

WELCOME

Welcome to this exhibition of the proposed new A415 Thames crossing at Newbridge.

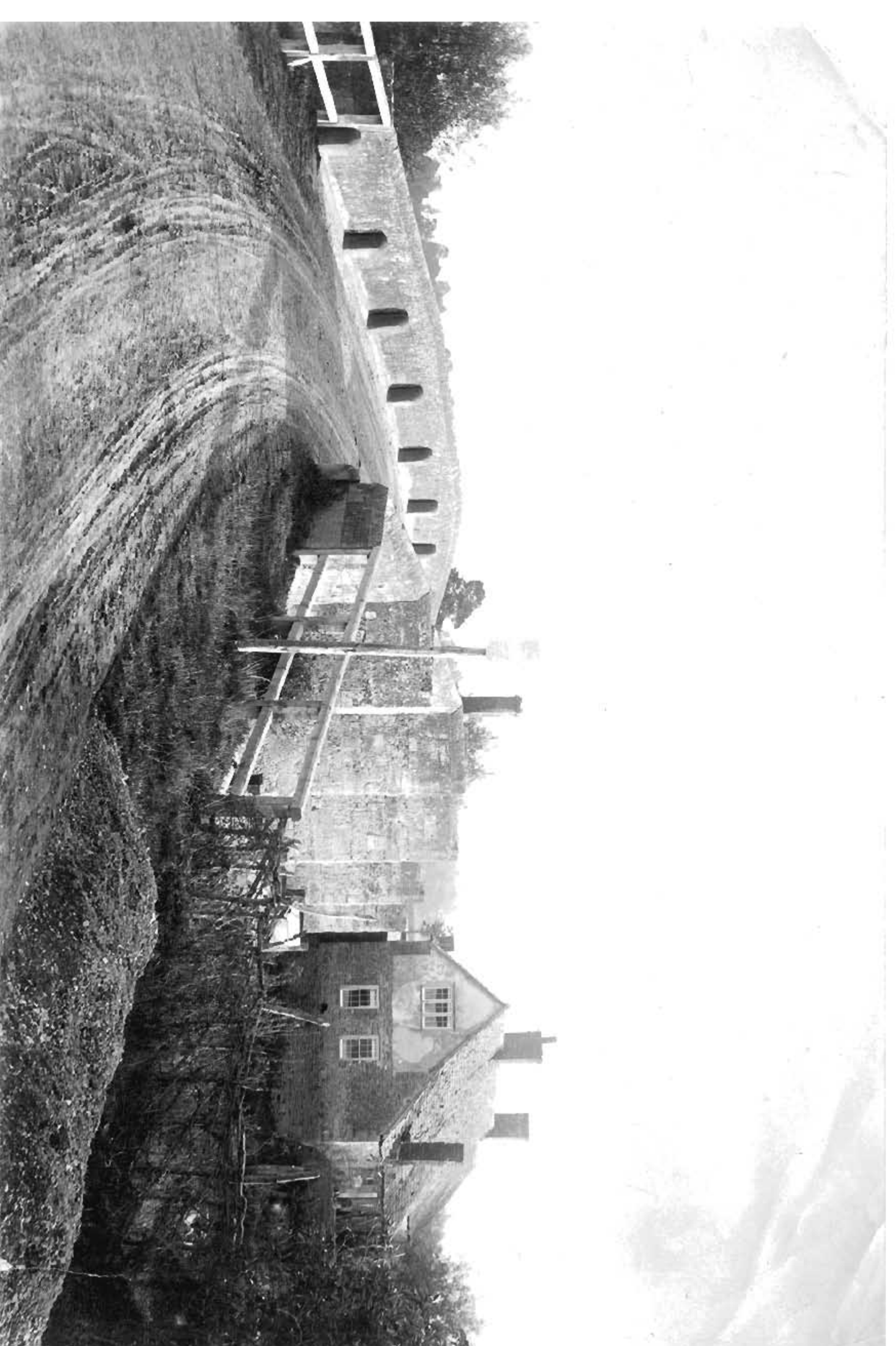
Please pick up a leaflet at the entrance to the exhibition and take time to have a look at each of the exhibition panels. They are intended to explain why we think a new Thames crossing is required, where we think it should be built, how it links to the existing A415 and also how the new crossing could look.

We would like to know what you think about our proposals so at the back of the leaflet you will find a questionnaire. You can fill in the questionnaire now and place it in the box provided on your way out or you can complete it later and post it back to us using the freepost address provided.

Alternatively you can go to the Oxfordshire County Council website www.oxfordshire.gov.uk/newbridge where you can find the plans, other background information and an on-line feedback form.

Staff at the exhibition will be pleased to answer any questions you may have.

Parents and guardians, please be responsible for your children at all times.



Photograph taken around 1900 looking south across Newbridge



Photograph taken 2009 looking south across Newbridge

INTRODUCTION

The A415 currently crosses the River Thames over Newbridge, a 13th century, six span, masonry gothic arch bridge that is thought to be the oldest complete and original bridge crossing the River Thames today.

The load carrying capacity of Newbridge has been assessed structurally and found to be very low. We have also concluded that Newbridge should not be reconstructed or strengthened due to its historic importance, the significance of which has been recognised and statutorily protected by being designated a Scheduled Ancient Monument.

As an interim measure we have imposed an 18 tonne structural weight limit and are closely monitoring Newbridge's condition.

Please now take time to look at the following exhibition panels which give further information regarding:

- Panel 2 Problems with Newbridge.
- Panel 3 Why we can't strengthen Newbridge.
- Panel 4 Why A415 traffic can't be diverted elsewhere.
- Panel 5 The preferred route selection process.
- Panel 6 Details of the proposed new route.
- Panel 7 Computer generated illustrations of the two proposed bridge options.
- Panel 8 Construction details for the two proposed bridge options.

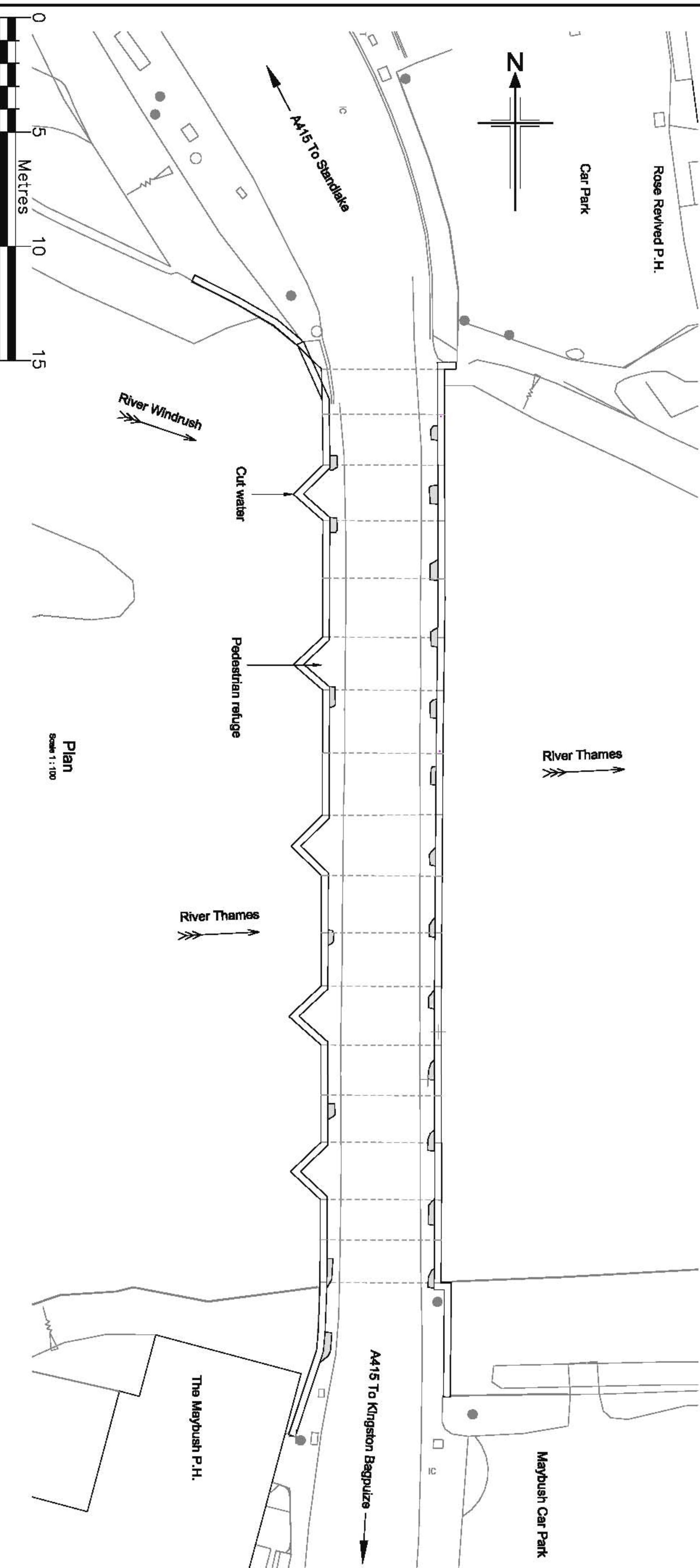
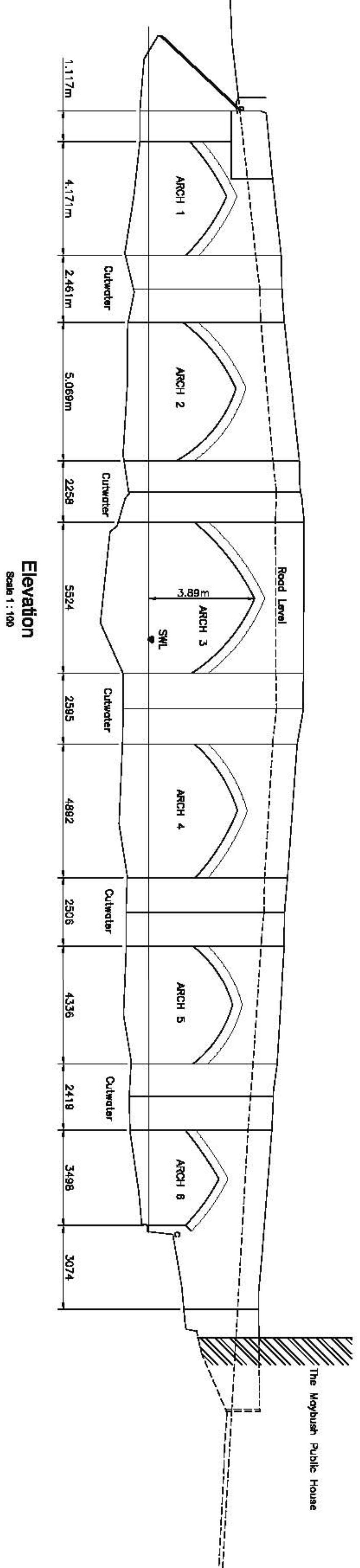
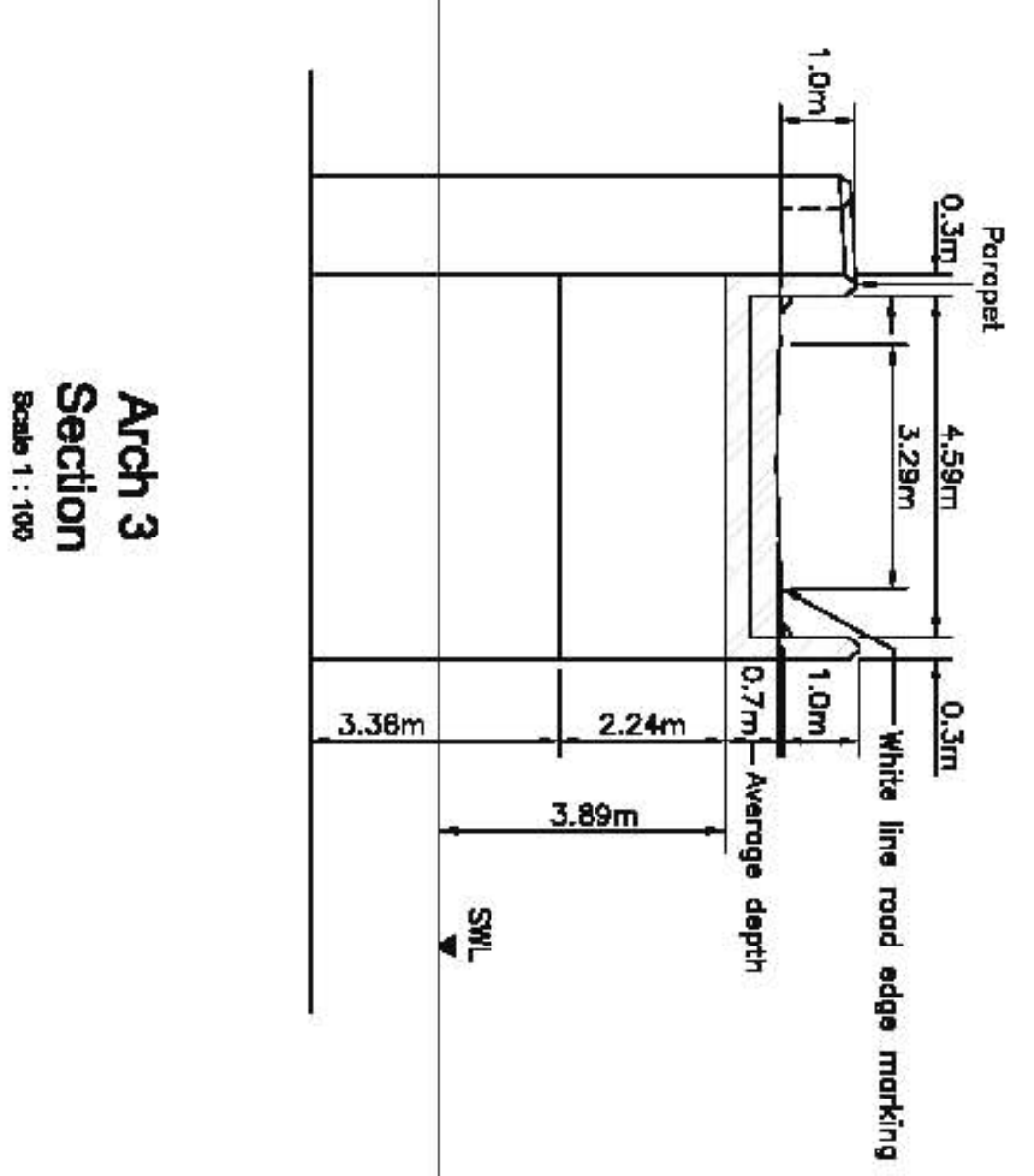
Arch Strength Assessment

The assessed capacity is the calculated long term safe load carrying capacity based on what is known about the structure of the bridge.

Where information is missing and cannot readily be obtained conservative assumptions are made in calculating this capacity. The individual arch strengths of Newbridge have been assessed and the assessment results are as follows:

Assessed permitted gross vehicle weights
Arch 1 30tonnes
Arch 2 30tonnes
Arch 3 Nil
Arch 4 13 tonnes
Arch 5 13 tonnes
Arch 6 13 tonnes

These results show that span 3 is the weakest span and that theoretically Newbridge should not be expected to carry any traffic loading at all long term.



Parapet Strength Assessment

The strength of Newbridge's parapets have also been assessed and have been found to be weak, not providing the minimum capacity required to contain even light vehicles travelling at 30mph.

Further Shortcomings of Newbridge

Newbridge's parapets are hit and damaged by vehicles quite regularly as can be seen in the photographs included on this panel. At the north-west corner of the bridge the parapet has been splayed back to reduce the number of times it is struck, but this area is still regularly damaged as can be seen by the cracks in the stonework in the photo centre right.

The frequency of parapet impacts is no doubt partly due to the poor horizontal alignment of the A415 approach from the north, and also partly due to the narrow width of Newbridge. In addition Newbridge has a humped-backed vertical profile that causes the underside of some long vehicles to ground on the crest of the bridge.

Users of the Thames Path National Trail and all other pedestrians who wish to cross the River Thames here must share the A415 carriageway with traffic as Newbridge is too narrow to provide a segregated raised pedestrian footway.

Scheduled Ancient Monument Status

Newbridge's obvious historic value and Scheduled Ancient Monument status means the options available to us to address its structural and physical shortcomings are far more restricted than for a less historic bridge. The basic conservation principle for managing any Scheduled Ancient Monument is that one should not interfere with its internal or external original fabric unless there is absolutely no alternative.

Current Restrictions

We are currently still permitting traffic to use Newbridge and have implemented an 18 tonne maximum weight (MGW) limit as an interim measure. Newbridge's continued use by traffic above its assessed capacity is currently still being permitted on the understanding that:

- Newbridge has been carrying unrestricted A415 traffic (i.e. including a full range of HGV's) prior to the 18 tonne weight restriction being imposed.
- The 18 tonne MGW limit will significantly reduce the number of the heaviest HGV's using the bridge.
- Arch failure mechanisms are not sudden occurrences and therefore cracking and surface deformation would become apparent before any catastrophic collapse.

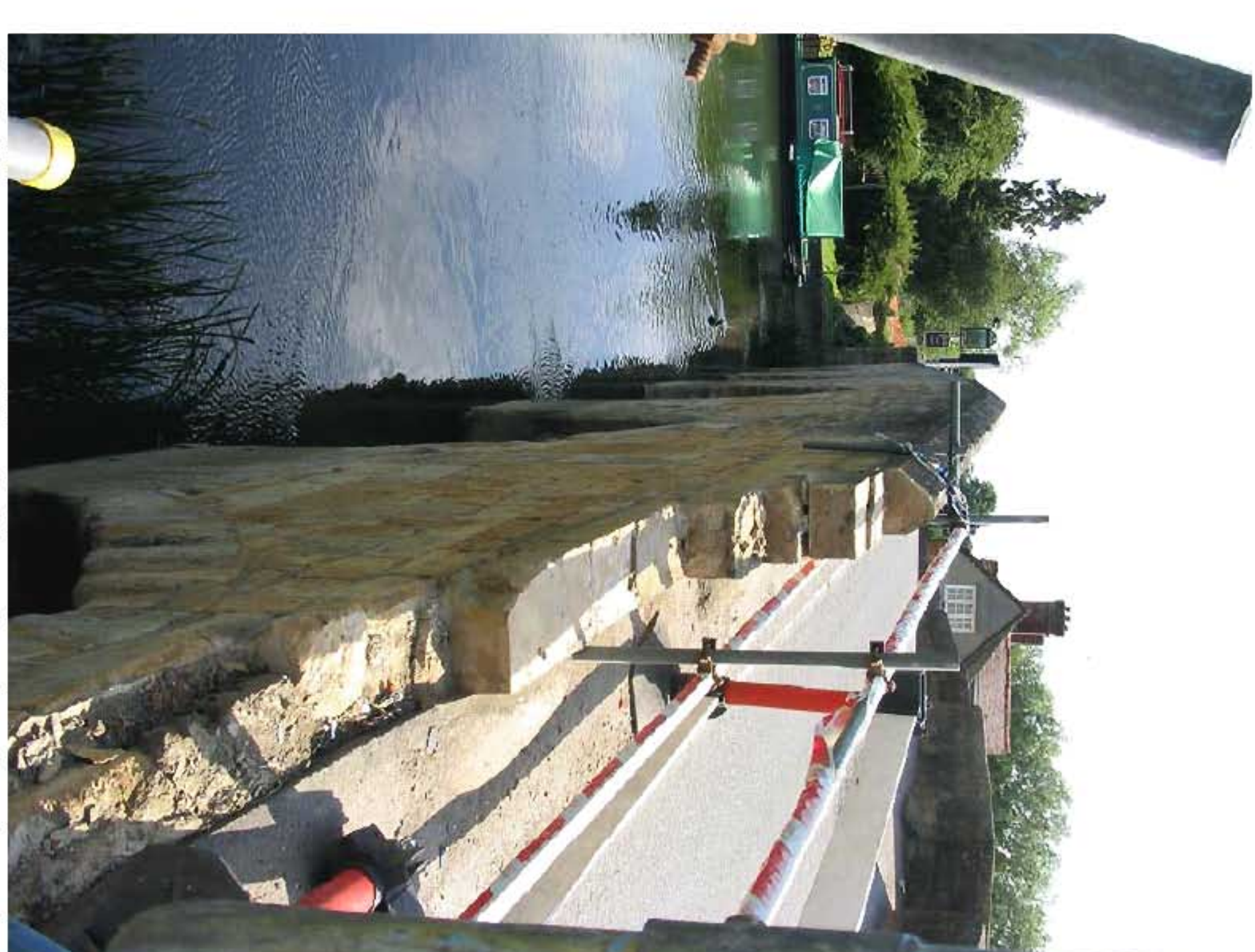
As well as more frequent physical inspections, remote crack and tilt monitoring equipment has been temporarily installed in various positions on the bridge which report via an internet based system every 24 hours. This remote monitoring and inspection regime has been in operation since March 2006 and currently has not yet identified any movements sufficient to cause concern or require the 18 tonne weight limit to be lowered any further.

Possible Future Restrictions Required

It is inevitable that Newbridge will continue to deteriorate due to the actions of vehicle loading, vibration, accidental impacts with the parapets, long vehicles grounding and the weather.

Any further significant movement detected may require the immediate imposition of a lower weight limit restriction, to either 7.5 tonnes, 3 tonnes or even a complete closure of the A415.

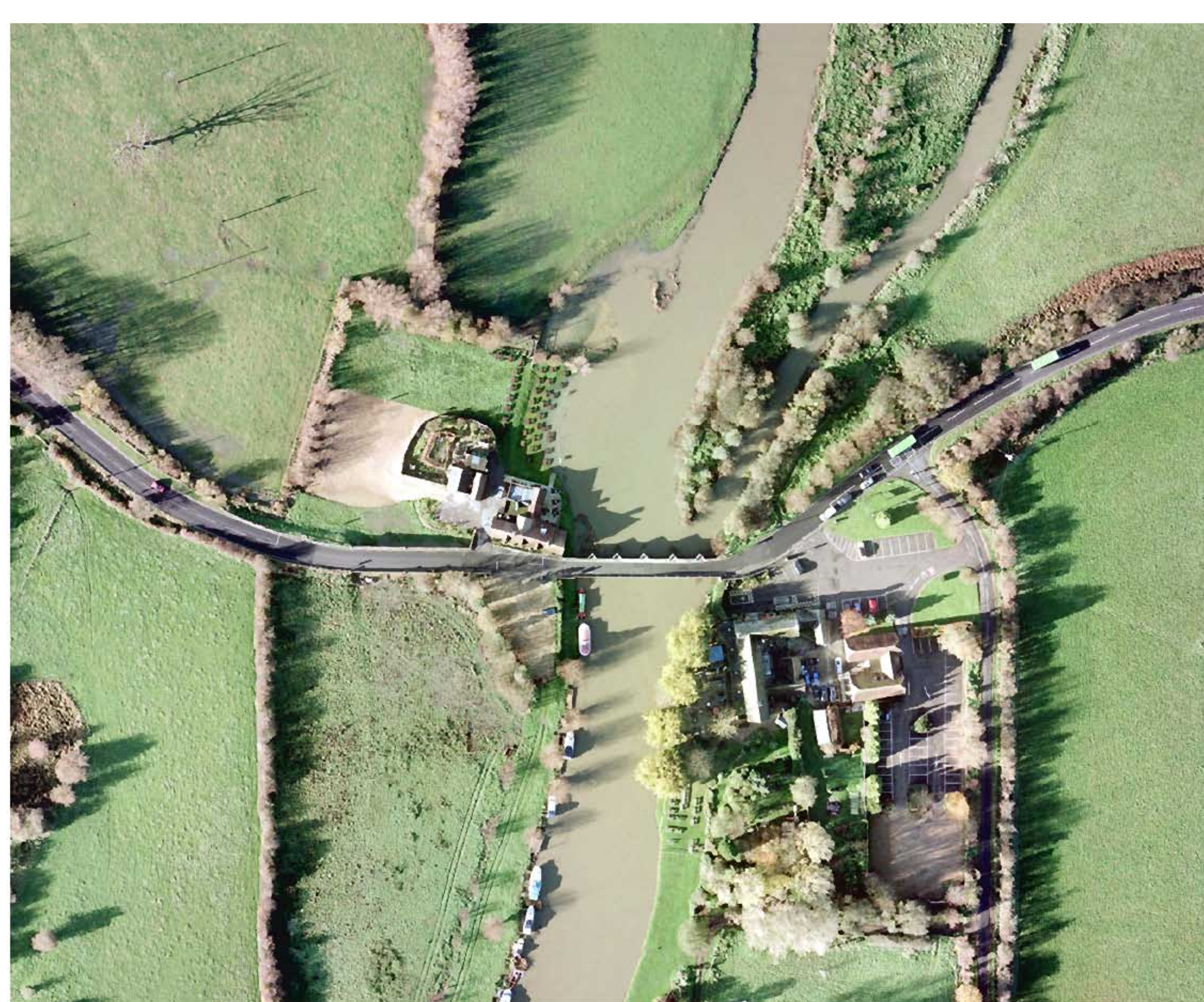
Vehicle Impact Damage to Parapets - 1



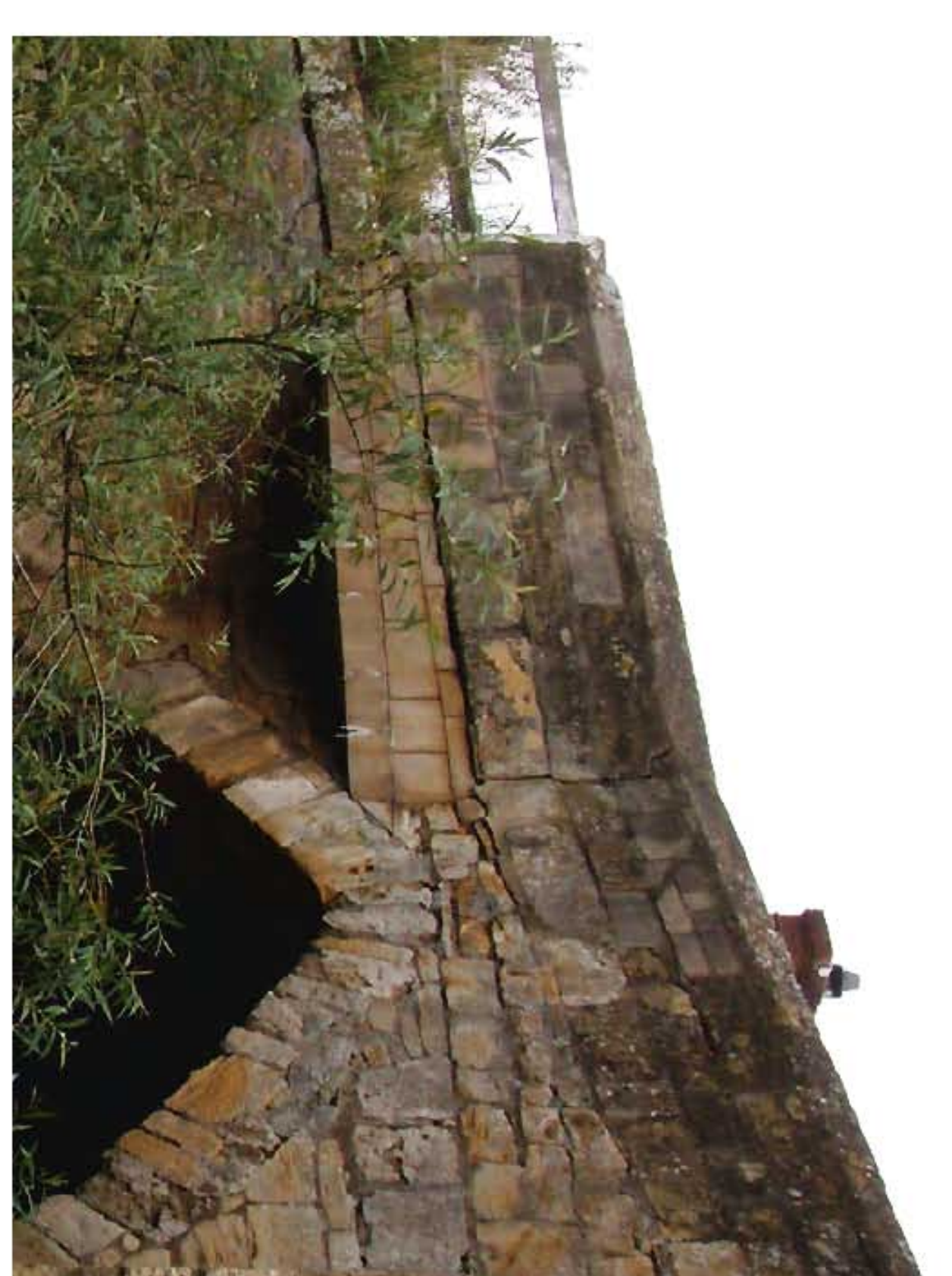
Vehicle Impact Damage to Parapets - 2



Aerial Photograph of Newbridge showing the sharp bend on the A415 immediately to the north of Newbridge



Vehicle Impact Damage to Parapets - 3



One of the electronic devices used to monitor movement of structure



Problems with Newbridge

Stage 1 Environmental Impact Assessment of Alternative Route Corridors

In 2007 Oxfordshire Highways completed a Stage 1 Environmental Impact Assessment of six alternative route corridors following the methodology set out in the Highway Agency's Guidance in the Design Manual for Roads and Bridges (DMRB) current at the time. The six alternative route corridors comprised of an eastern, western and central route with a variation on each. The relative merits of each route corridor was assessed against 12 areas of interest and scored and ranked as shown in the table below.

Areas of Interest Considered	Route Corridors					
	Red	Red/ Purple	Orange	Yellow	Blue	Green
	East		Central		West	
1. Traffic Appraisal	3	6	4	4	2	1
2. Policies & Plans	6	5	4	3	2	1
3. Air Quality	2	4	5	6	3	1
4. Noise & Vibration	2	5	4	6	1	2
5. Geology & Soil	6	3	3	1	5	2
6. Archaeology & Cultural Heritage	3	4	5	6	2	1
7. Ecology & Nature Conservation	6	3	5	4	2	1
8. Landscape, Visual & Townscape	6	5	3	4	2	1
9. Agriculture	6	4	2	1	5	3
10. Road Drainage & the Water Environment	6	5	4	3	2	1
11. Pedestrians, Cyclists, Equestrians & Community Effects	6	5	4	3	2	1
12. Vehicle Travellers	3	6	4	4	1	2
Score*	55	55	47	45	29	17
Ranking (From 1 to 5, with 1 most preferred)	5	5	4	3	2	1

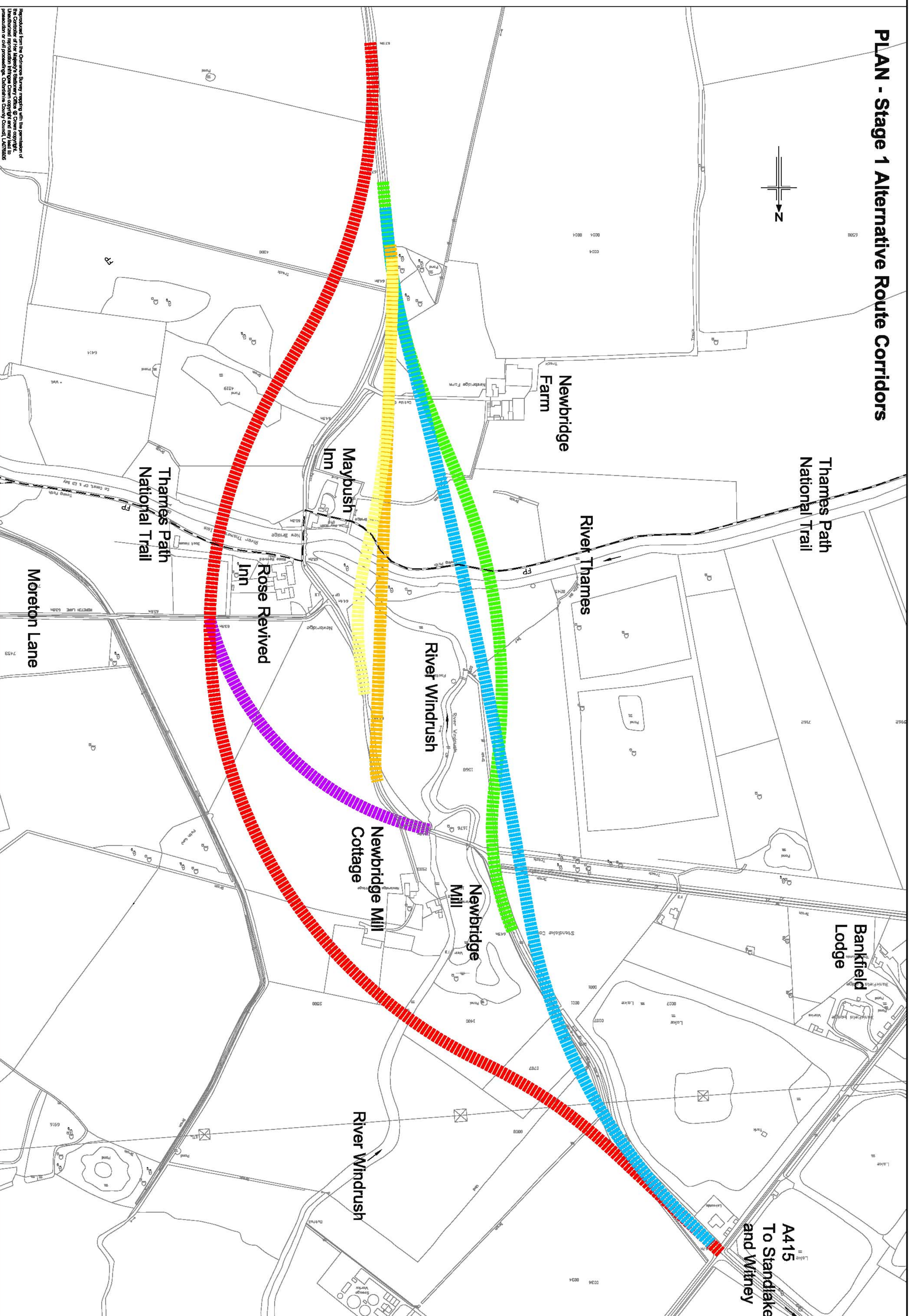
Note: *The score number represents the cumulative value of the ranking given at the end of each topic chapter in the Stage 1 Report plus the amended scores recommended in the addendum Report. A high number represents a high cumulative impact for that route corridor. Conversely a low score equates to a low cumulative impact.

Selection of a Preferred Route Corridor

It can be seen from the results in the table above that the Green route has the least environmental impact in 8 out of the 12 categories examined, and has the second least impact in 3 out of the remaining 4 categories.

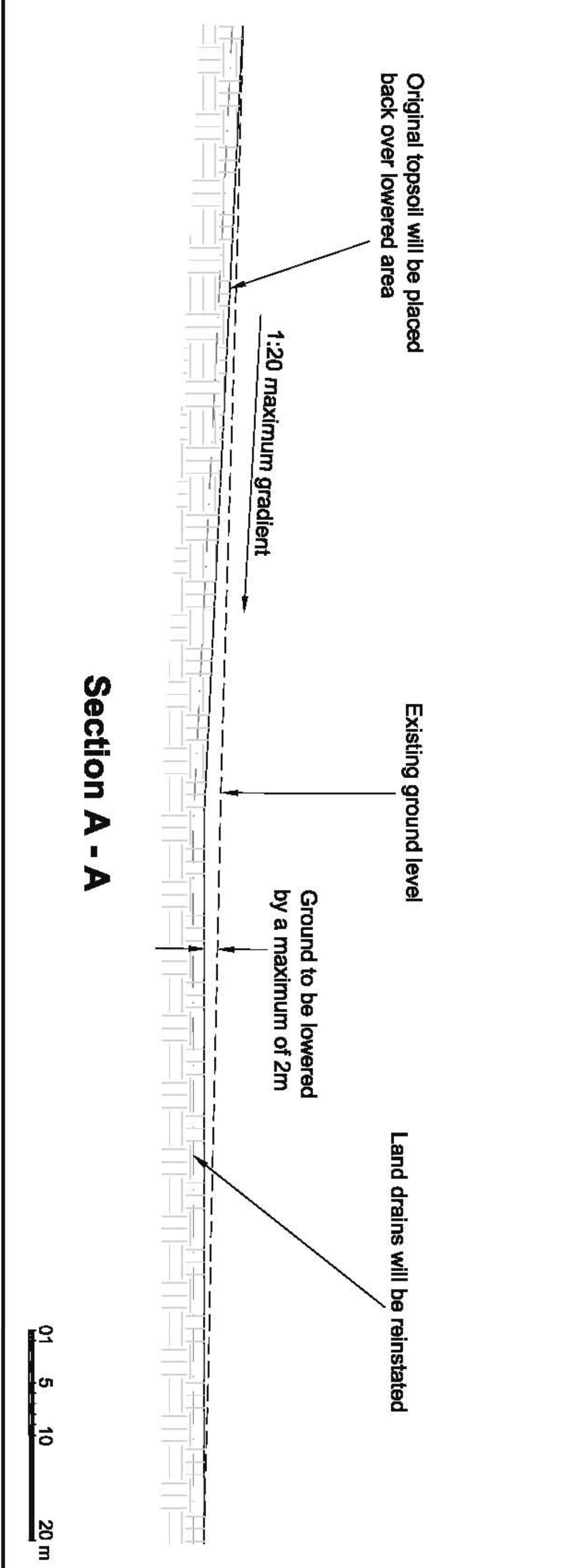
In light of the overwhelmingly positive results for the Green Route it was concluded that a scheme based on the green route corridor should be developed and that no other route corridors options should be considered further.

PLAN - Stage 1 Alternative Route Corridors

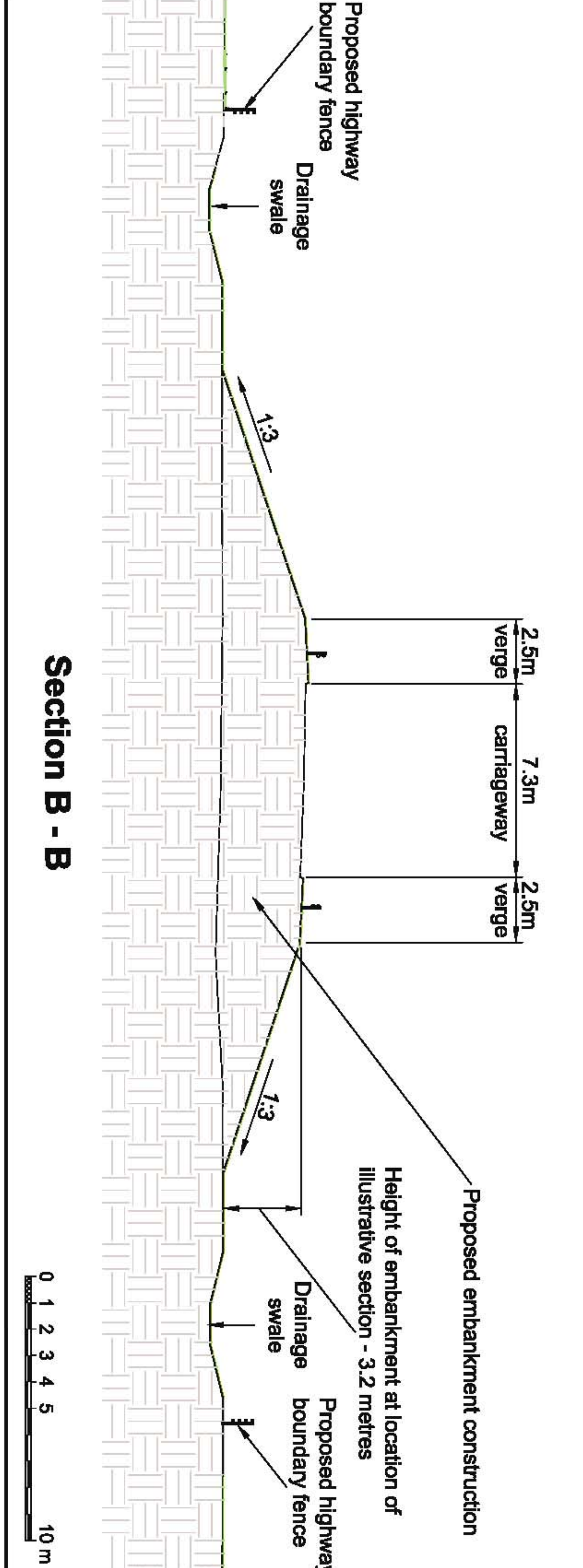


The Preferred Route Selection Process

Cross Section through the Flood Compensation Area



Cross Section of Proposed Highway



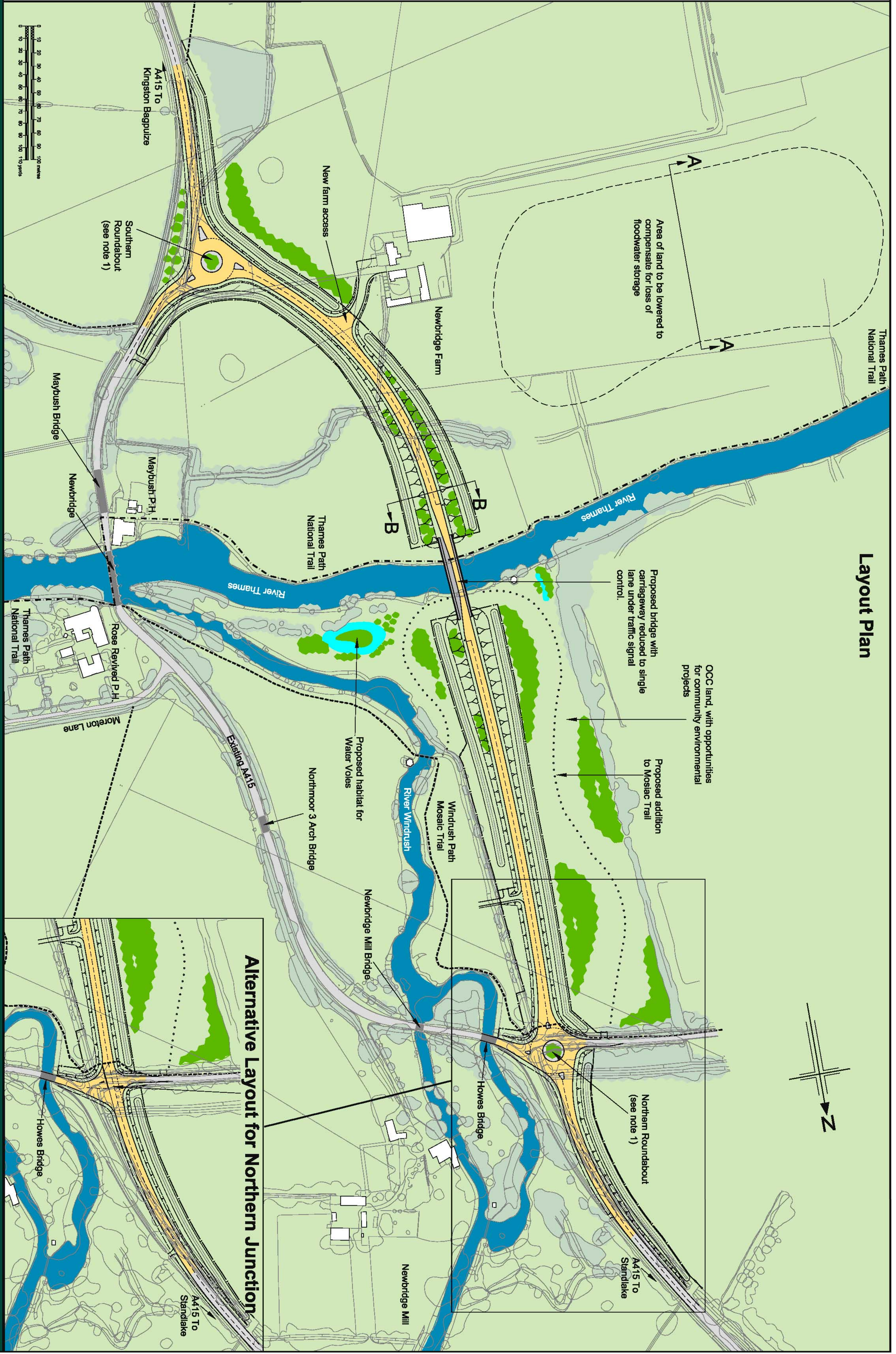
Notes:

1. Both roundabouts are small conventional roundabouts with a kerbed central island of 16m diameter and circulation carriageway width of 9.3m.
2. The bridge shown is based upon the beam bridge option being considered.

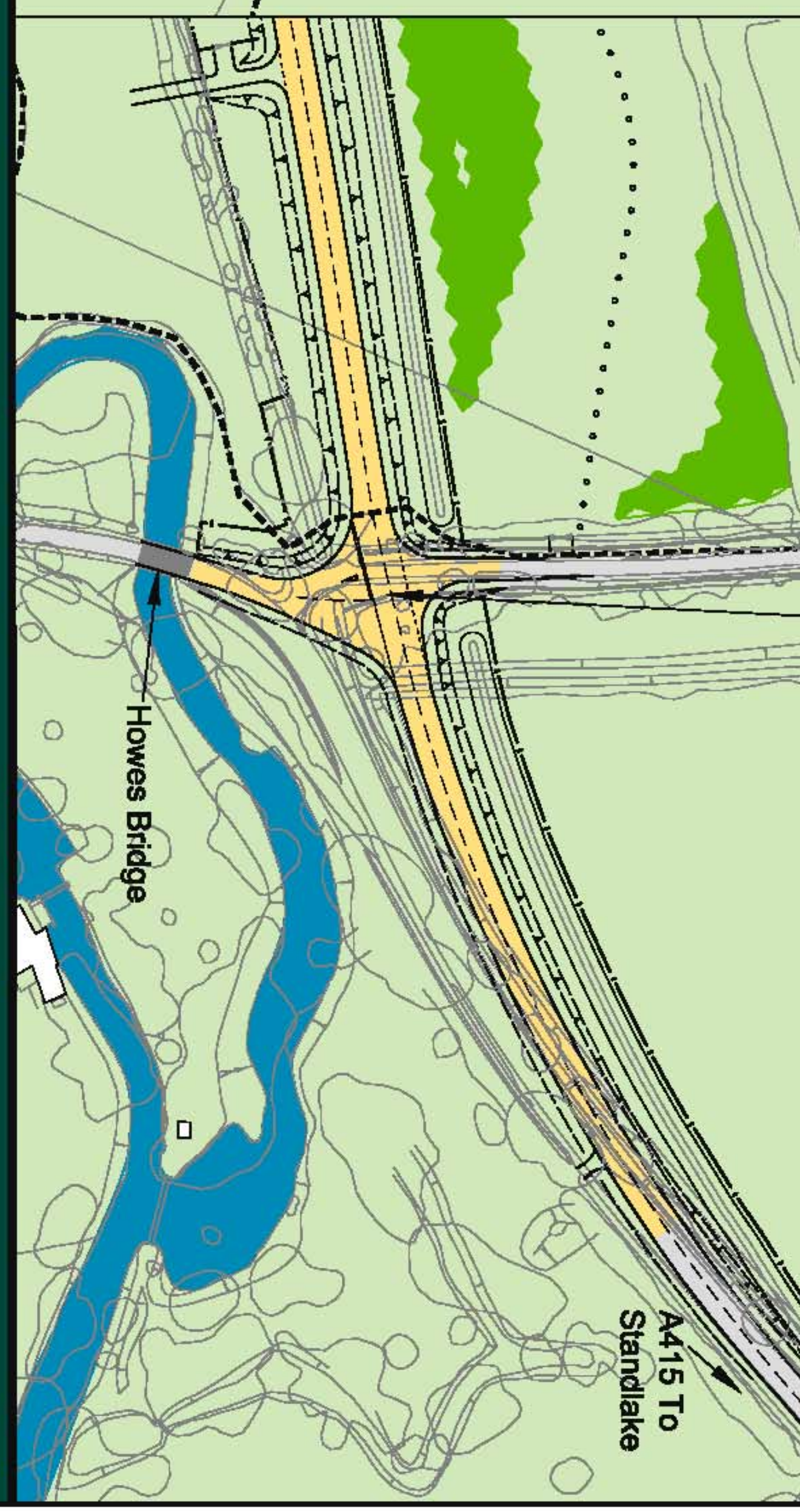
KEY:

- Proposed new carriageway surfaces
- Proposed planting, trees, shrubs & water features
- Existing shrubs & trees
- Proposed drainage swale
- Highway boundary fence
- Thames Path National Trail
- Footpath
- Proposed Mosaic Trail

Layout Plan



Alternative Layout for Northern Junction



Details of the Proposed New Route



**Beam Bridge: Three Span Flat Beam Shape with
Open Metal Parapets**

Total Scheme Cost Approx. £6.97m

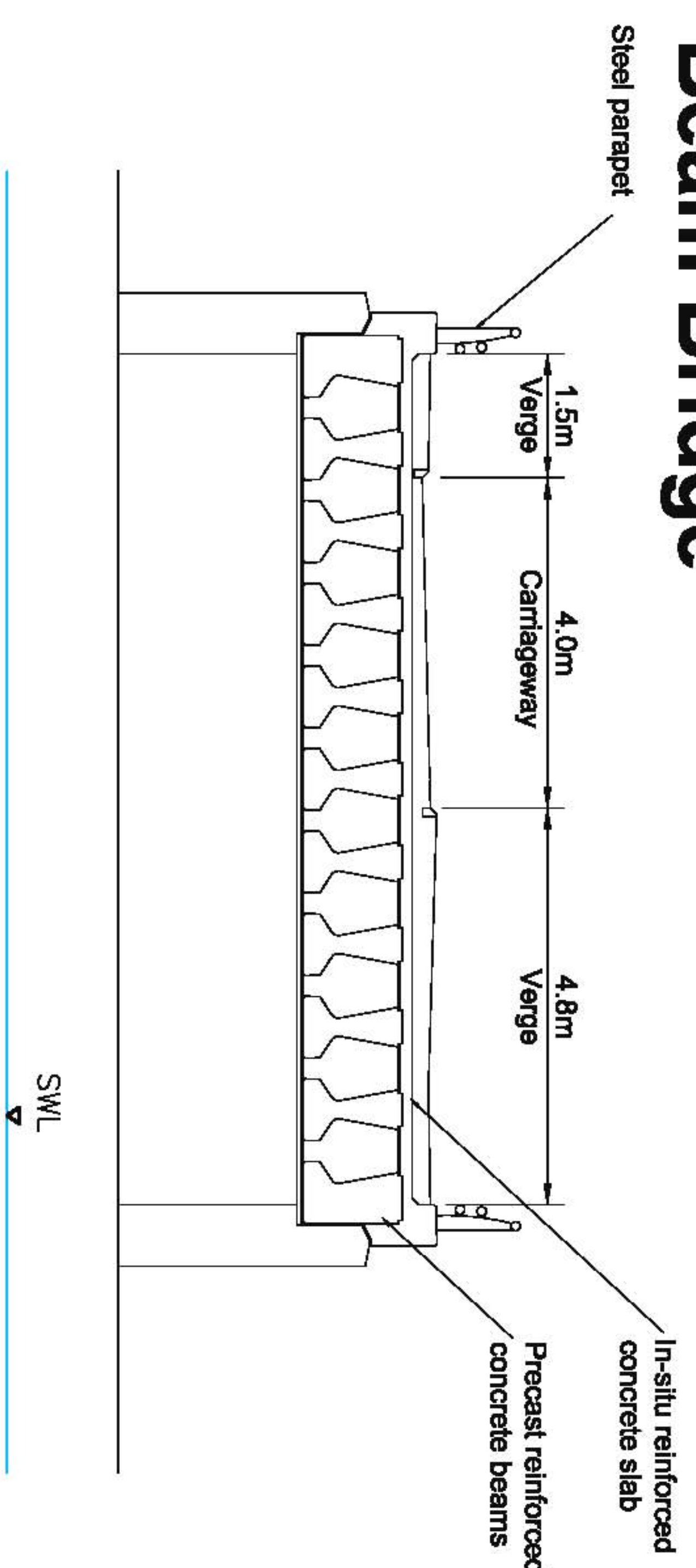


**Arch Bridge: Three Span Arch Shape with
Solid Parapets**

Total Scheme Cost Approx. £8.12m

**Computer Generated Illustrations of the Beam and Arch Bridge Options
(Looking west from Newbridge)**

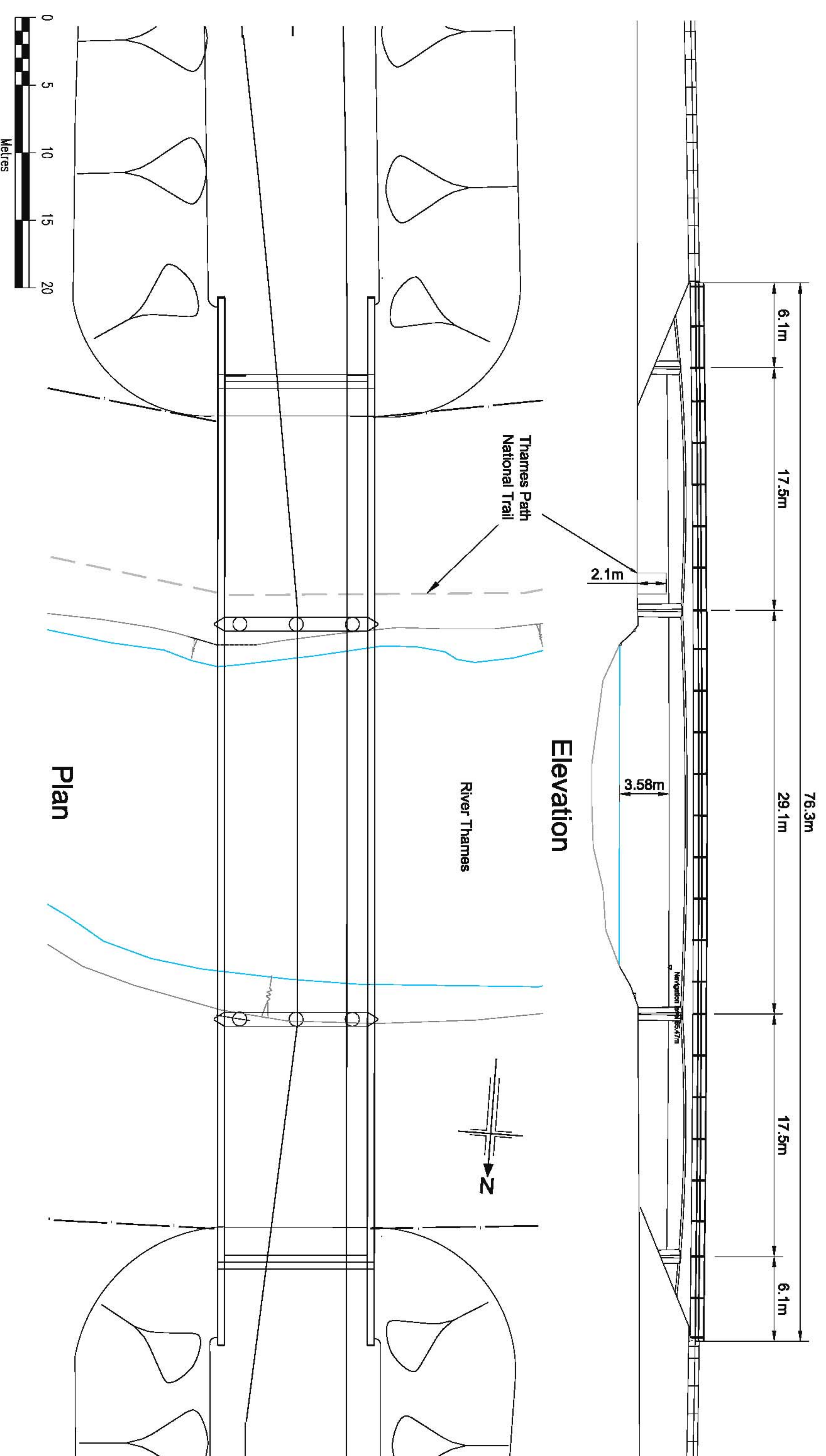
Beam Bridge



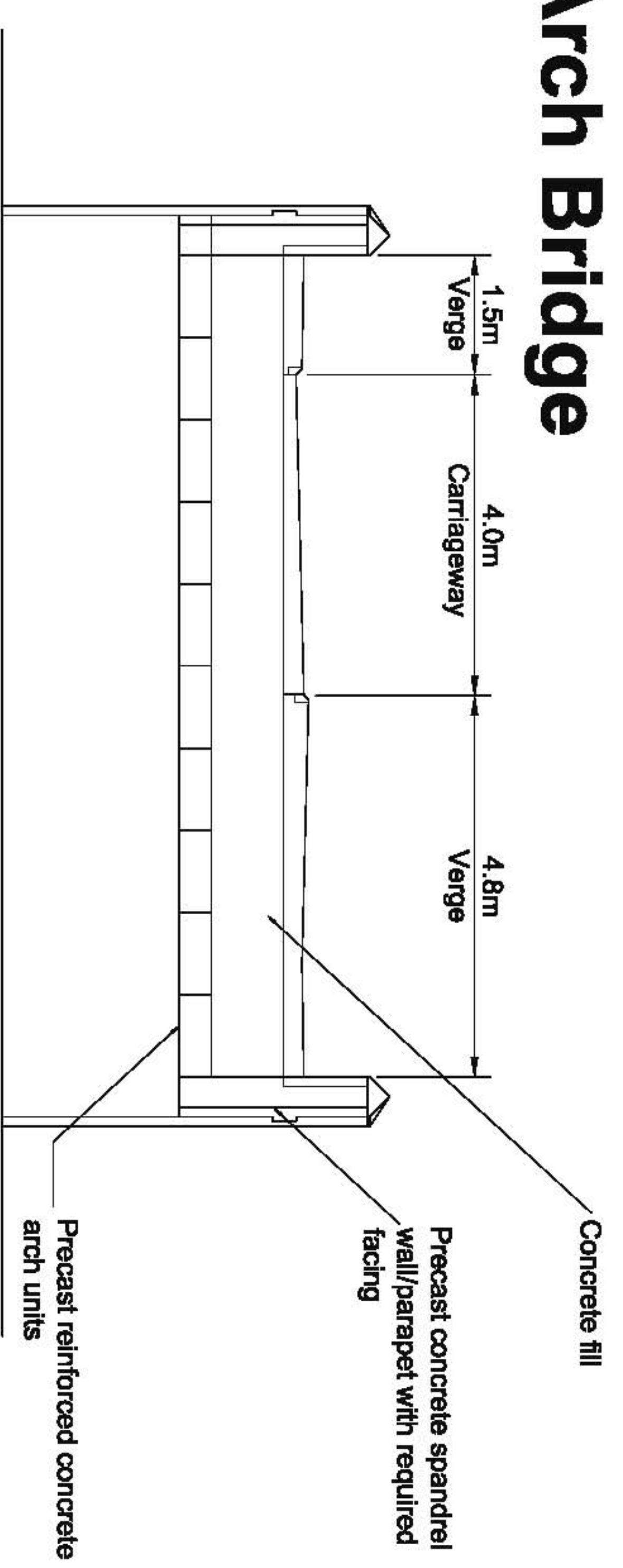
Possible Parapet Details

Bridge constructed using precast concrete beams with in-situ concrete deck slab

Total scheme cost with a beam bridge is approx. £6.97m



Arch Bridge



Possible Parapet Detail

Bridge constructed using precast concrete arch units with in-situ concrete arch infill. The bridge could be faced with reconstructed or natural stone.

Total scheme cost with an arch bridge is approx. £8.12m

