Worcestershire County Council

Cabinet – 18 March 2021

Background paper to item 6

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Cabinet
Thursday, 18 March 2021, 10.00 am, Online only

Membership: Mr S E Geraghty (Chairman), Mr A T Amos, Mr A I Hardman, Mr M J Hart, Mrs L C Hodgson, Ms K J May, Mr A P Miller, Dr K A Pollock, Mr A C Roberts and Mr J H Smith

Agenda

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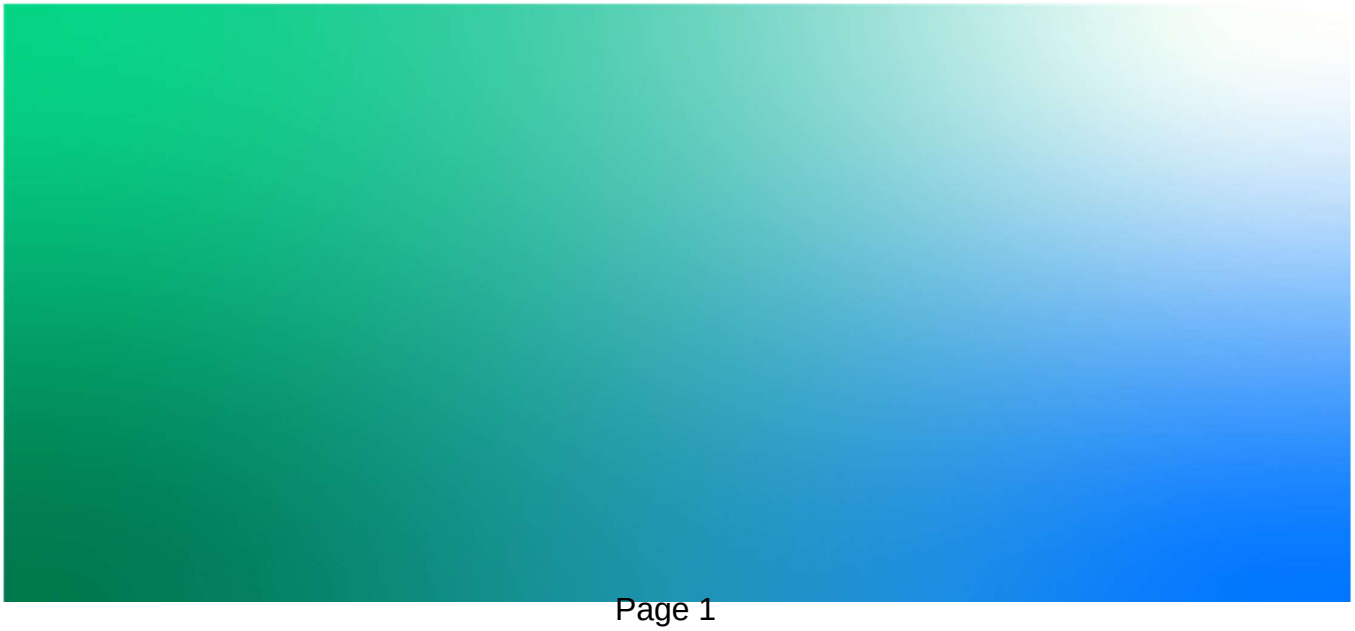
Hampton Pedestrian/Cycle Bridge

Evesham Alignment Feasibility Study

694944.BA.22.00-001 | 0

05 June 2020

Worcestershire County Council



Hampton Pedestrian/Cycle Bridge

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Acronyms and Abbreviations

ABC	Aerial Bundled Cable
AONB	Area of Outstanding Natural Beauty
EA	Environment Agency
mAOD	metres Above Ordnance Datum
NCR	National Cycle Route
STATS	Utility statutory undertakers search
SSSI	Site of Special Scientific Interest
WCC	Worcestershire County Council

Executive Summary

We have been commissioned by Worcestershire County Council, (WCC) to undertake an alignment feasibility study for the proposed pedestrian/cycle bridge crossing the River Avon in Evesham, Worcestershire. The study has focused on the options along the river that would be the most appropriate location for the bridge. The location of the bridge will be within an area between Boat Lane and Abbey Bridge.

In 2014, Bellway Homes Ltd secured planning permission to extend Hampton westward with a large housing development scheme. As part of the planning conditions set out in the Deed for the housing development scheme, a sum of £2,868,382 was allocated to the design and construction of a combined pedestrian and cycle bridge and a further £200,000 was allocated for the link roads for the proposed bridge. The purpose of the new bridge being to create a direct pedestrian/cycle connection between Evesham and Hampton both for the residents of the development and the wider community.

There are currently two options for pedestrians and cyclists travelling from Hampton to Evesham; the ancient Hampton Ferry and Abbey Bridge. Hampton Ferry is impractical for pedestrians and cyclists commuting due to the small capacity of the ferry. Abbey Bridge is the main vehicle route into Evesham and as such is heavily trafficked. This high use of both the bridge and the approaches along with its remoteness from Hampton make the route unappealing for pedestrians and cyclists.

The proposed bridge will provide a dedicated route into Evesham from Hampton for pedestrians and cyclists; a more direct and aesthetically inviting route instead of the alternative Abbey Bridge.

Following site visits and assessments, three potential locations for a bridge were identified between Boat Lane and Abbey Bridge. These locations have been tabulated below, in reference with Figure 11 of this report, with the summarised advantages and disadvantages for each location option:

Table 1 - Summary of Location Options

Location	Advantages	Disadvantages
Location A *Hampton Ferry*	Provides a direct link to Evesham using Boat Lane and allows for a design which reduces the length of the elevated structure	Visual intrusion to adjacent residential properties Greatest distance from Hampton
Location B *Clarks Hill Rise*	River width at narrowest so most cost effective structure. Vegetation privacy for residential properties	Distance from Pershore Road Elevation difference between banks
Location C *St. Andrew's Parish Church*	Close to Pershore Road Can be linked to Leisure Centre	Location including close proximity to a Grade II listed building Severn Trent access road diverts away from river bank

Following a review of each location option, **Location B is considered the most appropriate location for Hampton Bridge**. The bridge location will connect into the existing Severn Trent access road on the west bank and utilise the towpath on the east bank to link up to Boat Lane for pedestrian use. Placement of the bridge on the narrowest section of the river Avon will provide more scope for a cost effective design of the bridge which also allows it to utilise the aesthetics of the natural surrounding landscape.

We have provided an initial cost estimate for the construction of the bridge. It is recommended that the next stage is to work up the detailed design and costing of the bridge in Location B.

1. Introduction

Hampton is an area of Evesham, formerly a separate village, situated to the west of the River Avon. In 2014, Bellway Homes Ltd secured planning permission to extend Hampton westward with a large housing development scheme. As part of the planning conditions set out in the Deed for the housing development scheme a sum of £2,868,382 was allocated to the design and construction of a combined pedestrian and cycle bridge and a further £200,000 was allocated for the footpath links to the proposed bridge. The purpose of the new bridge being to create a direct pedestrian/cycle connection between Evesham and Hampton both for the residents of the development and to serve the wider community.

We have been commissioned by Worcestershire County Council, (WCC) to undertake an alignment feasibility study for the proposed pedestrian/cycle bridge crossing the River Avon in Evesham, Worcestershire. We have focused on the options along the river that would be the most appropriate location for the bridge. The location of the bridge will be within an area between Boat Lane and Abbey Bridge.

There are currently two options for pedestrians and cyclists travelling from Hampton to Evesham; the ancient Hampton Ferry and Abbey Bridge.

Hampton Ferry is a pedestrian cable ferry parallel to Boat Lane. It dates back to the 13th Century and is manually operated; the ferry can only carry 6 people across at a given time; less if cyclists are using the crossing. It is understood that the proposed bridge will deem the Hampton Ferry surplus to requirements as a commuting route however may still remain operational.

Abbey Bridge is a highway bridge comprising of a carriageway containing two lanes southbound and one lane northbound, there are also two footways either side of the carriageway which form the main pedestrian/cycle route into Evesham. Abbey Bridge is the most direct vehicle route into Evesham from Pershore Road, which continues onto Worcester, and as such is heavily trafficked with commuting traffic. The high traffic flow and its distance from Hampton makes the crossing an unappealing route for pedestrians and cyclists commuting into Evesham.

The proposed bridge is intended to create a dedicated route into Evesham from Hampton for pedestrians and cyclists; a more direct and aesthetically inviting route instead of the alternative Abbey Bridge. The secondary aim of Hampton Bridge is to encourage commuters to walk/cycle into Evesham instead of drive, potentially alleviating the traffic flow across Abbey Bridge and subsequently reducing the high volume of vehicles within Evesham town centre. Reducing the vehicles within Evesham, and creating an aesthetic cycle route, will help in achieving the objectives set out in Evesham Town Council's adopted Cycle Strategy (2003) and supporting Wychavon District Local Plan Policy SR5 'Minimising Car Dependency'. The need for a new bridge is also supported in Local Transport Plan 4.

The proposed bridge will link into the Severn Trent access road on the west bank of the river Avon, along with the existing public footpaths that circumvent Evesham along the river's east bank; travelling through the public parkland lining the east bank of the river from Abbey Road to Boat Lane.

There are a number of constraints to consider in relation to the precise location of the crossing, these will be discussed in depth within the following sections but our ultimate conclusions are that a new bridge is feasible and deliverable.

2. Location and Setting

2.1 Location of Proposed Bridge

Evesham is an historically important town situated within the West Midlands, 20 km south of the cities of Worcester and 35 km north of Gloucester. Figure 1 shows the pre-defined area provided by the Client to be considered for the proposed bridge location. This area has been chosen because it resides between the two current river crossings from Hampton to Evesham; being the Hampton Ferry and Abbey Bridge.

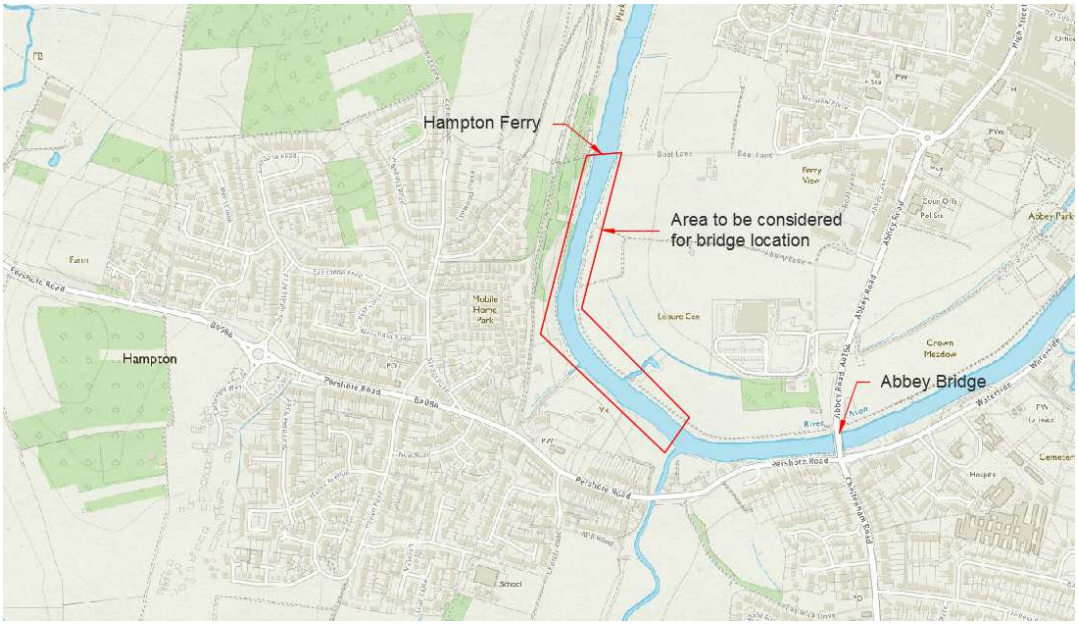


Figure 1 - Location Map

Following an initial walkover of the site defined in Figure 1 and analysis of topography and potential constraints, three sites were identified as being potentially suitable locations for the proposed bridge and are shown in Figure 2. The subsequent sections of this report considers the constraints offered by all or some of these three sites and provides an initial assessment of the feasibility and costs associated with delivering a new bridge.

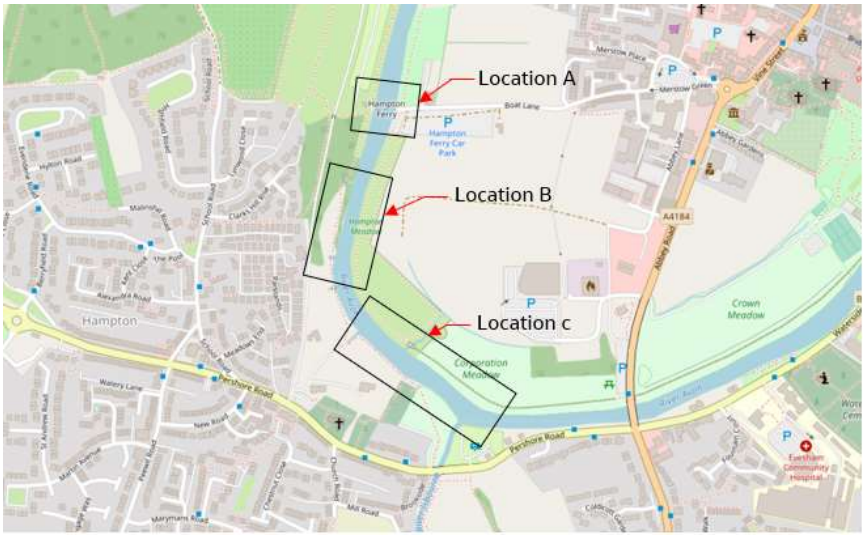


Figure 2 - Hampton Bridge Location Options

2.2 Existing and Proposed Links

Access from Hampton (west of the River Avon)

There is a concrete access road that runs parallel with the west bank of the river. It starts at Pershore Road and extends beyond the Hampton Ferry crossing; the road is owned and maintained by Severn Trent Water. The access road will be an ideal link for access for pedestrians and cyclists to the proposed bridge as it creates a direct route from Pershore Road and we do not envisage that Severn Trent would be reluctant to allow the road to be used for the purpose of the bridge.

Figure 3 - Typical View of Severn Trent Water Access Road

Access from within the Hampton residential area (west of the River Avon)

There is currently an access from within the Hampton residential development by utilising the public footpath from Clarks Hill Rise. Currently the path is only adequate for use as a footpath due to its width and steep gradient.

Figure 4 - Typical View Along The Public Footpath From Clarks Hill Rise

Access from Evesham (east of the River Avon)

On the east bank, there is a towpath which runs parallel to the river connecting Boat Lane to Abbey Road. This has been recently upgraded by WCC. It is probable that any new bridge will have to span over the towpath, providing a clearance envelope, and come down to ground level with the use of ramps.

Figure 5 - Typical View Along The Tree Lined Towpath on The East Bank

For further detail refer to Sketch 001 in Appendix A.

3. Constraints

A review of the location constraints is an important stage when deciding the feasibility of a location for the proposed bridge. There are various third-party bodies who need to be considered during the feasibility process for their requirements and constraints. These are listed and discussed below.

3.1 Ecology & Environment

In August 2017 SevernScape were commissioned by the Client to undertake a high level ecological walk-over survey. The survey focused on assessing the red boundary area shown in Figure 1. SevernScape concluded there were no major ecological or environmental issues within the boundary area and confirmed that it is not within a SSSI or an AONB. However, the report did highlight four potential issues that require further investigation during future stages of the project. These being:

- An area of old horse chestnut trees along the west bank
- Heavy vegetation on the west bank; ideal habitat for wildlife roosting
- Bat droppings found on a small culvert close to the Hampton Ferry at Boat Lane
- Avenue of lime trees flanking the towpath on the east bank

The location of each of these issues in relation to each of the three locations can be found on Sketch 001 in Appendix A. Whilst there will clearly be a need to undertake a more detailed and up to date survey as part of the process of preparing a more detailed design and costings, we have been content to rely on the findings of this survey supplemented with our own more recent survey as detailed in section 3.1.1.

Horse chestnut trees

The old horse chestnut trees could pose a restriction to the precise siting of a bridge in Location B. If they have Ancient or Veteran status; this would prevent the trees from being uprooted. This issue is not considered to be too onerous and can be mitigated through careful placement of the structure as part of the next phase of investigation.

Heavy vegetation

The heavy vegetation on the west bank, if found to be a habitat for wildlife roosting, could add restriction to the construction stages; being unable to disturb the vegetation during the bird breeding season of March to August. This would not prevent the delivery of the bridge. A more detailed study of the preferred site will provide further information at the next stage of the feasibility assessment.

Bat droppings

The presence of bat droppings may imply there are bat dwellings near Hampton Ferry, (Location A). The proximity of bat dwellings may lead to restrictions in illumination of the bridge and may also hinder the construction process with the imposition of noise and/or lighting constraints.

Lime tree avenue

The mature lime trees are very close together in places and are a potential site for nesting birds and bat roosts. To minimise disturbance to these trees, they could be incorporated and used as a feature of a bridge and ramp design. The supporting elements for landing of the bridge and its access ramp on this bank can be designed to minimise disturbance to the same trees. Furthermore, the towpath heading north to Boat Lane could be widened on its east side by using the avenue of trees as a central feature along the path as demonstrated on Sketch 002 in Appendix A.

3.1.1 Internal ecology & environmental assessment

The ecology of the area plays a major factor in deciding on the location to position the proposed bridge. It was therefore deemed prudent to conduct an internal survey and review of the report compiled by SevernScape, to ensure its legitimacy before undertaking any decisions based on their findings.

Our Ecology Appraisal confirms the findings within the SevernScape report. An Environment Team conducted a walkover survey of the location area and highlighted the possibility of habitats residing within the dense woodland on the west bank of the river Avon. Also, the location of mature horse chestnut trees this woodland. The report concludes that a closer inspection and survey of the horse chestnut trees is advised to confirm the status of them and potential of being a concern during construction of the proposed bridge.

3.2 Statutory Undertakers Services

A C1 Statutory Undertakers Services search was conducted on the red boundary area in Figure 1. The search returned one utility provider; a Western Power Distribution low voltage cable. The cable is underground along Boat Lane, transitioning into an overhead line when it turns along the towpath. The cable terminates at a junction box approximately 140 metres south of Boat Lane; Figure 6 shows the location of the cable.

Figure 6 - Location of Low Voltage Cable (Image Courtesy of Google Maps)

The overhead cable would need to be diverted if the bridge location intersects the line, it is therefore advised that the bridge is positioned south of the junction box where the cable terminates. Regardless of bridge location, construction traffic will be in close proximity to the cable as they travel from Boat Lane to the site compound; which will likely be on the east bank due to the heavy vegetation on the west.

Correspondence with Western Power Distribution, confirmed that the overhead cable has recently been made 'ABC' (aerial bundled cable) insulated due to the fishing along the River Avon. This means that works can be carried out within 150 mm of the cable, thus there is no constraint to construction traffic travelling parallel to the line.

3.3 Land Ownership

A land ownership search has been conducted of the surrounding land, Figure 7 shows the proprietors for the land in relation to the red boundary (referenced in Figure 1).

Figure 7 - Land Ownership Around Proposed Bridge Location (Image Courtesy of Google Maps)

Table 2 below lists the proprietors and Land Title for the zones above. These proprietors will have to be consulted before the bridge location is finalised and the design stage can commence.

Table 2 - Land Ownership Proprietors

Zone	Proprietor/s	Land Title
1	The Rudge Estate	WR107154
2	The Rudge Estate	WR107154
3	Severn Trent Water	WR123839
4	Shirley Anne Overbury	HW122654
5	Unknown	Unregistered
6	Wychavon District Council	Unknown

Placement of the bridge within Zone 5 is potentially ruled out due to the zone containing a local parish church and cemetery. At this point the river is at its widest and the Severn Trent access path diverts away from the river bank requiring a longer ramp. Location C is therefore discounted as an option and has not been considered any further.

Location A is within Zone 1 and is close to the Hampton Ferry crossing and is furthest away from Pershore Road.

Location B, places the bridge within Zone 4 is more favourable because of its proximity to the existing link routes on the west bank.

It is our understanding that the land required to deliver a bridge in Location A and Location B could be acquired by WCC either via agreement or, in the event no agreement can be reached, via the use of WCC's compulsory purchase powers. It is also our understanding that the market value of the land required to deliver a bridge in either of these locations is in the region of £50,000 -£150,000 per acre.

3.4 Avon Navigation Trust

The River Avon is a navigable river and as such there is the requirement to allow passage under the proposed structure. Avon Navigation Trust has requested that there be a minimum navigable width of 12 ft 6 in (3.81 metres) and a height clearance of 14 ft (4.25 metres i.e. equivalent to 24.3 mAOD). The height clearance is based on the air data for the section of river, this is determined by the existing clearance height of bridges in the vicinity of the proposed location; Abbey Bridge.

The narrowest section for the crossing, is within Zone 4 of Figure 7, where the approximate river width is 25 to 30 metres and the elevation difference between the west and east bank is 10 metres however no survey data is currently available to confirm this. This large elevation difference and the requirement to maintain a 4.25 metre navigable height, means the structure will require ramps to access from ground level on the east bank. The ramp will have to be beyond the towpath to allow the clearance for cyclists also travelling below the bridge.

3.5 Environment Agency

3.5.1 Flood Levels

According to the Environment Agency website the proposed location is within Flood Zone 3. This is the most extreme zone and brings with it the highest probability of a flood occurring. The Environment Agency provided the following flood level data (which includes the required freeboard of 900 mm):

- 1 in 100 year flood level 24.6 mAOD
- 1 in 1000 year flood level 25.0 mAOD

The Environment Agency have a monitoring station in Evesham with a site datum 19.47 mAOD. The monitoring station's recorded actual river levels are tabulated in Table 3 below. The values presented have been converted into metres Above Ordnance Datum (mAOD) using the monitoring station's datum. This is to allow direct comparisons to be achieved between the; river levels, flood levels, and ground levels.

Table 3 - River Avon Levels [Source: Environment Agency]

Level Description	Max. value	Maximum value converted into mAOD	Further Details
Normal river level	0.58 m	20.0 mAOD	Normal river level for at least 151 days in 2016
River level in extreme weather conditions	1.90 m	21.4 mAOD	Max. level for 90% of the time since monitoring at Evesham began (December 1936)
Most recent high river level	3.9 6m	23.4 mAOD	Recorded on 25th November 2012
Highest recorded river level	5.52 m	25.0 mAOD	Recorded on 21st August 2007

The 21.4 mAOD river level in extreme weather is below the 24.3 mAOD clearance height required for navigability. This means that the bridge soffit will be above the river level during flooding. However, as the bridge will be in Flood Zone 3 the possibility of a 1 in 1000 year flood is greater. Therefore, the bridge soffit should be

above 25.0 mAOD and the design elements should allow for water to flow; the parapets must be open and the ramps parallel to the river flow.

3.5.2 Fish Refuge Site

In 2009 the Environment Agency enlarged an existing ditch on the east bank which links with the river, to create a fish refuge area. The fish refuge is located across the public parkland area, shown in Figure 8.

Figure 8 - Location of Fish Refuge Area (Image Courtesy of Google Maps)

The refuge area covers the entire width of the east bank between the river bank and the boundary fence for the farmland west of the Leisure Centre building. The location of the fish refuge means there is no possibility of creating a construction traffic route from the main road Abbey Road. Construction traffic will have to access the site from both sides of the river. The exact access route will have to be confirmed as the scheme develops but possible options include using the Severn Trent access road to the west and via a constructed temporary access road through the farmland to the east.

3.6 Historic England

Evesham has historical records dating back to the 7th Century and as such there are a number of historically important buildings in the surrounding area. Within the vicinity of the red boundary, there are three Grade II listed structures; Friar's Mead, Church of St-Andrews and the remains of Abbot Chyryton's wall; shown in Figure 9 below.

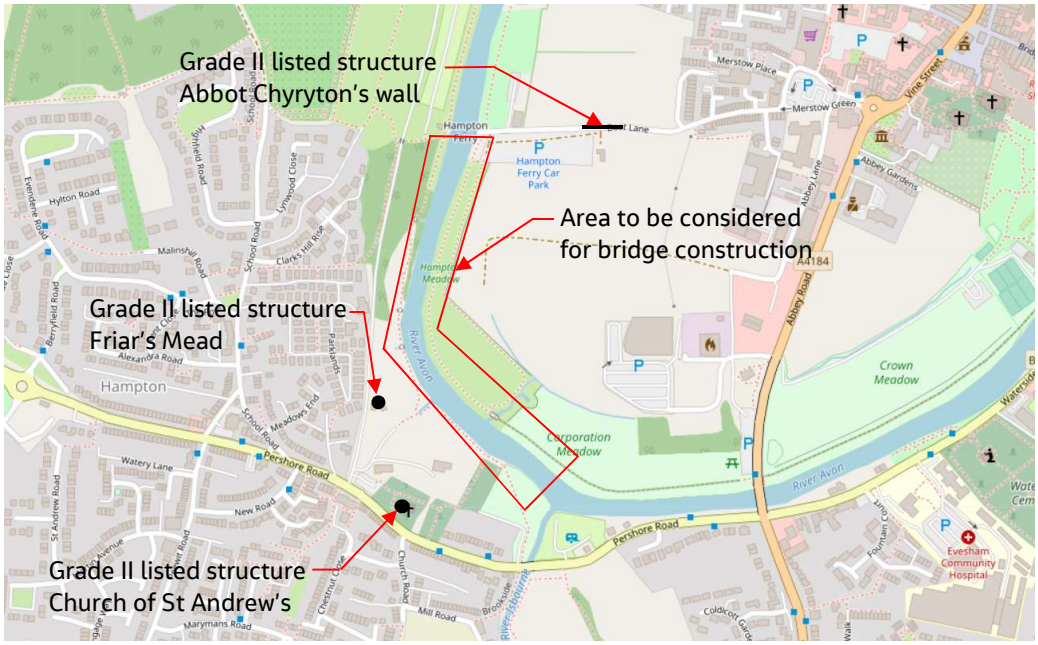


Figure 9 - Grade II Listed Buildings

Friar's Mead is a 17th Century building located within Zone 5 of Figure 7. Friar's Mead will not affect construction of the bridge, due to its distance away from the river and the likelihood of not placing the bridge within the private land of Zone 5. However, the building is occupied and has an uninterrupted view of the river. As such, the proposed bridge will have to be located far enough away from Friar's Mead to ensure visual privacy is maintained.

There is a historic Grade II medieval stone wall along Boat Lane that dates back to the 14th Century, shown by the black rectangle on Figure 9. It is listed as the remains of Abbot Chyryton's wall. The wall is also listed as a monument under the Ancient Monuments and Archaeological Areas Act 1979. Any works to this wall will require prior consent and approval from the appropriate legislative bodies.

The presence of this wall restricts the width of Boat Lane. Construction traffic may therefore find the route to be too narrow for access to the site and compound area. To prevent the medieval wall from being unintentionally damaged, an alternate route through the farmland or through the small carpark adjacent to Boat Lane would be more practical for construction traffic.

3.7 Housing Development

In March 2014 Bellway Homes Ltd secured planning permission on land within Hampton to create homes in multiple phases of construction, shown in Figure 10 below.

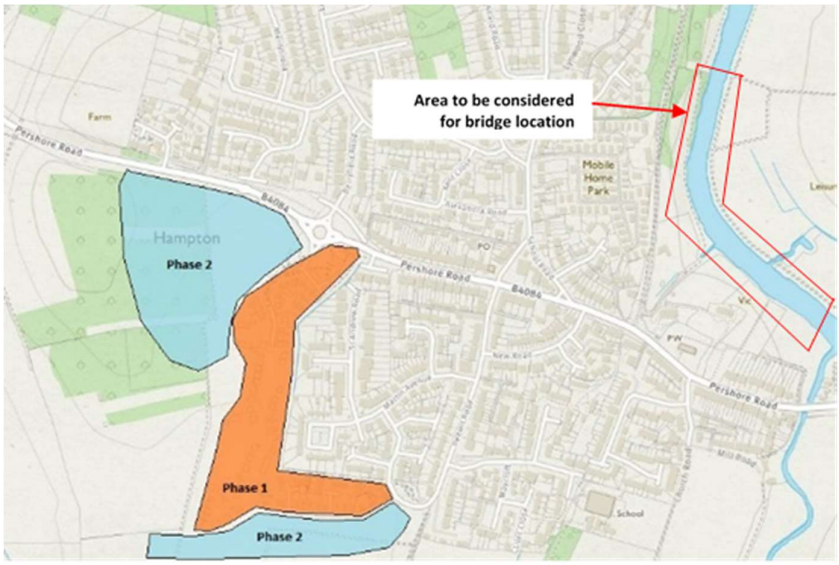


Figure 10 - Location Map With Housing Development

Phase 1 has been completed, Phase 2 is almost complete. The development is intended to increase the population of Hampton due to the overcrowding of Evesham.

The planning agreement for this housing development contains a requirement for funds for the proposed pedestrian/cycle bridge. The proposed bridge should be in a location that will maximise the use between Hampton and Evesham by pedestrians and cyclists.

3.8 Transport Planning

National Cycle Network route 41 is a long-distance cycle route intended to connect Bristol, Gloucester Stratford-upon-Avon and, ultimately, Rugby. WCC is working on delivering a local stretch of this route through Evesham, which will help complete the national route, but more importantly from a transport planning perspective, it will also give people locally improved options to make 'everyday' journeys by bike or on foot. The proposed walking and cycling bridge will tie-in with this work.

The key objective for the bridge is to find a location that creates a convenient, attractive walking and cycling route from the Hampton development to the town centre.

3.9 Statutory Approvals

Before construction of the proposed bridge commences, the project will require legal authorisation by the Secretary of State for Transport; under Section 106(3) of the Highways Act 1980. The documents required for authorisation will include but not limited to; a description of the points of commencement and termination, overall dimensions and headway clearances, a description of the ramps linking the bridge crossing to the surrounding infrastructure, and a general geographical location reference for the bridge crossing. We do not envisage any in principle reason why consent to construct the bridge will be withheld but this is on the understanding that more detailed site surveys are required to identify and assess the environmental and ecological impacts of the proposed bridge within the context of the wider social, economic and environmental benefits, alongside appropriate mitigation measures.

4. Location Options

This section discusses the advantages and disadvantages of locations A, B and C. Consideration is given to each with regards their acceptability as the recommended location for the bridge.

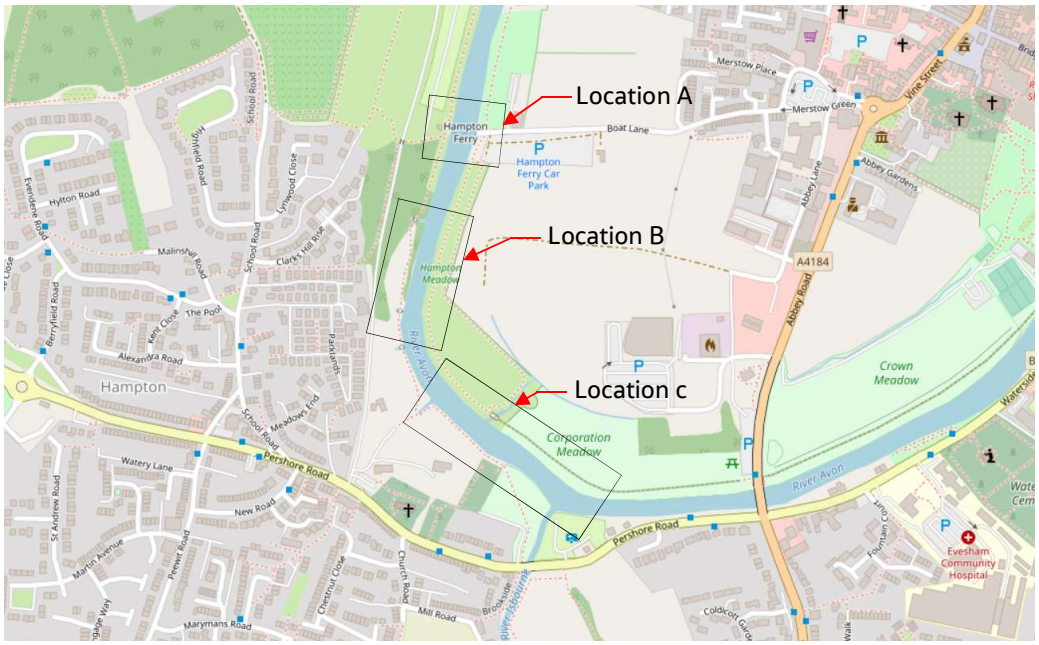


Figure 11 - Hampton Bridge Location Options Plan [Image Courtesy of Open Street Maps]

4.1 Location A

Location A is on the site of the existing Hampton Ferry crossing; adjacent to Boat Lane.

Advantages

- Reduced length of elevated structure as the approach ramps on the west bank can be integrated into the existing topography

Disadvantages

- River width 40 metres, leading to a longer main span.
- The adjacent house and caravan park on the west bank of the river will be directly overlooked by users of the bridge.
- The bridge would not create a direct link to the housing development of Hampton.
- Likely to impact the existing Hampton ferry crossing.

4.2 Location B

Location B is approximately 200 metres south of Location A; adjacent to Clarks Hill Rise just south of Avon House.

Advantages

- The River Avon is at its narrowest (approx. 25m) and is therefore the most cost effective design and structure.
- Reduced length of elevated structure as the approach ramps on the west bank can be integrated into the existing topography
- Location is far enough away from Hampton ferry crossing for it to remain, if desired.
- Can be directly connected to the existing Severn Trent Water access road.
- Future opportunity to create an improved link to the footpath leading from Clarks Hill Rise for walkers.
- High vegetation on the west bank ensures privacy for surrounding properties.
- High vegetation provides the opportunity create an elevated walk through the trees.

Disadvantages

- Large difference in ground level between west and east banks; require ramps to connect to link paths.
- More vegetation on the west bank will require clearance compared to other locations.

4.3 Location C

Location C is approximately 200 metres south of Location B; around the bend of the river Avon.

Advantages

- River width 32 metres, medium width compared to other options
- Closer and more direct link to Pershore Road.
- Can be directly linked to the Leisure Centre to give Hampton a direct route to the facilities.

Disadvantages

- Increased length of elevated structure as approach ramps are required on both banks (with 1:20 gradients, could be significant length of ramps on each bank)
- Location is close to the fish refuge area.
- There is a Grade II listed building
- The river is at its widest at approximately 40 metres and therefore the most expensive structure.
- At this point the river is at its widest and the Severn Trent access path diverts away from the river bank requiring a longer ramp to access the bridge.

5. Cost Estimate

A separate cost estimate report has been produced and provided in Appendix B. The total capital cost of the bridge excluding VAT is £3,066,650. It should be noted that the figure quoted is subject to a number of exclusions (See paragraph 39 of Appendix B) and that the final costs are likely to be well in excess of this figure. A more accurate cost estimate can be provided at the next stage of detailed design.

6. Conclusions and Recommendations

Taking into consideration all the constraints and options discussed within this report, **Location B is the most favourable site** for the bridge crossing. There are however a number of queries relating to this site that need investigating in more detail during the next stage of detailed design. By choosing the narrowest river crossing location the bridge span can be shortened and as such the cost of the bridge will be significantly reduced.

Location C was discounted early in the study, primarily because of the presence of the church and cemetery and the visual intrusion a new bridge may cause to adjacent properties. The river width is believed to greater than the other options and therefore the bridge cost is likely to be higher.

Location A, although initially preferable because of the existing Hampton Ferry crossing, was discounted because it is less accessible to the residents of Hampton and is visually intrusive to the nearby properties. It is probable that if located here, there would be a preference by most to continue to use the existing route across Abbey Bridge.

The figure below provides an overview of the proposed layout at Location B. Further detail is discussed below and provided on the sketches in Appendix A.

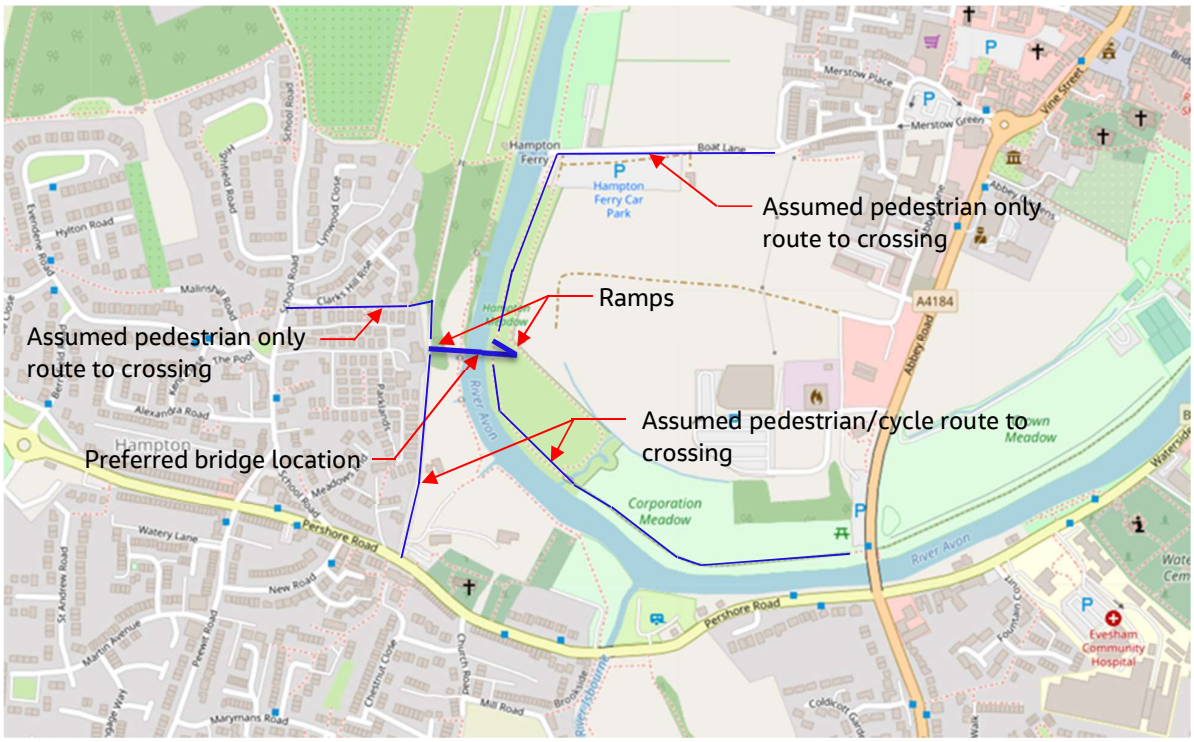


Figure 12- Proposed Location Including Assumed Traffic Route [Image courtesy of Open Street Map]

At this crossing point, the River Avon is at its narrowest. This is likely to provide a reduction in the desired length of a structure and the associated construction costs. The high level of vegetation on the west bank ensures there is minimal visual intrusion into the homes within Hampton. The high level of vegetation and tree coverage will add to the experience of those using the bridge whereby they will be walking amongst the trees at an elevated level.

Due to the river levels and navigation requirements the bridge will need to have a clearance of 4.25 metres across the river width. There is also the clearance requirement for the towpath, to allow cycle use. These

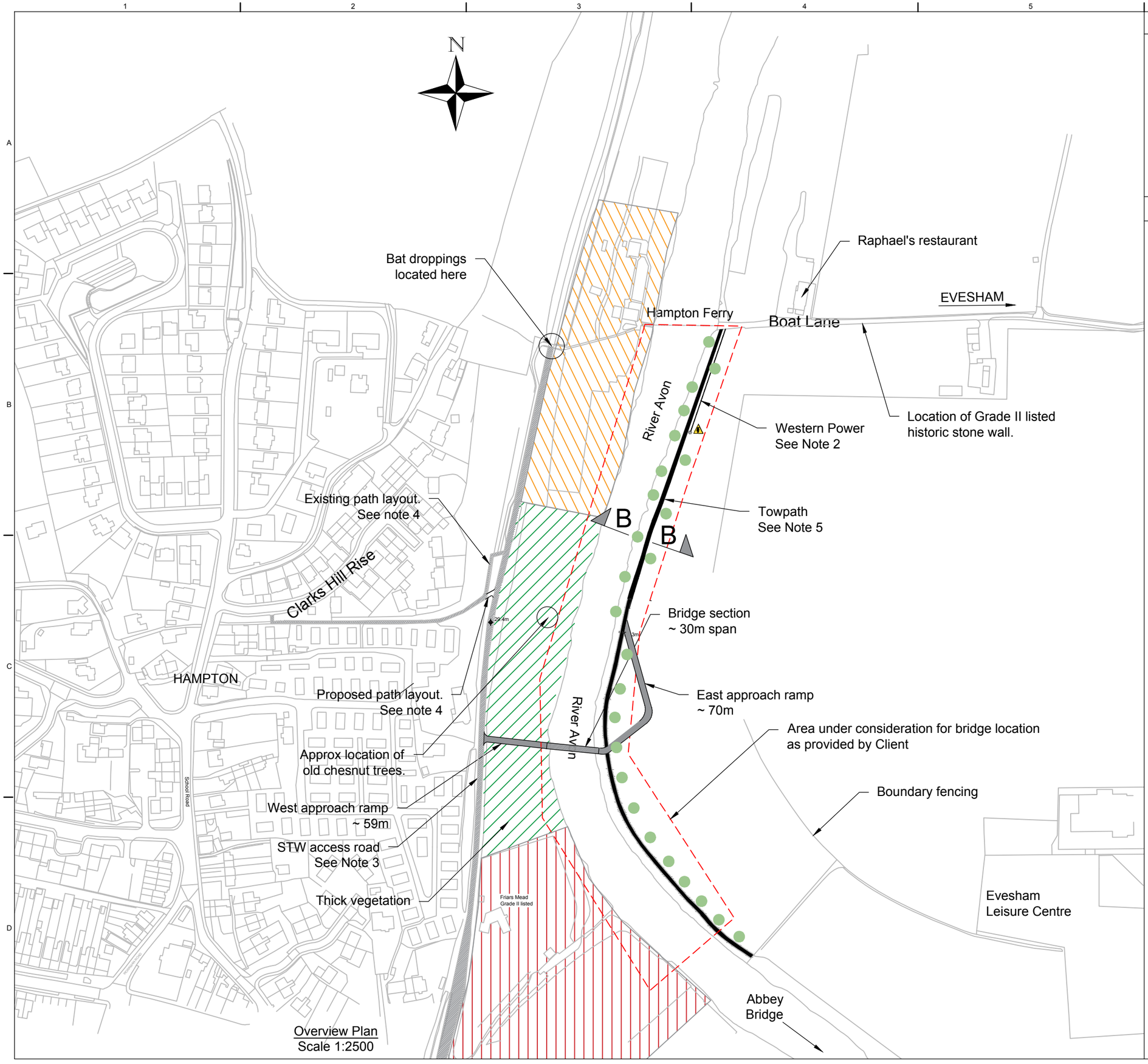
restrictions mean it is recommended the bridge be level across the river and towpath, with the ramp then taking the route down to ground level.

The bridge will be accessed from the Severn Trent access road on the west bank and will link into the towpath on the east bank, directing pedestrians and cyclists south and east towards Abbey road and into Evesham centre.

The trees lining the towpath on the right bank can be used as a feature when widening the towpath. An example of this is shown on the sketches in Appendix A.

Access for construction is likely to be required from both banks. The Severn Trent access route could potentially be used for construction traffic on the west bank. A newly constructed temporary access road through the farmland to the east bank will likely be required for access to the east bank. The exact access route will have to be confirmed at a later stage after consultation with land owners.

Appendix A. Drawings



Overview Plan
Scale 1:2500

GENERAL NOTES

- DRAWING TO BE USED INDICATIVELY ONLY
- HEIGHT ELEVATION VALUES ARE IN METRES ABOVE ORDINATES DATUM (mAOD)
- RAMP LEVELS ARE APPROXIMATE BASED ON ELEVATION VALUES.
- SEVERN TRENT ACCESS ROAD LABELED AS SVT FOR CLARITY
- ALL CROSS SECTIONS (A,B & C) CAN BE FOUND ON SKETCH 001
- BACKGROUND GEOGRAPHY TAKEN FROM ORDINATE SURVEY MAP DATA; TOPOGRAPHY SURVEY NOT CONDUCTED AT THIS STAGE

CONSTRAINTS NOTES

LAND OWNERSHIP

1. Land on the east of the river is owned by The Rudge Estate. The Rudge Estate are in agreement for the proposed bridge crossing to be constructed.
   - The Rudge Estate
   - Shirley Anne Overbury
   - Private

UTILITIES

2. A Western Power Distribution Low Voltage overhead cable parallel to the towpath. The cable has been deemed insulated is unlikely to pose a constraint to construction traffic.

ACCESS

3. Severn Trent access road runs parallel to the river, connecting Pershore Road with the ferry crossing adjacent to Boat Lane. Currently the access point from Pershore Road is gated, preventing public vehicles using the road.
4. Public footpath which links Clarks Hill Rise with the Severn Trent access road. It is proposed that the existing connection from Clarks Hill Rise to Severn Trent access road is modified to allow direct access across the bridge with no alignment deviations. See SKETCH 002 for cross section.
5. Towpath runs parallel along the east bank of the river, connecting Abbey Bridge with Boat Lane. See SKETCH 002 for cross section.

ENVIRONMENT AGENCY

6. Avon Navigation Trust require a river clearance envelope of 12ft wide by 14ft high. This is governed by the current clearance provided by Abbey Bridge downstream.
7. Flood levels provided by Environment Agency, including the required 900mm freeboard are listed below.
   Levels are mAOD:
   1 in 100 years 24.6m
   1 in 1,000 years 25.0m
8. For flood map area, see SKETCH 003

DRAFT

REV	DSGN	DATE	REVISION	DR	CHK	APVD	BY	APVD	FN
-	MO	-		MO	MO	FN	-	-	-

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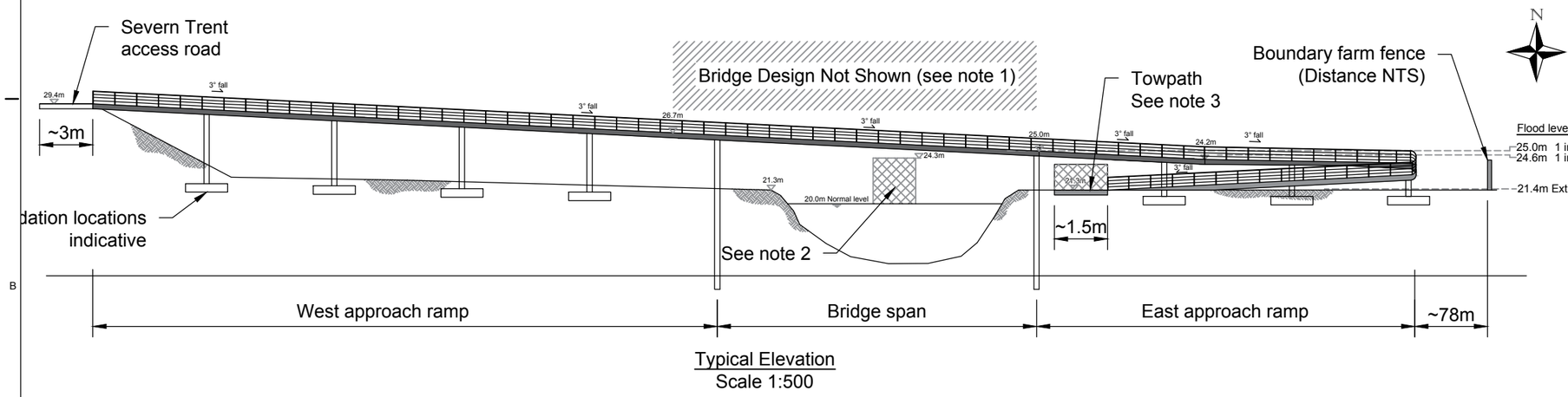
ch2m:

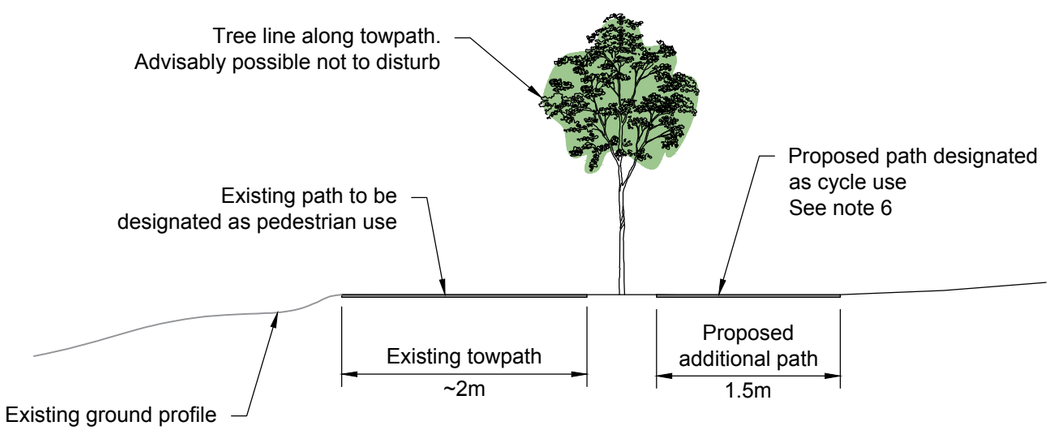
Hampton walk/cycle bridge, Evesham
Constraints Overview

PURPOSE OF ISSUE: FEASIBILITY

1:2500 @ A3	
VERIFY SCALE	
BAR IS 25mm ON ORIGINAL DRAWING. 0 25mm	
DATE	June 2020
PROJ	694944
DWG	SKETCH 001
SHEET	1 of 1



Typical Elevation
Scale 1:500



Cross section B-B
Scale 1:50

GENERAL NOTES

- DRAWING IS INDICATIVE ONLY. BRIDGE DESIGN IS NOT REPRESENTATIVE OF FINAL DESIGN, SHOWN FOR CLARITY IN LOCATION
- ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE
- ALL GROUND LEVELS AND RIVER LEVELS ARE mAOD
- DIMENSIONS AND AOD LEVELS ARE APPROXIMATIONS USING PUBLIC DATA
- SEE SKETCH 001 FOR GEOGRAPHICAL LOCATION OF CROSS SECTIONS
- FLOOD LEVELS INCLUDE REQUIRED FREEBOARD OF 900mm; ENVIRONMENT AGENCY
- ARROWS INDICATE FALL DIRECTION WITH GRADIENT

NOTES

1. BRIDGE FORM TO BE CONFIRMED IN OPTIONS STUDY STAGE. BRIDGE WIDTH TO BE MINIMUM 3m
2. NAVIGABLE CLEARANCE ENVELOPE PROVIDED BY AVON NAVIGATION TRUST, WIDTH 12ft/HEIGHT 14ft
3. TOWPATH REQUIRES 2.4m CLEARANCE FOR CYCLIST USE; IN ACCORDANCE WITH TA 90/05 OF THE DESIGN MANUAL FOR ROADS AND BRIDGES (DMRB)
4. BOUNDARY FENCE WITH FARMLAND. SEE SKETCH 001 FOR FURTHER INFORMATION
5. SOME MODIFICATION IS LIKELY TO ALLOW THE FOOTPATH FROM CLARKS HILL RISE TO THE SEVERN TRENT ACCESS ROAD TO BE WIDENED. THE FOOTPATH IS DESIGNATED AS 'FOOTPATH 37' AND IS COUNTY OWNED.
6. PROPOSED ADDITIONAL PATH WILL BE DESIGNATED FOR CYCLE USE; WITH THE ORIGINAL BEING USED FOR PEDESTRIAN TRAFFIC.

DRAFT

REV	DATE	DSGN	DR	CHK	APVD
-	-	MO	MO	MO	FN
-	-			FN	BY
-	-			APVD	APVD

REVISION

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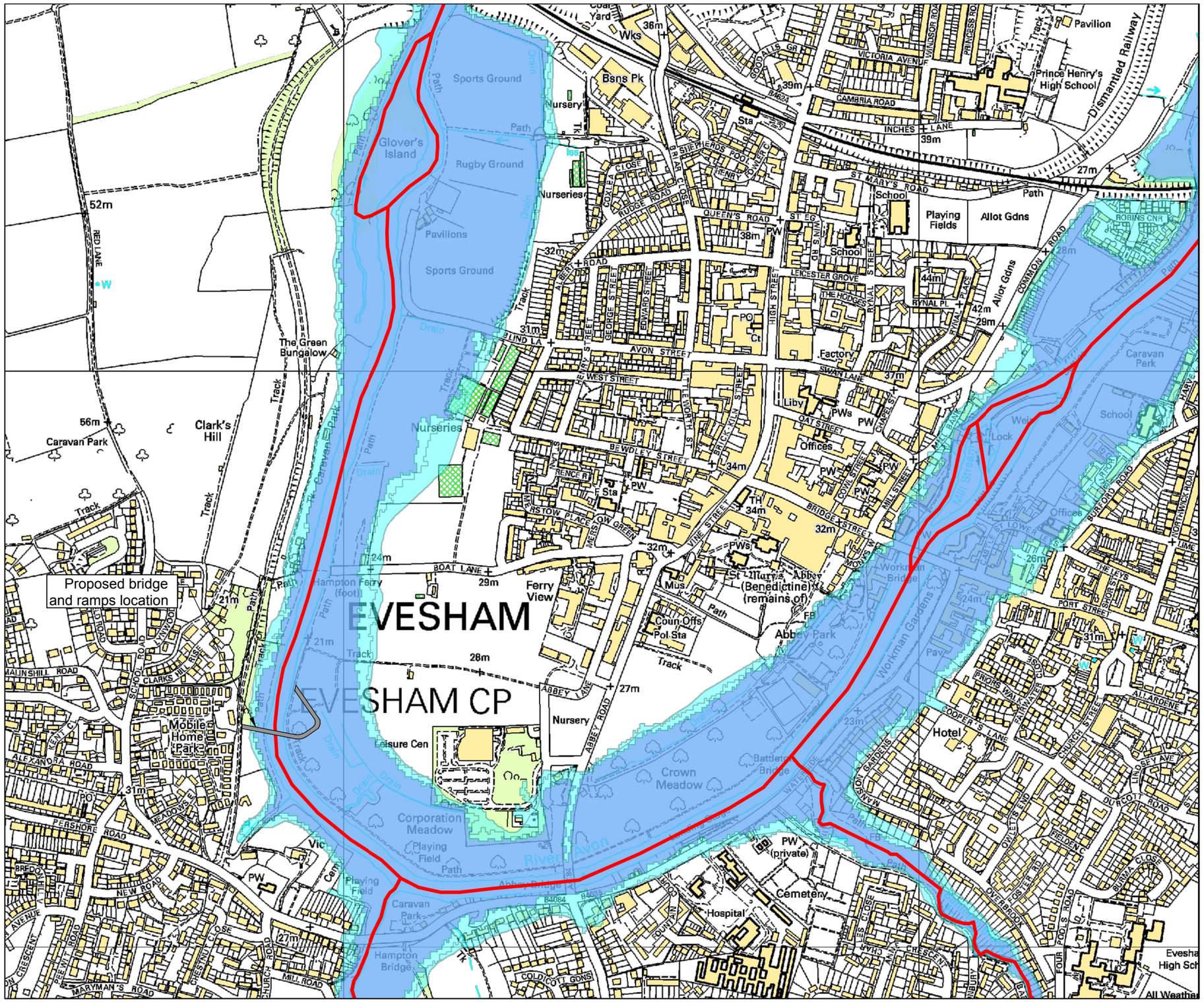
I:\AMJCA\Work\Drawing\Transport\Cycle\694944-SK002.dgn

ch2m:

Hampton walk/cycle bridge, Evesham
Typical General Arrangement

AS SHOWN @ A3	
VERIFY SCALE	
BAR IS 25mm ON ORIGINAL DRAWING. 0 25mm	
DATE	June 2020
PROJ	694944
DWG	SKETCH 002
SHEET	1 of 1



GENERAL NOTES

- DRAWING IS PROVIDED BY ENVIRONMENT AGENCY AND IS INTENDED FOR INDICATIVE USE ONLY.

DRAFT

Legend

- Main River
- Raised Flood Defences
- Areas Benefitting from Defence
- Flood storage Area
- Flood Zone 3
- Flood Zone 2

Flood map for Planning (Rivers and Sea) (assuming no defence)

Flood Zone 3 Shows area that could be affected by flooding from;
- The sea with a 0.5% or greater chance of occuring each year
- Or the river with a 1% or greater chance of occuring each year

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 0.1% chance of occuring each year.

REV	DSGN	DATE	DR	CHK	REVISION	APVD	FN
-	MO	-	MO	MO	-	BY	APVD
						-	FN

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ch2m:

Hampton walk/cycle bridge, Evesham
Flood Map Overview

PURPOSE OF ISSUE: FEASIBILITY

NTS @ A3	
VERIFY SCALE	
BAR IS 25mm ON ORIGINAL DRAWING. 0 25mm	
DATE	June 2020
PROJ	694944
DWG	SKETCH 003
SHEET	1 of 1

Appendix B. Cost Estimate Report

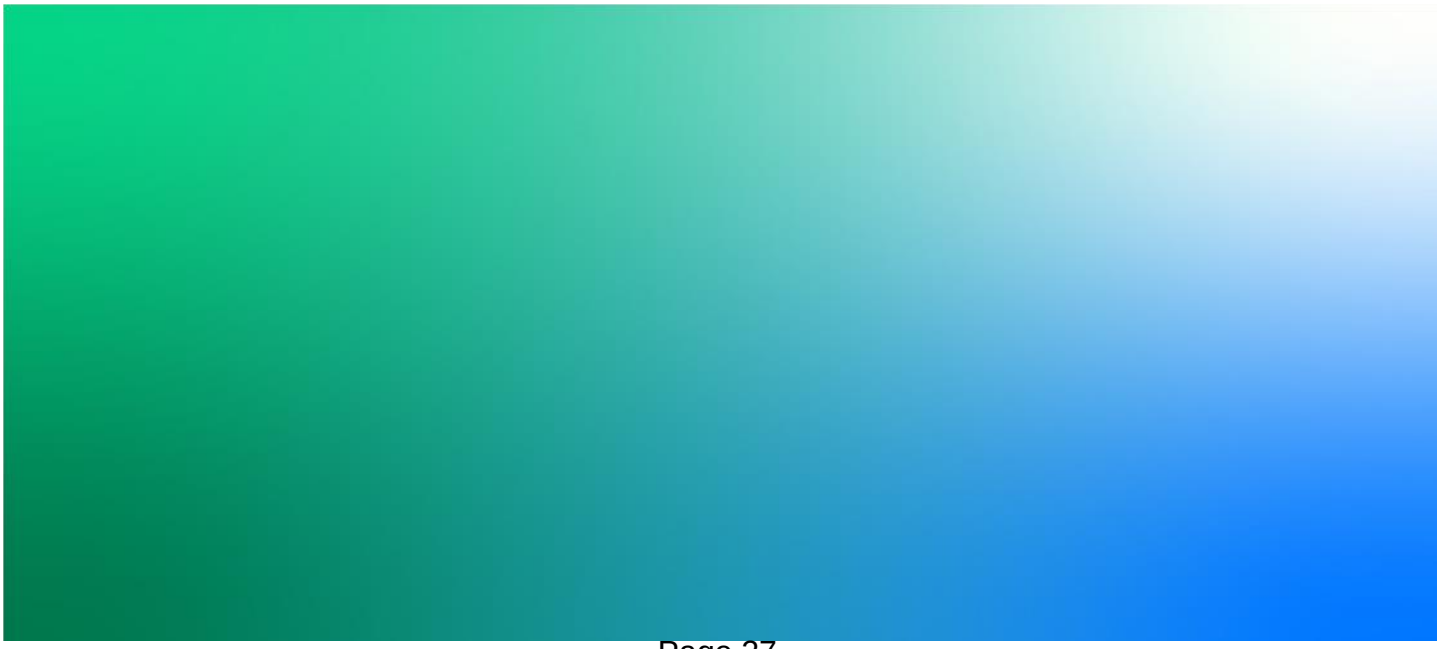
Evesham Alignment Feasibility Study

Hampton Pedestrian/Cycle Bridge Cost Estimate Report

N/A | 1

5 June 2020

Worcestershire County Council



Evesham Alignment Feasibility Study

Project No:	B2367205
Document Title:	Hampton Pedestrian/Cycle Bridge Cost Estimate Report
Document No.:	N/A
Revision:	1
Document Status:	
Date:	5 June 2020
Client Name:	Worcestershire County Council
Client No:	N/a
Project Manager:	Faz Nikoukar
Author:	Chee Leong
File Name:	B2367205 Hampton Bridge Cost Estimate Report Rev 1

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Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
0	01/06/2020	First Issue	C Leong	E. Niven	E. Niven	F. Nikoukar
1	02/06/2020	First Issue	C Leong	E. Niven	E. Niven	F. Nikoukar

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Appendix A Register of Design Information

Appendix B Measured Cost Estimate

1. Project Summary

This Cost Estimate Report provides an estimate for the construction of a shared pedestrian and cycle bridge across River Avon at the preferred bridge Location B as proposed in the Evesham Alignment Feasibility Study Report Ref. 694944.BA.22.00-001|1.0 issued on 5 June 2020.

The basis of the costs, assumptions and exclusions are listed in this report and a summary of the costs are as follows:

	Amount (£)
Highway Works	
• Preliminaries	858,350
• Roadworks	199,040
• Structures	1,630,470
• Miscellaneous	Excluded
• Accommodation Works	Excluded
• Facilitating Works	Excluded
Total Highway Works	**2,687,860**
Project / Design Team Fees	
• Project / Design Team Fees	Excluded
• NEC Contract Administration Cost	100,000
Other Development / Project Costs	
• Other development / project costs	Excluded
Sub-Total	**2,787,860**
Inflation	
• Tender Inflation	Excluded
• Construction Inflation	Excluded
Sub-Total	**2,787,860**
Risks	
• Project Risks (Design, Construction & Employer Risk)	278,790
• Optimism Bias	Excluded
Total Capital Cost (excl. VAT)	**3,066,650**

Details of the estimate have been included in Appendix B.

2. Methodology

WE have been commissioned by Worcestershire County Council to produce an estimate for the construction of a shared pedestrian and cycle bridge across the River Avon. The methodology detailed below has been used to prepare this cost estimate.

Scope: This scope of works to be included in this estimate has been agreed with the Worcestershire County Council and is defined by the design information included in Appendix A. Section 3 of this report details those elements of the works that are included within each section of the estimate, as well as any assumptions and exclusions that have been made.

Quantification: Section 4 of this report details the methods used to quantify the various elements of the scope of works and identifies any industry Standard Methods of Measurement or Work Breakdown Structures that have been used.

Basis of Cost Estimate: The base date of the estimate, location factors, and pricing methods are included in Section 5 of this report.

Check, Review & Approve: A line by line check of the estimate is carried out by an experienced surveyor prior to final high level review by the estimating manager prior to approval by the Project Manager. This process is undertaken in accordance with Jacobs UK Ltd quality procedure Work Instruction WI-3100.

3. Scope

This cost estimate has been based upon the design information listed in Appendix A.

3.1 Highway Works

3.1.1 Preliminaries

The allowance for Preliminaries includes Main Contractor's cost items such as:

- Project specific management and staff;
- Visiting management and staff;
- Support costs; staff travel, accommodation and subsistence;
- Site accommodation, offices, canteens, drying rooms, toilets and washrooms, stores, compounds and the like;
- Temporary works, bases & foundations, connections to services, temporary site roads and paths, temporary drainage, haul roads, and barriers;
- Traffic safety and management and temporary diversions for traffic.
- Furniture and equipment, IT systems, radio & telecommunications systems, sundries and consumables;
- Temporary water and electric supplies;
- Cleaning site accommodation and waste management;
- Hoardings, fences, gates and information boards;
- Safety and environmental protection, PPE, fire points, first aiders and traffic marshals;
- Contractors surveys, inspection and monitoring, setting out, protection of the works, samples and testing;
- Mechanical plant, temporary access bridge, road sweeper, jet wash, generators and compressors, and small tools;
- Site records, testing and commissioning, handover, post completion services;
- Insurances, bonds, guarantees and warranties;

3.1.2 Roadworks

The cost of the following Roadworks are included in this estimate.

- Roadworks General
    - Site Clearance and Earthworks;
- Main carriageway, Interchanges and Side Roads
    - Kerbs, Footways and Cycleways.
- Traffic Signs, Lighting and Motorway Communications
    - Traffic Signs and Road Markings, Road lighting Columns, Brackets and CCTV Masts, Electrical Work for Road Lightings and Traffic Signs.

3.1.3 Structures

The cost of the following Structure is included in this estimate;

- Shared pedestrian and cycle bridge; comprises 70.00m long x 3.50m wide East Approach Ramp, 30.00m long x 3.50m wide main bridge section and 59.00m long x 3.50m wide West Approach Ramp.

3.1.4 Miscellaneous

Miscellaneous works for service areas, car parks and maintenance compounds are excluded from this estimate.

3.1.5 Accommodation Works

Accommodation Works are excluded from this estimate.

3.1.6 Facilitating Works

Facilitating Works are excluded from this estimate as detailed in Section 3.9 below.

3.2 Project/ Design Team Fees

Project/ design team fees are excluded from this estimate as detailed in Section 3.9 below; apart from NEC contract administration cost is included in the estimate of £100,000.

3.3 Other Development/Project Costs

Other development/ project costs are excluded from this estimate as detailed in Section 3.9 below.

It is our understanding that the land required to deliver a bridge in Location A and Location B could be acquired by WCC either via agreement or, in the event no agreement can be reached, via the use of WCC's (Worcestershire County Council) compulsory purchase powers. It is also our understanding that the market value of the land required to deliver a bridge in either of these locations is in the region of £50,000 -£150,000 per acre.

3.4 Risk

Section 3.1.1 of "The Department for Transport Guidance, TAG Unit A1.2, Scheme Costs, dated November 2014" states that a Quantified Risk Assessment (QRA) is required for all transport projects with a cost greater than £5m and is encouraged for smaller schemes.

In the absence of a QRA an allowance of 10% on the cost of Highway Works have been included in this estimate for design development risks, construction risks, employer change risks and employer other risks.

HE PCF Stage (or equivalent)	Estimate Type	Risk
0 & 1	Order of Magnitude	40 - 60%
1 & 2	Options Estimate	25 - 40%
3	Preliminary / Initial Estimate	20 - 25%

4	Developing Estimate	15 - 20%
5	Final Estimate	10 - 15%
6	Cost to Complete Estimate	5 - 10%

3.5 Optimism Bias

Section 3.2.24 of "The Department for Transport Guidance, TAG Unit A1.2: Scheme Costs", dated July 2017 ("TAG A1.2") states that Optimism Bias uplifts are only required for the economic case of a proposal, hence Optimism Bias has not been included within the cost estimate.

3.6 Inflation

Inflation is excluded from this cost estimate

3.7 Value Added Tax (VAT)

Value Added Tax (VAT) is excluded from this cost estimate.

3.8 Assumptions

The following assumptions have been made in the preparation of this cost estimate for all three sections unless stated specifically:

- Construction Works will generally be undertaken during normal working hours unless specifically identified as being undertaken out of normal working hours (evenings and weekends).
- Access to the site is unrestricted.
- Existing site conditions, extent of works and level of specification are as set out in the information included in Appendix A.
- The works will be carried out as one continuous project.
- No demolition of existing buildings and structures to be included in the estimate.
- Allowance of £50,000.00 for site clearance to 2 no location, each approximately 2,500m2 is included in the preliminaries.
- Allowance of £100,000.00 for temporary access roads, footpaths and hard standings for a total area of 5,000m2 is included in the preliminaries.
- Allowance of £100,000.00 for site supervision is included in the cost estimate.
- No allowance for drainage is included in the estimate.
- Excavated material will be disposed off site.
- Construction of new cycleway next to existing towpath overall size 468.00m long x 1.50m wide.
- No allowance is included in the cost estimate for works to existing towpath.
- New cycleway construction comprises 20mm thick AC6 surface course, 60mm thick AC20 binder course, 150mm thick type 1 sub-base.
- New footbridge comprises 30.00m long x 3.50m wide main bridge section, 70.00m long x 3.50m wide East Approach Ramp and 59.00m long x 3.50m wide West Approach Ramp.

- The overall size of the reinforced concrete spread foundation for East and West sides piers is 5.00m x 5.00m x 700mm thick.
- The overall size of the reinforced concrete spread foundation for abutments (either sides of the river) is 5.00m x 5.00m x 1.00m thick; including 4 no. 600mm diameter concrete piles to each foundation and each pile length is 15.00m.
- The reinforcement contained in the pile is 250kg/m3 of concrete.
- Reinforcement for concrete foundations and abutment walls assumed to be £200kg/m3.
- Allowance of £5,000.00 is included in the cost estimate for pile tests.
- Overall size of the east abutment wall is 4.14m long x 1.35m thick x 4.70m high.
- Overall size of the west abutment wall is 4.14m long x 1.35m thick x 6.10m high.
- Piers is based on 900mm diameter, 32mm thick CHS (Circular Hollow Section) 'Y-shaped' steel columns; one end welded to steel base plate.
- Base plate assembly to the pier comprises 1.00m x 1.00m x 20mm thick steel plate; bolted to concrete foundation with 8 no. holding down bolts.
- Allowance of 22 no. mechanical bearings to the footbridge.
- No allowance is included in the cost estimate for works to existing Boat lane and Severn Trent access road.
- The estimate does not consider the effects of global pandemics, such as Coronavirus 19, which are unknown at this time.

3.9 Exclusions

The following items are excluded from this cost estimate:

- Works to existing Boat lane and Severn Trent Access Road
- Facilitating Works
    - Toxic/hazardous material removal including removal of toxic or hazardous parts of building fabric and hazardous materials or components from existing services installations;
    - Removal and/or treatment of contaminated ground material;
    - Eradication of invasive plant growth;
    - Ground gas venting measures including gas proof membranes, perforated collection pipes, proprietary gas dispersal fin layers, radon sumps and vent pipes;
    - Soil stabilisation measures including cement or chemical grouting, electrochemical stabilisation, sand stowing, soil nailing, ground anchors, compacting, and freezing of groundwater and subsoil;
    - Site dewatering and pumping to lower the ground water level of the site, including forming well points, filling, drain tubes and ring mains, sumps, pumps and pumping, off-site disposal of water, running costs and attendance;
    - Temporary and permanent diversion works including diversion of statutory undertakers services (e.g. water, electricity, gas and communications);
    - Extraordinary site investigation works including archaeological investigation and other site investigation works;

- Project/Design Team Fees
  - Employer's project team and design team costs / fees;
  - Main contractor's design fees;
  - Main contractor's pre-construction fees including management and staff, specialist support services fees, temporary accommodation, services and facilities, charges, overheads and profit.
- Other Development /Project Costs
  - Land acquisition and compensation costs;
  - Employer finance costs, costs in connection with funding of project;
  - Fees, planning fees, building control fees, oversailing fees, fees in connection with party wall awards, fees in connection with rights of light agreements, fees in connection with other agreements between the employer and neighbours to facilitate the project, other fees in connection with licences, permits and agreements;
  - Charges, rates on temporary accommodation, licences in connection with hoardings, scaffolding, gantries and the like and licences in connection with crossovers, parking permits, parking bay suspension and the like;
  - Planning contributions, direct financial contributions in connection with planning consent, and environmental improvement works;
  - Compensation for permanent land take; statutory loss payments; possible disturbance claims; potential Part 1 claims and professional fees incurred by the claimants;
  - Insurances other than main contractors works insurance;
  - Decanting and relocation costs, temporary relocation costs, temporary accommodation, rents and other running costs;
  - Fixtures, fittings and equipment other than that included in design;
  - Marketing costs, public relations events, site based advertising and public relations literature.
- Risk
  - Optimism bias
- Inflation
- Taxation & Grants
  - Capital allowances;
  - Grants;
  - Value Added Tax (VAT).

4. Quantification

The Highways Works element of this estimate have wherever possible been quantified in accordance with the Manual of Contract Documents for Highway Works, Volume 4, Bills of Quantities for Highway Works published by the Highways Agency (now Highways England).

The detailed estimate is included in Appendix B which has been prepared using the Construction Computer Software (CCS), CostX Estimating Software. Quantities are either directly entered into take off sheets or measured electronically using the built in Quantity Take off package.

5. Basis of Cost Estimate

5.1 Base Date

The rates used are in pounds sterling and reflect construction projects of a similar size and nature. The base date of the estimate is 2nd Quarter 2020 (2Q 2020).

5.2 Region

The works are located in the West Midlands Region of the United Kingdom of Great Britain

5.3 Pricing

5.3.1 Percentage Allowances

Percentage allowances have been included in this estimate for Risk.

5.3.2 Approximate Estimating Rates

Approximate Estimating Rates have been used in this estimate for Traffic Signs and Road Marking, based on the area of carriageway; footbridge and ramps based on the decking area.

5.3.3 Unit Rates

Unit rates have been used to price Site Clearance, Earthworks, Kerbs, Footways and Paved Areas, Road Lighting, and Electrical Work Associated with Road Lighting and Traffic Signs.

5.3.4 Resource Costs

Resource costs have not been used in this estimate.

5.4 Programme

No programme is currently available.

Appendix A. Register of Design Information

The following documents have been used as a basis for this estimate:

Document No.	Rev	Title
SKETCH 001	-	Hampton walk/cycle bridge, Evesham Constraints Overview
SKETCH 002	-	Hampton walk/cycle bridge, Evesham Typical General Arrangement
694944.BA.22.00-001	1.0	Hampton Pedestrian/Cycle Bridge – Evesham Alignment Feasibility Study; issued on 5 June 2020

Appendix B. Measured Cost Estimate

Summary		Amount £
Highway Works		
1	Preliminaries	858,350
2	Roadworks	199,040
3	Structures (Bridges, Viaducts, etc)	1,630,470
4	Structures (Retaining walls, culverts, subways, etc)	Excluded
5	Miscellaneous	Excluded
6	Accommodation Works	Excluded
7	Facilitating Works	Excluded
	Sub-Total A	**2,687,860**
Project / Design Team Fees		
8	Project / design team fees a) Project / design team fees b) NEC contract administration cost	 Excluded 100,000
Other Development / Project Costs		
9	Other development / project costs	Excluded
	Sub-Total B	**2,787,860**
Inflation		
10	Tender Inflation	Excluded
11	Construction Inflation	Excluded
	Sub-Total C	**2,787,860**
Risk		
12	Risks (10% on Sub-Total C)	278,790
13	Optimism Bias	Excluded
	Sub-Total D	**3,066,650**
VAT		
14	VAT Assessment	Excluded
Total		**3,066,650**