

NORTH AND EAST MELTON MOWBRAY DISTRIBUTOR ROAD

Proof of Evidence LCC 06 :
River Eye Diversion and Site of Special Scientific Interest

Prepared by : Jonathon Simons

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Leicestershire County Council

Project number: 60542201

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DISTRIBUTOR ROAD

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Interest
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Quality information

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Table of Contents

1.	Introduction	1
1.1	Qualifications	1
1.2	Relevant Experience	1
1.3	Included within this Proof	1
2.	Involvement with the Scheme and Contribution Made	3
2.1	Scope of Involvement.....	3
2.2	Contribution Made.....	3
3.	Development of the Scheme	1
3.1	Development of the scheme prior to Planning Submission	1
3.2	Development Since Planning Submission	2
4.	Assessment of Scheme Proposals.....	3
4.1	Scheme impact.....	3
4.2	Scheme Mitigation Measures.....	4
5.	Specific point in response to Objection 014	7
5.1	Purpose of a specific response to Objection 014.....	7
5.2	This sub-section deals with Point 1 of Objection 014	7
5.3	This sub-section deals with Point 2 of Objection 014	7
5.4	Objection 014.....	8
6.	Conclusion	9
	Appendix A – General Arrangement at the River Eye SSSI.....	0
	Appendix B – General Arrangement of the Proposed River Eye Bridge.....	0
	Annex A - Geomorphology expert opinion on the River Eye SSSI and associated Diversion works	0
1.	Introduction	1
1.1	Qualifications	1
1.2	Relevant Experience	1
2.	Involvement with the Scheme and Contribution Made	2
2.1	Scope of Involvement.....	2
2.2	Contribution Made.....	2
3.	Development of the Scheme	3
3.1	Development Since Planning Submission	3
4.	Assessment of Scheme Proposals.....	4
4.1	The River Eye and River Eye SSSI Baseline.....	4
4.2	Scheme Design Evolution and Mitigation of potential impacts of NEMMDR crossing of the River Eye	5
4.3	Scheme Impact.....	7
5.	Conclusion	8
	Appendix A Annotated Summary of the River Eye Realignment	1
	Annex B - Flooding at River Eye and its tributary	1
1.	Introduction	1
1.1	Included in this Annex.....	1
1.2	Definitions	1
1.3	Work carried out by my colleagues at AECOM.....	1

1.4	The need for a Flood Risk Assessment	2
2.	Development of the Scheme	3
2.1	Planning Stage	3
2.2	FRA Approval and Grant of Planning Permission	3
2.3	Development Since Planning Submission	3
3.	Assessment of Scheme Proposals	5
3.1	Fluvial Flood Risk - River Eye and Lag Lane Watercourse	5
3.2	Scheme Mitigation Measures.....	7
4.	Conclusion	8
Annex C - Ecology at the SSSI and River Diversion and expert opinion on the impact of the works		1
1.	Introduction	1
1.1	Included in this Annex.....	1
1.2	Legislation	1
1.3	Planning Policy	1
1.4	Biodiversity Action Plans	1
1.5	Designation and Current Condition of the SSSI.....	1
1.6	Ecological Position on the SSSI set out at Planning	3
1.7	Planning Permission and Conditions	4
1.9	Changes in ecological baseline since planning	5
2.	Mitigation in the River Eye and SSSI	6
2.1	General Approach to Mitigation.....	6
2.2	Specific Ecological Mitigation Measures	6
3.	Summary and conclusion	8
3.1	Expert opinion	8

Figures

Annex B: Figure 3-1 -Depth difference map for a 1 in 100 year + 50% climate change event.....	6
Annex C: Figure 1-1 River Eye SSSI Units upstream and downstream of the MMDR crossing	2

Tables

Annex B - Table 1-1	2
Annex C: Table 1-1 - Ecological Field Surveys of the River Eye SSSI undertaken in support of the Environmental Statement for the Scheme	3

1. Introduction

1.1 Qualifications

- 1.1.1 My name is Jonathon Simons and I am presenting a proof of evidence in relation to the River Eye diversion and works within the Site of Special Scientific Interest (SSSI) on the Melton Mowbray distributor Road (NEMMDR) project.
- 1.1.2 I hold a Masters degree in Civil Engineering and have been working in the profession for 11 years.
- 1.1.3 I am a Senior Engineer at AECOM and have held this post for over three years.

1.2 Relevant Experience

- 1.2.1 I have played a key role in the design and development of the NEMMDR Project since January 2018. I am the Information Manager for the scheme and have led on several aspects of the design as well as coordinating specialist inputs from multiple disciplines.
- 1.2.2 I was the programme and design lead on a project relating to upgrading fencing at multiple substation locations for National Grid. I led client liaison and design coordination on this nationwide scheme to upgrade fencing at key substation locations.
- 1.2.3 I held the role of client representative and resident engineer at a construction site for a tyre proving ground in Indonesia. My main role was to oversee quality in construction and check adherence to specifications and standards. I worked closely and collaboratively with the contractor to remove and rectify errors. Where specialist or specific advice was required, I liaised with appropriate design disciplines in the UK to resolve any issues arising on site.
- 1.2.4 I led the pavement design team from investigation to detailed design for the A120 Little Hadham Bypass. This role included specialist and bespoke expert advice on the types of surveys and their potential relevance on this project, pavement construction options and development of preferred option. Whilst a specialist design element, I worked closely with client, project management team and other design disciplines.
- 1.2.5 I led the pavement investigation and report of Failure Investigation on the M2 Westlink, Northern Ireland and proposed appropriate rehabilitation measures. I led client liaison on the project and controlled both budget and programme for the design works.
- 1.2.6 I assisted in the preparation of an expert witness report for concrete pavement failure at Ministry of Defence Airfield in the UK. The location of which I am unable to disclose due to confidentiality.

1.3 Included within this Proof

- 1.3.1 This proof of evidence includes three annexes:
- Annex A - Geomorphology expert opinion on the River Eye SSSI and associated Diversion works prepared by Neil Williams
 - Annex B - Flooding at River Eye and its tributary prepared by Ian Bentley
 - Annex C - Ecology at the SSSI and River Diversion and expert opinion on the impact of the works prepared by Matt Oakley

- 1.3.2 The text included within this proof of evidence and its Annexes specifically relate to the River Eye, the SSSI and associated works within the vicinity.

2. Involvement with the Scheme and Contribution Made

2.1 Scope of Involvement

- 2.1.1 This evidence covers the River Eye diversion and works within a Site of Special Scientific Interest (SSSI).
- 2.1.2 The format is to draw within a single proof of evidence covering various elements related to the SSSI, including engineering, geomorphology, ecology and flooding matters related to that consideration. Each element is set out in the form of a specific proof should it be necessary to call each individual witness to deal with specific matters. It also permits a complete understanding as to who is responsible for the various elements.
- 2.1.3 This proof of evidence includes annexes created by experts in flooding, geomorphology and ecology, which I will draw on and reference within this document.

2.2 Contribution Made

- 2.2.1 One of my significant involvements in the scheme has been to lead the input to landowner negotiations, from the designers perspective, since 2018.
- 2.2.2 I have represented AECOM at meetings with landowners and their agents on the scheme. My duties on the project have included a coordination role of works involved with the diversion of the river and associated design items and am best placed to provide an overview, background and development of the design in this area.
- 2.2.3 I led the technical review process for all highway related design inputs and led the quality, consistency and review process for the scheme as a whole.
- 2.2.4 I led and reviewed the accommodation works design, site clearance and creation and management of general arrangement plans, among other roles.
- 2.2.5 I led AECOM's involvement in the creation, review and editing of the statutory orders plans, namely the Compulsory Purchase Order and Side Road Order plans. This role involved a high degree of scrutiny and discussion with legal advocates to ensure all the land take is justified. I also led AECOMs involvement in subsequent discussions with the landowners, including discussions with those landowners affected by the River Eye diversion and works within the SSSI.
- 2.2.6 I coordinated the pavement design for both the new build sections and the work within the existing highway. Including liaison with the contractor for design optimisation and development of options proposals for remedial options to existing pavements
- 2.2.7 Throughout the project, a significant part of my role was close collaboration with design discipline leads and working closely with Martyn Glossop, as scheme engineer.

3. Development of the Scheme

3.1 Development of the scheme prior to Planning Submission

- 3.1.1 The North and East Melton Mowbray Distributor Road (NEMMDR) is a major infrastructure scheme, proposed to help resolve traffic congestion on the local network and facilitate delivery of the objectives of the Melton Local Plan. The scheme comprises a new single carriageway road of approximately 7km in length, including six new roundabout junctions, a railway crossing and a river crossing over a Site of Special Scientific Interest (SSSI). The new road will run from A606 Nottingham Road to the north of Melton Mowbray, around the outskirts of the town to the east, to the A606 Burton Road to the south of the town.
- 3.1.2 The NEMMDR crosses several watercourses, including the River Eye SSSI. The River Eye SSSI is located south of B676 Saxby Road in the vicinity of the NEMMDR, running very close to B676 Saxby Road at the junction between B676 Saxby Road and Lag Lane. The River Eye SSSI then continues for approximately 200m to the east before heading south towards the railway line. Where the river meets the railway line to the east of Lag Lane is the Brentingby Dam, which is a major piece of infrastructure protecting Melton Mowbray from flooding. The Brentingby Dam is upstream of the section of the River Eye near the NEMMDR and affects the flow rates and function of the river.
- 3.1.3 A new roundabout junction (roundabout 5) is required to connect the new NEMMDR with B676 Saxby Road. Given that the NEMMDR would need to cross the River Eye SSSI, a number of design options were explored to look at ways to minimise the impact of the scheme on the river, whilst taking into account the major constraints in this location, including two sets of high voltage (132kV) overhead powerlines running predominantly east-west to the north and south of the B676.
- 3.1.4 As part of the development of the scheme prior to Planning Submission an appraisal of the options for crossing the River Eye was undertaken alongside consultation with Natural England (NE) and the Environment Agency (EA). This appraisal is detailed in the River Eye Options Appraisal Report (*see core document reference P18*).
- 3.1.5 The River Eye Options Appraisal Report outlines the background to the development of the proposed route alignment in the vicinity of the river crossing. It presents five options for the River Eye crossing and evaluates each option in terms of its technical feasibility, safety and environmental impacts. The report includes the findings of the options appraisal.
- 3.1.6 The Report found that all feasible options for the NEMMDR route at the River Eye required either diversion of the powerlines or diversion of the River Eye. However, there were significant safety and cost implications associated with diverting the overhead powerlines be that overground or underground. The Environment Agency and Natural England were also supportive of diverting the River Eye as part of the NEMMDR scheme due to the significant potential for environmental and ecological benefits associated with diverting the River Eye (*see core document reference P4 which detailed the planning response*). For these reasons the decision was made to divert the River Eye as part of the NEMMDR Scheme. The design of the River Eye realignment is detailed within Annex A - Geomorphology Proof of Evidence.

3.2 Development Since Planning Submission

- 3.2.1 The fundamental principles and philosophy outlined within the planning submission for the river diversion have not changed since the submission of the planning application. The general arrangements shown at planning are still applicable, although detailed design development of the features and layout has progressed.
- 3.2.2 The design has been developed to include substantially more detail including, but not limited to: channel profile; inset floodplain features; backwater detail; backwater connection channel; flood analysis and flood mitigation features, which has been developed through discussion and a collaborative approach with Natural England, the Environment Agency and Leicestershire County Council [LCC]. Both Natural England and the Environment Agency support the design and have acknowledged the benefits which are provided by the diversion works and enhancement of the SSSI area shown within the detailed design. A collaborative approach was maintained throughout the design development between Natural England, the Environment Agency and the project team. During meetings with the landowner affected by the river diversion, representatives of Natural England joined meetings to respond to questions and promote the development.
- 3.2.3 The area of land required for the scheme has been reduced significantly from that shown within the planning red line boundary to include only land which is necessary for the enhancement of the SSSI, diversion of the River Eye and floodplain replacement features to help mitigate flooding.
- 3.2.4 The design has been developed to incorporate new and amended Non Motorised User (NMU) and private access routes. The proposed works include new access arrangements designed for affected landowners and development of the NMU and private access routes via Lag Lane. It also provides access for LCC to maintain their assets in the vicinity of the river.
- 3.2.5 Details have been prepared for the future management and monitoring of the River Eye diversion including the proposed inset floodplain and backwater channel. This includes new access arrangements and fencing proposals designed for the affected landowners. This information is presented in the NEMMDR Distributor Road River Eye SSSI Monitoring and Management Plan (August, 2021) (doc reference 60542201-ACM-EZE-GEN_GEN_ZZ_Z-RP-HD-0009), that will be submitted to the Local Planning Authority to discharge Planning Condition 6.
- 3.2.6 Several meetings have been held with the affected landowners to explain the impact of the River Diversion on their holdings.

4. Assessment of Scheme Proposals

4.1 Scheme impact

- 4.1.1 The Melton Mowbray Distributor Road (NEMMDR) scheme crosses the River Eye at the location of a Site of Special Scientific Interest (SSSI). A general arrangement of the River Eye SSSI is included in Appendix A.
- 4.1.2 The SSSI runs along the river between Stapleford (National Grid Reference [NGR] SK 802186) and Melton Mowbray (NGR SK 764188) with a total length approximately 7.5km. The SSSI covers approximately 40% of the length of the River Eye. The scheme crosses the SSSI for a length of approximately 55m with an additional length of the channel being filled in adjacent to the NEMMDR route on either side to allow landowner access across the existing channel.
- 4.1.3 The assessment of the River Eye SSSI, included within the Technical Report “River Eye SSSI: Strategic Restoration Plan” created by Natural England (*see core document reference SAD15*), classifies the site as “Unfavourable no change” meaning special features are not being conserved or are being lost. The works included with the NEMMDR scheme enhance the area and allow appropriate management of the site so that it may reach a favourable or recovering condition in future. Development of the SSSI site provides great benefit to the local ecology and biodiversity.
- 4.1.4 From the B676, the road starts on an embankment which rises as the road heads south. A minimum clearance is required between the carriageway surface and overhead power lines at the approximate location of the existing river channel. The road heads towards the railway line, where a minimum separation between the rails and bridge soffit is required. The road is required to cross the railway line as perpendicular as possible. This is to reduce the overall impact of the scheme on landowners, minimise cost and programme, and materials used. At this point, the road is well outside of the floodplains and risk area of causing detriment the SSSI.
- 4.1.5 The works within the SSSI, and its immediate vicinity include:
- Diversion of the River Eye;
 - Creation of an inset floodplain area adjacent to the diverted channel;
 - Creation of three flood compensation areas;
 - Construction of the River Eye bridge (*see Appendix B for the general arrangement of the proposed bridge*);
 - Embankment works for the NEMMDR carriageway;
 - Retention of the existing River Eye channel as a backwater and the construction of a connection channel between the diverted and retained channels;
 - Creation of balancing ponds for water management from the highway;
 - Creation of a new bridleway route; and,
 - Creation of new accesses for landowners from new and existing highways.
- 4.1.6 The chosen option, to divert the River Eye, presented the optimum balance of the site constraints. This is detailed in the River Eye options appraisal report (*see core document reference P18*), reference Option C. With this option:
- The power lines do not need to be diverted, which reduces cost, project risk, programme risk, health and safety risks involved with the diversion works, energy supply risks (should the diversion works cause any network black outs);

- The new bridge can be constructed in the dry prior to realigning the River Eye. This reduces health and safety risks involving working over water, improves construction programme, removes risks from working under power lines, and provides an improved working platform as opposed to being within the river channel or its banks;
- The alignment provides an easy opportunity to approach the railway line, lying to the south, as perpendicular as possible which minimises the length of the railway bridge;
- Reduces work adjacent to the river compared to options presented in some of the alternative proposals;
- By diverting the river, it provides the greatest opportunity for appropriate ecological mitigation and restoration of the SSSI; and,
- A river diversion also creates additional meanders in the channel and allows the river to return to its assumed historic alignment. Paleo channels identified during our investigations show that the river is likely to have been diverted in the past, possibly to feed the now removed, canal to the north. The straight section of the river adjacent to the B676 Saxby Road doesn't appear to be of a natural form.

4.1.7 The existing River Eye channel is to be retained as a backwater (see Appendix A for a general arrangement). A backwater is an area of channel not reached by the current but where water 'backs up' or 'backfills' from the main river channel. Backwaters are natural river features and provide alternative wetland habitat to habitat types typical of the flowing parts of the river system. They provide specific benefit to local aquatic plant diversity, invertebrates, amphibians, mammals and birds. Retaining the existing course of the River Eye SSSI as a backwater contributes significantly to the overall environmental benefit of the river diversion design and makes best use of existing landforms. To help maintain wetland habitats and provide additional flood storage, the upstream bund has been set at a level that allows some flood water to overtop and enter the backwater during times of flood. During typical flow conditions, the River Eye backwater channel will receive water from the realigned river through the backwater connection channel. This will keep a constant supply of water to the backwater with varying depths across the length of the channel to create and maintain wetland habitats. The backwater and connection channel are to be fenced off to restrict poaching by livestock and allow natural flora and fauna to populate the channel.

4.1.8 The three flood compensation areas to be provided within the flood plain will counteract the presence of the road embankment. These have been designed on a "level for level" basis in accordance with Environmental Agencies requirements.

4.1.9 The flood compensation areas, diverted river channel (to the east of the scheme) and the existing River Eye (retained as a backwater) have a 4m maintenance strip of land adjacent to the crest the banks. This is to allow LCC access to maintain the inset floodplain, diverted channel, and the flood compensation areas. Access to the inset floodplain area is by means of four gates, two located to the north and two located to the south of the area.

4.2 Scheme Mitigation Measures

4.2.1 The diversion of the river channel and works within the floodplain affect two landowners. Mitigation measures have been extensively discussed with the landowners and their agents.

4.2.2 The first landowner occupies most of their holding to the south of the river, west of the scheme but also owns a strip of land in between the scheme and Lag Lane (*see Appendix A for a general arraignment of the area*). Our key design considerations for this landowner were to:

- Provide suitable access to their retained land;
- Install appropriate gates;

- Minimise additional land take where feasible and have the option of offering land back should it not be required for the permanent works;
- Minimise planting within the retained lands;
- Provide adequate access across the balancing pond outfall.

4.2.3 Lands to the west of the NEMMDR can be accessed via three routes:

- The B676. This route is partly shared with the bridleway. This route allows access for a tractor and trailer combination;
- Access via the NEMMDR northbound lane. An access direct from the NEMMDR, south of the River Eye Bridge. A private means of access shall be granted over lands to be owned by LCC; and,
- Access from the NEMMDR southbound lane. This allows access to all lands east and west of the NEMMDR. Should the landowner wish to access the lands to the west from their access, they will have to use the underpass as part of the River Eye Bridge structure.

4.2.4 Access routes have been modelled to accommodate tractor and trailer vehicle movements and the widths of the tracks have been modelled with vehicle wheel tracking software to ensure the routes are wide enough to accommodate vehicle turning circles.

4.2.5 Access routes to these lands have been carefully considered so that large cattle wagons or a tractor and trailer combination can access all the retained land and the land which may be capable of being offered back to the landowner in future.

4.2.6 During discussions, the landowner requested that Plot 107, which LCC are acquiring title to, has the option of being offered back to the landowner upon completion of the scheme. It was made clear during this meeting, that the landowner will not have any access to this plot and that the land will be isolated from the rest of the landowner's holdings. Nevertheless, the landowner wished to have the option of this land offered back following scheme completion.

4.2.7 The second landowner owns the fields to the east of Lag Lane and the fields north of the river, west of the NEMMDR scheme. Our key design considerations for this landowner were to:

- Land take has been reduced as far as possible so that it includes only that land necessary for the scheme footprint;
- Provide connectivity between the landowner's holding east and west of the scheme, which has been achieved via the two northern spans of the River Eye Bridge. This replaces the current access which is via lag lane (see Appendix B for the general arrangement of the proposed bridge);
- Maintain their current access across the railway bridge; and,
- Ensure that management and maintenance plans for the diverted River Eye inset floodplain and associated flooding features do not severely compromise the ability for the landowner to continue routine farming activities.

4.2.8 Extensive discussions have been held with the landowner regarding the land being purchased to help the landowner understand the requirement for the land and decide if it is in their best interest to retain all or part of the land.

4.2.9 Two access points have been provided to the "island" of land in between the existing and diverted river channels. Access from the east is provided via an earth bund across the existing river channel and a section of the backwater connection channel will be culverted to provide access from the west. Ownership of this land has also been discussed with the landowner who wishes to retain the land. Consequently, it is not included within the land take for the scheme.

- 4.2.10 An alternative access has also been provided around the north of the flood compensation areas, adjacent to the B676 Saxby Road. This route runs in between the backwater connection channel, through the northernmost two spans of the River Eye Bridge, across a bunded section of the River Eye west of the scheme and into the lands owned by the landowner to the west via a gate. These access arrangements have been discussed and agreed with the landowner.
- 4.2.11 To further mitigate the impact to the landowner, two handling pens are to be constructed either side of the NEMMDR scheme. This will allow the landowner to effectively manage livestock movement through the structure or over the bridge. Rights plots have been included within the CPO drawings to illustrate this is the express intent of LCC. The detail of the handling pens is subject to ongoing landowner negotiations.
- 4.2.12 In order for LCC to effectively manage the inset floodplain and flood compensation areas, a new access is being provided from the B676. The land which forms the access routes to these areas from the B676 is required for permanent title. The landowner will be granted legal right to cross over these plots where necessary. This will be achieved either by a private means of access, as included within the SRO plans, or an easement which will be agreed with the landowner on a case by case basis.
- 4.2.13 On the CPO plans, Plots 101, 102, 103 and 104 have been included which LCC require rights over. These are for the construction of the inset floodplain, River Eye channel and flood compensation areas. These plots are different in size and shape from the maintenance routes as the vehicles which will need access for construction are significantly larger than those required for maintenance with larger turning circles.
- 4.2.14 The flood modelling, see Annex B, shows that access between lands east and west of the NEMMDR scheme will be improved during all flooding events except the most extreme events. When the more extreme flood events occur, the whole floodplain will be underwater and therefore no access via the fields will be possible. This is the case with or without the scheme.
- 4.2.15 The entire extent of Lag Lane will be purchased by the scheme and a new bridleway route will be provided along much of the existing route. Existing highway rights will be extinguished and a new private means of access will be provided along the remaining length for the appropriate landowners and new field accesses will be installed. The existing bridge over the River Eye will be removed.
- 4.2.16 Fencing details have been discussed with the landowners and are included within the detailed design proposals. It is understood that stock proof fencing will need to be provided where appropriate.

5. Specific point in response to Objection 014

5.1 Purpose of a specific response to Objection 014

5.1.1 I would refer specifically to points 1 and 2 of an objection raised by Harrison Riddle on behalf of Mrs Barbara June Barnes and R A Barnes & Sons (Objector 14). As indicated above a great deal of thought has gone into the proposed changes to the SSSI including input from various statutory bodies to achieve the advantage that has been identified. The objection raised needs to be seen in that context. The objection responses below, refer to the following specific points raised relevant to the River Diversion and associated works in the vicinity of the SSSI, namely:

- The justification of diverting the river;
- Flooding impact on their lands; and
- Location of the attenuation/balancing pond (reference Balancing Pond [BP] 09).

5.1.2 Part of the objector's land is required for the diversion of the River Eye, the footprint of the highway and a Balancing Pond 09.

5.2 This sub-section deals with Point 1 of Objection 014

5.2.1 The cost and viability of diverting the power lines, which is extensively discussed in the evaluation is comparable whether the powers lines are diverted overground or underground.

5.2.2 An argument is raised regarding the potential impact of flooding next to the road and that this will be detrimental to the SSSI. This is speculation, not supported by any evidence, contrary to the detailed flood modelling undertaken by AECOM and opinion of Natural England which are summarised within this proof. Furthermore, there is photographic evidence which supports the current modelling which shows existing flooding on the land west of Lag Lane. The same modelling shows that the flooding post scheme will not be any more significant or extensive that it is currently.

5.2.3 Several discussions have been held with the landowners both east and west of the NEMMDR. The landowners were fully aware of the council's intent as set out at planning. Detailed discussions have been held with the landowner and their agent at every step of the design process, including regarding land acquisition which was first discussed in February 2019). This is evident due the extensive additional works which have been included within the scheme and orders to ensure the landowner has sufficient access to their lands.

5.2.4 Regarding the flood compensation area and wetland area, the objection doesn't specify what they understand that they have been advised but none of the flood compensation areas are located on their land. I would revert to my response in 5.2.3.

5.3 This sub-section deals with Point 2 of Objection 014

5.3.1 The location, size and shape of Balancing pond 09 has been discussed extensively with the landowner and their agent as documented within meeting minutes.

5.3.2 The pond is located in its optimum position. It balances the following main considerations:

- Highway outfall locations to minimise length of pipe runs between the road and the pond;
- Distance from and height above the River Eye to maintain effectiveness during River flooding events;
- Minimise the length of outfall from the balancing pond to the River Eye;

- Land topography to minimise earthworks required for the pond; and
- Direction of watercourse flow as per standard practice the pond is located on the downstream side of the highway to avoid introducing additional flow upstream that then has to pass back under the road at the proposed bridge.

5.3.3 The pond is designed such that it's outfall is located above the predicted level of the 1 in 100yr plus 40%CC River Eye flood event.

5.3.4 The orientation of the pond as selected to minimise earthworks and hence land take, due to the topography of the land rising as you move away from the River.

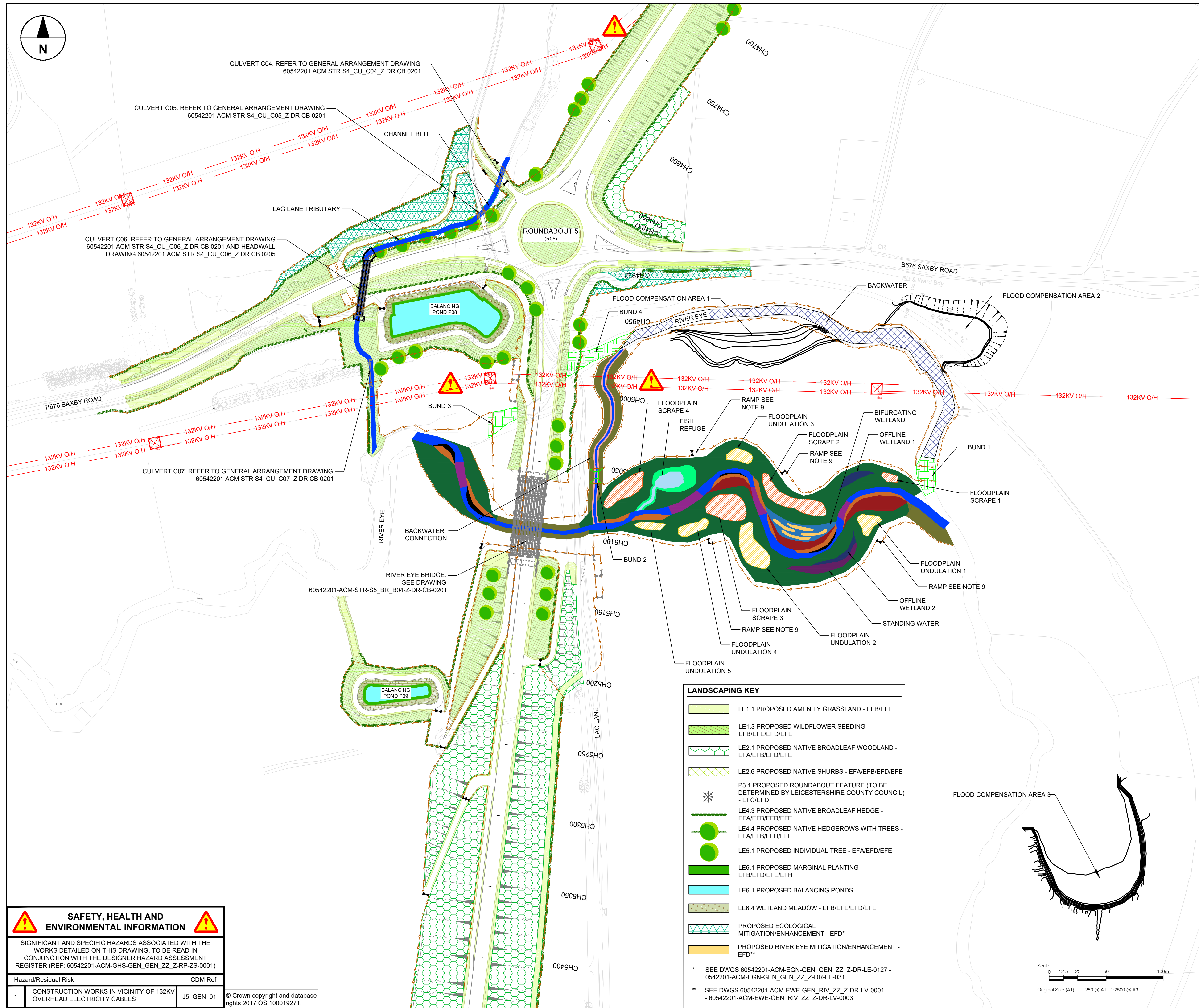
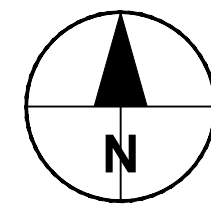
5.4 Objection 014

5.4.1 The remainder of Objection 014 will be covered directly or indirectly within other proofs or has been discussed and action agreed between the council and the landowner/agent

6. Conclusion

- 6.1.1 The construction of the diversion of the River Eye does have an impact on the two affected landowners; however, significant effort has been made to mitigate the impact as far as practicable. This has been achieved through collaborative discussions with the landowners and amending the design where appropriate.
- 6.1.2 Both landowners have access to all retained lands except Plot 107 as described in paragraph 4.2.6
- 6.1.3 Land take from both landowners has been reduced as far as practicable utilising the embankments for landscaping and keeping access tracks within the proposed scheme footprint as far as possible. Large parts of the lands required are for the construction of the scheme and it has been identified as land that may be able to be offered back to the landowner post scheme completion.
- 6.1.4 Every effort has been made to accommodate landowner requests which has resulted in significant amendment to the design.

Appendix A – General Arrangement at the River Eye SSSI



- NOTES**
1. ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.
 2. THIS DRAWING IS BASED ON ORDNANCE SURVEY DATA AND THE COMBINED AECOM AND LCC TOPOGRAPHICAL SURVEY.
 3. ALL LEVELS ARE TO ORDNANCE DATUM.
 4. FINISHED BANK GRADIENT MAY VARY UP TO +/- 30% IN SELECTED LOCATIONS TO GENERATE LOCAL VARIATION WITH AGREEMENT OF CLERK OF WORKS.
 5. ALL WORK TO BE UNDERTAKEN BY A SUITABLY EXPERIENCED CONTRACTOR IN RIVER WORKS/ RIVER RESTORATION SCHEMES WITH SUPPORT FROM CLERK OF WORKS.
 6. BED AND BANK VARIATION TO BE RECOMMENDED BY CLERK OF WORKS.
 7. REFER TO SPECIFICATION 3100 RIVER DIVERSION FOR GRAVEL SIZE DISTRIBUTION AND PLACEMENT.
 8. REFER TO ALL DOCUMENTS REFERENCED WITHIN SPECIFICATION 3100 RIVER DIVERSION.
 9. RAMP DOWN TO INSET FLOODPLAIN VIA LOCKABLE 14FT METAL GATE. GRAVEL SURFACING TO BE PROVIDED ON RAMP.
 10. FENCING WILL BE POST AND THREE RAIL FENCING IN ACCORDANCE WITH HIGHWAY STANDARD DETAILS.

KEY

RIVER EYE	
[Blue]	CHANNEL
[Light Blue]	INSET FLOODPLAIN
[Green]	BERM
[Dark Green]	HIGHER BERM
[Yellow]	POINT BAR
[Purple]	RIFLES
[Orange]	BIFURCATING WETLAND
[Light Green]	BIFURCATING ISLANDS
[Light Blue]	FISH REFUGE
[Light Green]	FISH REFUGE MARGINAL HABITAT
[Dark Green]	OFFLINE WETLAND
[Dark Blue]	STANDING WATER
[Light Green]	FLOODPLAIN SCRAPES
[Light Green]	FLOODPLAIN UNDULATION
[Light Green]	SHALLOWER BANKS
[Light Green]	INSET BERM
[Light Green]	EXISTING RIVER EYE RETAINED AS BACKWATER
[Light Green]	FLOODPLAIN COMPENSATION AREA CONTOURS AT 0.1m INTERVALS
[Light Green]	BUNDS
[Light Green]	FENCING
LAG LANE TRIBUTARY	
[Blue]	CHANNEL

LANDSCAPING KEY

[Light Green]	LE1.1 PROPOSED AMENITY GRASSLAND - EFB/EFE
[Light Green]	LE1.3 PROPOSED WILDFLOWER SEEDING - EFB/EFE/efd/efe
[Light Green]	LE2.1 PROPOSED NATIVE BROADLEAF WOODLAND - EFA/EFB/efd/efe
[Light Green]	LE2.6 PROPOSED NATIVE SHURBS - EFA/EFB/efd/efe
[Star Symbol]	P3.1 PROPOSED ROUNDABOUT FEATURE (TO BE DETERMINED BY LEICESTERSHIRE COUNTY COUNCIL) - EFC/efd
[Light Green]	LE4.3 PROPOSED NATIVE BROADLEAF HEDGE - EFA/EFB/efd/efe
[Light Green]	LE4.4 PROPOSED NATIVE HEDGEROWS WITH TREES - EFA/EFB/efd/efe
[Light Green]	LE5.1 PROPOSED INDIVIDUAL TREE - EFA/efd/efe
[Light Green]	LE6.1 PROPOSED MARGINAL PLANTING - EFB/efd/efe/efh
[Light Green]	LE6.1 PROPOSED BALANCING PONDS
[Light Green]	LE6.4 WETLAND MEADOW - EFB/EFE/efd/efe
[Light Green]	PROPOSED ECOLOGICAL MITIGATION/ENHANCEMENT - EFD*
[Light Green]	PROPOSED RIVER EYE MITIGATION/ENHANCEMENT - EFD**

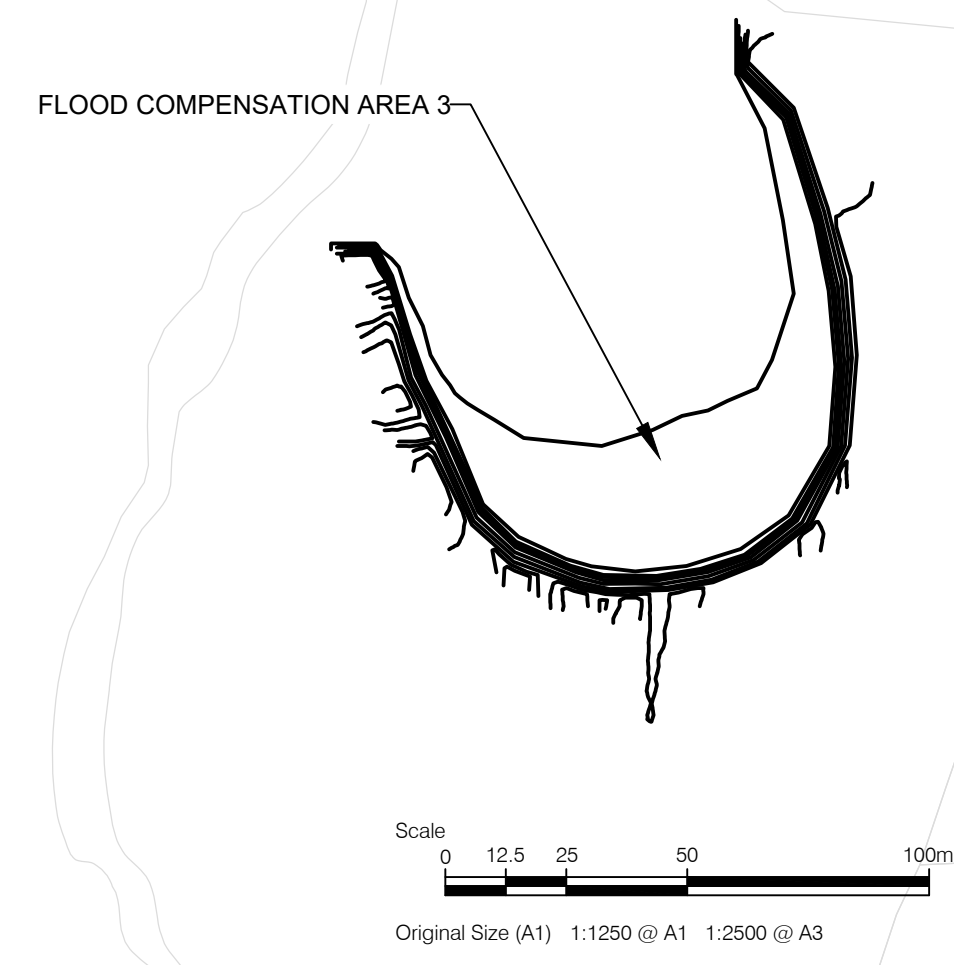
* SEE DWGS 60542201-ACM-EGN-GEN_GEN_ZZ_Z-DR-LE-0127 - 0542201-ACM-EGN-GEN_GEN_ZZ_Z-DR-LE-031
** SEE DWGS 60542201-ACM-EWE-GEN_RIV_ZZ_Z-DR-LV-0001 - 60542201-ACM-EWE-GEN_RIV_ZZ_Z-DR-LV-0003

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

SIGNIFICANT AND SPECIFIC HAZARDS ASSOCIATED WITH THE WORKS DETAILED ON THIS DRAWING. TO BE READ IN CONJUNCTION WITH THE DESIGNER HAZARD ASSESSMENT REGISTER (REF: 60542201-ACM-GHS-GEN_GEN_ZZ_Z-RP-ZS-0001)

Hazard/Residual Risk	CDM Ref
1 CONSTRUCTION WORKS IN VICINITY OF 132KV OVERHEAD ELECTRICITY CABLES	J5_GEN_01

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FOR DISCHARGE OF PLANNING CONDITIONS		NL	OT	26/08/21	P02
REVISION DETAILS		BY	CHECK	DATE	SUFFIX

PROJECT MANAGEMENT INITIALS

DESIGNED: RC	CHECKED: RC	APPROVED: OT
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INTERNAL PROJECT NUMBER 60542201 **SCALE** 1:1250

STATUS BS1192 SUITABILITY

FOR REVIEW & COMMENT S3

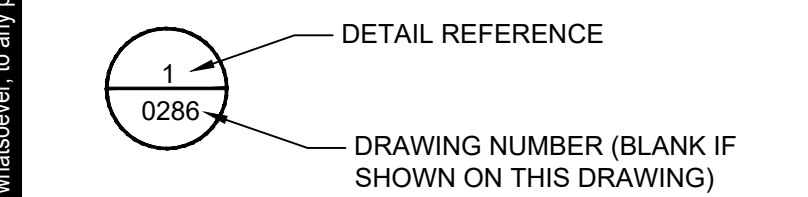
SHEET TITLE
RIVER EYE AND LAG LANE TRIBUTARY GENERAL ARRANGEMENT

DRAWING NUMBER 60542201-ACM-EWE-GEN_RIV_ZZ_Z-DR-HD-1001 **REV** P02

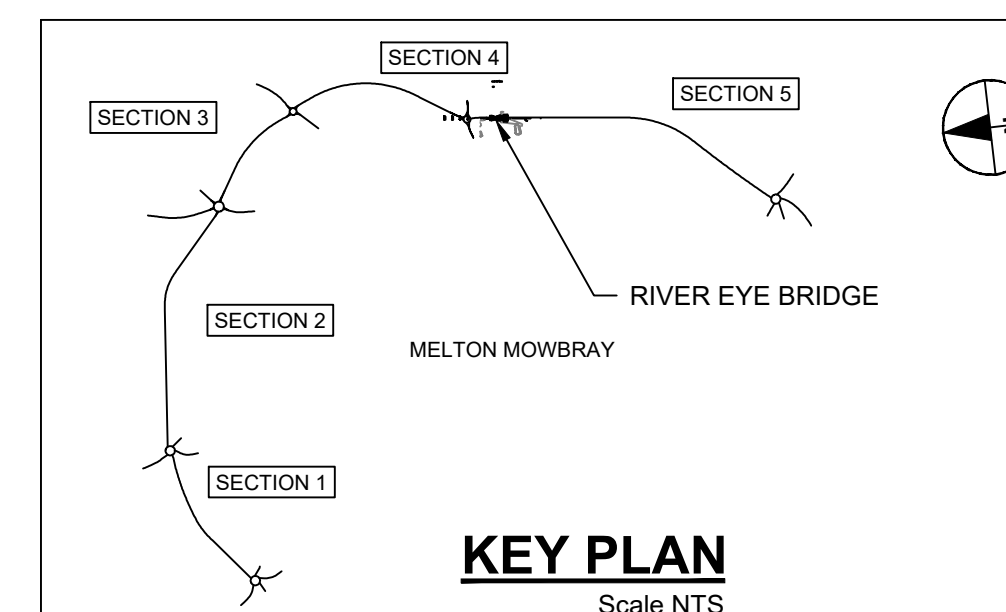
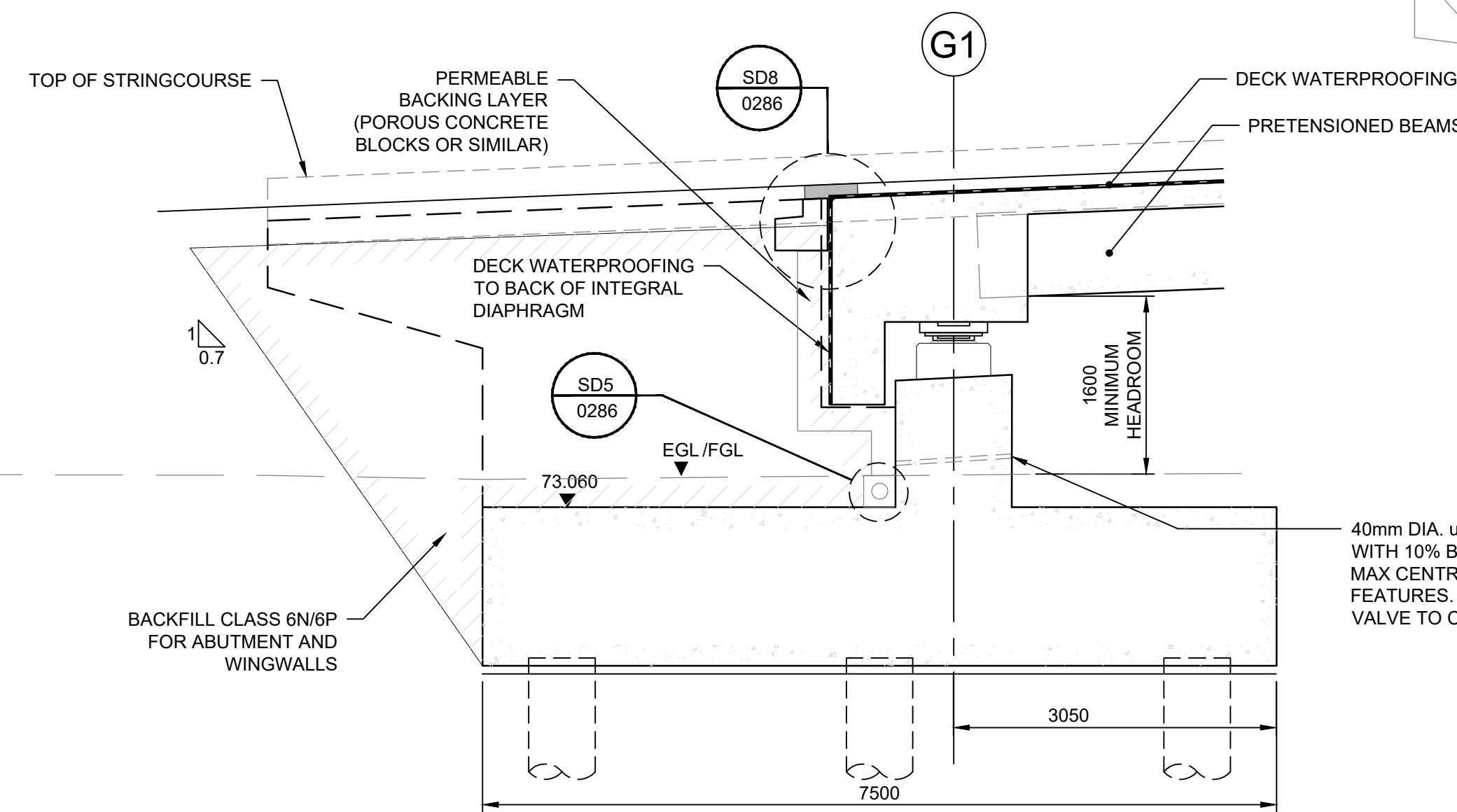
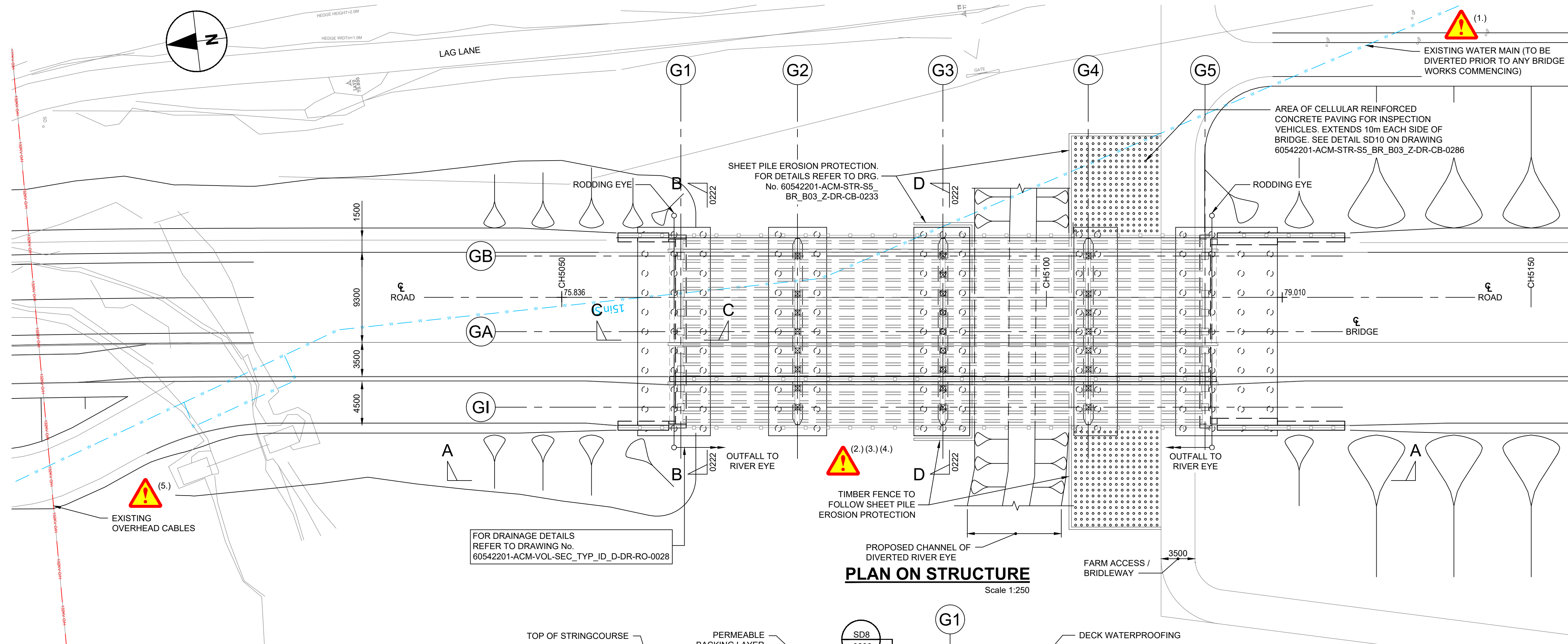
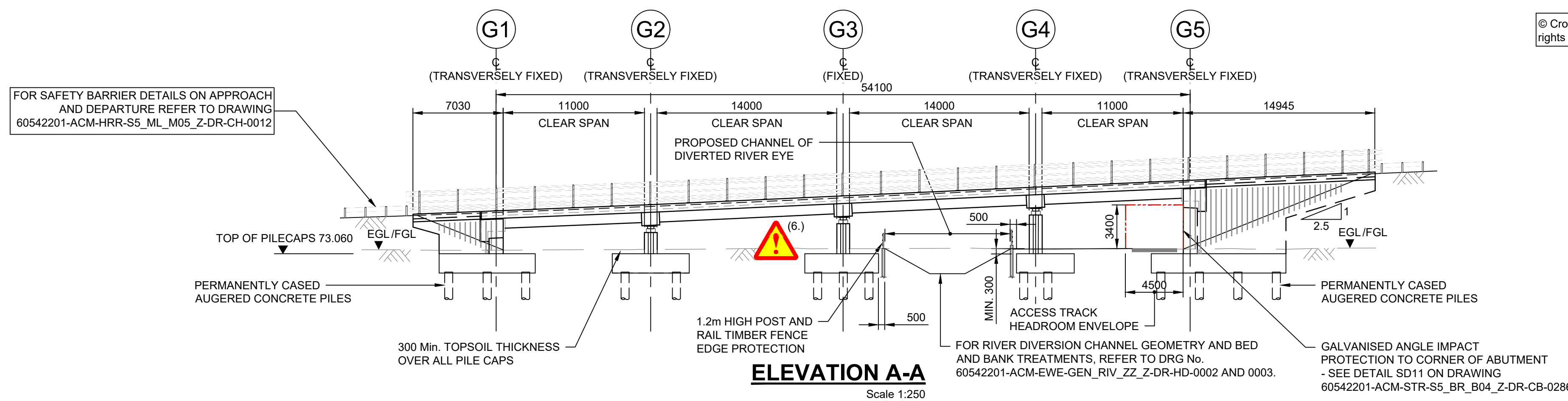
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Appendix B – General Arrangement of the Proposed River Eye Bridge

- NOTES**
1. ALL DIMENSIONS ARE IN MILLIMETRES. ALL LEVELS CHAINAGES AND CO-ORDINATES ARE IN METRES UNLESS OTHERWISE STATED.
 2. THIS DRAWING IS BASED ON ORDNANCE SURVEY DATA AND THE COMBINED AECOM AND LCC TOPOGRAPHICAL SURVEY.
 3. DETAILS ARE REFERENCED THUS:-



NOTES CONTINUED ON DRAWING No. 60542201-ACM-STR-S5_BR_B03_Z-DR-CB-0222.



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
SIGNIFICANT AND SPECIFIC HAZARDS ASSOCIATED WITH THE WORKS DETAILED ON THIS DRAWING. TO BE READ IN CONJUNCTION WITH THE DESIGNER HAZARD ASSESSMENT REGISTER (REF: 60542201-ACM-GHS-GEN_GEN_ZZ_Z-RP-ZS-0001)	
Hazard/Residual Risk	CDM Ref
1 Water pipes underground	L1-6 GEN_6 B03_BRI_1
2 Area liable to flooding	B03_GEN_1
3 Artesian water pressures	B03_BRI_1
4 High ground water level	B03_BRI_1
5 Overhead cables on the northern approach to structure (CH 4995).	B03_BRI_2
6 Horizontal loads induced by sloping soffit during temporary support of precast concrete beams.	B03_BRI_3

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ISSUED FOR CONSTRUCTION		LV	MA	16/10/20	C01
REVISION DETAILS		BY	CHECK	DATE	SUFFIX
PROJECT MANAGEMENT INITIALS					
DESIGNED: KP	CHECKED: KP	APPROVED: MA			
INTERNAL PROJECT NUMBER		SCALE			
60542201		AS SHOWN			
STATUS		BS1192 SUITABILITY			
PCF STAGE 5 APPROVED		A5			
SHEET TITLE					
RIVER EYE BRIDGE GENERAL ARRANGEMENT SHEET 1 OF 2 PLAN AND ELEVATION					
DRAWING NUMBER		REV			
60542201-ACM-STR-S5_BR_B03_Z-DR-CB-0221		C01			

Annex A - Geomorphology expert opinion on the River Eye SSSI and associated Diversion works

Authored by Neil Williams

1. Introduction

1.1 Qualifications

1.1.1 My name is Neil Williams and I am presenting a proof of evidence in relation to the Melton Mowbray Distributor Road, on behalf of Leicestershire County Council. I am a Chartered Geomorphologist, Scientist, Environmentalist, and Water and Environment Manager. I have been a Fellow of the Royal Geographical Society for 10 years, and a full member of the Chartered Institute of Water Engineers and Managers for seven years, with 15 years overall experience.

1.1.2 I hold a PhD in Fluvial Geomorphology and have specialised in river research, design and management for 15 years.

1.1.3 I am currently an Associate at AECOM and have held this post for over 1.5 years. I led the environmental design of the River Eye realignment for AECOM from 2017-2018, before working for another company in 2019 and returning to AECOM.

1.2 Relevant Experience

1.2.1 During my career I have been led the preparation of numerous river and protected aquatic habitat assessments, and river diversion and restoration designs. I regularly take the role of technical lead on aspects of water environment designs including, but not limited to:

- determining condition baselines;
- developing and leading on concept and detailed design;
- overseeing, reviewing and issuing hydromorphological hydraulic modelling completed by others; and
- consulting on and then supporting the development of the scheme by the Contractor.

2. Involvement with the Scheme and Contribution Made

2.1 Scope of Involvement

2.1.1 The evidence I present relates to the River Eye as a SSSI and protected habitat, and its proposed realignment in the area between Brentingby Dam and Lag Lane bridge.

2.1.2 This Proof of Evidence sets out:

- Description of the River Eye and the River Eye SSSI
- Identification and baseline assessment of watercourses and drainage channels with regards to environmental legislation and environmental protection.
- Assessment of the River Eye at the proposed crossing with regards to the river's SSSI designation.
- Design evolution and mitigation of the impacts of NEMMDR crossing of the River Eye
- Reasons for NEMMDR crossing the floodplain on an embankment with a bridge across the channel and realigning the river, instead of options that avoid impacts on the river and floodplain (i.e. a viaduct crossing and diverting power cables to make space for the viaduct).
- Mitigation of the impacts of NEMMDR crossing of the River Eye.
- Reasons for realigning the river to the design position, i.e. realigning from the edge of fields around Lag Lane / NEMMDR closer to the middle of some fields.
- Reasons for changing the shape of the river, i.e. changing from a mainly straight canalised channel to a more complicated meandering form with an inset floodplain.
- Reasons for retaining the form of the existing channel after the river is diverted instead of infilling the disconnected channel with spoil excavated from the new channel.
- Reasons for the shape of the design channel connection back to the present channel west of Lag Lane / NEMMDR, i.e. reasons for a gentle curve instead of a tighter bend that would require less land take.
- Managing erosion of land around the new channel.
- Reasons for fencing off the channel instead of allowing livestock access.
- Impacts on Brentingby Dam.
- Impacts on flooding east of Lag Lane / NEMMDR
- Impacts on flooding west of Lag Lane / NEMMDR

2.2 Contribution Made

2.2.1 The evidence I present relates to my environmental oversight of the River Eye realignment design.

3. Development of the Scheme

3.1 Development Since Planning Submission

- 3.1.1 No significant changes, only minor refinement of details in response to engagement with the Environment Agency and Natural England have been made.

4. Assessment of Scheme Proposals

4.1 The River Eye and River Eye SSSI Baseline

- 4.1.1 The NEMMDR involves crossing several watercourses including the River Eye SSSI. Each crossing requires assessment for compliance with the objectives of the Water Framework Directive (WFD), and the River Eye requires particularly detailed assessment with regards to the river's protected environmental status.
- 4.1.2 The River Eye is designated as a SSSI due to its characteristics as an exceptional example of a semi-natural lowland river. As a SSSI it is a protected habitat, with a variety of biological, physico-chemical and hydromorphological features relevant to the WFD, and it is therefore considered to be highly sensitive. The SSSI is currently assessed as being in "unfavourable no change condition", meaning that it is not being conserved and will not reach favourable condition unless there are changes to site management or external pressures. Natural England published a River Eye SSSI: Strategic Restoration Plan (*see core document reference SAD15*) and accompanying technical report in 2015, which has been used to guide the NEMMDR environmental designs.
- 4.1.3 In consultation with Natural England, the Environment Agency, and technical officers from Leicestershire County Council, AECOM undertook River Eye baseline assessments and developed the design proposals. Natural England and the Environment Agency are supportive of AECOM's assessments and designs and have praised AECOM's environment approach and expertise.
- 4.1.4 The hydromorphological condition of the River Eye around the location of the NEMMDR crossing is severely impacted by a number of pressures, which mean the river is lacking in many natural functions. At a broad scale, the River Eye has been realigned extensively and enlarged to create a channel that is over-wide and over-deep, relative to its expected natural form. These activities reduce the diversity of the river, reducing the range of wetland habitats, variable bed levels, and inundation patterns.
- 4.1.5 The flow regime of the River Eye at the proposed NEMMDR crossing is currently controlled by the Brentingby Dam upstream and the 'mars' weirs downstream. The channel in the vicinity of the proposed NEMMDR crossing has also been enlarged by historic realignment and management.
- 4.1.6 The Environment Agency manages the Brentingby Dam sluices to capture and store flood water for the protection of developments in Melton Mowbray. However, as flooding is a natural process, this flood management, in combination with the enlarged channel, disconnects the natural floodplain and wetlands, and restricts habitat-refreshing spate events.
- 4.1.7 The 'Mars' weirs attenuate lower flows for several hundred metres upstream and cause extensive ponding and deposition of nutrient-enriched fine sediment in the River Eye channel around the proposed NEMMDR crossing.
- 4.1.8 Due to these existing pressures, locally, the River Eye is a highly modified system without many natural river functions. The extents of modifications to the river mean there is little probability of natural self-recovery to favourable SSSI condition, and as such, naturalised processes can only realistically be achieved with intervention.
- 4.1.9 Natural England is managing several restoration schemes throughout the River Eye, including a pilot study to potential lower the 'Mars' weirs in the future. The NEMMDR in this location has been developed with the River Eye SSSI at the forefront of sustainable designs, in consultation with the

Environment Agency and Natural England, and is considered an opportunity to help reach favourable conditions.

4.2 Scheme Design Evolution and Mitigation of potential impacts of NEMMDR crossing of the River Eye

4.2.1 The crossing of the River Eye SSSI channel and floodplain involves a multi-span bridge with embankments with minimal intrusion in the floodplain, and realignment of the main river channel for the reasons described earlier in this Proof of Evidence.

4.2.2 Realignment of the River Eye is a fundamental component of mitigating the environmental impact of the scheme. Due to the sensitive nature of the SSSI designation and Natural England's target to return the affected SSSI unit to favourable conservation status, mitigating the impact of the scheme involves improving the current environmental condition of the SSSI unit.

4.2.3 Identification and baseline assessment of watercourses and drainage channels with regards to environmental legislation and environmental protection.

4.2.3.1 The NEMMDR involves crossing several watercourses including the River Eye SSSI. Each crossing requires assessment for compliance with the objectives of the Water Framework Directive (WFD), and River Eye requires particularly detailed assessment with regards to the river's protected environmental status.

4.2.4 Reasons for NEMMDR crossing the floodplain on an embankment without flood relief culverts and with a bridge across the channel and realigning the river, instead of options that avoid impacts on the river and floodplain:

4.2.4.1 The Report found that all feasible options for the NEMMDR route at the River Eye required either diversion of the powerlines or diversion of the River Eye. However, there were significant safety and cost implications associated with diverting the overhead powerlines, be that overground or underground. The Environment Agency and Natural England were also supportive of diverting the River Eye as part of the NEMMDR scheme due to the significant potential for environmental and ecological benefits associated with diverting the River Eye. For these reasons the decision was made to divert the River Eye as part of the NEMMDR Scheme.

4.2.4.2 The proposed crossing is the shortest distance across the floodplain, therefore the lowest footprint impact in terms of embankment and shading. The existing Lag Lane is on raised embankment without flood relief culverts, and flood water is known to impound at the embankment to create some informal wetlands, so the proposed NEMMDR retains existing hydrological functions.

4.2.5 Opportunities and expert opinion on NEMMDR crossing and development within the SSSI.

4.2.5.1 The River Eye is a protected habitat, so there are potential risks to its protected status and stakeholders have duties to uphold and improve its environmental conditions. A major infrastructure development across a SSSI could have significant adverse impacts, but a sympathetically and well-designed sustainable development would work with natural processes for the benefit of the environment.

4.2.5.2 The River Eye at the proposed crossing location appears severely degraded by permanent and irreversible flood protection and structural impacts, and it is my view that the SSSI would benefit from intervention rather than preservation in its degraded condition. Natural England are proposing various river restoration measures throughout the River Eye, including potentially

- lowering the 'Mars' weirs in Melton Mowbray, so the proposed realignment supports and works with these wider aspirations.
- 4.2.5.3 To improve the conservation status of the River Eye SSSI, and to use the NEMMDR as an opportunity to further invest in improvements, detailed assessments of the river's baseline conditions and proposed design conditions have been undertaken in detailed EIA and WFD assessments. These assessments have used hydraulic modelling to demonstrate design improvements to the river geomorphology and habitats without increasing flood risks.
- 4.2.6 Reasons for realigning the river to the design position, i.e. realigning from the edge of fields east of Lag Lane / NEMMDR to the middle of the field.
- 4.2.6.1 Assessments undertaken for the scheme have demonstrated that the river has been extensively realigned historically and is severely degraded as a direct result. Modelling demonstrates that realignment of the existing channel to the proposed more naturalised form would be beneficial. This view is supported by Natural England and the Environment agency.
- 4.2.7 Reasons for changing the shape of the river, i.e. changing from a mainly straight canalised channel to a more complicated meandering form with an inset floodplain.
- 4.2.7.1 While the main control on disconnected floodplain flows in the proposed crossing area is flood capture at Brentingby Dam, local channel enlargement has also contributed to reduced out-of-channel inundation, and loss of floodplain and wetland habitats. The river channel local to the proposed crossing generally has a bank foot width of approximately 5 – 6 m with flow widths narrowing to around 1 m adjacent to berms, a bank top width of around 8 – 16 m, and a bank height of approximately 2 – 3 m, with baseflow depths in pools that can exceed 1m.
- 4.2.7.2 The over-sized channel is associated with historic realignments, enlargement for drainage and flood management of adjacent agricultural land, and channel maintenance to supply flows to the former Melton Mowbray to Oakham Canal, which was completed in 1802, but abandoned (due to inadequate water supply) in 1847.
- 4.2.7.3 The river was dredged on a regular basis until 1991, at which time the National Rivers Authority (which has now become the Environment Agency) ceased channel maintenance. It is apparent that the river is still dredged in places on an informal basis, with mechanical scour, sediment spoil heaps, and extracted aquatic vegetation visible throughout the catchment.
- 4.2.7.4 The upstream channel reaches, with a less severe history of management, indicate a naturally much shallower width: depth ratio channel than exists at the proposed crossing location, with the natural channel set into a well-connected floodplain. This would be difficult to replicate at the proposed crossing, due to the extent of historic management and channel enlargement extending over several kilometres.
- 4.2.7.5 The new channel alignment therefore includes a channel and an inset floodplain to replicate natural conditions as far as possible downstream of the flood storage area at Brentingby Dam.
- 4.2.8 Reasons for retaining the form of the existing channel after the river is diverted instead of infilling the disconnected channel with spoil excavated from the new channel.
- 4.2.8.1 Retention of the existing channel as a backwater greatly increases the SSSI wet habitat area and diversity and also provides flood storage.
- 4.2.9 Reasons for the shape of the design channel connection back to the present channel west of Lag Lane / NEMMDR, i.e. reasons for a gentle curve instead of a tighter bend that would require less land take.

- 4.2.9.1 A gentle, low radius curve is designed central to the bridge span to mitigate scour risks. Tighter bends are feasible upstream because flow energy is dissipated through the inset floodplain. The channel narrows back to its existing width at the bridge and towards the reconnection, and without the inset floodplain there is less flow modulation, so tighter bends are more likely to erode against the structure or into the adjacent land. Hard bank protection is not appropriate in a SSSI, so the design reduces scour risks by working with natural river processes.
- 4.2.10 Managing erosion of land around the new channel.
- 4.2.10.1 Rivers such as the River Eye that are formed in erosion-resistant clay geology are typically stable. The channel has remained in the same position in the floodplain since it was historically realigned, and exhibits little tendency to migrate or meander (or naturalise). Erosion risks have been quantified as low by comparing modelled hydraulic shear stress with surveyed bank shear strength. Bank shear strength is generally an order of magnitude greater than flow shear stress, so erosion risks are low.
- 4.2.11 Reasons for fencing off the channel instead of allowing livestock access.
- 4.2.11.1 The fence creates a riparian buffer strip to filter pollutant runoff from the surrounding land surface, and prevents bank poaching and faecal inputs to the river from cattle accessing the channel for most of the realignment length. Controlled cattle drink accesses are included in the design. Fencing will protect habitats in the new river corridor.
- 4.2.12 Impacts on Brentingby Dam.
- 4.2.12.1 River modelling demonstrates that the new channel will have no impacts on flow levels or the operation of Brentingby Dam. Since there is no impact to water levels immediately downstream of the dam (where the water level controls the sluice operation) there will be no impact on the scheme or SSSI.
- 4.2.13 Impacts on flooding east of Lag Lane / NEMMDR
- 4.2.13.1 River modelling included in Annex B describes how the construction of the NEMMDR scheme will have only minor, localised effects on flood risk from the River Eye within agricultural land located to the east of the proposed scheme, upstream of proposed crossing of the River Eye. Flooding is managed by storage capacity of the inset floodplain, flood compensation areas and the backwater, which have been designed to work in tandem with the Brentingby Dam and storage reservoir upstream.
- 4.2.14 Impacts on flooding west of Lag Lane / NEMMDR
- 4.2.14.1 River modelling demonstrates that there will be no increase in flooding to land west of Lag Lane / NEMMDR, due to the storage capacity of the inset floodplain and the backwater. This is detailed further in Annex B.

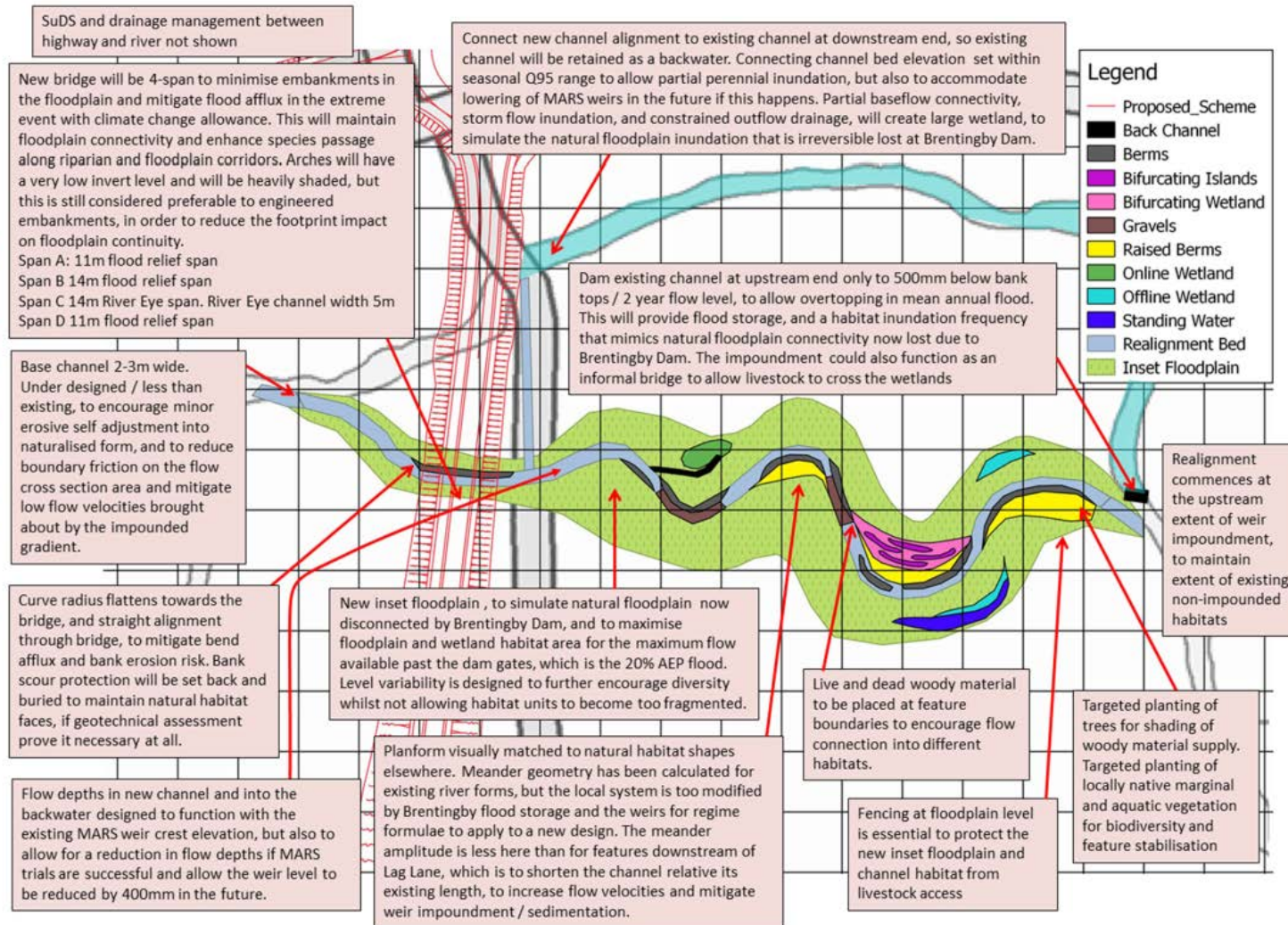
4.3 Scheme Impact

- 4.3.1 The River Eye is unlikely to achieve SSSI favourable condition by self-recovery, as a result of its highly modified condition between Brentingby Dam and the 'mars' weirs. The design channel, with its inset floodplain and retention of the existing channel as a backwater, greatly increases the SSSI wet habitat area and diversity. The design of reach realignment features a narrowed, sinuous baseflow channel with varying berms and bed forms, with an inset floodplain cut into the natural floodplain surface that is irretrievably disconnected. The increased morphological diversity of the design will provide variable inundation depths and frequencies in a range of hydrological conditions, and a range of habitat niches for macrophytes, fish and aquatic invertebrates.

5. Conclusion

- 5.1.1 The River Eye has been analysed in detail for its baseline conditions, modification by historic activities, and potential for future channel change including self-recovery to a more natural state. All river analysis has been undertaken with reference to appropriate policy including WFD objectives, SSSI favourable condition targets, and the River Eye Strategic Restoration Plan. Mitigation measures and environmental enhancements have been designed for the Proposed Scheme to maximise river restoration and SSSI potential.
- 5.1.2 The main river of the water body would be crossed by the NEMMDR with a permanent four-span crossing, with abutments set-back from the river channel bank tops. Realignment of the River Eye is a key feature of the proposals, because of the opportunity it brings to restore and re-naturalise part of the river, and is the preferred option when considering construction safety.
- 5.1.3 At the proposed crossing, the permanent impacts of weirs in Melton Mowbray downstream of the site, and Brentingby Dam upstream, mean the river is considered too modified and degraded to be able to naturally recover SSSI favourable conditions. This mainly relates to permanent disconnection of the natural floodplain and changes in channel gradient. Despite being a protected habitat, it should not be preserved in its current state, and intervention is required to achieve the best environmental potential.
- 5.1.4 A new channel alignment, with an inset floodplain and retention of the existing channel as a backwater, has been designed for the Proposed Scheme. Areas of habitat creation that are part of this river restoration initiative will be surrounded with livestock fencing to prevent damage and poaching. Habitat improvements that would be brought about by the Proposed Scheme are quantified as:
- The design channel with an inset floodplain and a connected backwater has over 1,500m² more habitat area than the uniform existing channel in the dry summer baseflow season, and nearly 2,000m² more habitat area in winter baseflow. This is roughly a 35% increase in wet habitat area at baseflow throughout the year.
 - The inset floodplain and backwater designed to inundate in spate events mean that there is no increase in flood risk to adjacent land. It also means that in the mean annual flood, an event with important ecological functions, wet habitat area increases by over 6,000m², which is an increase of over 25% of the existing flood habitat area.

Appendix A Annotated Summary of the River Eye Realignment



Annex B - Flooding at River Eye and its tributary

Authored by Ian Bentley

1. Introduction

1.1 Included in this Annex

1.1.1 This Annex contains excerpts from the Proof of Evidence LCC 07 written by Ian Bentley, a Principal Engineer at AECOM with 12 years' experience. This annex only includes information pertinent to the River Eye diversion and works within the SSSI. Some of the text may be duplicated with text in the Proof of Evidence 07 which also includes full details of Ian's experience and qualifications.

1.2 Definitions

1.2.1 It would be helpful if from the start I define certain terms to ensure that my evidence can be followed:

1.2.1.1 Exception Test:

The Exception Test is set out in paragraph 160 of the NPPF. It is a method to demonstrate and help ensure that flood risk to people and property will be managed satisfactorily, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.

1.2.1.2 Main River:

Larger river or stream falling under the jurisdiction of the Environment Agency, as shown on the Main River Map

1.2.1.3 NPPF:

National Planning Policy Framework. The NPPF sets out government's planning policies for England and how these are expected to be applied.

1.2.1.4 Ordinary Watercourse:

All open watercourses not designated as Main River

1.2.1.5 PPG:

Planning Practice Guidance. The PPG sets the government's planning policies for England and how these are expected to be applied (in conjunction with the NPPF).

1.3 Work carried out by my colleagues at AECOM

1.3.1 Prior to my involvement, my colleagues at AECOM had undertaken the following:

1.3.2 Initial consultation was undertaken with the Environment Agency Partnership and Strategic Overview Team. This preliminary consultation was to get guidance on the two Eastern Distributor Road route options and to discuss requirements / restrictions on development in Flood Storage Areas (FSA) and compensatory floodplain storage. Based on the outcome of this consultation Option 1, which did not cross the Brentingby Dam's Flood Storage Area was chosen as the preferred option.

1.3.3 Following the scoping phase of the project, regular correspondence was maintained with the Environment Agency to:

- Obtain the River Wreake hydraulic model (of which the River Eye is a part of) to be used to represent the pre-scheme i.e. baseline scenario at the River Eye crossing;
- agree the River Eye hydraulic modelling approach;
- to discuss the various River Eye crossing options;
- discuss the proposed River Eye realignment in the vicinity of the proposed crossing;

1.3.4 In support of the NEMMDR planning application, a Flood Risk Assessment (FRA) was prepared in accordance with the National Planning Policy Framework (NPPF), its associated Planning Practice Guidance (PPG) and other relevant local policy in 2018. The guidance related to flood risk essentially remains the same as before in the latest NPPF published in 2021 and therefore, the Flood Risk Assessment is still in compliance with the latest planning policy.

1.3.5 The FRA has considered flood risk from all sources. Flood risk from the River Eye, which is classed as a Main River, has been supported by hydraulic modelling in consultation with the Environment Agency. This hydraulic modelling has been reviewed and approved by the Environment Agency.

1.4 The need for a Flood Risk Assessment

1.4.1 The proposed NEMMDR intersects one Main River at the River Eye. At this crossing of the River Eye, the scheme intersects Flood Zones 2 and 3 defined in Annex B - Table 1-1.

Annex B - Table 1-1

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3).
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding or land having a 1 in 200 or greater annual probability of sea flooding (Land shown in dark blue on the Flood Map).
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

1.4.2 As parts of the proposed NEMMDR works in the vicinity of the River Eye are located in Flood Zones 2 & 3, a Flood Risk Assessment is required to assess the risks from all sources of flooding, both to and from a proposed development, in order to comply with National Planning Policy Framework (NPPF). Section 14 of the newly updated (July 2021) NPPF provides national policy in relation to development and flood risk. In 2018, during the planning stage of this NEMMDR, in the previous version of NPPF, Section 10 provided the national policy in relation to development and flood risk. The NPPF is supported by the Planning Practice Guidance (PPG), an online resource published in March 2014.

2. Development of the Scheme

2.1 Planning Stage

2.1.1 At the planning stage a comprehensive Flood Risk Assessment was prepared in accordance with the NPPF with extensive consultation with the Environment Agency and Leicestershire County Council to support the planning application.

2.1.2 As a part of the FRA preparation the following objectives were met:

- review of existing site data including Environment Agency (EA) flood risk data, ground conditions (if available), scheme proposals and reference to relevant Leicestershire County Council policy including Strategic Flood Risk Assessments, Preliminary Flood Risk Assessments, Surface Water Management Plans and Local Flood Risk Management Strategies;
- liaison with the EA to outline and agree requirements regarding various flood related issues around the proposed River Eye crossing and River Eye hydraulic modelling;
- liaison with LCC Flood team (Lead Local Flood Authority) to outline and agree requirements for the site-specific FRA;
- hydraulic modelling to confirm baseline conditions and assess the fluvial flood risk impact of the proposed development in the vicinity of the proposed River Eye crossing. This included modelling of the existing baseline conditions and of the proposed scenario with the new bridge for a series of magnitude fluvial events;
- identification of potential measures to mitigate the fluvial flood risk impacts of the proposed development;
- a review of the surface water drainage design that has been prepared for the proposed development, and incorporation of the design calculations into the FRA; and
- discussion and provision of recommendations for flood mitigation measures including fluvial volume compensatory storage and residual risk mitigation measures in line with the conclusions of the drainage strategy, where applicable.

2.1.3 The FRA document is available for reference and is included in the NEMMDR Statement of Case documentation list (ref SAD16).

2.2 FRA Approval and Grant of Planning Permission

2.2.1 The Flood Risk Assessment that accompanied the planning application which was submitted in September 2018 concluded that there will be no significant increase in fluvial flood risk to the neighbouring land uses, or an increase in surface water runoff as a result of the proposed development based on application of identified mitigation measures. The Flood Risk Assessment went through rigorous review by Leicestershire County Council's Flood team (Lead Local Flood Authority) and the Environment Agency and was accepted.

2.2.2 Planning permission was granted in May 2019 and detailed design of the NEMMDR has since been in progress. The planning permission was accompanied by planning conditions, some of which need to be discharged prior to commencement of construction.

2.3 Development Since Planning Submission

2.3.1 The River Eye flood modelling has been updated to reflect changes to the scheme design that have occurred subsequent to the planning submission, including:

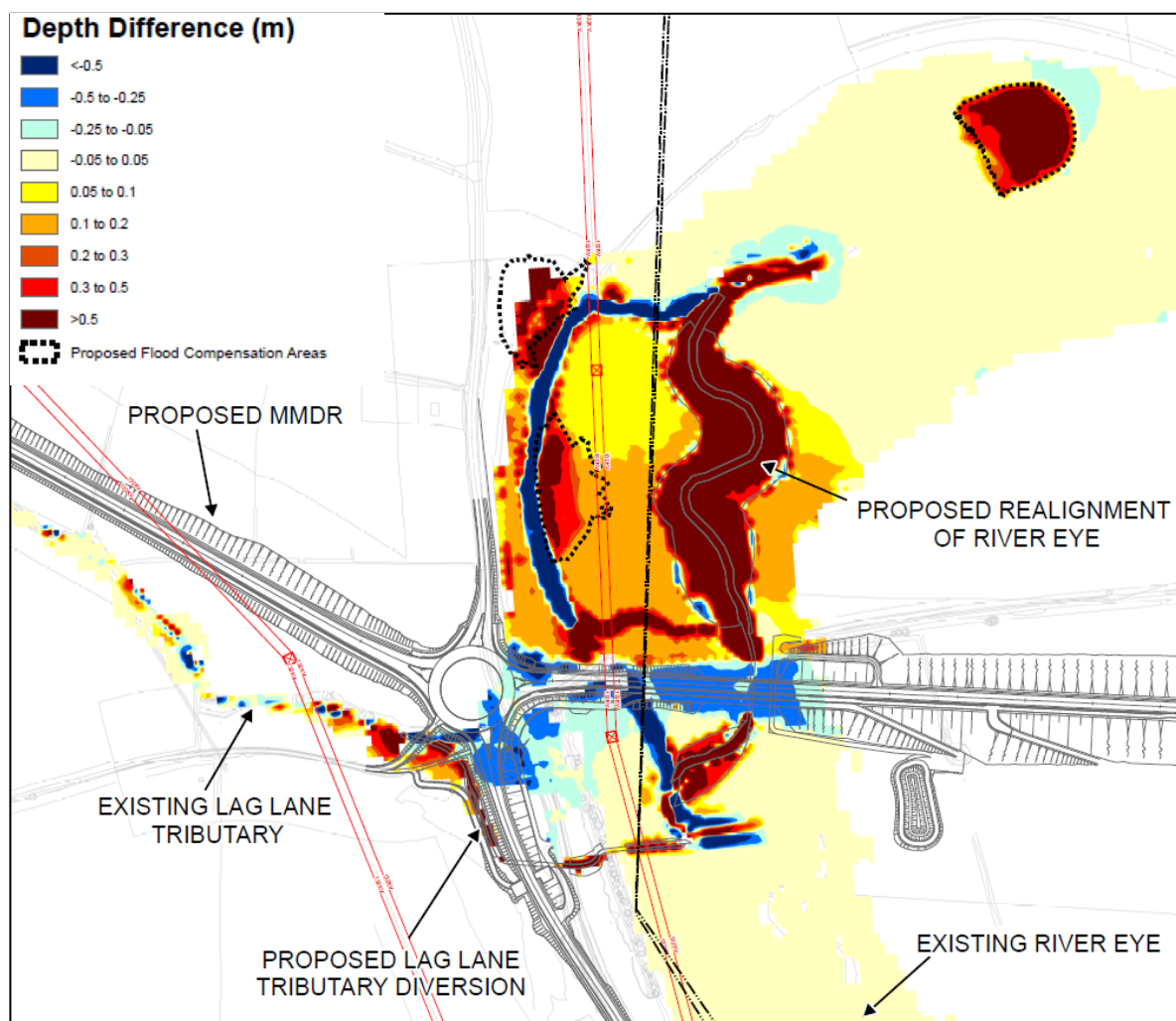
- Minor changes to the road alignment and embankment crossing the River Eye floodplain.
- Changes to the river diversion and restoration.
- The addition of flood compensation areas to the east of the proposed crossing.
- Changes to culvert dimensions on the Lag Lane tributary diversion.

- 2.3.2 It should be noted that these changes do not invalidate the planning permission. They are required because the detail of the design has developed further and, especially around the SSSI, progressed to identify the detail of land take. These updates to the model were necessary to finalise the flood compensation storage provision as required by planning condition 15.

3. Assessment of Scheme Proposals

3.1 Fluvial Flood Risk - River Eye and Lag Lane Watercourse

- 3.1.1 Hydraulic modelling of the River Eye was carried out using a computational model supplied by the Environment Agency. This model represents the River Wreake / Eye and a number of its tributaries. The model was updated to include an additional tributary crossed by the scheme and joining the river near the proposed scheme crossing of the River Eye (hereafter the Lag Lane tributary) and to incorporate newly available survey data in the vicinity of the River Eye crossing.
- 3.1.2 The updated hydraulic model was used to assess baseline flood risk from the River Eye and from the Lag Lane tributary. A proposed option model was then created to represent the scheme, including:
- The proposed alignment of the river diversion, based on information supplied by AECOM’s geomorphology team.
 - The proposed River Eye crossing based on information supplied by AECOM’s highway design and bridge design teams.
 - The proposed Floodplain Compensation Areas, located to the east of the River Eye crossing.
 - A proposed diversion of the Lag Lane tributary.
 - Proposed culvert sizes for crossings of the Lag Lane tributary by the scheme. New crossings under Saxby Road, a proposed bridleway and a realigned section of Lag Lane were assessed for the diverted section of this watercourse.
- 3.1.3 Flood hydrology (peak river flows) was retained from the original Environment Agency model and modified to incorporate currently applicable climate change allowances. Flood flows in the River Eye at the site of the proposed crossing, are controlled by the Environment Agency’s Brentingby Dam Flood Storage Area, which largely prevents flooding for events up to and including the 1 in 100yr event.
- 3.1.4 The scheme was found to have a localised impact on flood levels upstream of the proposed River Eye crossing, with water levels increased by around 50 to 200mm during a 1 in 100 year flooding event, with a 50% climate change allowance. Larger increases to flood depths are limited to areas where ground levels are to be reduced, to form the realigned River Eye Channel and flood compensation areas. Increased flood depths extend approximately 200m upstream from the proposed crossing. The predicted changes to the peak flood depths are shown in Annex B: Figure 3-1.



Annex B: Figure 3-1 -Depth difference map for a 1 in 100 year + 50% climate change event

- 3.1.5 Figure Downstream of the of the proposed crossing, impacts to flood risk from the River Eye are confined to the area immediately adjacent to the diverted section of the channel, where ground level changes are part of the proposed channel design.
- 3.1.5.1 The scheme will reduce flood risk from the Lag Lane Tributary, which currently poses a risk of flooding to Saxby Road. The scheme proposals include diversion of this watercourse to a new culvert under Saxby Road, to the west of the existing crossing. Two new culverts under Lag Lane and an adjacent bridleway are at risk of overtopping during flood events, causing localised flooding to these accessways. This watercourse is also crossed by the scheme carriageway further to the north, where a minor, localised increase to the flood level is predicted upstream of the proposed culvert.
- 3.1.5.2 Flood risk to the scheme has also been assessed for a breach of the upstream Brentingby Dam flood storage area. Since such a breach is extremely unlikely to occur this was done to provide information for contingency planning only, and mitigation was not required.
- 3.1.6 In general, the hydraulic modelling has shown very localised increases above 0.05m (which is considered a negligible increase within model tolerances) in flood levels immediately upstream of the proposed River Eye and Lag Lane Tributary crossings. However, it should be noted that no properties are located in the affected area, and there are minimal changes to the flood extents and depths. Therefore, these

results show that the proposed scheme does not significantly increase the flood risk to any properties in the vicinity of the proposed River Eye and Lag Lane Watercourse crossings;

- 3.1.7 Floodplain compensation storage will be provided on a like for like, volume for volume basis. The storage volumes have been calculated for the 1% AEP + 50% Climate Change event;
- 3.1.8 There is residual fluvial risk to the proposed development associated with the Brentingby Dam breach. In case this extremely low-probability event occurs, it is accepted that the proposed scheme will remain closed until flooding recedes.

3.2 Scheme Mitigation Measures

- 3.2.1 The scheme crosses the River Eye via a bridge spanning the diverted channel with three additional flood relief spans located in the floodplain, to maximise the conveyance of flood water. Soffit levels were set in accordance with freeboard requirements specified by the Environment Agency.
- 3.2.2 Three floodplain compensation areas are proposed to the east of the scheme to mitigate the infilling of floodplain storage by the scheme, providing an equivalent storage volume on a level-for-level basis.

4. Conclusion

- 4.1.1 The construction of the NEMMDR scheme will have only minor, localised effects on flood risk from the River Eye within agricultural land located to the east of the proposed scheme upstream of proposed crossing of the River Eye.
- 4.1.2 Flood risk to the scheme and impacts of the scheme on flood risk elsewhere have been assessed in accordance with the relevant planning guidance and the analysis carried out for the River Eye crossing has been reviewed and accepted by the Environment Agency.

Annex C - Ecology at the SSSI and River Diversion and expert opinion on the impact of the works

Authored by Matthew Oakley

1. Introduction

1.1 Included in this Annex

1.1.1 This Annex is to be read with Proof of Evidence LCC 08: Ecology, authored by Matt Oakley, a Technical Director at AECOM with 15 years' experience. This annex refers to the ecology specific to the River Eye SSSI and the river diversion works. Some of the text may be duplicated with text in the Proof of Evidence 08 which also includes full details of Matt's experience and qualifications.

1.2 Legislation

1.2.1 Nature conservation policy in England is implemented through a series of sites, habitats and species designated under legislation from an international to a local level. The following national wildlife legislation is relevant to the River Eye SSSI:

- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Countryside and Rights of Way Act 2000. Section 74 of the Act provides the habitat types and species of principle importance in England (CROW Act 2000);
- The Fish Health Regulations 1997 (as amended);
- Salmon & Freshwater Fisheries Act 1975 (as amended);
- Eels (England and Wales) Regulations 2009 (as amended);
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (WFD);
- The Aquatic Animal Health (England and Wales) Regulations 2009 (as amended); and
- The EU Invasive Alien Species Regulation 2014.

1.3 Planning Policy

1.3.1 The following national and local planning policy is relevant to the River Eye SSSI:

- The National Planning Policy Framework (NPPF);
- The Local Plan of relevance is the saved policies of the Melton Borough Local Plan (1999). Relevant policies are C13 – Sites of Ecological, Geological or Other Scientific Importance, C14 – Nature Conservation Value, and C15 – Wildlife Habitat Protection.

1.4 Biodiversity Action Plans

1.4.1 The following biodiversity actions plans are relevant to the River Eye SSSI:

- The UK Post-2010 Biodiversity Framework;
- Biodiversity 2020, a national strategy for England's wildlife and ecosystem services; and
- Space for Wildlife: Leicester, Leicestershire and Rutland Biodiversity Action Plan 2016 – 2026', 2nd edition (LBAP).

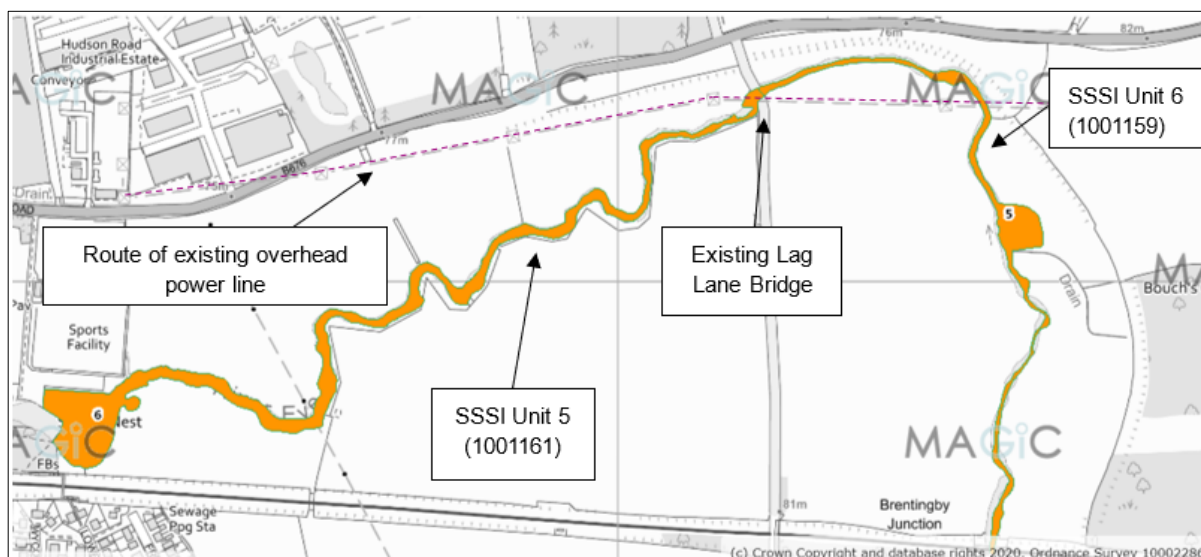
1.5 Designation and Current Condition of the SSSI

1.5.1 The River Eye is designated as being an exceptional example of a semi-natural lowland river, representative of clay streams within central and southern England. The citation includes records of white-clawed crayfish, the water bug *Corixa panzeri* and white-legged damselfly.

1.5.2 The citation for the SSSI states that for an 8km stretch above Melton Mowbray the natural structural features of the river, comprising riffles, pools, small cliffs and meanders, together with clean water continue to provide a range of conditions essential for the maintenance of rich and diverse plant and animal communities. For most of its length the marginal vegetation is dominated by such plants as

bulrush, branched bur-reed, greater pond-sedge, slender tufted-sedge, reed canary grass and flowering rush.

1.5.3 The SSSI is divided into six monitoring units, with the proposals for the Scheme located within Units 5 and 6 (BRENTINGBY JUNCTION - LAG LANE 1001161, and LAG LANE - SWANS NEST 10001159 respectively) as illustrated in Figure 1-1.



Annex C: Figure 1-1 River Eye SSSI Units upstream and downstream of the MMDR crossing

Source: <https://magic.defra.gov.uk>

1.5.4 The Site Check, most recently completed in January 2010, states that the assessment against favourable condition targets for both units is as follows:

- Biological General Quality Assessment (GQA) target met;
- Chemical GQA target met;
- Unionised ammonia target met;
- Suspended solids target met;
- Phosphorus target (0.06) has not been met but there has been a decrease in Phosphorous since 1998;
- The river profile target has not been met due to over-dredging and impoundment (weir);
- Bankside vegetation target has also not been met and ideally it should have a higher proportion of marginal macrophyte species, there should be areas of species rich marshy grassland, swamp vegetation and MG4 floodplain meadows;
- Riparian zone targets have not been met due to a lack of semi-natural habitats;
- Species composition - two sites along the river were surveyed, one near Lags Lane and one near Ham Bridge - the site near Lag Lane passed this target and supports many characteristic macrophyte assemblages, but the Ham Lane site failed due to the physical modifications; also many species recorded in 1979 are no longer present; and
- River restoration is necessary to ensure the macrophyte assemblages improve.

1.5.5 According to Natural England, the River Eye SSSI is currently in unfavourable (no change) condition. This means that special features of the site are not being conserved or are being lost, so without appropriate management the site will never reach a favourable or recovering condition.

1.5.6 Natural England's River Eye Strategic Restoration Plan (2015) summarised that the principal reasons for SSSI non-improvement in 2010 were water quality and siltation. The siltation problem was exacerbated

by the lack of flow and the presence of structures, impeding the river’s hydrological functioning. Water quality was being addressed, but the physical character of the river channel needed to be restored to secure good ecological and hydrological functioning.

1.6 Ecological Position on the SSSI set out at Planning

1.6.1 To assess how the Scheme may impact the River Eye SSSI in the context of the legislative and policy framework detailed above, a comprehensive suite of surveys has been undertaken, as set out below in Table 1-1.

Ecological Feature	Survey Type/ Method	Date of Surveys
Habitats	Phase 1 habitat survey	May and June 2017 May 2018
Water Vole and Otter	Presence/ likely absence surveys	Between July 2017 and May 2018
Aquatic Invertebrates	Kick sampling	October 2017 April and May 2018
White-clawed Crayfish	Presence/ likely absence surveys	August 2018

Annex C: Table 1-1 - Ecological Field Surveys of the River Eye SSSI undertaken in support of the Environmental Statement for the Scheme

1.6.2 The section of the SSSI that would be affected by the Scheme is slow flowing (<10 cm/s) with an average width of 2.5 m and average depth of 80 cm (see image below). The surrounding land is characterised by improved grassland for livestock grazing. At the time of the survey, most of the habitat type was ponded reach (95%) with some riffle (5%). The substrate was soft and made up of 80% silt with some boulders



(10%) and cobbles (10%) present throughout. There was no shading along the watercourse and turbidity was slight. Macrophytes were present throughout the reach (50% coverage).

1.6.3 The River Eye has a history of fine sediment deposition from the run-off from cultivated land, channelization, in-stream impoundments and a lack of suitable riparian and marginal habitats (Camelo et al., 2015). There is a series of negative impacts related to these pressures as follows:

- The smothering of gravel has created uniform geomorphological conditions and reduced habitat diversity for plants, invertebrates and fish. Impoundments have created barriers to the movement of fish.
- There is a lack of habitat diversity such as back channels due to limited woody debris.

These features concur with the findings of the walkover survey, which highlighted low flows and associated sedimentation as well as intermittent livestock poaching. However, the biological data (Biological Monitoring Working Party (BMWP) Score and Average Score Per Taxon (ASPT)) suggest that the river receives little organic pollution and its condition in that respect is very good.

1.6.4 The Proportion of Sediment-sensitive Invertebrates (PSI) score of Heavily-sedimented found in the autumn and both spring samples confirms the sedimentation pressure influencing this watercourse, although the assemblage was of Fairly high conservational value and relatively high diversity in autumn. Similarly, the Lotic-Invertebrate Index for Flow Evaluation (LIFE) (species) score for the autumn and spring samples suggests the waterbody is influenced by low flows. This watercourse would be expected to support species suited to higher flows. Both spring samples suggest that the watercourse is subjected to pressures that have contributed to its Low and Moderate conservation values.

1.6.5 No evidence of water vole has been recorded during surveys; therefore, water vole is likely absent from the river in this location and no impacts would occur.

1.6.6 The surveys have shown that otters are present on the River Eye, though no holts (resting or breeding sites) have been found to be present within 500m of the location where the SSSI would be impacted by the Scheme.

1.6.7 No evidence of white-clawed crayfish was recorded during the surveys, therefore white-clawed crayfish is likely absent from the river in this location and no impacts would occur.

1.6.8 The Environmental Statement [ES] considered it likely that in the absence of mitigation, there would be a negative effect on the functional integrity of the SSSI due to habitat loss, and that this would be a moderate significant effect at the national scale. However, accounting for mitigation and compensation measures outlined the ES (discussed in further detail below) the Scheme would likely result in a positive effect on the SSSI significant at the National scale due to providing greater, better quality river habitat.

1.7 Planning Permission and Conditions

1.8 Planning permission for the Scheme was granted in May 2019, subject to conditions. Those conditions relevant to the River Eye SSSI are listed below:

1.8.1.1 River Eye Mitigation, Compensation and Enhancement Scheme 5.

“A detailed mitigation, compensation and enhancement scheme for the River Eye as shown on the Indicative Ecology Mitigation and Enhancement Plan (60542201-ACMEGN-GEN_GEN_ZZ_Z-DR-LE-0126 Rev P01) shall be submitted to and approved by the County Planning Authority prior to the commencement of any works on site. The scheme shall make provision for compensatory habitat creation including its management and monitoring and shall be implemented as approved. Thereafter, the development shall be implemented in accordance with the approved scheme.”

1.8.1.2 River Eye Management and Monitoring Plan 6.

“A detailed management and monitoring plan to mitigate for impact on the River Eye SSSI including hydro-morphological, ecological and surface water monitoring to ensure restoration to the objectives of the Water Framework Directive Report (including River Eye SSSI diversion and enhancement proposals) Update (March 2019) and to include appropriate management actions for a five-year establishment period after completion of the restoration works shall be submitted to and approved by the County Planning Authority prior to the completion of construction works. The plan shall make provision for annual monitoring visits and the submission of annual reports to the County Planning Authority during the five-year establishment period.”

1.9 Changes in ecological baseline since planning

- 1.9.1 There have been no changes in the ecological baseline reported in the ES with regards to the River Eye SSSI and the habitats and species it supports.
- 1.9.2 Updated water vole surveys did not record any evidence of the species on the River Eye. Otter continue to be present on the river. Updated habitat, macroinvertebrate or white-clawed crayfish surveys have not been undertaken as it is considered unlikely that the ecological baseline for these features would have changed in the interim period since the 2017/2018 surveys were undertaken.

2. Mitigation in the River Eye and SSSI

2.1 General Approach to Mitigation

2.1.1 The mitigation, compensation and enhancement measures of the Scheme have been designed with the vision for the River Eye SSSI in mind, with the following key objectives:

- Create a wider riparian corridor;
- Create a wider variety of bed sediments, flow types and depths;
- Increased connectivity between the river and riparian zone;
- A reduction in the impacts of impoundments; and
- A reduction in the impacts of land management.

2.1.2 Despite being a protected habitat, it has been put forward as a benefit of the Scheme (and accepted by Natural England) that the local River Eye should not be preserved in its current state, and intervention is required to achieve the best environmental potential. On the grounds that the SSSI is classified as being in less than favourable condition, there is potential for the Scheme to provide betterment to the SSSI, and could present an opportunity to realise a number of the restoration and rehabilitation measures, as outlined in the River Eye SSSI Strategic Restoration Plan (2015). These include targeted management of existing wetland areas to improve habitat diversity, riparian improvements through planting of marginal and aquatic vegetation and riparian trees and increasing sinuosity through the reach.

2.1.3 The Scheme at this location has been developed with the River Eye SSSI at the forefront of sustainable design, and in consultation with the Environment Agency and Natural England. A new channel alignment has been designed from concept level through outline and then detailed design. This includes a new inset floodplain and retention of the existing channel as a backwater, to restore the river channel as far as possible, given the permanent historical impacts noted in a previous section of the report. It is proposed that the new channel, inset floodplain and existing channel (to become a backwater) will be surrounded by appropriate livestock fencing to prevent access, which will be fundamental to protecting the new habitats created from poaching – the entire realignment and enhancement area will be fenced.

2.1.4 On this basis habitat improvements are quantified as follows:

- The designed river channel with an inset floodplain and a connected backwater has over 1,500 m² more habitat area than the uniform existing channel in the dry summer baseflow season, and nearly 2,000 m² more habitat area in winter baseflow. This is roughly a 35% increase in wet habitat area at baseflow throughout the year.
- The inset floodplain and backwater designed to inundate in spate events mean that there is no increase in flood risk to adjacent land. It also means that in the mean annual flood, wet habitat area increases by over 6,000 m², which is an increase of over 25% of the existing flood habitat area.

2.2 Specific Ecological Mitigation Measures

2.2.1 Below is a summary of the detailed mitigation, compensation and enhancement measures proposed for the River Eye SSSI. Measures indicated in bold are specifically detailed in the River Eye SSSI Strategic Restoration Plan (*River Eye SSSI: Strategic Restoration Plan1 – Technical Report. Natural England Commissioned Report NECR184. 2015*).

- Provision of advance planting at mitigation areas

¹ Camelo, J., Douglas, J., Pride, M., Dennis, I. & Smith, C. (2015). *River Eye SSSI: Strategic Restoration Plan - Technical Report*. Natural England Commissioned Reports, Number 184.

- Minimise the extent of bankside and aquatic vegetation lost and severance of the riparian corridor.
- Measures would be put in place to protect bullhead and other fish species during construction, including fish rescue upon completion of the realigned River Eye channel offline
- Realigned channel allowed to colonise naturally with macrophytes from upstream
- Regime of water quality monitoring is implemented before, during and after construction works.
- Low-level lighting, or other less-intrusive lighting set up, would be utilised around the river
- Retain the existing channel offline to provide additional mitigation habitat for wetland plant, vertebrate and invertebrate communities. Retained channel will be connected to the realigned River Eye at its downstream end to accommodate high flow events and maintain connectivity of the retained channel.
- Minimise shading of the river channel through appropriate design of the new road bridge; avoidance of in-channel structures to reduce impacts on flow dynamics.
- Proposed landscape planting within the River Eye corridor includes: Species-rich grassland / wetland meadow, Native shrubs, wet woodland / riparian trees, aquatic / marginal planting
- **Channel diversion to include a functional sinuous 'natural' channel design which meets SSSI standards with a diverse bed and bank structure to enhance existing riverine habitats. Coarse gravel introduction has been included.**
- **Targeted planting of trees to locally increase tree cover and eventually provide a source of Coarse woody material to the river - Increased shelter, shading and foraging for fish, invertebrates, mammals and birds.**
- **Create low level berms on the inside of meanders at appropriate locations within units 5 and 6 of the SSSI - Increased morphological diversity, narrowing of river channel, greater range of marginal and in-channel habitat niches for macrophytes, fish and aquatic invertebrates.**
- **Following diversion maintain existing channel as wetland / backwater habitat with areas of open water, potentially with some connectivity to new diverted channel - Improve local aquatic plant diversity and provide habitat for invertebrates, amphibians, mammals and birds.**
- **Fencing of units 5 & 6 to reduce cattle poaching and improve bank structure with the provision of appropriate cattle crossing points and drinking bays / troughs - Improve bank structure and improve macrophyte community benefitting invertebrates, mammals and birds.**

3. Summary and conclusion

3.1 Expert opinion

- 3.1.1 Although the River Eye SSSI is a feature of national ecological importance, both existing data on the river from studies undertaken by Natural England and the Environment Agency, and the studies undertaken in support of the Scheme have shown that the river is currently in unfavourable condition due to existing land use pressures and lack of management.
- 3.1.2 The proposed realignment of a section of the River Eye has been designed to provide environmental enhancement and to deliver significant restoration of the River Eye along what is currently a degraded reach, with poor flow conditions, a lack of morphological diversity, and impacted by bed sedimentation.
- 3.1.3 The river realignment would comprise a longer, more naturalised channel and planform. The former channel would be retained as wetland habitat, and with the creation of the new channel to the south, would create a wider wetland area than currently exists, supporting biodiversity improvements and natural flood management.
- 3.1.4 As agreed by Natural England, it is my expert opinion that the diversion of the River Eye provides a great opportunity to restore the condition of the SSSI and realise a number of the restoration and rehabilitation measures for the river, as outlined in the River Eye SSSI Strategic Restoration Plan (Natural England, 2015).

