

HS2
LANDSCAPE DESIGN APPROACH

July 2016

hs2
engine for growth



The public roof garden at Canary Wharf's Crossrail Place, created as part of the retail and public realm space at the Canary Wharf Crossrail station, provides an attractive and memorable experience for passengers and visitors to the station. ©Gillespies

Preface

HS2 represents the largest infrastructure project undertaken by the UK Government in recent history, with construction expected to commence in 2017. Given the scale and importance of landscape to the project, this Landscape Design Approach (LDA) document has been produced to demonstrate HS2 Ltd's approach to the development of the landscape design along the line of route.

The LDA is being produced to guide designers to achieve a high quality landscape design for the project. The guidance is based on good practice, and has been reviewed by the HS2 Design Panel.

The LDA embraces the HS2 Ltd Vision 'to be a catalyst for growth across Britain', and is based on principles set out within the HS2 Design Vision, which reflects the project's commitment to the role that good design will play in making the project a success. The HS2 Design Vision states that 'designers must work expertly and collaboratively to realise the full potential of HS2.' In this context, the LDA provides direction to ensure that the HS2 landscape design integrates and responds successfully with all other design areas of the project.

Cover image: ©mexrix

The LDA sets out clear aspirations for the landscape design to fuel the thoughts of designers and builders in order for it to be functional, work well and respond sensitively in terms of scale to the landscape context along the line of route.

The landscape design will also be required to deliver on global challenges such as the effects of climate change and health and well being and how it can contribute to the wider economic and growth targets of the HS2 vision, by supporting community benefits, local economies and promoting sustainability, culture, biodiversity and art.

The LDA provides the framework and inspiration to deliver a landscape design for HS2 'beyond business as usual' within the scope and means of the project, setting new standards of design for an infrastructure project, delivering growth and creating a legacy for local communities.

Note

Images

The images within this document have been selected to show good practice in a variety of different landscape design scenarios. They should not be taken literally, but instead illustrate the design quality and ideas that HS2 aspires to.

Introduction

Purpose of this document

The purpose of this document is to guide and direct the landscape design approach for HS2. The approach based on principles set out within the HS2 Design Vision reflects the project's commitment to good design. It presents the design aspirations for HS2, to ensure that the project can achieve its full potential through design and construction stages to post-construction management.

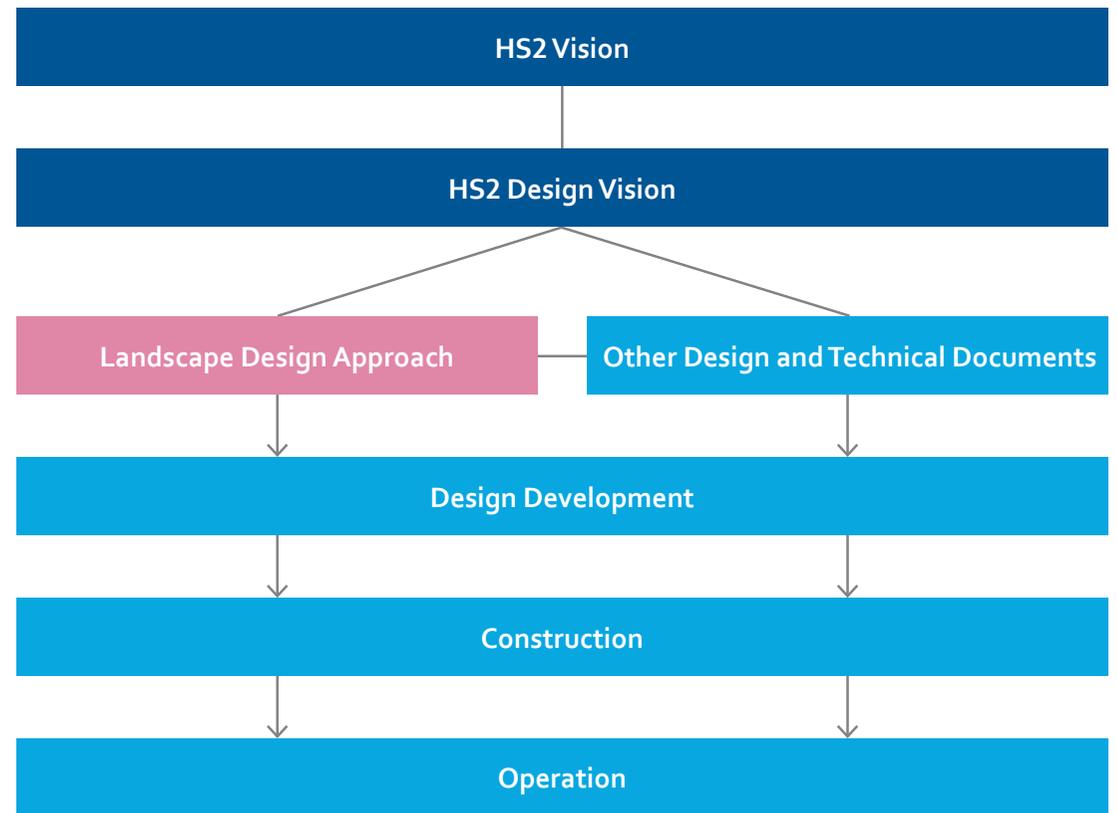


Diagram showing the context of the LDA in relation to other HS2 guidance and standards.

What is landscape?

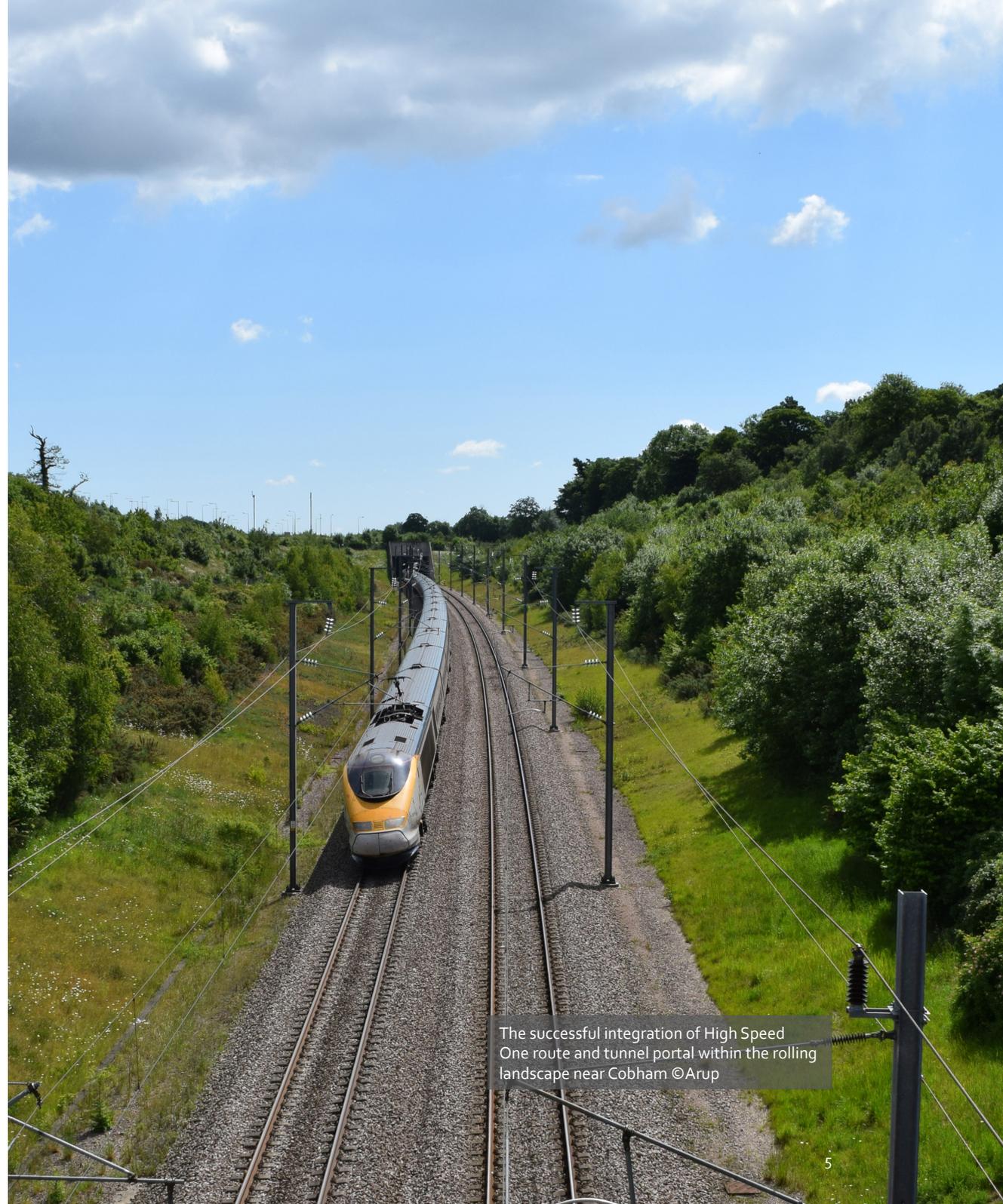
Landscape is a complex and all-embracing subject area. The European Landscape Convention (ELC) definition of 'landscape' is:

'...an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.'¹

Therefore landscape is not just about trees, but it is about the complex relationship between people, place and time, which is a product of the interaction of the natural and cultural components of our environment, and how they are understood and experienced by people.

Our landscapes are formed of the interrelationships between many elements including the underlying geology, soils, topography, land cover, land use, climate, weather and hydrology. Landscape also holds historical and cultural associations and specific perceptual and aesthetic qualities including people's memories and associations.

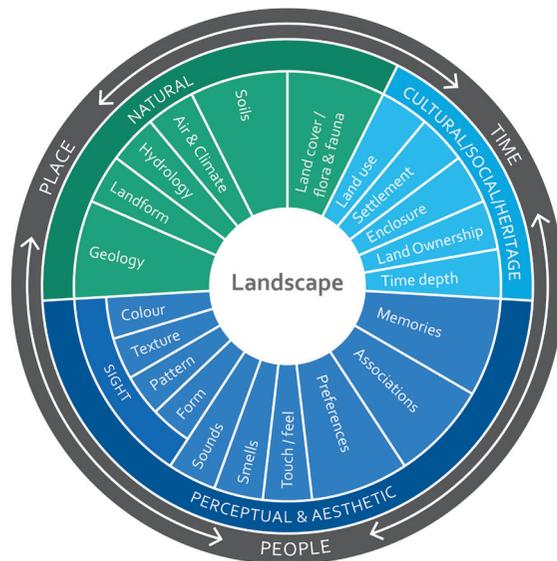
¹ Council of Europe (2000), European Landscape Convention, Florence, October 2000



The successful integration of High Speed
One route and tunnel portal within the rolling
landscape near Cobham ©Arup

Introduction

The role of landscape design



'Sensitive, informed, and integrated approaches help to conserve, enhance, restore and regenerate landscapes that are attractive, diverse and publicly valued, showing that environmental, social and economic benefits can go hand in hand.'

Diagram based on 'An Approach To Landscape Character Assessment' - Natural England, 2014

The landscape design is pivotal in helping realise the HS2 Ltd Vision, because it provides the means to achieve project aspirations that will significantly contribute to its success.

The landscape design will create a positive lasting legacy, responding to the scale and extent of HS2 infrastructure and its components with the local landscape context along the line of route. It is also intended that the landscape design delivers a strong identity to the scheme, including the creation of bold new landscapes and transformational public spaces and places that will help generate and support economic growth.

Achieving good design will require a collaborative approach, where all the design elements of the project can be successfully brought together in an integrated way, whilst also respecting the operational and maintenance requirements of a high speed railway. Landscape design can make a huge contribution to this integrated design approach, because of its unique qualities as a unifying element. By acting as the 'glue' landscape design can help to merge and consolidate the work of other design areas of the HS2 project, including the engineering,

architecture, ecology, noise, highways, recreation, agriculture and heritage.

The scope of landscape design is wide and all-embracing. Along with new landscapes and public places, it will deliver environmental requirements such as visual screening, and appropriate settings for a host of engineering design and architectural elements, including structures and buildings .

The landscape design will also provide the means to restore agricultural land, build-in noise mitigation, create new ecological habitats and features, provide recreational spaces, opportunities for land art and settings for heritage features and historic landscapes, and promote the integration of footpath, bridleways and cycle routes.



A21 Lamberhust Bypass land bridge

A good example of integrated design with landscape acting as the unifying element to bring together engineering design and structures with ecological design. On HS2, the tree and shrub planting would be required to set back from the edge of the bridge.

©Richard Jevons / Fira

Introduction

Landscape context

Understanding the diverse character, unique patterns and subtleties of the landscapes through which HS2 is planned is the starting point in developing an effective landscape design for the project. This will require an understanding of landscape in its widest context, including the natural, cultural, social, heritage, perceptual and aesthetic qualities of the landscape.

Landscapes are fundamentally defined by the relationship between people and place. Landscape character assessment is a widely accepted method of systematically explaining these relationships, together with the economic, social, cultural and historical aspects of the landscape, making it possible to identify broad similarities over large areas from Natural England's National Character Area (NCA) profiles, down to locally distinctive details.

As well as providing a valuable baseline against which to judge the effects of future changes to the landscape, landscape character assessment can be used as a powerful design tool. Natural England's 'An Approach to Landscape Character Assessment' provides useful information in considering the different design approaches

that are required to recognise and improve the landscape as a resource. Landscape Character Assessment will provide the understanding of the local characteristics of the landscape along the HS2 route.

The design approach to be adopted will therefore be guided by the condition and value of the landscape together with local context. Landscape design is always 'site specific' and driven by a wide range of contextual considerations. The manner in which these design approaches are implemented may vary from one location to another.

These include the physical characteristics of the landscape, along with cultural, social and heritage considerations and with perceptual and aesthetic qualities. The following diagrams are intended to illustrate general approaches that could be adopted for a range of landscape types to maximise the integration and benefits of HS2.

The following diagrams are intended to illustrate general approaches that could be adopted for a range of landscape types to maximise the integration and benefits of HS2.



Conserve

A sensitive high value landscape is likely to require a landscape design approach that creates significant screening and integration of HS2, but also develops measures that will conserve and enhance the overall landscape character.

Design measures will depend on local context, but may include subtle earthworks designed to integrate HS2 and respect distinctive local topography. Planting design to replicate local patterns, and reconfiguring agricultural land to retain existing field sizes and patterns. Where practicable, local materials and styles will be selected to enhance landscape settings and recreate locally distinctive landscape features.



Enhance

A landscape in which HS2 may be potentially highly visible is likely to require a bold landscape design approach to create effective screening and integration, but also gives the opportunity for enhancement of local landscape character.

Measures may include large scale earthworks to integrate HS2 into the landscape, acting with large scale woodland planting to integrate the railway and screen noise barriers. Connected networks can be developed to enhance and link local water bodies, streams and waterways with woodland, field and hedgerow habitats to deliver overall landscape enhancement.



Restore

HS2 may traverse a landscape that has lost or is losing original features and qualities that provided its intrinsic landscape character. The opportunity is to restore and significantly improve existing landscape character.

The approach required may be gently graded earthworks that fit with distinctive local topography, whilst also providing visual screening. Extensive woodland and hedgerow planting to screen and integrate the railway whilst also rebuilding the local landscape pattern and restoring its character. Reconnected cycle and pedestrian routes will help to promote permeability.



Transform

Some areas through which HS2 is planned may be in very poor landscape condition, or are of a character that HS2 can bring bold transformation that can also provide wide benefits and support local economies. The opportunity for HS2 bringing transformation and wide reaching positive landscape change may occur both in rural and urban locations.

Public open space for local community and businesses may be created to include a range of leisure and recreational activities. Distinctive earthworks and artworks can be combined with water bodies and woodlands to create bold new spaces to link with the wider landscape and public rights of way networks.

HS2 Design Vision

Applying the vision to landscape

The HS2 Design Vision was developed to embrace the HS2 Ltd Vision and provides the means to achieve it. It sets out three core design principles of people, place and time. In order to achieve the HS2 Design Vision the landscape design approach directly relates to the core design principles as follows:

People

The HS2 landscape designers will continue to work with communities and stakeholders to understand their needs and aspirations, the local landscape context and the arising opportunities for social, economic and environmental benefits.

Place

The HS2 landscape designers will work with the notion that each part of HS2 is an opportunity to achieve the wider benefits that the UK government is seeking to achieve. The objective is to deliver a scheme for HS2, that responds and relates to the local characteristics along the line of route, supporting quality of life and demonstrating an environmentally sensitive design approach.

In many places, this may be about the sensitive integration of HS2 into the local landscape through a conservation, restoration or enhancement design approach. In other places, local context may require the creation of bold new landscapes and places that will contribute to the regeneration of areas and communities, and boost economic growth.

Time

HS2 is an investment in the future. It is designed to provide quality transport for generations to come. This ambition is reflected in the 120 year design life of the project. The HS2 landscape designers will be committed to ensuring that wherever possible the materials are designed to last, and will enhance with age over time.

The HS2 landscape will also be designed to be adaptable to environmental change and wherever possible to add beauty to the landscape. Management measures will be developed to ensure that the design will enrich and develop to provide a continual enhancement of the landscape over time.

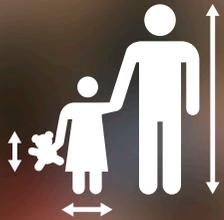
Landscape design approach

To achieve the HS2 Vision the landscape designers will adopt high levels of creativity and innovation in order to achieve an exemplar landscape design for the project. Designers will work from a thorough understanding of the urban and rural landscapes through which HS2 is planned.

Through engagement with local stakeholders, they will develop an understanding of local landscape context and requirements. At the same time they will work collaboratively with all other project design disciplines to deliver an integrated and holistic landscape design for the railway.

They will also deliver on global challenges such as climate change, health and well-being and also support community benefits, local economies and promote sustainability, culture, biodiversity and art.

Every landscape design task will be considered as critical in order to meet the Design Vision with a clear aim of bringing all design elements together to achieve success.



People

Design for everyone
to benefit and enjoy

- 1 Design for the needs of our diverse audiences
- 2 Engage with communities over the life of a project
- 3 Inspire excellence through creative talent



Place

Design for a
sense of place

- 4 Design places and spaces that support quality of life
- 5 Celebrate the local within a coherent national narrative
- 6 Demonstrate commitment to the natural world



Time

Design to stand
the test of time

- 7 Design to adapt for future generations
- 8 Place a premium on the personal time of the customers
- 9 Make the most of the time to design

HS2 Design Vision

Wider benefits

HS2 will be directly responsible for the landscape areas set within the Act limits. However, it is acknowledged that the landscape design has the opportunity to act as a driving force for the project, by influencing the surrounding environments in a positive way, and by providing opportunities to achieve wider benefits.

These photo illustrations summarise the wide range of opportunities that the landscape designers will consider as part of the development of the HS2 landscape design.



Add landscape beauty



Promote green buildings



Create urban forests



Encourage local community collaboration



Celebrate views



Enhance agriculture



Celebrate heritage



Create resilience and legacy



Promote sustainability and inclusion



Create new landforms



Understand and respond to local landscape character

Images: ©Shutterstock | Arup | Flickr CC | Wikimedia CC | The Rubens Hotel | Paul Carstairs | LDA Design | Trudi Entwistle | Yves Adams | Adam Edwards



Improve urban microclimates



Develop healthy networks



Collaborate with local development



Promote natural play



Exhibit Seasonal change



Support local economies



Encourage habitat creation



Promote renewable energy



Promote sustainable water systems



Establish Green infrastructure



Encourage creative management



Promote positive use of excavated materials



Encourage positive integration of structures



Promote new and traditional skills



Promote Art, culture and entrepreneurship

HS2 Design Vision

What landscape design success looks like

- The landscape design works intuitively and well for all audiences.
- The landscape design seamlessly integrates the designs of all other HS2 disciplines.
- The design delivers landscape beauty wherever possible.
- All landscape design elements are built to last.
- All landscape design elements are sensitive to their context.
- National pride in the landscape design is matched by a sense of local ownership.
- The landscape delivers local community and economic benefits and supports health and well-being.
- Small landscape elements and larger landscape design responses meet rigorous environmental standards.
- Collectively the landscape design adds to our cultural and natural heritage.
- The landscape designers have designed in the needs of the future including building-in resilience to the effects of climate change.
- Through effective management arrangements the HS2 landscape design will continually enhance the HS2 railway environment as it evolves and matures into the future.





High Speed One railway is a good example of the benefits that can be achieved through an integrated landscape, engineering and ecological design approach ©Arup

HS2 Design Vision

Landscape design methodology

The designers are to follow an agreed methodology to develop the HS2 landscape design. This comprises a series of logical steps involving stakeholder engagement as a critical part of the design process.

Step 1: Understand the landscape

In this stage the designers are to gain a full understanding of the landscape context of HS2 (for their project area). This knowledge will inform future design and management decisions along the line of route. Relevant national, regional, county and local landscape character assessments (LCA) are to be studied, along with early scoping studies, Environmental Impact Assessments or related cultural, social and economic studies. This work is to be reinforced through detailed desk study and field work.

Step 2: Identify opportunities for landscape

In this stage landscape constraints and opportunities for each study area will be developed by the designers. To inform this stage, reference will be made to the landscape effects and recommendations reported in the HS2 ES. Further field work will also be undertaken to verify landscape opportunities.

Step 3: Develop integrated landscape design options

To achieve an integrated landscape design for the project, designers will work collaboratively with the wider project teams, e.g. engineering, architecture, ecology, drainage, noise, highways, recreation, agriculture and heritage, to develop integrated landscape design solutions and options for review.

This approach will allow mutual benefits to be created within the design, e.g. multifunctional design opportunities, where for example, an earthworks can be used to substitute a noise barrier or a flood storage area, that will also support habitat creation.

As previously discussed, landscape is a principal unifying design element, and the HS2 landscape designers will take a proactive approach in seeking the best integrated design solutions for the parliamentary design.

Step 4: Test options and refine parliamentary design

The design options will be tested and refined at this schematic design stage, which will involve discussion with stakeholders. The agreed design solutions will then be developed and refined.

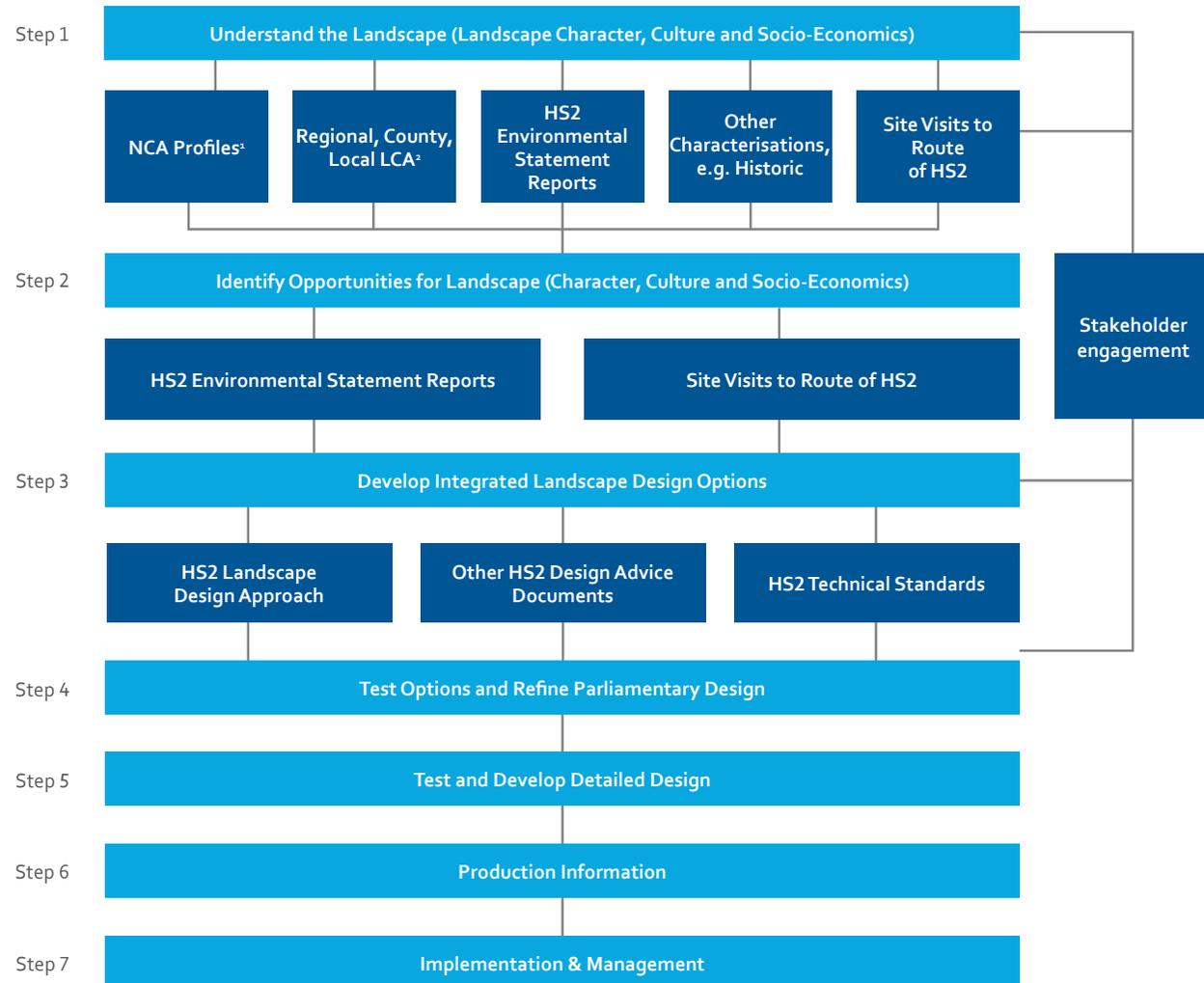
Step 5 to 7: Test and develop detailed design

The agreed landscape design options from Step 4 will be developed into detailed design. This will be supported by production information and taken through to implementation and long term management.

All stages of design development will involve an iterative process of reviews and evaluation to ensure the best integrated design solutions.

Diagram showing the methodology that will be followed by landscape designers to develop the HS2 landscape design.

¹NCA: National Character Areas
²LCA: Landscape Character Areas



Landscape scenarios

Introduction

This section presents three aerial landscape scenario drawings to illustrate the HS2 landscape design approach. The scenarios demonstrate how the range of components of the scheme including the route engineering, highways, building and structures will be brought together and integrated through the landscape design.

The drawings are not intended to show specific locations along the HS2 line of route, but are nevertheless grounded in reality to illustrate inspirational scenarios and ideas that will be considered for the HS2 landscape design in its many and varied places through which this modern railway infrastructure is planned.

Additional design approach information can be found in the following section of the LDA.



High Speed 1 - Green Tunnel and landscape integration at Mersham, Kent ©Hawk Publications

Landscape scenarios

Temporary landscape

The construction of HS2 will take a number of years, which provides the opportunity for the creation of attractive temporary landscape features in selected locations. The aim is to deliver features that are attractive but practical and these may be for example ecological, art based or informative, and may also provide visitors the opportunity to view and be informed about the project and its construction operations.

Depending on context and location, these features may also act to positively address visual, acoustic or environmental effects of HS2 construction works. Designers are to consider local stakeholder involvement in their formation and management. The scenario on the opposite page depicts potential opportunities in both rural and urban locations.



Wildflower seeding to add interest to temporary soil stockpiles ©Arup



Opportunity to use materials won from site, such as logs, for community use outside of construction sites ©Jessica Lucia



Temporary earthworks could also function as artworks or observation areas ©Trudi Entwistle



Hoarding provides screening where required but can also be artistic, educational and informative ©Arup

Landscape scenarios

Examples

This artwork example is formed from different species of grass. It focuses on the contrast between the natural topography of the landscape, and the strong geometry of the man-made Lower Laithe reservoir site, with the patterns of linear walls and field boundaries that form the backdrop.



Fields of Vision ©Trudi Entwistle

The temporary construction hoardings around King's Cross regularly play host to art installations. These are designed for a specific place and for a temporary period of time, using mixed-media.



Hoarding provides screening where required but can also be artistic, educational and informative ©Arup

Community and visitor features

Temporary earthworks and planting features that can provide landscape enhancement and construction site observation areas for the community and visitors

Advanced planting

New temporary planting and seeding to screen construction at interface with existing road. Use fast growing tree species

Advanced planting

Advanced permanent or temporary hedgerow and woodland planting to enhance local landscape character

Advanced planting

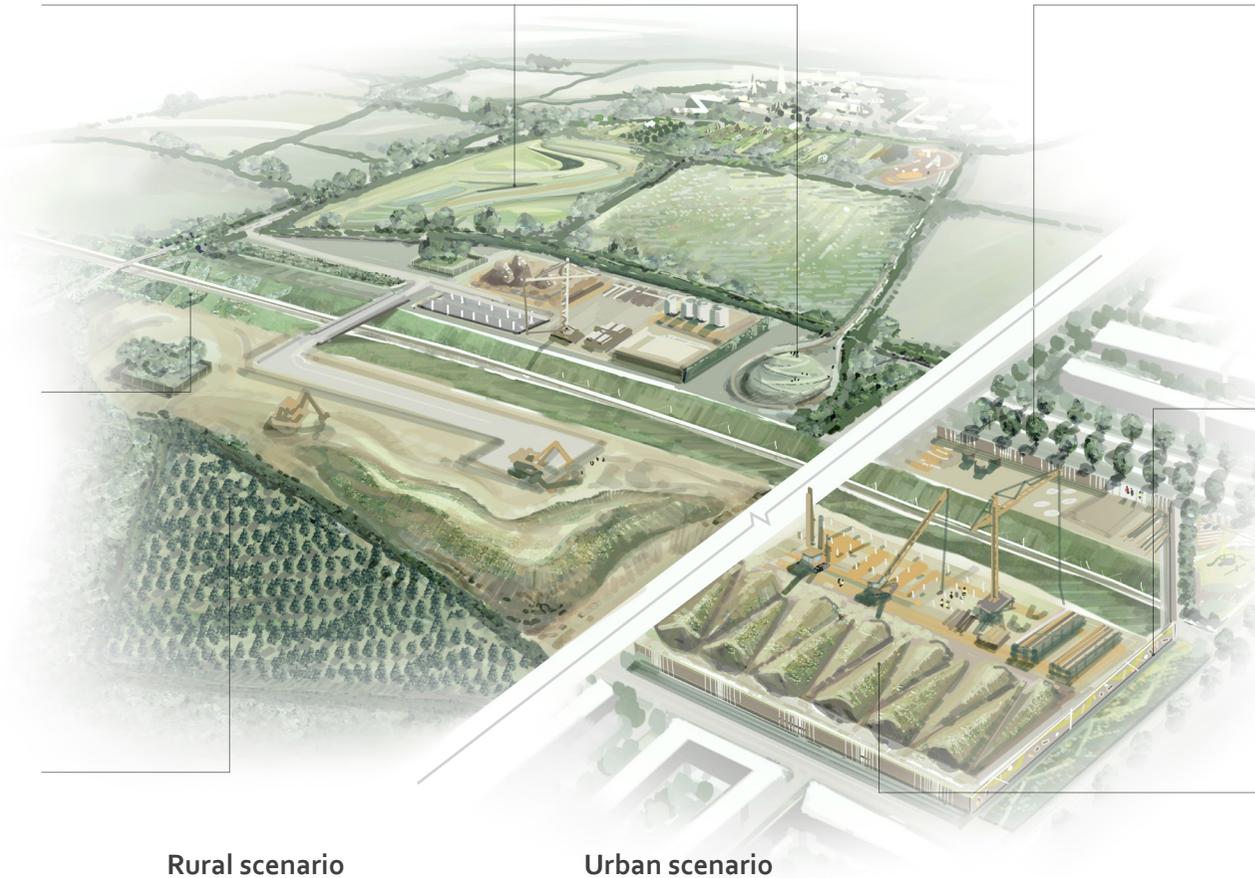
Construction site off-set with meadow seeded edge and advanced temporary or permanent tree planting

Construction site boundary treatment

Semi-permeable hoardings provide screening but allow selected views of construction operations. Hoardings can also provide information and art

Promote art and culture

Temporary land art to enhance the local experience of place. These features could also be designed to provide observation areas for the community and visitors



Rural scenario

Urban scenario

Landscape scenarios

Rural landscape

The design will seek to respect and enhance the high value landscapes that are effected by the HS2 line of route. This includes nationally, regionally and locally designated landscape areas. Consultation with local stakeholders will be undertaken in order to understand the landscape context and the particular qualities of protected landscapes. The creative design of the landscape earthworks and planting design will look to effectively screen and integrate the railway and associated structures and features. The landscape design will seek to enhance the features and qualities that give the landscape its particular value. Future management requirements will also be an important consideration in retaining and enhancing local landscape character.



A sunken lane characteristic of the Chilterns ©Paul Maguire



Conserve or enhance key views to historic buildings ©Jason Salmon



Hedgerow planting and the use of local materials ensures local character is preserved in the Chilterns ©David Hughes

Support local economies

Woodland planting to integrate railway could also be locally managed as coppice woodland, which respects historic landscape character and traditional woodland management

Positive use of excavated materials

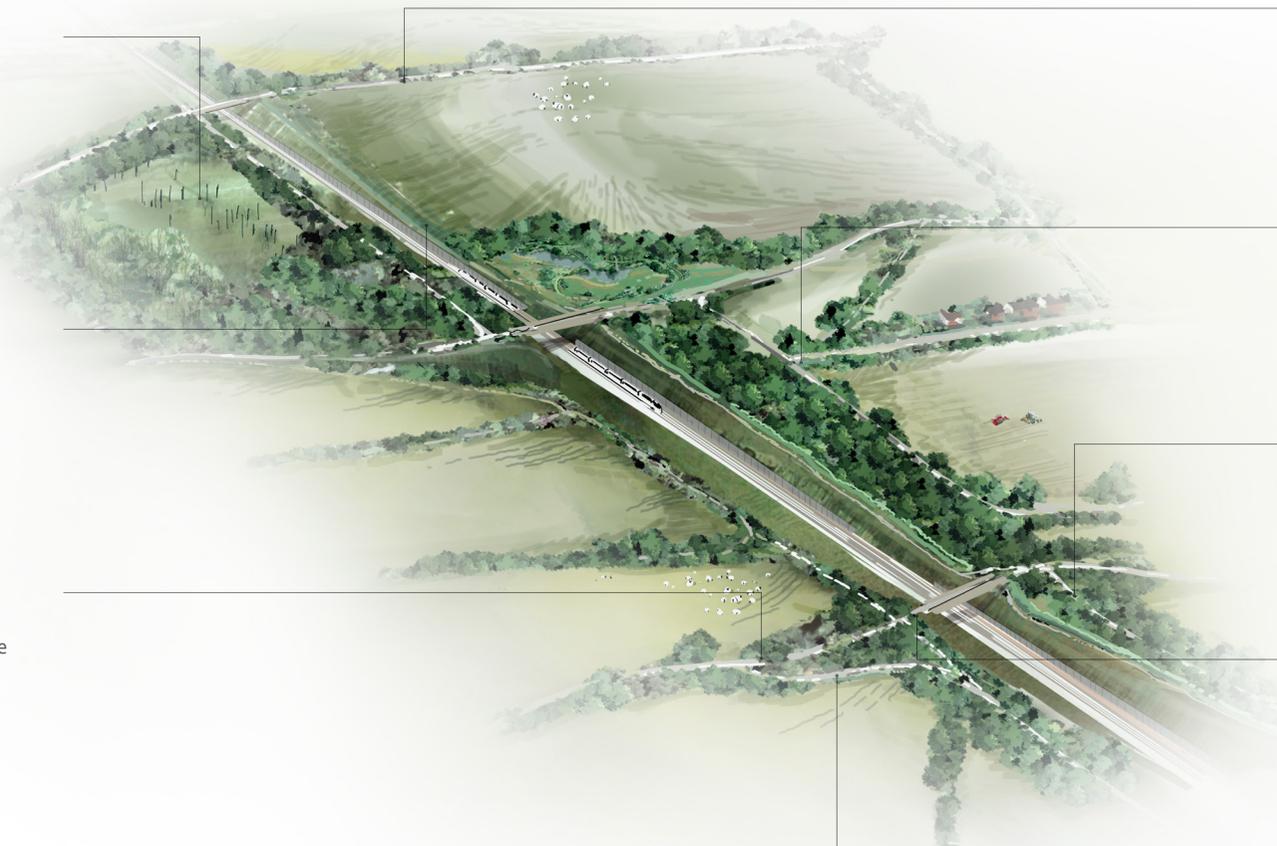
Excavated material carefully designed to screen views of HS2 from local receptors, and returned to agriculture. Contouring to be natural and reflect the character of local topography

Community and visitor features

Earthwork and planting features that can provide landscape enhancement and HS2 observation areas for the community and visitors.

Promote local walking & cycling network

Provide opportunities for enhancing health and wellbeing in publicly accessible areas. Look to recreate local landscape features



Conserve or enhance local landscape character

Hedgerows with tree species reinstated and enhanced to reflect landscape character and reconnect locally fragmented planting areas

Access

Severed routes will be reconnected and integrated into wider access networks

Planting character

Planting area to be shaped to respond to the scale and character of local planting and earthwork patterns

Positive integration of structures

Earthworks and large scale planting used to integrate realigned bridge structure with the local landscape

Landscape scenarios

Urban landscape

Good design looks to create an effective public realm and landscape setting to enhance the local urban context. The focus is to be on a design approach to the urban landscape that considers good microclimatic design, green infrastructure, multifunctional design, permeable surfacing and sustainable water systems to build in climate change resilience and deliver social, environmental and economic benefits to local communities. The designers will consider all components in an urban context including the appearance and careful integration and alignment of new buildings, structures, fencing and noise barriers. The potential for incorporating renewable energy on HS2 associated buildings will also be investigated.



Bridge integrated with adjacent parkland. Buffalo Bayou, Texas ©Ed Uthman



Pedestrian paths link to wider pedestrian networks and footbridges, Hinge Park ©Payton Cheung



An example of the ecological and aesthetic benefits of green and brown roofs ©Arup



This unique sculptural installation, by Claes Oldenburg creates a landmark feature within the landscape ©FaceMePLS

Promote habitat creation

Compensation pond integrated within landscape designed to be natural in appearance. This provides an opportunity for marginal planting and habitat creation in an area where it might not otherwise be possible. It also provides visual interest for both local residents and HS2 passengers

Create new features

Opportunity to create a high quality, eye catching and well integrated piece of infrastructure

Promote wider walking and cycling networks

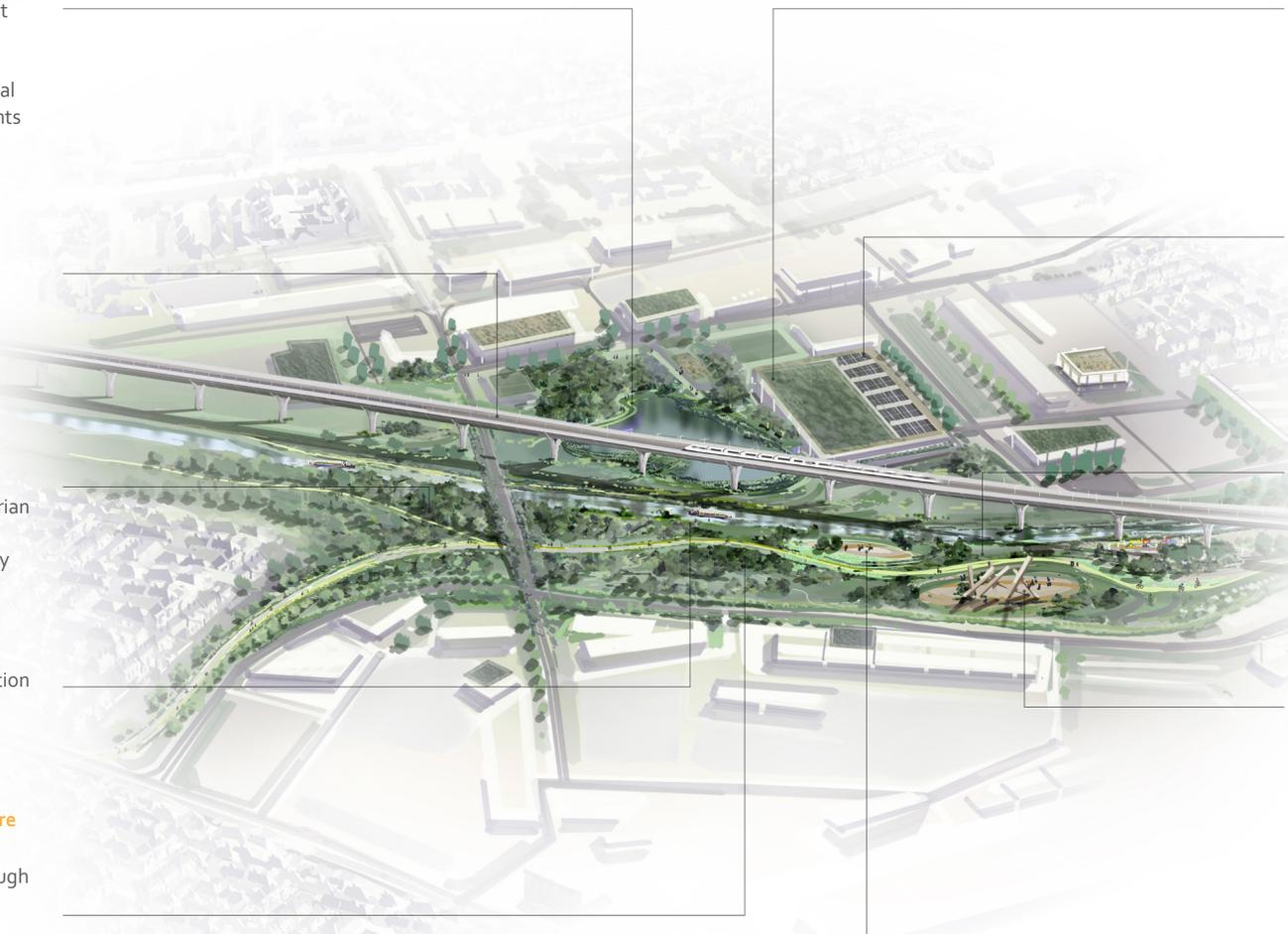
Opportunity to create convenient cycle and pedestrian networks for increased connectivity and permeability

Habitat creation

Opportunity for habitat creation along canal edge and within associated open spaces

Promote green infrastructure

The creation of green infrastructure networks through the greening of redundant land, and the introduction of green and brown roofs and positive improvement of urban microclimate



Promote sustainable water systems

Opportunity for rainwater harvesting and grey water recycling on proposed buildings

Promote renewable energy

Opportunity for photo-voltaic cells on HS2 associated buildings along with green roofs for habitat

Art and culture

Opportunity for high quality art installations and landforms that enhance views from the train, create local points of interests and are educational

Natural play

Opportunity for natural play or community facility to be incorporated within proposed open spaces

Engender community benefits

Embed recreation into publicly accessible spaces and link into strategies for the wider area such as existing public rights of way

Landscape design approach

Introduction

This section sets out the design approaches that will be taken by the HS2 landscape designers for the range of HS2 project components:

- ▶ Temporary works
- ▶ Earthworks design
- ▶ Landscape interfaces with buildings and structures
- ▶ Public realm
- ▶ Public open space, recreation and play
- ▶ Highways
- ▶ Accesses
- ▶ Planting
- ▶ Grassland
- ▶ Soil
- ▶ Water
- ▶ Heritage and culture
- ▶ Ecology
- ▶ Environmental barriers
- ▶ Fencing
- ▶ Retaining walls
- ▶ Management



Temporary works



Fields of Vision ©Trudi Entwistle

Design approach

The construction of HS2 will take a number of years. This will provide a unique opportunity to create a range of temporary landscape features and measures that will help reduce the impact of construction works and enhance the areas around construction sites. Measures may include project information, local cultural and educational information or may comprise attractive seasonal planting, habitat creation works or temporary art. Temporary features will be installed around construction areas in both rural and urban locations, with consideration being given to the local landscape character and context. Features may be free standing or integrated as part of the construction site hoardings and fencing.



Earthworks design



HS1 tunnel portal ©Arup

Design approach

The landscape earthworks form a major design element for the project. The earthworks will re-use the excess materials that will be excavated to create the route of HS2 in a positive way. So, typically, the landscape earthworks will be designed to create slopes and earth mounding to immediately screen or reduce views of the railway, or gentle slopes and grading will be designed to help the route fit more comfortably within the existing character of the rural and urban landscapes through which the railway is planned. The earthworks will also incorporate agricultural land restoration, enhancements for ecological compensation or be shaped to enhance the settings for heritage features and buildings.



Landscape interfaces with buildings and structures



Attractive landscape setting ©Chetwoods Architects

Design approach

A range of new buildings and structures will be introduced on HS2 including stations, depots, tunnel portals and vent shafts, viaducts, bridges and underpasses. The landscape design for these components will consider the positive design of their external spaces and the settings surrounding them. Depending on available space, the landscape design will consider a wide range of design components including landform and earthworks design, planting proposals, sustainable drainage and finishes and materials that will suit local character. Attention to detail is also an important design consideration to help fit these components in well with their particular rural or urban location.



Public realm



New Road, Brighton is a successful shared space ©Shaw + Shaw

Design approach

The public realm design approach will look to provide visitors and users with a sense of arrival and a healthy environment in which to gather. To achieve this, the public realm areas associated with HS2 will be designed to create new destinations, not just places to pass through. The public realm design will focus predominantly on public open spaces around the stations, with the aim of creating attractive new urban destinations for people, with good shade and shelter and space to wait, meet and socialise. Clear connections to the surrounding streets and spaces will be designed to achieve a well-connected public realm that will help enhance the surrounding urban landscape.



Public open space, recreation and play



Osdorp Oever, Netherlands ©Carve.nl

Design approach

New and relocated open space, recreation facilities and play areas will respond to the local landscape character, and will be designed to create attractive facilities. Access will be a key design consideration to ensure they are welcoming and safe. In addition, there will be focus on creating comfortable conditions including shade and shelter and places to meet and socialise. Clear connections to the surrounding streets and spaces will also be designed to help the new facilities fit well with their surroundings to encourage use, and enhance the local landscape. For play areas natural play will be encouraged, featuring natural elements to extend play value.

Landscape design approach



Highways



A good example of integrated design ©Richard Jevons / Fira

Design approach

Highway design associated with HS2 will focus on connecting new and altered roads and diverted public rights of way to existing routes in a way that seeks to minimise any impacts to these important networks, their users and the wider environment during both construction and operation of the new railway. Slopes and areas around the highways will take account of the adjacent character of local landscapes considering the topography and patterns of vegetation including hedgerows and woodland. Important considerations will be the choice of materials, design of verges, kerbs, retaining walls and the planting proposals.



Accesses



Heatherhall woods ©Smart Community Fife

Design approach

Access covers alterations to existing private routes to property, businesses and farmland (known as accommodation works), plus new access routes to HS2 infrastructure and facilities. Access design will consider local landscape character, and particular attention will be paid to surface materials, signage, verges and the need for kerbs rather than 'standard' solutions. Service areas and car parking areas will be carefully sited and the design will look to avoid over-large areas of hard standing and where practicable permeable surfacing will be used.



Planting



Planting along HS1 provides screening and visual interest ©Arup

Design approach

The planting will be designed to achieve a wide range of functions. This including planting for visual screening and planting to blend the scheme into the landscape and connect with existing planting areas. The planting design will also look to enhance biodiversity by creating rich new ecological areas, new wildlife corridors and, where appropriate, new landmarks and settings. The areas and types of planting will be designed at a scale to match the scale of HS2 and associated infrastructure, and will be designed to fit with the existing character of the rural and urban landscapes, and with national, regional and local planting strategies.



Grassland



Grassland at Queen Elizabeth Olympic Park ©Paul Hudson

Design approach

The area of grassland associated with HS2 will be large and the design opportunity will be taken to create rich and visually attractive grassland areas that are in keeping with, and enhance local landscape character. The design will incorporate a wide range of different grassland types to positively benefit biodiversity and ecology, and also reflect the different local environmental conditions through which the railway is planned. The design will look to create grassland that will support a wide range of species that will also change through the season to create year round interest, and in places will enhance the passenger experience.



Soil



Wildflower meadow on the Green Estate ©James Hitchmough

Design approach

Soil is a precious and important resource for the project. Therefore the handling, storage, preparation and reuse of soils is a critical factor principally in achieving successful agricultural reinstatement works and the planting and seeding design proposals for HS2. Soil along the line of the route will be carefully stripped, stored, ameliorated or conditioned and then reused. The different soil types along the route will inform the design and future management of planting and seeded areas. In many places specific soil types will be developed to support low-maintenance, species rich grassland. This will be beneficial in reducing future management whilst increasing its value for biodiversity.



Water



Thalie Park, France ©Urbicus

Design approach

HS2 will require the provision of many new and realigned watercourses, replacement flood storage areas and wetland habitats. The approach will be to design these features to function well and contribute positively to the surrounding landscape through their alignment, shaping and bankside design. Surface water features will incorporate planting and wetland species for wildlife and habitat creation, where appropriate. Opportunities will also be taken to filter and clean water through natural means, through reed beds for example. For buildings associated with HS2 rainwater harvesting and recycling will be considered.

Landscape design approach



Heritage and culture



The setting of heritage and cultural assets will be carefully considered ©Chrislofotos

Design approach

Heritage and cultural assets will be carefully considered in order to develop suitable landscape design responses. The approach will be to fully analyse and consider the curtilage, setting and context of historic and cultural assets include conservation areas, archaeology, buildings and structures, historic views and landscapes. This will help develop a design response that will look to integrate or relocate assets or provide new design settings that will allow them to be maintained for future generations to enjoy. Proposals will take into account the position of the heritage and cultural asset considering the surrounding topography and landscape patterns.



Ecology



Compensation habitats created near the A421, Bedford ©Aecom

Design approach

The design of HS2 will provide significant opportunities for ecological gain to benefit biodiversity and habitat creation. Diverse planting and seed mixes will be developed across the project in order to maximise habitat types and ecological gain. This strategy will also help provide future biosecurity. Landscape design and planting arrangements will be developed to incorporate ecological requirements and measures introduced to benefit the value and visual amenity of local landscapes. Design approaches will also look to improve ecological links across the landscape and join or rejoin fragmented areas of habitat to strengthen them and encourage the movement of wildlife.



Environmental barriers



HS1 timber environmental barrier ©Arup

Design approach

The purpose of environmental barriers will be to reduce noise and visual impact effects of HS2 on adjacent properties and public places. Where possible earthworks rather than fence type barriers will be used with variations in height being introduced to create a more natural appearance within the local landscape. This is likely to occur more in rural locations. In urban locations noise fence type barriers can be large in scale, and their design will be carefully considered, particularly in sensitive locations where local landscape character will warrant a more site specific design solution than a 'standard' noise barrier design.



Fencing



Discreet fence integrated with landscape adjacent to HS1 ©Arup

Design approach

A large number of different fences will be required for HS2 including security fencing, boundary fencing, agricultural stock-proof fencing and wildlife and rabbit-proof fencing. The approach will be to ensure that the majority of fence types follow a consistent design with height variations depending on the level of security required in specific locations. Fences will be robust but will be visually 'light' in design and typically black in colour so that they blend into a wide variety of landscape settings. Fencing will also be combined wherever possible, e.g. a single fence could fulfil both security and boundary function and also incorporate rabbit proofing. This will help reduce visual clutter in the landscape.



Retaining walls



Retaining wall, Queen Elizabeth Olympic Park, London ©Arup

Design approach

Retaining walls will be necessary on HS2 in constrained situations and the design considerations call for an integrated design approach that considers the local environment in relation to wall height, adjacent embankment treatment, materials, textures and the possibilities of planting as part of the proposals. The landscape approach will be to develop the selection of materials and style to reflect or enhance local character by making reference to local vernacular and design guides. In some locations it may be possible to create pockets or areas for planting and natural colonisation to soften the appearance of retained walls which will also encourage habitat creation and seasonal change.



Management



Advanced planting management strategies on HS1 ©Arup

Design approach

The success of the landscape design will be achieved through the enactment of a long-term management plan. Prior to this the design approach will be to work with future long-term management requirements in mind. So in developing planting and seeding proposals, this will look to use low maintenance approaches that will require less intensive future management techniques. This approach also applies to how hard landscape materials, features and construction details are designed and specified, and durable longer life materials will be favoured. The potential for stakeholder and other organisations to take on future management of parts of the HS2 landscape will also be explored.

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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Document by:
Arup and AECOM

Document Number:
HS2-HS2-EV-STR-000-000010

Document Version:
P02