

Design vision

What is a Key Design Element (KDE)?

HS2 has classified certain structures or parts of the railway as ‘Key Design Elements’, including the River Blythe Viaduct. This means it is important for us to involve the local community in their design.

You can find a full list of the KDEs in Table 1 of HS2 Information Paper D1: Design policy, which is available online from GOV.UK

The River Blythe Viaduct is a significant piece of infrastructure that will connect back to the HS2 Design Vision of People, Place and Time. We want it to respect the local context, environment and social setting.

We have designed the viaduct to do its job effectively, to last 120 years and offer taxpayers value for money in the long term.

The landscape character of the River Blythe and its flood plain is an important aspect in influencing the design of the viaduct. As you can see from these images, the landscape is characterised by:

- A low, lush and flat grazing floodplain
- The natural processes associated with the river and the human influence of agriculture
- A broad skyline framed by woodland on the edges of the floodplain.

We have undertaken an analysis of the landscape and the key viewpoints and set ourselves a design vision which responded to the context. This is based around three key themes:

- Creating a low-lying viaduct that skims the flat landscape, preserving the broad horizons
- Maintaining the separation between the underside of the deck and ground
- A viaduct which emerges from the tree canopies at either end as it crosses the floodplain.



Existing view looking north from River Blythe



View looking south on Meriden Road from the existing bridge



View from Meriden Road looking east towards Patrick Farm, including the proposed Viaduct

River Blythe Viaduct

Design approach

Our design approach

Our design focuses on the principles set out in the HS2 Design Vision document. These ensure that People, Place and Time are considered in all aspects of our work.

We also have paid special attention to the HS2 landscape design approach to ensure that the viaduct suits the surroundings and meets the requirements to conserve, enhance, restore and transform the landscape.

People
Design for everyone to benefit and enjoy

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

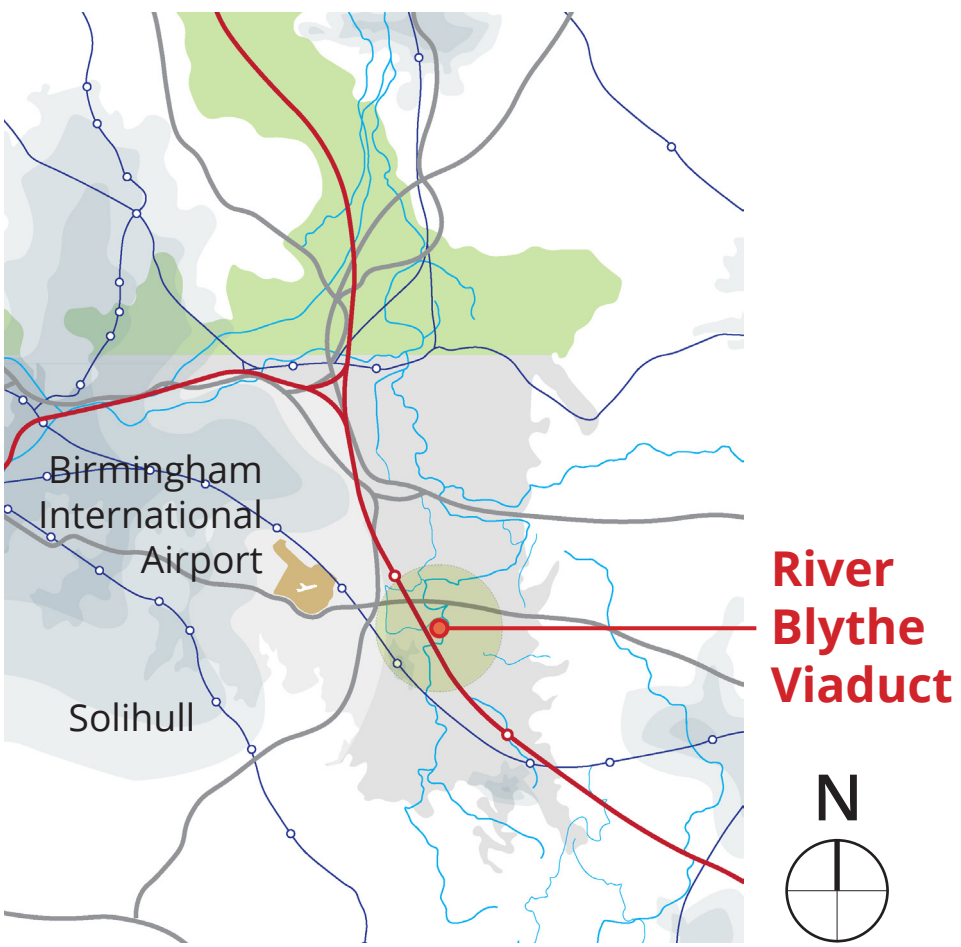
Place
Design for a sense of place

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

Time
Design to stand the test of time

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

HS2 design principles



HS2 landscape approaches

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.



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.



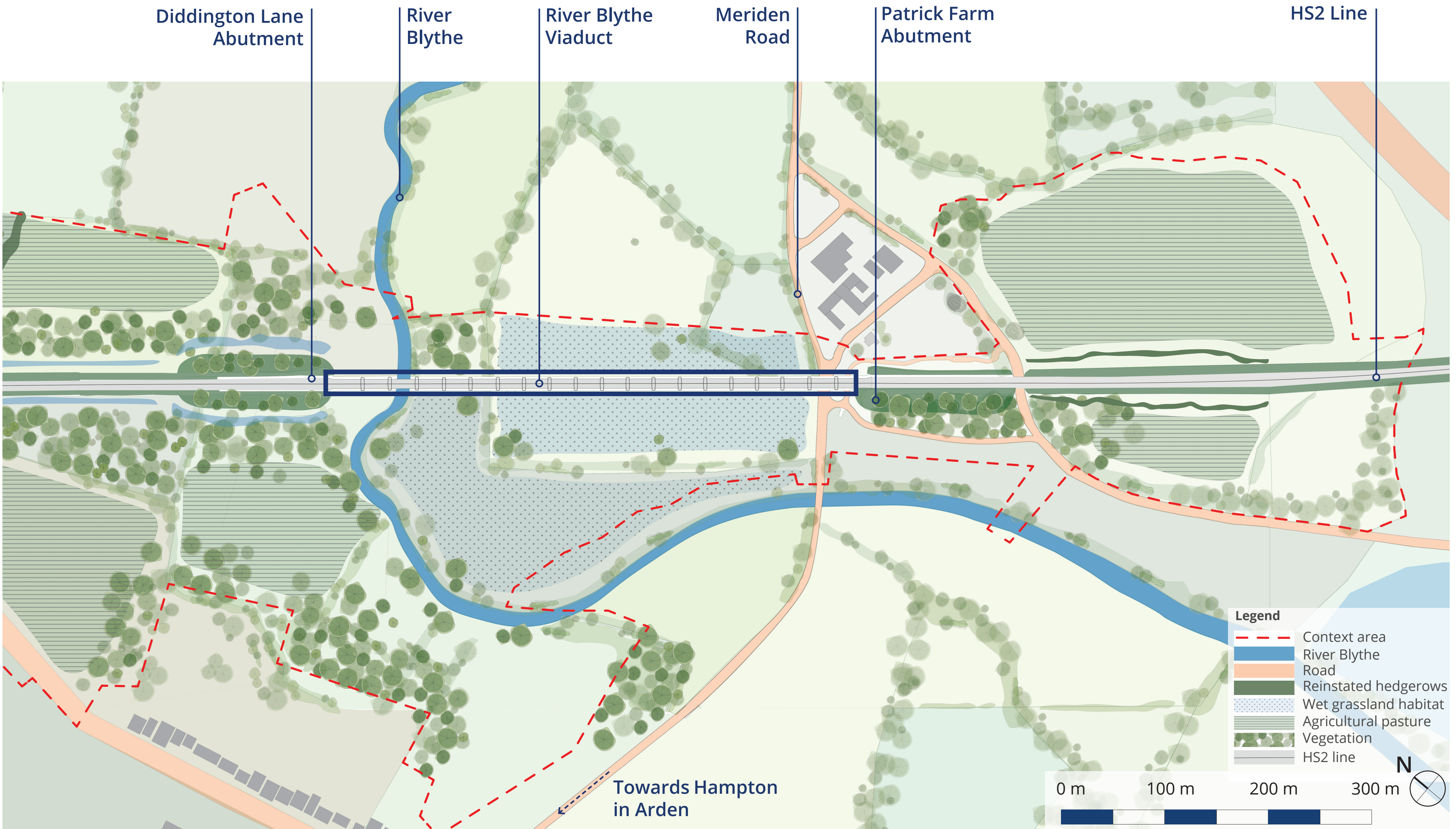
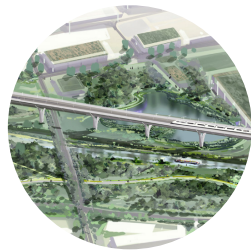
Restore

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.



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.



River Blythe Viaduct - landscape and habitat masterplan

River Blythe Viaduct

Public engagement

Your voice is important to us

Our approach for the detailed design phase of the viaduct is focused on the principles set out in the HS2 Design Vision document. These ensure that People, Place and Time are considered in all aspects of our work.

As well as these principles, it is important for us to understand how local people feel about the viaduct.

To do that we are holding public engagement events, circulating information, and asking for your direct feedback.

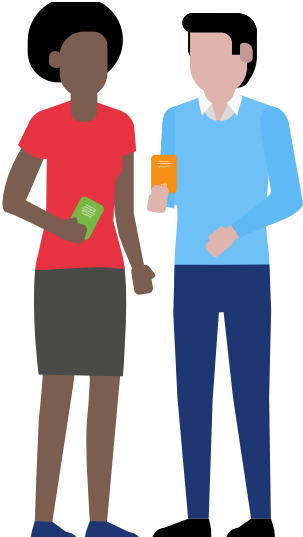
It is important to us that we understand how you feel about the viaduct, its impact in the aream, and what is important to you.

To do this we would like you think about the following questions:

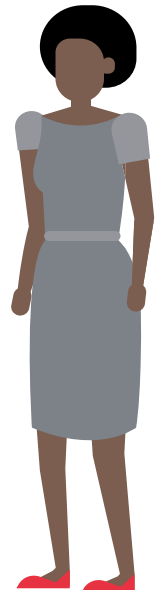





HS2 public engagement events




What is important to you about this area?



What character and features of the area should be retained and maybe enhanced by HS2’s work?



If we were to look to improve cycling access in the wider area, have you got any suggestions about routes and connections which would be desirable?



What would you like to see from us during the construction of the viaduct?

River Blythe Viaduct

River Blythe ecology

Site of Special Scientific Interest

The River Blythe is designated as a Site of Special Scientific Interest (SSSI). A SSSI is a formal conservation designation which typically refers to an area of high environmental importance due to the unique species of fauna and flora it contains, as well as any significant geological or physiological aspects.

Rivers are of particular importance and a conservation priority. The River Blythe is designated a SSSI due to the high habitat quality, diversity, aquatic plant and invertebrate communities that it supports. The river is also noted for its range of natural structural features, including riffles, pools, small cliffs and meanders, which contribute to the rivers significance.

Along the length of the river there are several damp, unimproved meadows, including the Dole Meadow Local Wildlife Site (LWS) which falls within the scheme extents of HS2. They receive some of their water from annual flooding and are largely dependent upon the river for the maintenance of a high water-table.

The River Blythe is within the land required to construct the HS2 railway, however the viaduct has been designed to ensure no supporting structures, known as piers, will be placed in the river and this also reduces the levels of shading on the river itself. The viaduct design retains habitats within the SSSI, as well as reduces impacts during the operational stage on wildlife dispersal routes; utilised by badgers, bats, birds, fish, otters and water voles.

Consultation is ongoing with Natural England regarding the proposed construction methods and design elements that will impact on the River Blythe.



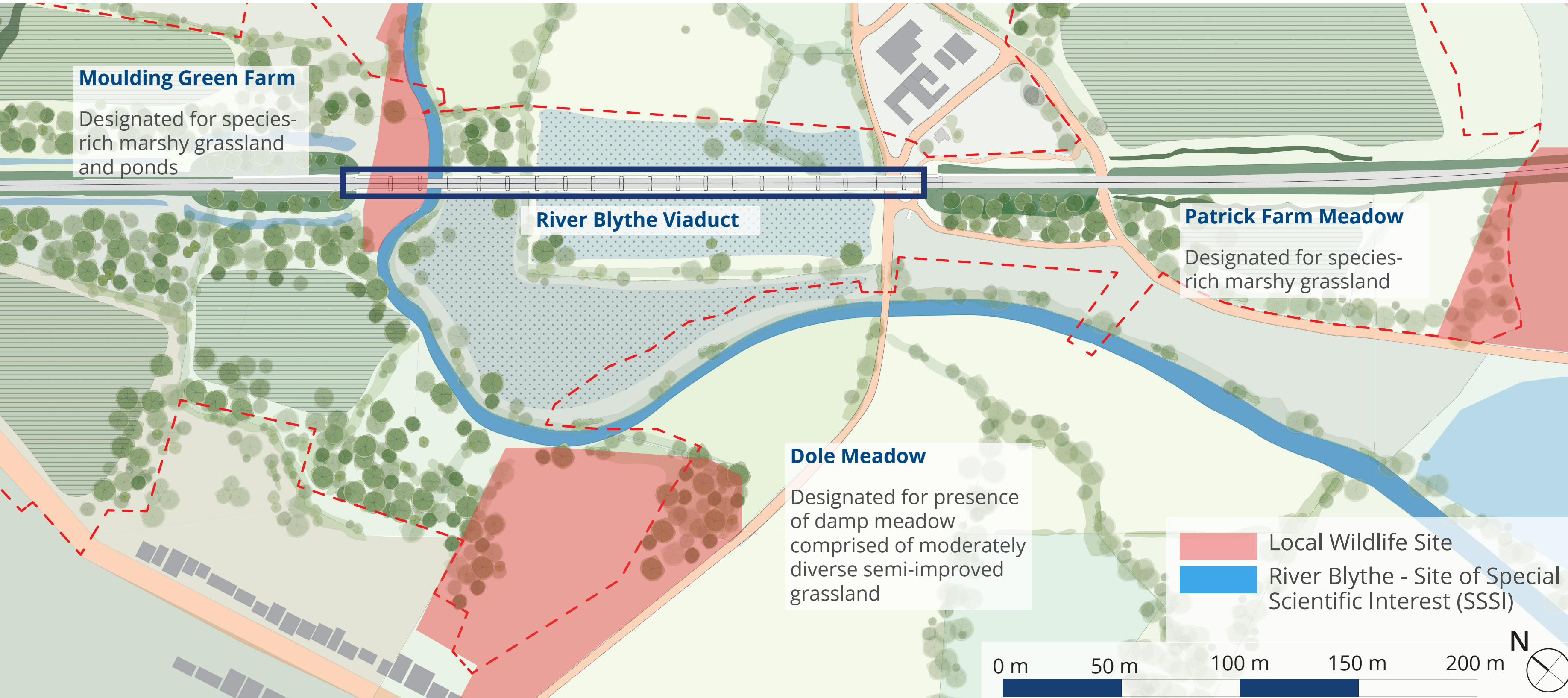
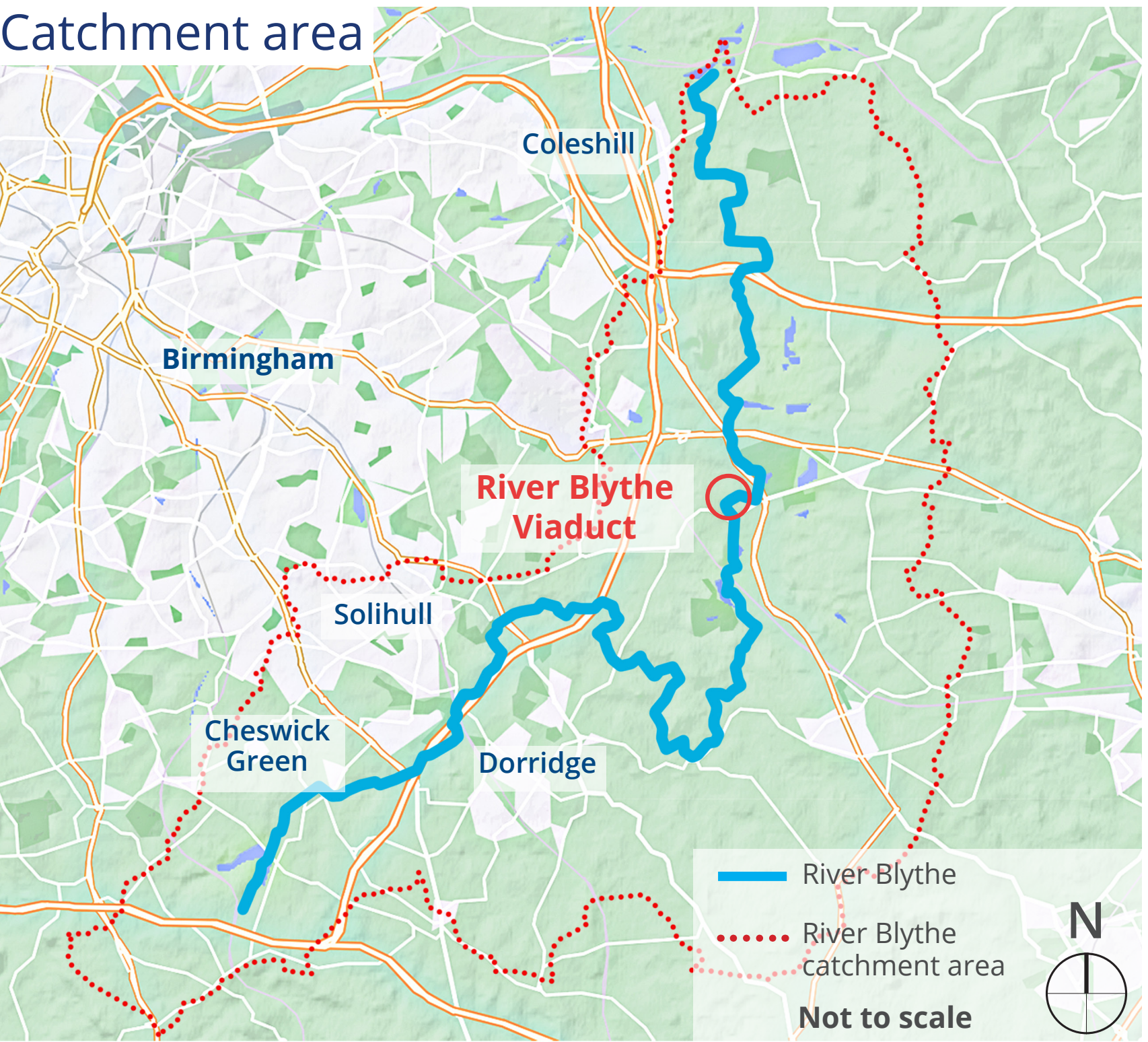
Existing view looking north from River Blythe

Local Wildlife Sites

A Local Wildlife Site (LWS) is a wildlife-rich site, noted for their local nature conservation value. A LWS is not protect by law, but provision is made for these sites as part of the National Planning Policy, which requires local authorities to identify LWS's and provide for their protection.

The area around the River Blythe Viaduct includes three LWS's: Mouldings Green Farm LWS , Dole Meadow LWS, and Patrick Farm LWS.

The viaduct has been designed to minimise LWS habitat loss. During initial assessments carried out under the Environmental Statement (ES), potential loss of habitat within Moulding Green Farm LWS and Patrick Farm LWS was assessed, with a requirement stated to create compensatory marshy grassland habitat. The Dole Meadow LWS was only designated in 2018 and consultation is ongoing to establish appropriate mitigation for design elements that will impact upon the site.



River Blythe Viaduct masterplan - designated habitats

River Blythe Viaduct

Landscape strategy

For the landscape design surrounding the River Blythe Viaduct, we have been working with the wider design team and other environmental specialists to ensure a fully thought-out solution for the landscape is created. This focuses on these three key areas, which also meet the HS2 landscape approaches of conserve, enhance, restore and transform:



Landscape

- To conserve the low lying agricultural landscape
- The enhancement of the wetland landscape around and adjacent to the Site of Special Scientific Interest (SSSI) creating links to the surrounding green infrastructure
- Provision of a new wetland link from east to the west under the viaduct connecting the existing vegetation.



Ecology

- Promote connectivity on either side, and under, the viaduct using the grain of the retained landscape and enhancements around and adjacent to the SSSI
- Ensure the preservation of key protected or notable species (otter, bats, barn owls and wintering birds) recorded in the vicinity of the viaduct and ensure provision for these is fully integrated into the landscape design.



Water

- The continuity and enhancement of wet grassland features on both sides of the viaduct
- Protection of the SSSI.



Hedgerow example
Common Hawthorn



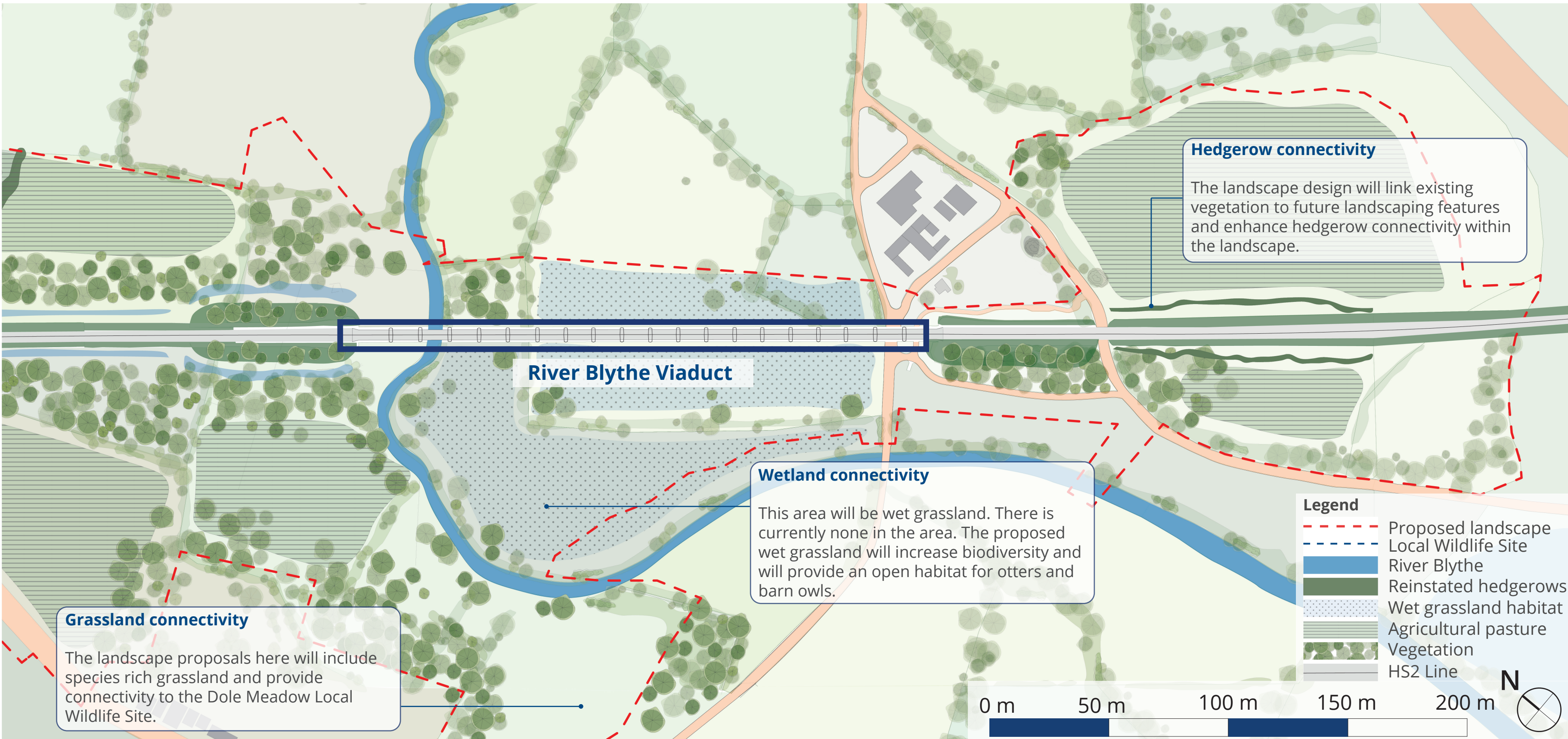
Woodland example
Wych Elm



Riverside planting example
Crack Willow



Existing planting example
Horse Chestnut



River Blythe Viaduct masterplan - proposed landscape / habitat mitigation

River Blythe Viaduct

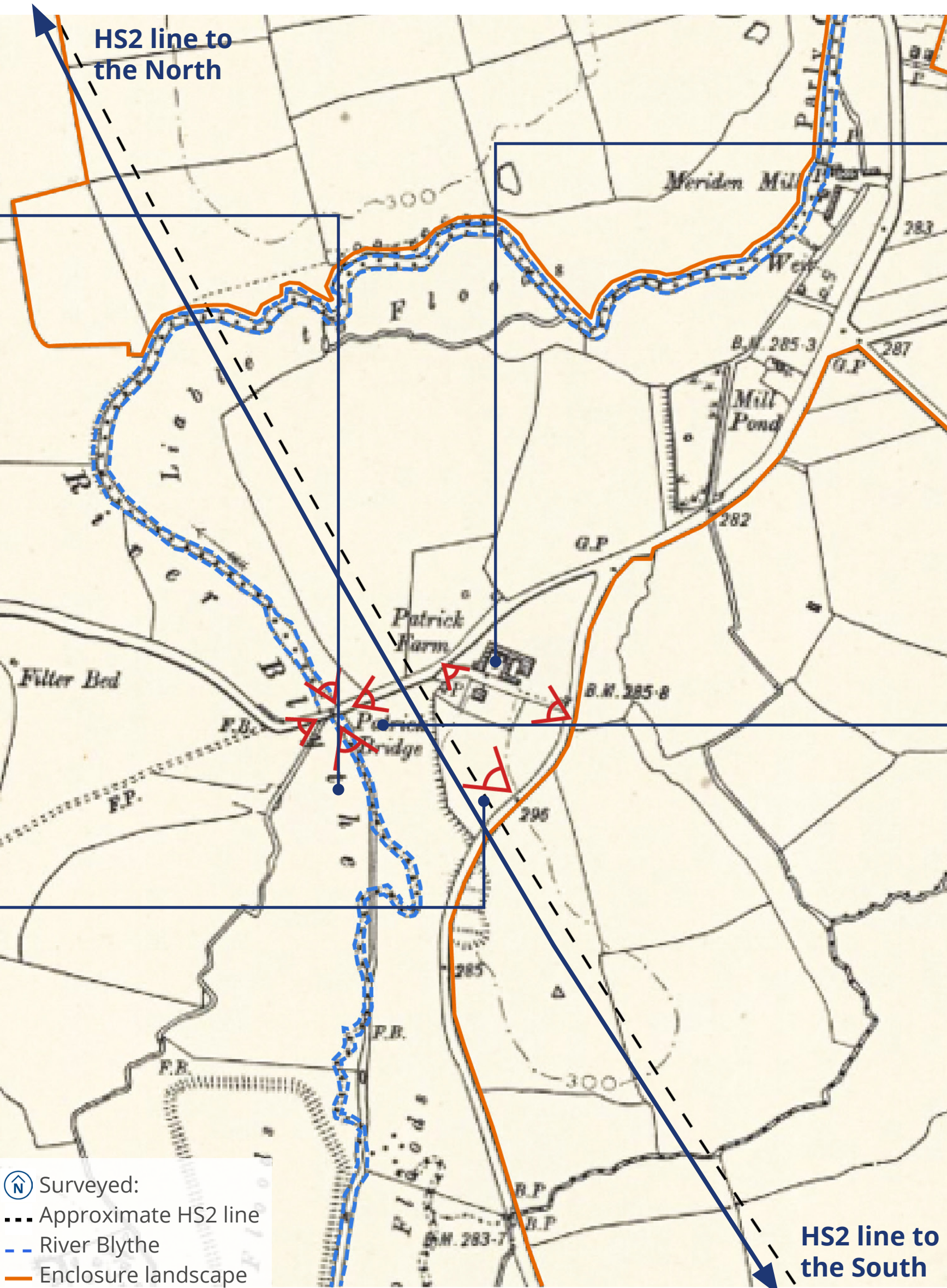
Heritage

Historic Landscape: Key Characteristics

The historic landscape in the local area has been shaped by the River Blythe, both its natural and man-made form. The river valley has historically been used for pasture and the higher land has been used for crops, or cover crops, to manage the landscape. The area has been part of the Packington Estate for centuries. The field patterns have come from when they were enclosed in the 18th century, when landowners enclosed previously communal fields for their own use. The hedgerow field boundaries, which also contain various trees, are typical of enclosure landscapes in this area.

Farm buildings have been built in the area on higher ground to avoid the flood plain. Patrick Farm is a good example of this and dominates the local landscape, especially in views along Meriden Road and from Patrick Bridge. The farmhouse is likely to date from the 18th century although it was heavily altered in the 19th century. The farmyard next to it is a good example of a “model farm”. Model farms were built in the 19th century by wealthy landowners to research and demonstrate modern ways of farming.

The river has also been used to provide power for local mills. This has left man-made channels leading to former mill ponds in the landscape. The buildings of Meriden Mill and Mercote Mill still survive although they are no longer used for milling.



Historic map of the site dated 1886, (Reproduced with the permission of the National Library of Scotland)

River Blythe Viaduct

Existing viewpoints

The landscape character and future views of the viaduct have been important factors in developing our design vision for the River Blythe Viaduct. This will ensure that the design compliments the character of the area and that key viewpoints from which the public will see the viaduct are considered in the design approach.

These viewpoints below were selected to assist in engagement and developing design vision but may differ from those defined in the HS2 Act.



Viewpoint 1

- Taken from Meriden Road looking north
- Hedge line to the left to be retained
- The gap in the hedge in the far centre of the image shows the viaduct location
- The viaduct comes across the view obliquely from the right.



Viewpoint 3

- Taken from A452 Kenilworth Road looking south
- Existing arched road bridge passes low over the River Blythe in the foreground
- The River Blythe Viaduct will be filtered in this view by existing riverside vegetation (circa 680m away)
- Views from the train will look towards this location but through a treeline filter.



Viewpoint 5

- Taken from the junction of Diddington Lane and footpath M115 looking east
- The viaduct itself is going to be screened by the mature garden planting to the right of the image.



Viewpoint 2

- Taken from Meriden Road looking north from the junction with the Patrick Farm access
- The gap in the hedge in the far centre of the image shows the viaduct location
- The viaduct comes across the view obliquely from the left.



Viewpoint 4

- Taken from A452 Kenilworth Road looking south
- Mouldings Green Farm can be seen on the right of the image
- The River Blythe Viaduct will be filtered in this view by existing riverside vegetation (circa 680m away)
- Views from the train will look toward this location but through a treeline filter.



Viewpoint 6

- Taken from the junction of footpath M118 and Meriden Road looking north towards the viaduct and Patrick Farm
- Some filtering provided by roadside vegetation and the retained hedgerow on the east side of the River Blythe at a low level
- The viaduct will be seen behind these (185m) with the deck and noise barriers visible above.

River Blythe Viaduct



View looking south from Patrick Farm (private land - not publicly accessible); planting shows maturity 10 years after construction

River Blythe Viaduct

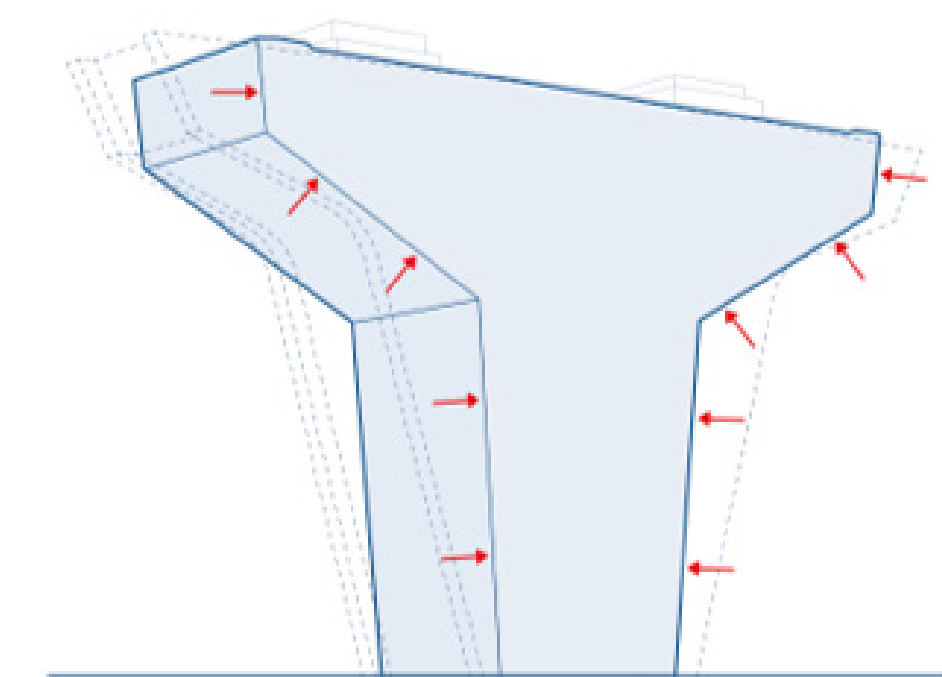
Balfour Beatty VINCI  Working in partnership with HS2

Viaduct design

The River Blythe Viaduct, a 475m low-lying structure, will be skimming the landscape, keeping distance from the private properties, crossing the River Blythe and Meriden Road, and anchoring itself to two distinct points of the area: Diddington Lane Farm and Patrick Farm.

Rather than adding a new structural icon, our viaduct design opts for simplicity and longevity. During the design process we have carefully considered the use of materials that will change in appearance over the 120-year life of the viaduct, creating a sense of robustness and permanence to the structure, minimising long-term maintenance and ensuring that the external appearance responds positively to the effects of weathering over time.

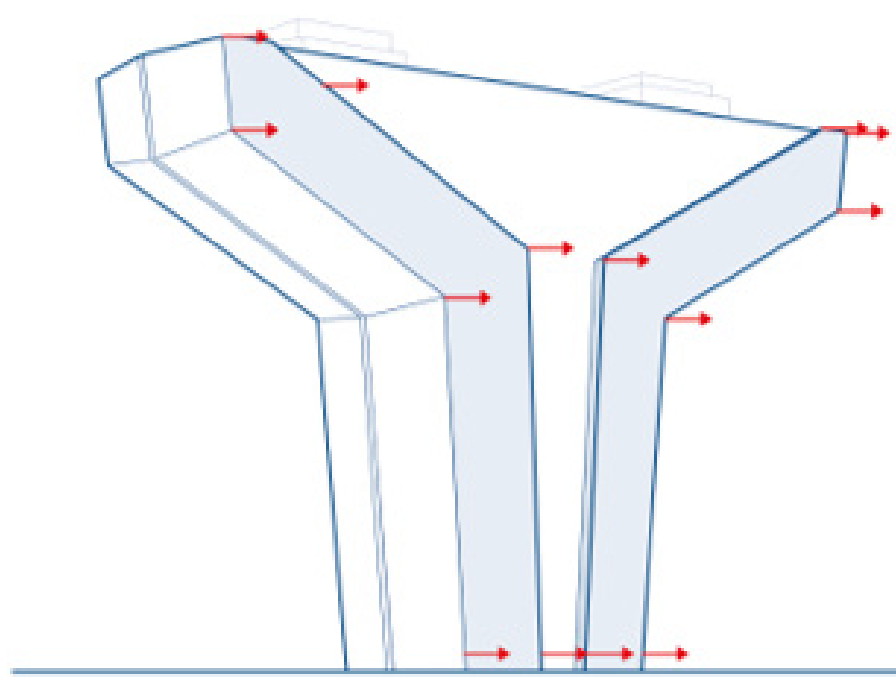
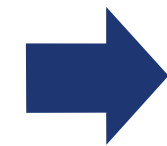
Pier refinement



Refinement 1

Technical requirements

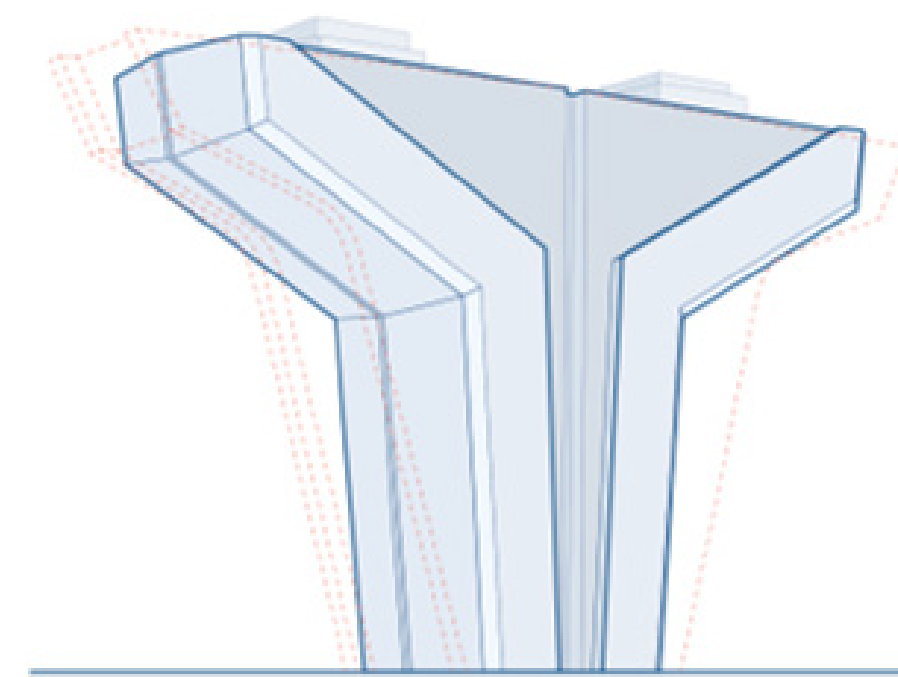
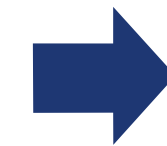
- Reduction in volume compared to common design elements (CDE)



Refinement 2

Split front face

- Y shape splits the front face into 3 distinctive areas



Refinement 3

Comparison with standard HS2 Common Design Element (CDE) pier

- Significant reduction in concrete volume
- Shaping of the pier to minimise visual impact



View looking south west from Patrick Farm (private land - not publicly accessible); planting shows maturity 10 years after construction



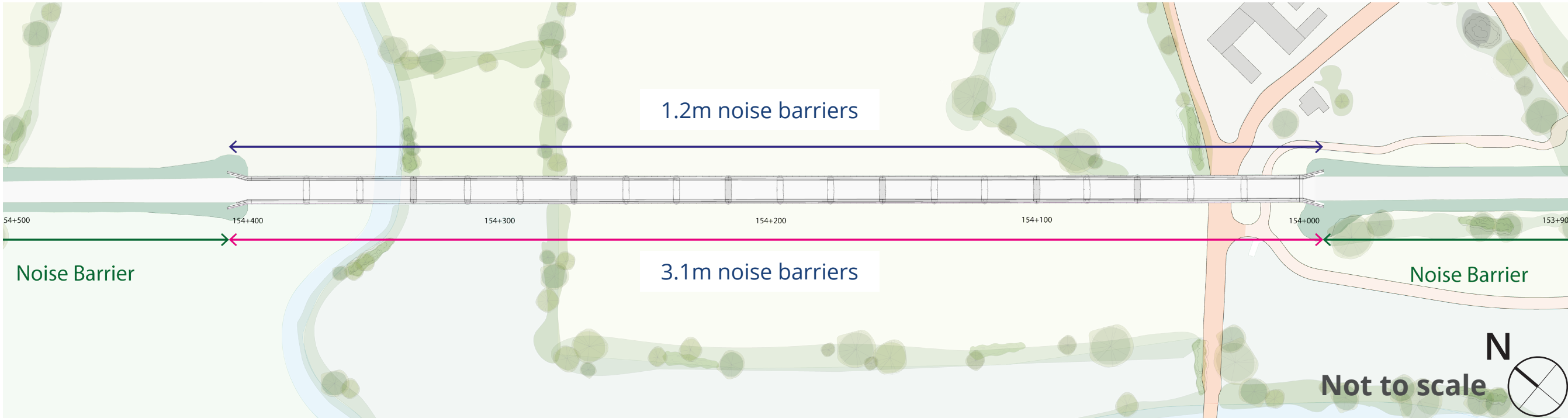
View looking east from River Blythe (private land - not publicly accessible); planting shows maturity 10 years after construction

River Blythe Viaduct

Noise barrier design

There are two primary functions of the noise barriers; to serve as a safety barrier for the engineers inspecting the tracks and to act as a noise barrier to reduce the impact on the nearby residents. The viaduct noise barrier heights measure 1.2m and 3.1m from track level. Whilst the 1.2m noise barrier is an element used routewide, the 3.1m noise barriers will include an integrated acoustically absorptive surface specifically designed for this location to help mitigate noise impact on the neighbouring village.

The external appearance of all noise barriers will be split into two parts. The upper part has a reflective surface achieved by polished concrete. This will allow for the noise barrier to gently reflect its surroundings and optimise its integration within the landscape, helping to blend in with the existing context. A textured concrete finish is proposed at low level where the barrier is experienced close-up. This will provide a unique feature, allowing the concrete mass/ colour to be visually broken up and appear differently along Meriden Road.

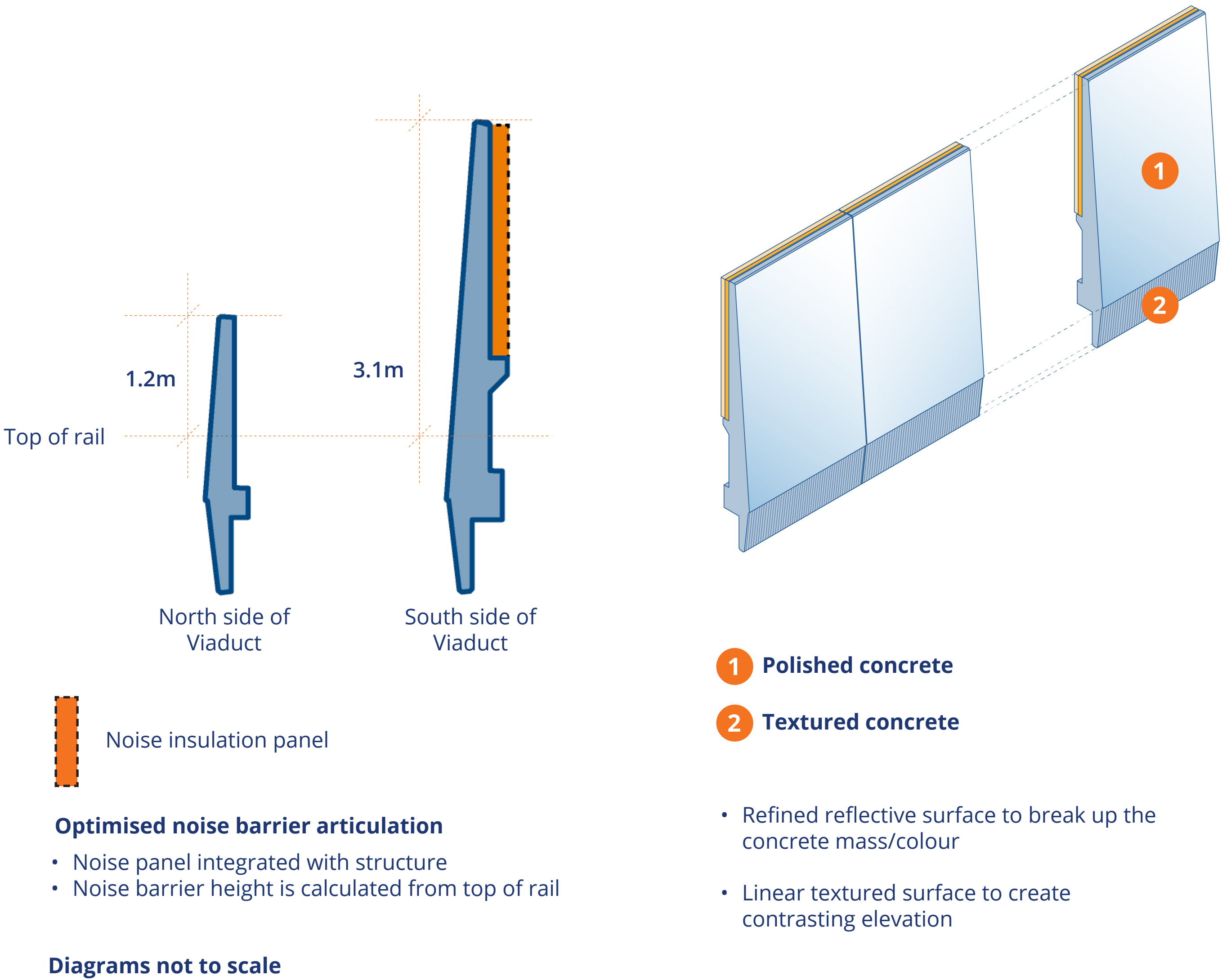


Noise barrier heights and extents



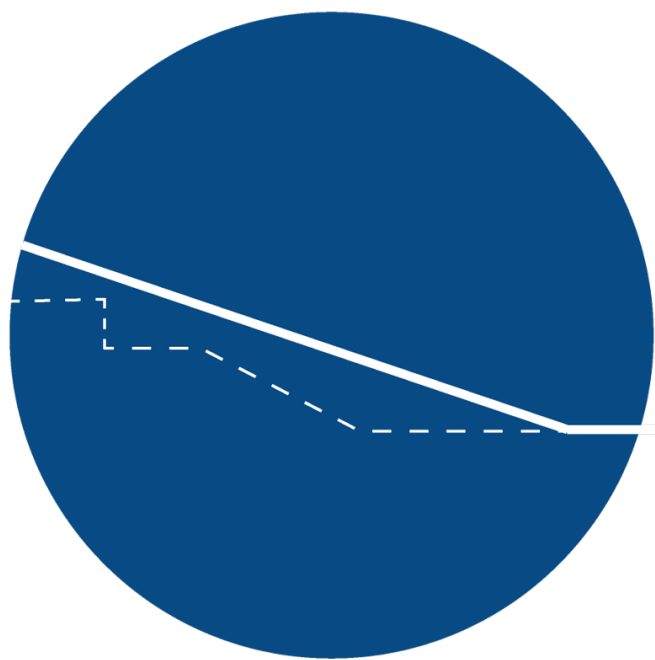
View from Meriden Road looking north showing 3.1m noise barriers

River Blythe Viaduct



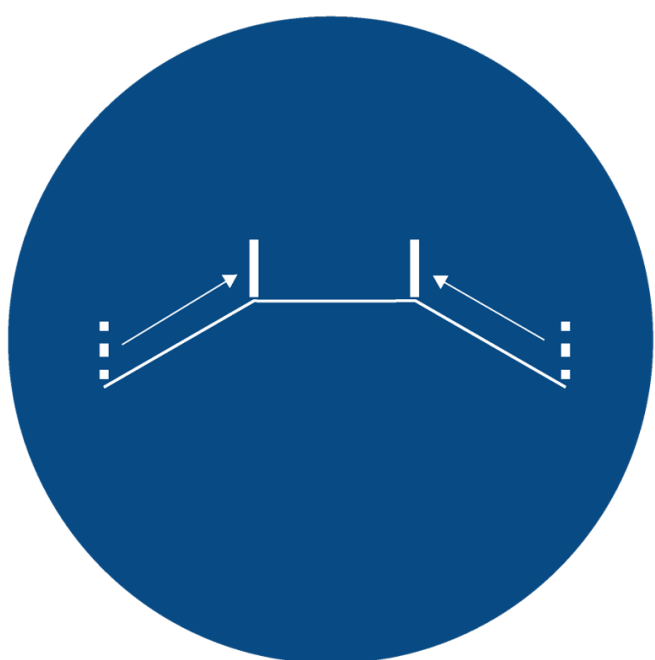
Abutments

Abutments are the structures at each end of the viaduct, which support and tie it back in with the embankments. There are a number of technical functions that these abutments have to perform, including providing maintenance and safety access to the tracks. This, combined with the noise and security fencing, can make these locations quite cluttered so we have developed a four step approach to designing these area to minimise the impact of them on a rural location. The four steps are set out here.



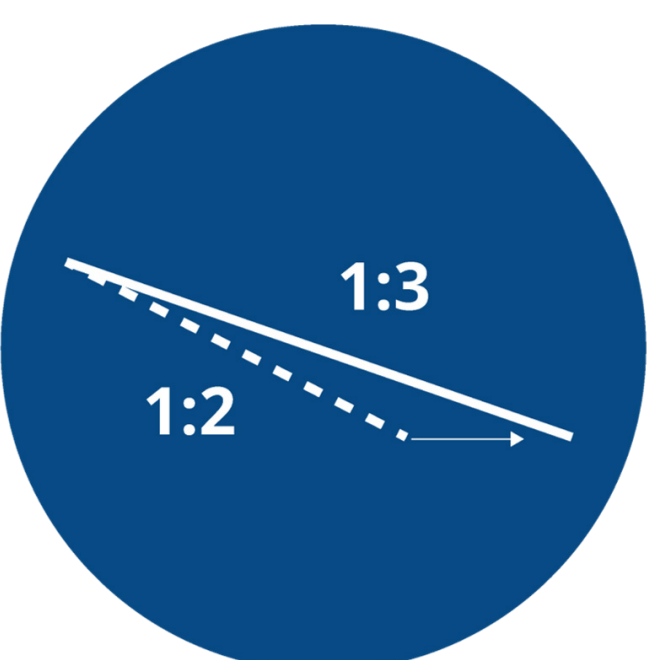
**Step 1:
De-cluttering**

Stairs and maintenance platforms are sunken into the earthworks to increase landscape integration



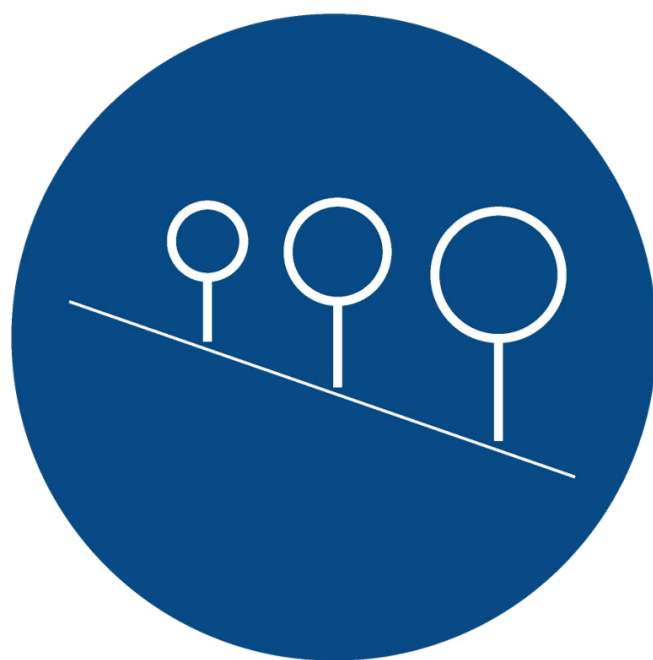
**Step 2:
Security fencing**

Changing the location of the security fencing from the bottom to the top of the embankments, forming a coherent relation on both sides



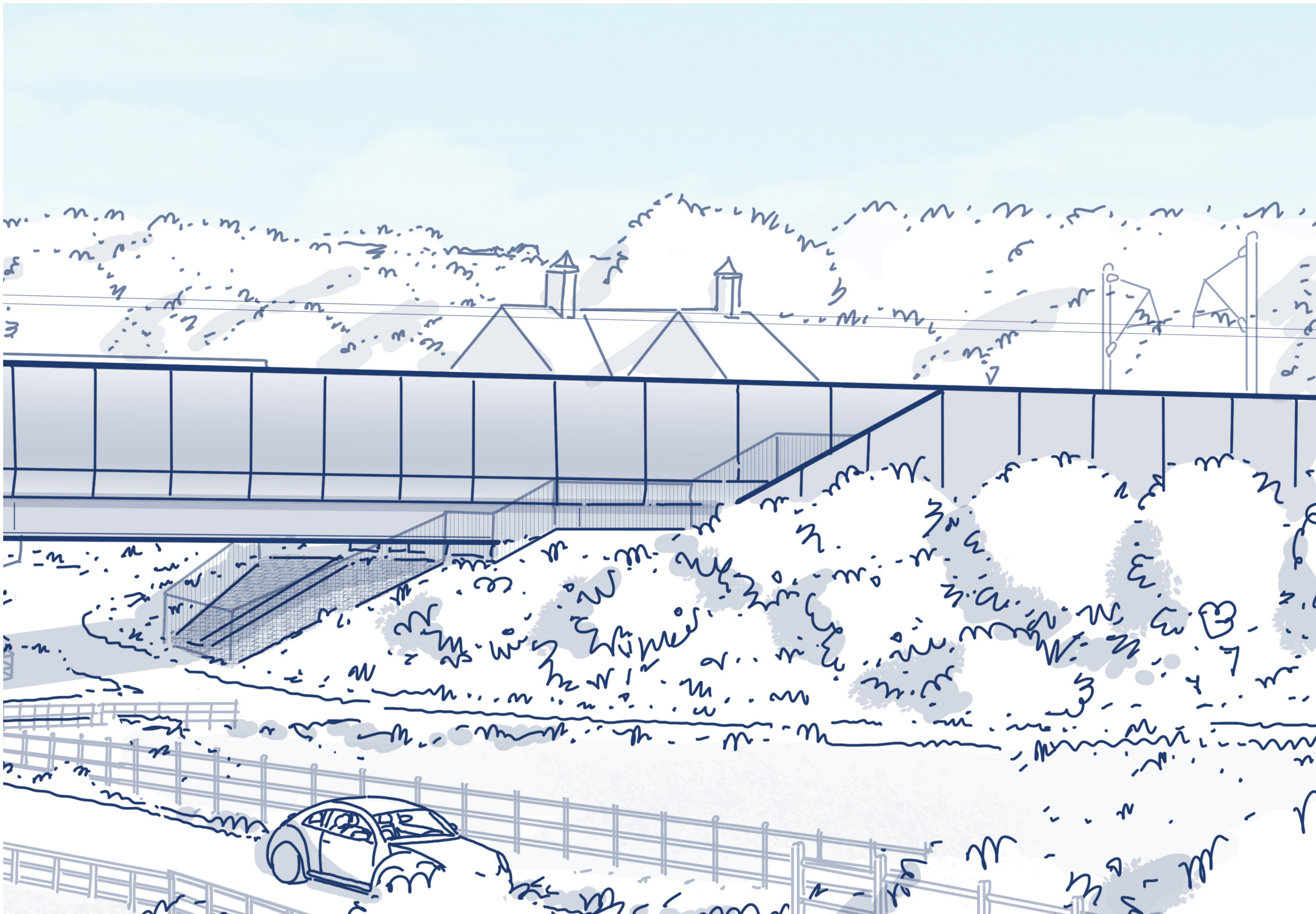
**Step 3:
Earthwork gradient**

The slope of the embankments changes from a 1:2 to a 1:3 slope, creating more space for planting and a more natural form



**Step 4:
Embankment planting**

Various planting heights and styles contribute to sustainability and reduce visual impact



Patrick Farm abutment - sketch



Patrick Farm abutment - scheme development sketch plan

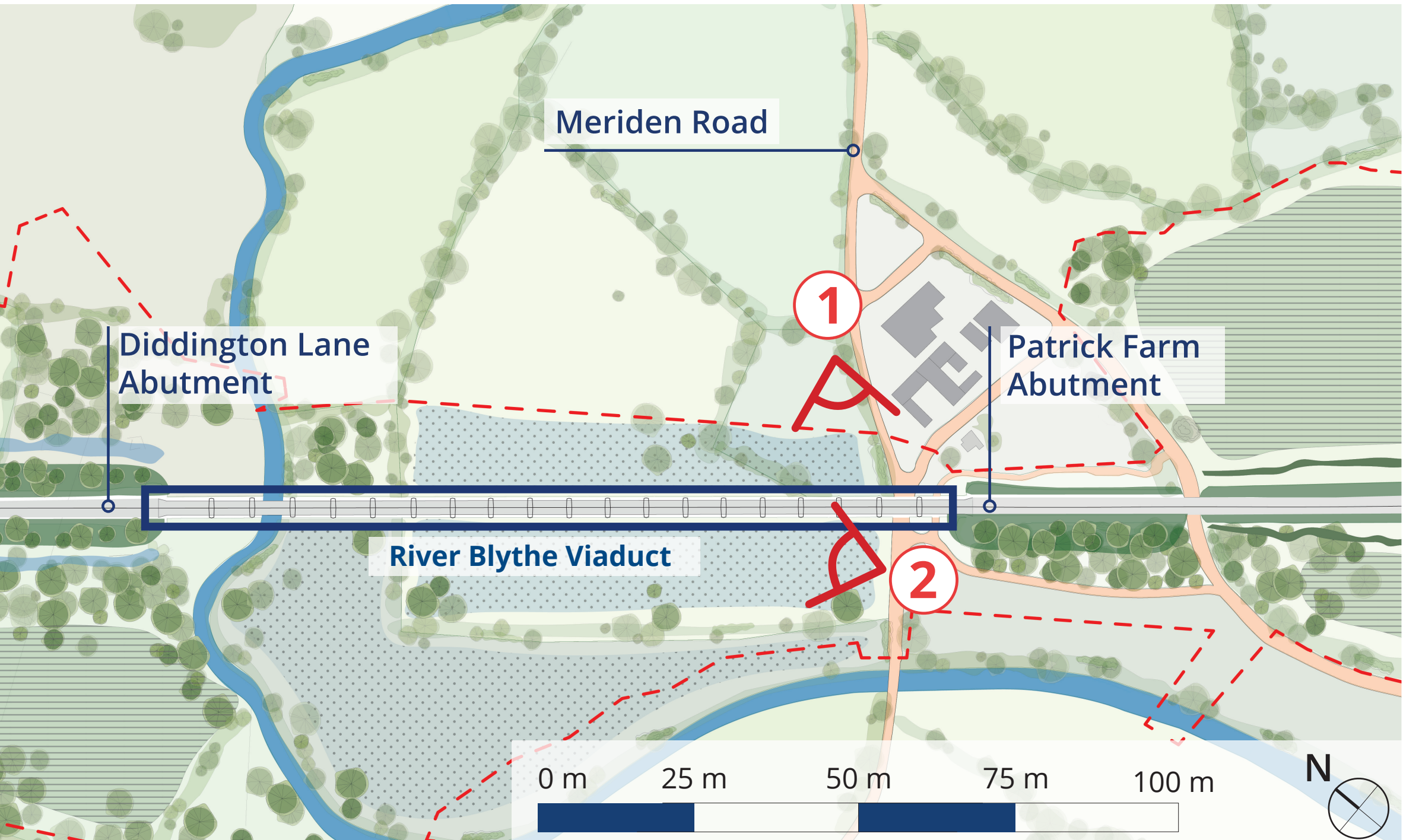
River Blythe Viaduct

Meriden Road

The floodplain landscape of this area has a semi-rural character centred on the meandering and partly tree-lined River Blythe with its grazing meadows to either side. The natural form of the river contrasts with the engineered alignment of Meriden Road.

With no public rights of way under the viaduct, the structure will mainly be seen at close quarters from Meriden Road.

Particular attention to the design has been given to the section of the viaduct which crosses Meriden Road to ensure sufficient head room for vehicles using the road.



Meriden Road views - key plan



View 1: View looking south west from Meriden Road (publicly accessible); planting shows maturity 10 years after construction



View 2: View looking north from Meriden Road (publicly accessible); planting shows maturity 10 years after construction

River Blythe Viaduct

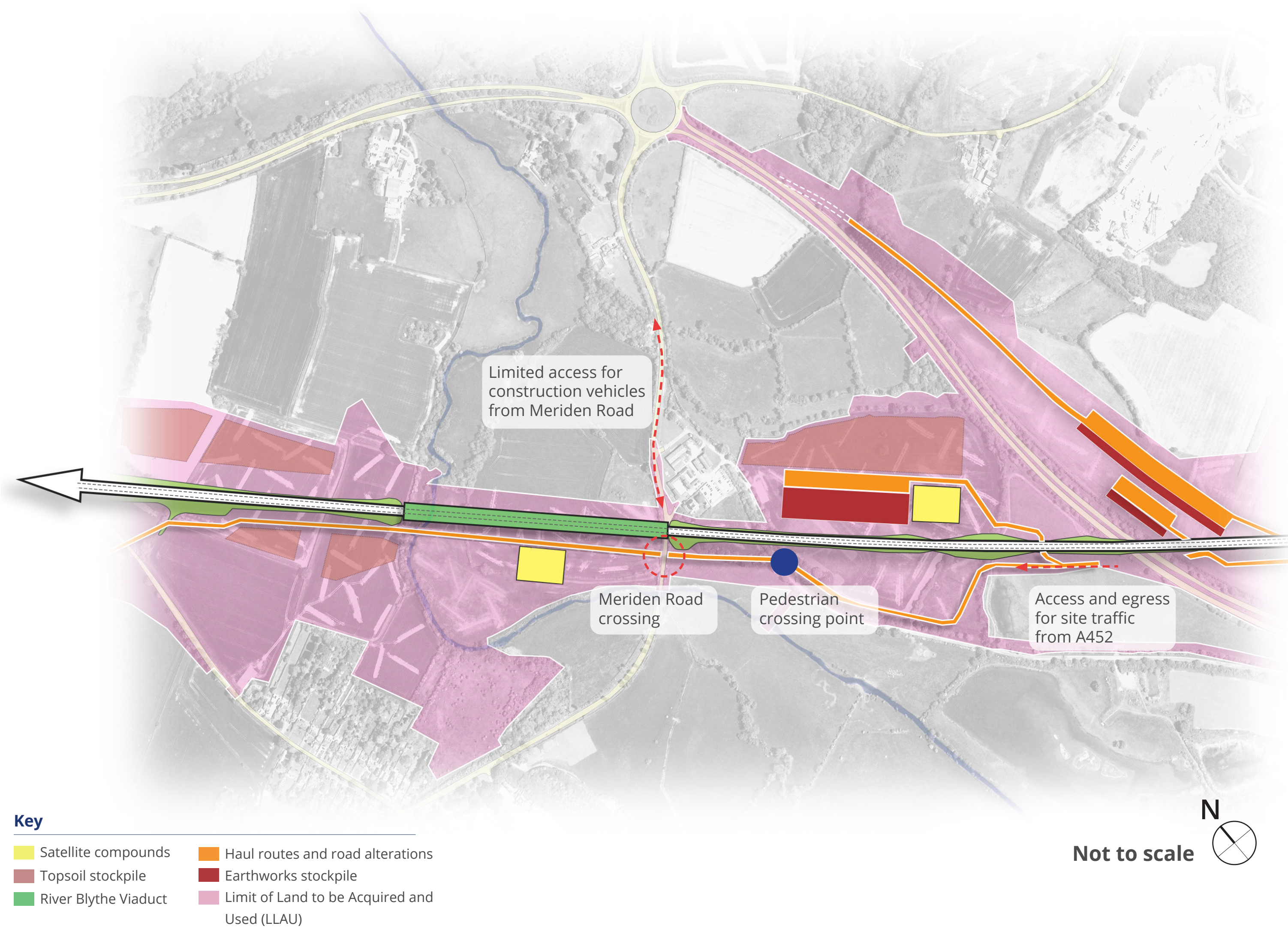
Construction and traffic management

Traffic management

In order to minimise the impact on the local road network and nearby residents, an alternative access route will be constructed to access the River Blythe Viaduct directly from the A452, by-passing Meriden Road as indicated on the plan below.

It will be facilitated with traffic lights and a plant crossing on Meriden Road, as well as a temporary bridge above the River Blythe.

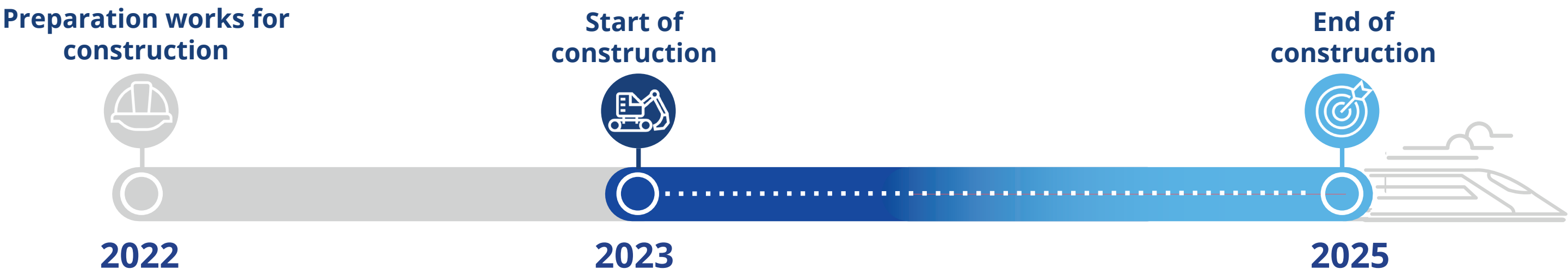
Closures on Meriden Road will be sporadically required for specific activities such as road improvements at the plant crossing and viaduct construction near or above the road.



Photographs showing typical viaduct construction processes

Programme of work for the viaduct

(Anticipated timeline - this could be subject to change)



River Blythe Viaduct



Existing aerial photograph showing proposed viaduct location and the HS2 line

River Blythe Viaduct