. Throughout the development process the design has been developed with regard to regional and local planning policy. The Planning Statement (Application Document 7.2, Appendix C) contains a description of how the Project complies with these. For information, some examples of how the Project has responded to Local and Regional planning policy are outlined below:

Heritage

2.3.2. The preliminary design for Tilbury Fields provides access to heritage assets and celebrates local history through its design. This includes vista points which align with and highlight the cannon mounts on the nearby historical forts. Placemaking features and interpretation material are proposed to increase understanding of the local historic setting. This is an example of how local heritage is highlighted in the Project, which aligns with the following policies:

- a. Thurrock Council Core Strategy and Policies for Management of Development (Jan 2015) CSTP24, PMD4
- b. Gravesham Local Plan Core Strategy (Sept 2014) Policy CS20

Green Infrastructure

2.3.3. The Preliminary Design for green bridges along the route promote better connectivity of habitat for local wildlife and continuation of local landscape character. The Project proposes to enhance, reinstate (where practicable) or replace local landscapes to improve biodiversity and habitats, in accordance with:

- a. Gravesham Local Plan Core Strategy (Sept 2014) Policy CS12
- b. The London Plan (Intended to Public Version) (Dec 2019) Policy G1

Connectivity and Active Travel

2.3.4. The Project is proposing more than 40 miles of improved and additional routes for WCHs. These provide better connections across the region and promote safe and active travel, which meet local policies including:

- a. Kent Local Transport Plan (2016–2031) Outcome 2–5
- b. Gravesham Local Plan Core Strategy (Sept 2014) Policy CS12
- c. Essex Transport Strategy: The Local Transport Plan for Essex (June 2011) Policy 8, 14, 15
- d. Thurrock Council Core Strategy and Policies for Management of Development (Jan 2015) CSTP15

2.3.5. Some site specific examples are listed below:

Routes for WCHs and improved accessibility to the Mardyke Valley.

2.3.6. Improved and additional routes for WCHs across the Project promote active and sustainable travel. Within Thurrock, these routes propose new and improved connections between urban areas for education, employment and recreational activities. The Mardyke Valley also benefits from these proposals, meeting the Thurrock Council Core Strategy and Policies for Management of Development (Jan 2015).

A127 WCH bridge west and Thames Chase WCH bridge

2.3.7. The A127 WCH bridge west and Thames Chase WCH bridge are located in the London Borough of Havering. These bridges provide green infrastructure, connecting areas within the borough which are currently inaccessible or difficult to access and promote active travel, in accordance with the Mayors Transport Strategy (March 2018).

Further details on the routes for WCHs, including the proposed preliminary designs, can be found in Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders

3. Project design process

3.1. Introduction

3.1.1. Developing good design, including good landscape design, has been a focus of the Project. The Project design team have had regard to the policies of the NPSNN, seeking to achieve a good quality design in all areas within the physical constraints associated with a highways project. The following strategies were engaged to develop and deliver design quality:

- a. Developing designs in an integrated team
- b. Public consultation and stakeholder engagement
- c. Independent design review
- d. Incorporating flexibility for future development

3.2. Integrated design team

3.2.1. The team responsible for developing the design included architects, landscape architects, town planners and many engineers of specialisms' including, highways, safety, geotechnical and structural engineering. The team also included the environmental specialists who were undertaking the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA), with specialists from ecology, landscape and visual impact and cultural heritage, amongst others. Achieving good design means weighing and balancing the requirements of these specialist disciplines along with factors raised as part of consultation and engagement.

3.2.2. The landscape, ecology, architecture and engineering designs have been developed concurrently since the Preferred Route Announcement (April 2017) with much interplay between the design and environmental disciplines. This phase resulted in active collaboration on a weekly basis and an iterative design process which lasted approximately four years. As an overarching principle, the Project development team actively sought to prevent, avoid, reduce or offset adverse environmental effects where reasonably practicable, and to seek beneficial effects. As a result, environmental mitigation and compensation measures are embedded into the design proposals.



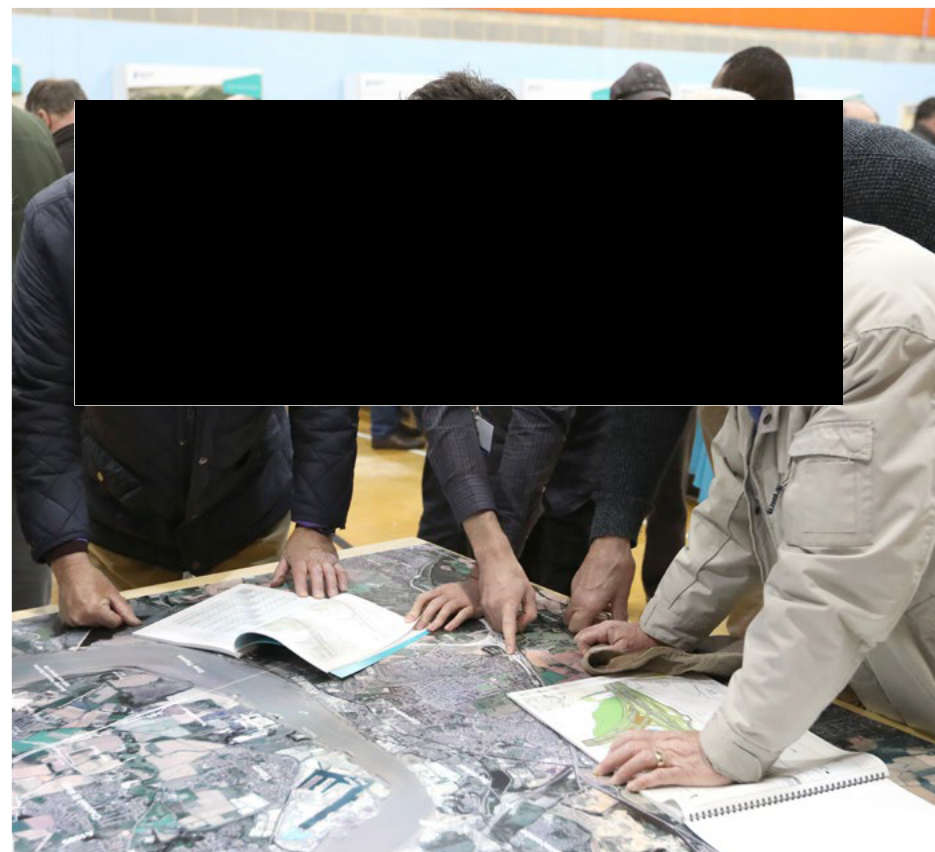
Integrated design team discussion

3.3. Public consultation and stakeholder engagement

3.3.1. Pre-application consultation on the Project proposals throughout the design development process has sought to engage with and seek participation from different groups of consultees. These include the following:

- a. Statutory stakeholders, i.e. those that are required by the Planning Act 2008 and associated regulations to be consulted on Nationally Significant Infrastructure Projects. These include bodies such as the Environment Agency, Historic England and Natural England, as well as local authorities with responsibilities for land that would be needed for the construction and operation of the Project. They also include statutory undertakers, including companies that own, operate, or use utilities infrastructure such as overhead power lines and underground gas pipelines.
- b. Non-statutory stakeholders, including local businesses either side of the River Thames that would be expected to make use of a new river crossing, environmental groups such as Buglife and the Woodland Trust, and representatives of local amenities and nature reserves such as the Thames Chase Community Trust.
- c. Community groups such as local residents' associations or church groups, as well as interest groups formed in response to the Project proposals, such as the Thames Crossing Action Group.
- d. People with a defined interest in land affected by the Project, including landowners as well as tenants.
- e. Individuals who may not be affiliated with any of the above groups but who nevertheless have an interest in the development of the Project.

3.3.2. These discussions have been undertaken to take account of their views, gain a full understanding of local constraints and opportunities and get feedback on integration and reinstatement proposals.



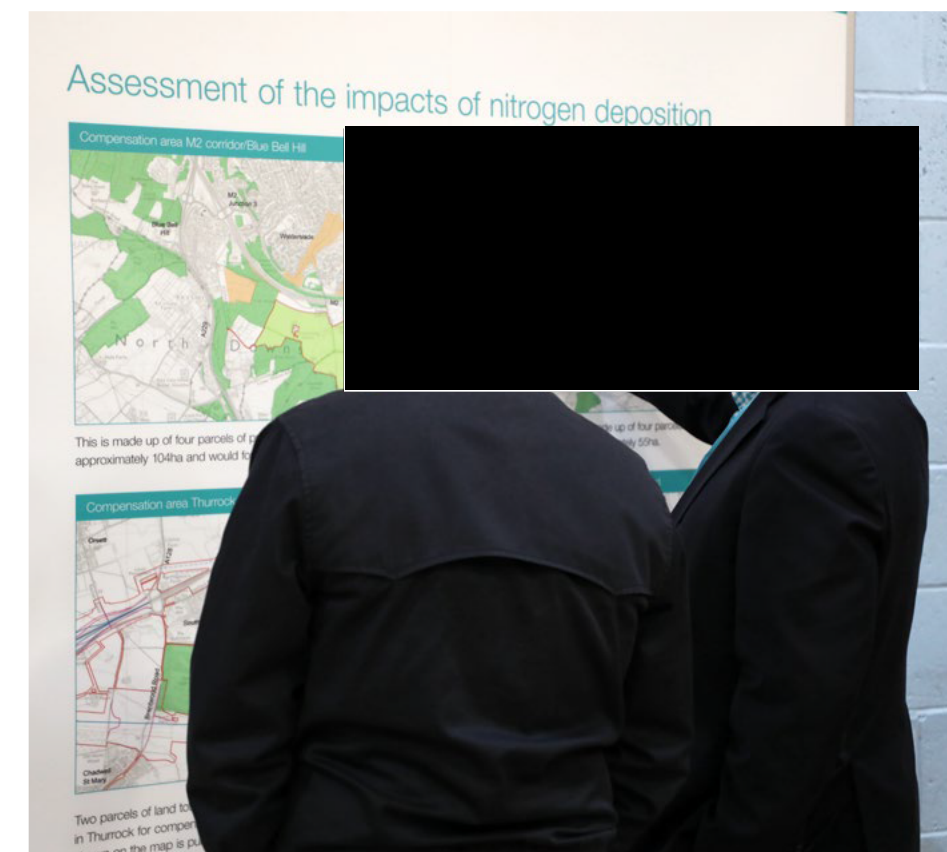
Design Refinement Consultation



Community Impacts Consultation, Chadwell St Mary



Community Impacts Consultation, Brandon Groves Community Club, South Ockendon



Local Refinement Consultation, Cascades, Gravesend

3.3.3. The Project engaged in five rounds of public consultation. These are referred to in this report as:

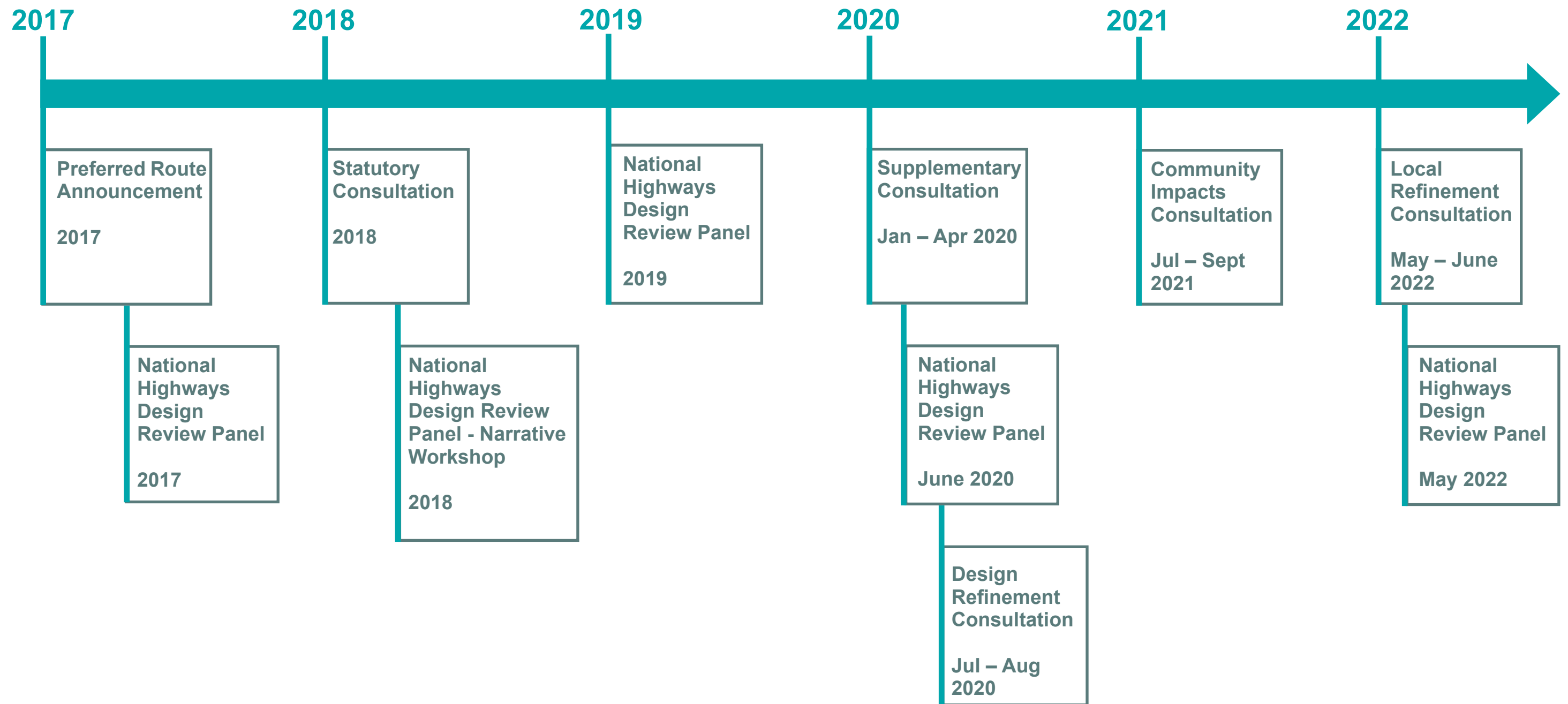
- a. Statutory Consultation
- b. Supplementary Consultation
- c. Design Refinement Consultation
- d. Community Impacts Consultation
- e. Local Refinement Consultation

3.3.4. For further information on the consultation process, please refer to the Consultation Report (Application Document 5.1).

3.3.5. For further information on the stakeholder engagement process, please refer to the Statement of Engagement (Application Document 5.2).

3.3.6. These rounds of public consultation have also been run in parallel with preliminary design presentations of architectural and landscape elements to the National Highways Design Review Panel (see Section 3.4)

Further details on how the Project has responded to the feedback from stakeholders and consultation at each stage can be found in Project Design Report Part G: Design Evolution



Timeline of public consultations and National Highways Design Review Panels

3.4. Design reviews

3.4.1. Paragraph 4.33 of the NPSNN notes *'The use of professional, independent advice on the design aspects of a proposal should be considered, to ensure good design principles are embedded into infrastructure proposals.'* It goes on to suggest that the Design Council can be approached to provide this service.

3.4.2. It is also a requirement of the licence, described in Section 2.2 of this report, that National Highways establishes and uses a design panel to advise on design matters and to review schemes in sensitive locations. The National Highways Design Review Panel (NHDRP) was established to review standards and guidance and to provide advice on individual schemes.

3.4.3. The Design Review Panel operates in accordance with the established *Principles and Practice of Design Review (2019)*. This document is widely understood as best practice and it states: *'Design Review is an independent and impartial evaluation process in which a panel of experts on the built environment assess the design of a proposal.'*

3.4.4. The NHDRP panel members are experts in transport and traffic planning, structural and civil engineering, architecture, urban design, landscape architecture, environmental sustainability, public art and design. They use their expert knowledge to evaluate schemes broadly but with particular reference to National Highways Principles of Good Road Design (DMRB GG 103) (National Highways, 2019).

3.4.5. The Project design has been reviewed on five occasions by the NHDRP over the course of its development.

- a. 2017: Review of emerging proposals.
- b. 2018: Workshop review of the Project's draft design narrative
- c. 2019: Review of the Statutory Consultation Proposals
- d. 2020: Review of the Design Refinement Consultation Proposals
- e. 2022: Review of the Community Impacts Consultation Proposals

3.4.6. The 2022 review included design changes, the area around Tilbury, legacy and partnerships, structures, approach to carbon, good design and tender design.

3.4.7. Once the Project received support from the NHDRP on the principles of an overarching landscape-led design narrative in 2018, this was then developed, and the wider stakeholder community was invited to provide feedback on it during mid-2019.

3.4.8. The 2019 review was observed by the affected local authorities and other stakeholders including the Environment Agency, Historic England and Natural England, engaging in more detail to ensure better outcomes for the people, landscape and environment affected by the Project.

- 3.4.9. The reviews were undertaken in the following format
- a. Short presentation by the designer
 - b. Invitation for stakeholders to comment
 - c. Review and discussion by the panel experts

Further details on how the Project has responded to the feedback from the NHDRP can be found in Project Design Report Part G: Design Evolution



National Highways Design Review Panel on the Lower Thames Crossing – March 2019

3.5. Producing a design narrative

3.5.1. The first NHDRP review of the Project in 2017 made the following recommendation:

'This process [next stage of design] should pursue the highest level of ambition. We recommend the design team explore the range of possibilities at the outset, and test these against the range of physical, technical and regulatory and financial constraints. We recommend that the narrative for the scheme is explored and refined through the next stages of the Project, utilised through consultation.'

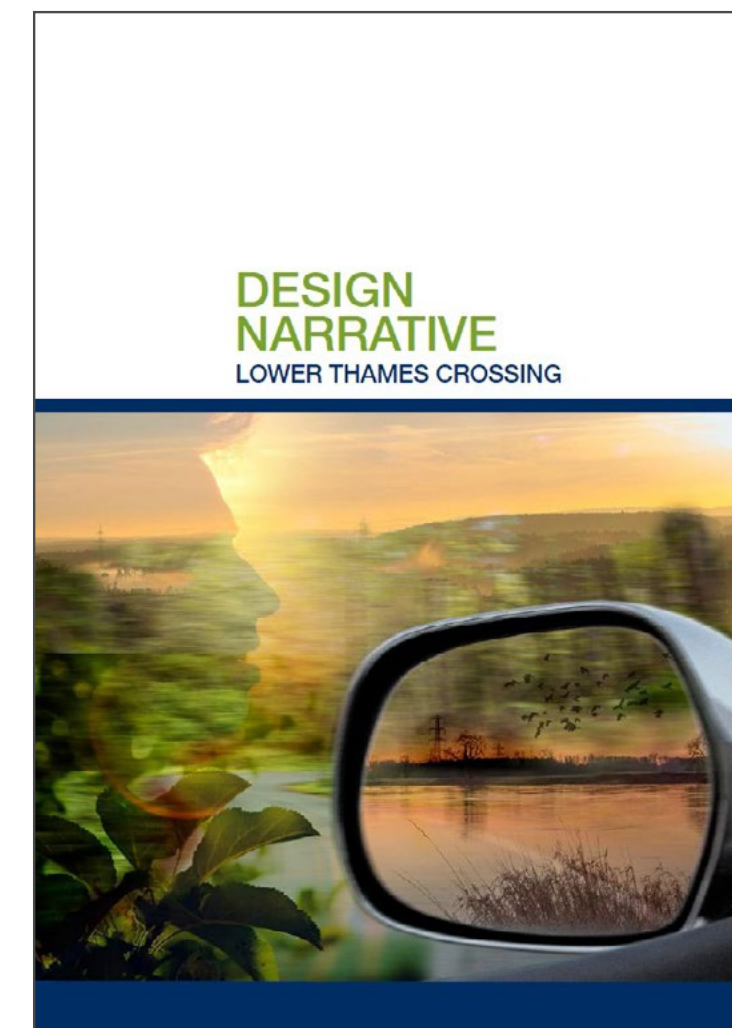
3.5.2. As a result, the Project commissioned the development of the design narrative. This short, illustrated document described the places-specific approaches the team should take to designing the Project, firstly for consent and ultimately for detailed design and construction. It was intended to guide those making decisions about the Project – across the disciplines – and to inform conversations with stakeholders internally and externally.

3.5.3. The design narrative was developed to identify the high-level factors that should shape multi-disciplinary design decisions early in the process and to explain how the design should respond to them in order to:

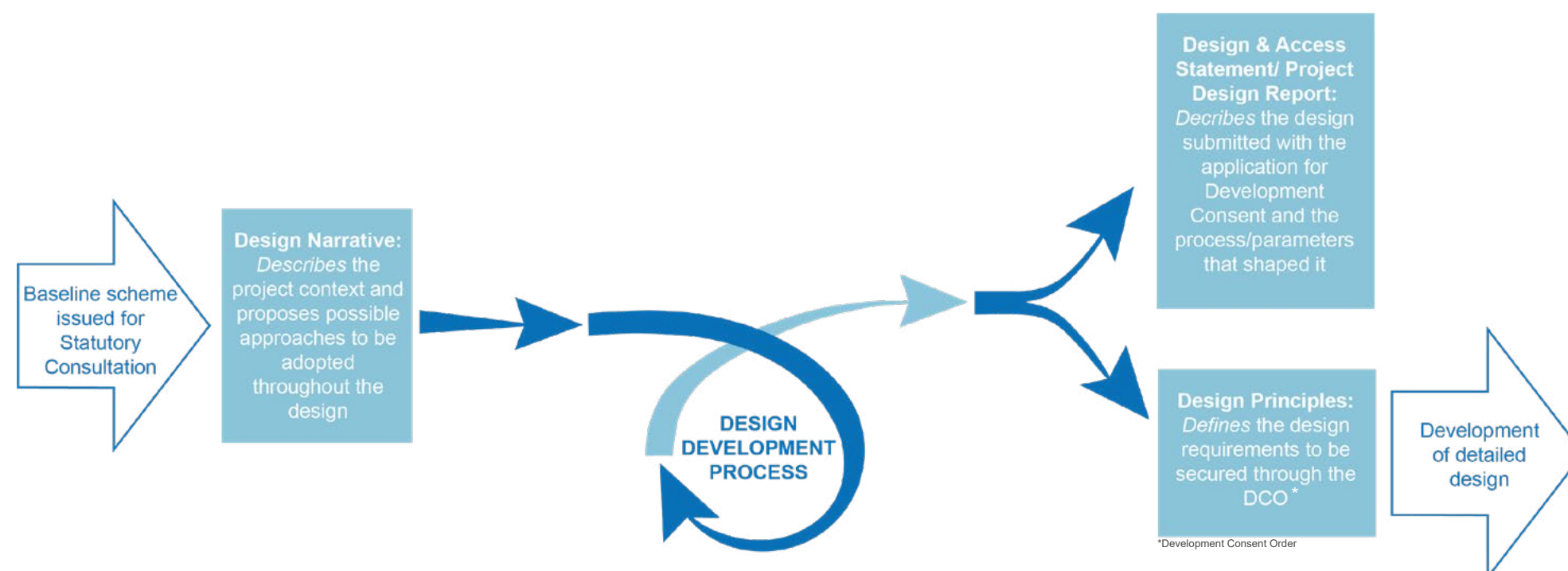
- Achieve the right design for this Project and location (rather than a generic design that could apply to any road project anywhere)
- Achieve the best outcome for local communities
- Achieve the best outcome for the environment
- Meet the technical requirements for construction and operation of the road
- Make the experience of using the route safe and enjoyable
- Make the Project the best it could be overall, consistent with the available budget

3.5.4. The document divided the scheme route down into eight character areas based on local authority landscape character assessments (described in more detail in the following PDR parts), listed the overarching factors that should influence the design, identified opportunities and suggested an appropriate design response.

3.5.5. The draft design narrative document was reviewed by NHDRP and the revised draft circulated to the Project Stakeholders for review and comment. The design narrative and the comments received have influenced both the Preliminary Design during the early stages of the design development and then were used to influence and establish the Project Design Principles (Application Document 7.5) submitted for approval.



Design Narrative



Development process

3.6. Green Infrastructure study

3.6.1. Another key document in the development of the design proposals for landscape was the Green Infrastructure (GI) Study commissioned by the Project. Further information on the Green Infrastructure Study is provided in the Planning Statement Appendix D – Open Space and Green Infrastructure Study (Application Document 7.2).

3.6.2. Paragraph 5.180 of the NPSNN states:

'Where green infrastructure is affected, applicants should aim to ensure the functionality and connectivity of the green infrastructure network is maintained and any necessary works are undertaken, where possible, to mitigate any adverse impact and, where appropriate, to improve that network and other areas of open space, including appropriate access to new coastal access routes, National Trails and other public rights of way.'

3.6.3. The purpose of the GI study was to provide the conceptual perspective or 'bigger picture' for the delivery of large-scale GI as part of the design and mitigation to be delivered by the Project, demonstrating that existing and proposed GI connects and enhances communities and wildlife at the sub-regional and regional scale.

3.6.4. Its development involved identifying, mapping and assessing existing GI assets and their connectivity. This was followed by review of relevant planning policy and engagement workshops with stakeholders to identify potential improvement projects.

3.6.5. Specialists in design; walking, cycling and horse riding (WCH) routes; and environment and town planning used this document to inform and design landscape mitigation that would be of most benefit to the network of existing green infrastructure and to the green infrastructure projects identified by our stakeholders.

3.6.6. As a result of this collaboration and focus on green infrastructure, the Project is proposing seven green bridges designed to be multi-functional: reducing severance for ecology; providing a better experience for WCHs; and contributing towards mitigating the Project's impacts on landscape character.

3.6.7. An example of the benefits of this approach can be found around the Ockendon Link. Here proposals to connect and improve existing WCH routes were designed to complement the Thames Chase Plan (2014) strategy for landscape regeneration through enhanced connected woodland and green space. This includes improved access through enhancements to the 'Forest Circle' and creation of interconnected 'Greenway' routes through and around the Thames Chase area.

3.6.8. Furthermore, Orsett Fen was identified as a potential area for restoration to an extensive wetland landscape as part of the Essex Wildlife Trust project, 'the Lost Fens'. Restoration of historical fen landscape has also been a long-term aspiration for the group Land of the Fanns as part of their 'Rediscovering the Lost Fens' project.

3.6.9. The Project's landscape mitigation within the Ockendon Link therefore includes wetland creation and new water vole habitat. Over and above the visual and biodiversity benefits of this new form of habitat, the proposals would also make the WCH recreational experience here more enjoyable and, potentially, reduce the need for flood compensation on adjacent land.

3.6.10. The creation of wetlands and fen habitats as part of the embedded mitigation in this area adjacent to the route would not preclude the future aspiration of the Land of the Fanns and Essex Wildlife Trust. The creation of a Mardyke Valley Country Park also featured in Thurrock Council's Green Infrastructure Framework Plan (2007) commissioned in support of the development of their Local Plan. The Project's plans are designed to foster this aspiration.



Extract from the plan presented to National Highways Design Review Panel (March 2019) on the relationship between the Project and Stakeholder Green Infrastructure projects

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