

**EASTERN STORT CROSSING OPTIONS REPORT:
ADDENDUM**



Major Highways and Structure Proposals

VD17516-ESC-ADD

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1 EXECUTIVE SUMMARY

1.1 ESC

1.1.1 The new Eastern Crossing of the River Stort (ESC) is one of the planned pieces of highway infrastructure necessary to deliver the Gilston Park Estate (GPE) as well as support growth across the Harlow and Gilston Garden Town. The route has several purposes as follows:

- To provide an additional crossing of the River Stort thus taking traffic away from central areas and enhancing the function of the existing crossing of the River Stort and its continuation towards Harlow Town Centre as a Sustainable Transport Corridor;
- To act as a traffic route from the Gilston Area towards Junction 7a, the Enterprise Zone and other areas in East Harlow;
- To act as a sustainable transport corridor for walking, cycling and buses to these destinations.

1.1.2 A key advantage of this route (for example, rather than a western route) is its links to Junction 7a and the Enterprise Zone. The route is consistent with adopted planning policy. Policy GA2 of the East Herts District Plan seeks to deliver a new vehicular, cycle and pedestrian crossing of the Stort, with supporting paragraph 11.4.2 stating a preference for an eastern route connecting the A414 to the River Way as it provides relief to junctions along the western end of the A414 Edinburgh Way in Harlow, and enhances access to the Enterprise Zone and links to Junction 7a.

1.1.3 Places for People (PfP) are neutral on whether this route becomes the designated A414 or not. This is a matter for the highway authorities. The ESC does however reflect the wider aspirations of Essex CC (ECC) and Hertfordshire CC (HCC) highway authorities to deliver an improved strategic road corridor linking the A414 to Edinburgh Way to offer relief to Fifth Avenue.

- 1.1.4 The ESC includes three roads; Road 1, Road 2 and Road 3 and a Central Roundabout. Road 1 links the Central Roundabout west towards the A414, Road 2 links the Central Roundabout north to Eastwick Road and on to Village 2 whilst Road 3 links the Central Roundabout southeast to River Way.
- 1.1.5 Through extensive pre and post May 19 application discussions, the details of the ESC route alignment and the design have evolved, involving collaborative discussions with HCC and ECC.
- 1.1.6 In summary, the changes to the May 19 application proposals comprise:
- The width of the Road 1 carriageway has been reduced at the location immediately north of Terlings Park. The previously proposed 4 arm junction linking ESC Road 1 to Pye Corner and Terlings Park has been simplified and reduced in size by removal of the Terlings Park link. Terlings Park now retains its connection to the existing Eastwick Road with a connection to Road 1 further west at the junction with Burnt Mill Lane. Straight across “Toucan” crossing making it easy for pedestrians and cyclists to cross the road.
 - Reduced deck width for Fiddlers Brook road bridge to reflect the narrow single lane carriageway passing over the bridge;
 - Further pedestrian routes pass below Fiddlers Brook road bridge, being segregated from traffic above;
 - Noise attenuation is now fully detailed;
 - ESC Road 1 moved away from Terlings Park thus allowing high quality landscaping;
 - Road 2 junction with Eastwick Road and Village 2 has changed from a roundabout to a traffic signal-controlled junction;
 - An extended Village 2 Interim junction is to be installed whilst procurement of the full ESC is progressed, facilitating early access to Village 2;

- Replacement of the existing River Way road bridge over the railway line with a new bridge to include provision for the 5m segregated cycle and footway, removing the need for the previously proposed independent cycle and foot bridge west of the existing bridge. The existing bridge is to be demolished;
- Upgrading of River Way and the proposed new River Way roundabout junction, as part of the bridge replacement works; and
- SUDS proposals generally have been progressed in detail with the LLFA and additional detail and modelling provided in the Application.

1.1.7 A further key advantage of the proposals is that they facilitate the closure of the existing Pye Corner to through traffic thus significantly enhancing the environment and safety for residents in Pye Corner and Gilston. Removal of through traffic will reduce conflicts with existing pedestrian movements. Existing pedestrian road crossings in the locality of Pye Corner and Gilston cross Eastwick Road in an uncontrolled way eg between:

- Terlings Park and the Plume of Feathers pub;
- Terlings Park and Gilston Park;
- Gilston Park plus Pye Corner residents on the north side of Eastwick Road and Burnt Mill Lane and Harlow Town Station.

1.1.8 Provision of the crossings as described above will enhance these movements and make them considerably safer, thus reducing severance.

1.1.9 Garden City Principles underpin the vision for the Gilston Area which includes the requirement that development provide integrated and accessible sustainable transport systems, with walking, cycling and public transport designed to be the most attractive forms of local transport for new residents. Policy GA1 requires the creation of a sustainable transport route through the Gilston Area which connects all villages into the planned sustainable transport corridor along the Central Stort Crossing and into Harlow. In addition, the HGGT Vision requires that 60% of all trips originating within the Gilston Area to be by sustainable active travel modes.

- 1.1.10 The proposed alterations to the alignment from that originally submitted in May 19 move Road 1 further north and away from Terlings Park residential properties and include appropriate noise attenuation features alongside enhanced landscaping areas, as well as continuing to deliver the opportunity for substantial public realm improvements to the heart of Gilston village.
- 1.1.11 The ESC route is unchanged in principle but significant improvements have been designed in to provide betterment to the occupants of Terlings Park and Pye Corner. There will be no access to Terlings Park via the new Pye Corner signalised junction, access will be retained via the existing Eastwick Road route. Benefits of this include a smaller proposed Road 1 junction at Pye Corner, Road 1 being aligned further away from Terlings Park and a lighter trafficked route on the existing Eastwick Road.
- 1.1.12 Village 2 will now be accessed via a new signalised junction, with the western arm closed off and landscaped to remove a through-route option via Pye Corner and reduce traffic there to access only for existing residences and businesses.
- 1.1.13 For full details of the proposed ESC layout please refer to the Detailed Application drawings in Appendix A.

2 SCOPE OF REPORT

2.1 Introduction

- 2.1.1 The Harlow and Gilston Garden Town is planned to experience significant growth in the coming years. This comprises the Gilston Area but also other developments in the Harlow area. To cater for that growth new infrastructure is planned. The overarching objective is to promote sustainable transport options but inevitably additional highway infrastructure is also required, in part to free up other road space for sustainable modes.
- 2.1.2 An Options Report was prepared for the ESC and submitted in May 2019, in support of the detailed application, which summarises the highway alignments and bridge structure options considered. The report describes the proposed scheme forming the detailed planning application submission and includes a set of the Detailed Application drawings as developed to reflect external constraints, stakeholder consultation responses and pre-application public consultation feedback.
- 2.1.3 The Options Reports should be relied upon to act as a source of information to demonstrate the factors considered when preparing the detailed proposals, and to complement the EIA documentation.
- 2.1.4 Subsequent to the initial detailed application submission in May 2019, the major highway proposals have been further developed pursuant to continuing dialogue with the Local Authorities and consultations. The changes reflect feedback from the highway and planning authorities and also reflect evolving discussions on the condition of the existing highway authorities assets and opportunities to enhance mitigating features to local residents.
- 2.1.5 Addendum Reports have been prepared as updated supplementary documents to the May 19 Options Reports, for both the CSC and ESC schemes, to summarise the key changes. An updated pack of General Arrangement drawings and detailed application drawings have been produced to reflect these changes and are included in the Appendices to these Addendum reports.

2.1.6 This Addendum Report specifically identifies the design changes that have been implemented on the ESC Scheme rather than repeating the content of the May 19 Option Reports which summarised the evolution of the Crossing proposals up to May 19.

3 ALIGNMENT OPTIONS – ISSUES AFFECTING THE CHOICE OF ROUTE ALIGNMENT

3.1 Introduction

3.1.1 Please refer to the Options Report April 19 for a broader description and background to the Eastern Crossing scheme.

3.1.2 The ESC principle changes include;

- i. Realigning Road 1 northwards from Terlings Park; retaining the existing access to Terlings Park from Eastwick Road and removing connection from the proposed Pye Corner junction,
- ii. Reducing the deck width of Fiddlers Brook road bridge in combination with relocation to reflect changes to Road 1 in the vicinity of the bridge,
- iii. Upgrading the Village 2 access proposals from a roundabout to a signalised junction,
- iv. Replacement of the existing River Way road bridge and upgrades to River Way and the proposed River Way junction.

3.2 Consultations

3.2.1 For a record of consultations up to the April 19 submission, please refer to the Options Report. This Addendum details all consultations and meetings post-April 2019 that influenced the final ESC layout. The meetings being referenced in this Addendum are as follows:

- Structures and Drainage Meeting 1 – 26/11/2019
- Remaining Matters Meeting – 12/02/2020
- Structures and Drainage Meeting 2 – 18/03/2020
- Highway Drainage Meeting – 22/05/2020

- HCC Structures Comments 1 – 05/06/20 & Vectos Response
- HCC/WSP Crossings and RSA1 Review – August 2020 & Vectos Response
- HCC Structures Comments 2 – 28/08/2020 & Vectos Response
- WSP River Way Review – 27/08/2020 & Vectos Response
- River Way design development collaboration meetings held weekly from 5th June to 14th August 2020

3.2.2 Appendix H contains copies of Minutes taken from each meeting, where available apart from the River Way meetings, which were workshops with ECC maintaining and circulating records of discussions. The pertinent items arising from each meeting have been referenced below followed by a brief description of how and where the current Application Pack drawings satisfy these points.

3.2.2.1 **Structures and Drainage Meeting 1 – 26/11/2019**

- **Environment Agency - Surface Water & Water Quality**
 - 2.13 *The HAWRAT results (see Appendix 17.5 of the ES) indicated that there are no failures against EQS other than where road catchments E2 & E3 were considered cumulatively. However, with the treatment measures proposed this cumulative effect would be negligible but that the scheme was still committed to incorporating suitable SuDS treatment options (generally grass swales followed by small pond/wetland, other than road catchment E3 where only a pond/wetland is proposed). In addition, vortex flow separators have also been proposed as additional betterment beyond the SuDS proposals to provide additional and complimentary treatment of highway runoff.*
 - *Consideration has also been given to the Simple Index Approach for highway outfalls from the CSC and ESC:*
 - *The EA stated in their planning response that under this approach there would be a small (0.05) short fall in treatment provision for road catchments C1, C2, E1 and E2 due to hydrocarbons. However, this assumed the pond option for the second component of the treatment train. If the wetland option is used the mitigation indices would exceed the pollution risk. The SuDS Manual does not provide mitigation indices for vortex flow separators, but they would provide further treatment, subject to regular maintenance according to the manufacturer's guidance.*
 - *The EA stated that insufficient treatment for multiple pollutant types was being provided for road network E3. The treatment provision for this road catchment has since been clarified and will include two sets of grass swale*

followed by a pond/wetland. The outcome is therefore the same as for C1, C2, E1, and E2 above. The SuDS Manual does not provide mitigation indices for vortex flow separators, but they would provide further treatment, subject to regular maintenance according to the manufacturer's guidance.

- *Finally, the EA have also raised concerns that under the Simple Index Approach insufficient treatment for multiple pollutants is being provided for E4. If the wetland option was selected this would only be the case for hydrocarbons. Hydrocarbons are typically adsorbed onto the surface of fine sediment, which a vortex flow separator would help to remove, although the SuDS Manual does not provide mitigation indices for vortex flow separators. This treatment would be subject to the separator being regularly maintained according to the manufacturer's guidance. Hybrid SuDS may provide greater treatment and avoid the need for a vortex flow separator, but there might be a trade off with the need for additional space and this location is constrained by existing roads, development, topography, trees and shrubs. Please note that the Simple Index Approach should be used as a guide to inform appropriate decision making and interpretation does require an element of professional judgement on the risk to the water environment.*
- To satisfy concerns that were raised in the above items, all SuDS treatment trains have been designed to provide three levels of treatment; Swale – Wetland – Vegetated Ditch. With the exception of the SuDS at River Way where these open features are not achievable due to topography, underground treatments in the form of cellular 'biomat' crates and Vortex Fuel Separators provide the required level of pollutant treatment dictated by the SIA assessment.
- To improve the resilience of the SuDS, all treatment trains have been reviewed so that the channels are above the 1 in 30yr + 70% Climate Change flood level, to satisfy a direct request from Herts LLFA. Detailed Long Section drawings of each Swale are included in Appendix A and described in the Drainage Strategy in Appendix E.
- **HCC Comments re ESC**
 - 3.13 *Fiddlers Brook bridge was discussed regarding the main span appearing to clash with the watercourse. Clarification was made in the meeting that the brook meandered, and the piers were located to accommodate this. It was also confirmed the construction of the mid span piers would result in the section of watercourse being reinstated further to bridge construction works.*
 - 3.18 *MS confirmed new bridge design criteria will include SV-100 loading criteria.*
 - 3.19 *MS confirmed that where possible, bridges were intended to be integral or semi-integral to minimise the need for future maintenance/repairs. Material choice had been thoroughly reviewed in order to determine the most appropriate construction materials in order to minimise whole life costs.*

- The current set of submission drawings have been rationalised, removing large amounts of text for better clarity of the proposals. Bridge piers can now be clearly identified against the meandering Fiddlers Brook on drawing VD17516-EC-100 in Appendix A.
- **Highway Drainage**
 - 4.2 *ECC requested confirmation that all SUDS features were located outside of the floodplain. Aecom to confirm. Post meeting note - Aecom confirmed that SUDS detailed as part of the Outline Planning Application are outside the flood plain. SUDS proposed within the Stort Valley for the two crossings are in places within the flood plain. In such specific locations, storage of runoff to reflect greenfield runoff rate for storms of up to the 1 in 30 year return period would be accommodated within the piped drainage network prior to discharge to the SUDS features within the valley.*
 - To improve the resilience of the SuDS, all treatment trains have been reviewed so that the channels are above the 1 in 30yr + 70% Climate Change flood level, to satisfy a direct request from Herts LLFA. A series of long sections for each proposed swale have previously been provided to the LFAs for comment. These drawings VD17516-EC-507-512 are also included in Appendix D for ease of reference with the design rationale explained in the Appended Drainage Strategy.
 - The subject of attenuation and controlled discharge rates was discussed in more detail at the 22nd May SuDS and Drainage meeting; the proposed Drainage Strategy in Appendix E identifies and assesses the controlled run-off rates for a variety of storm events, whilst the Proposed Drainage Strategy drawings VD17516-EC-504-506 identify indicative areas for attenuation storage for both the 30yr and 100yr+40% CC events.

3.2.2.2 **Remaining Matters Meeting – 12/02/2020**

- 2. CSC and ESC Design Approach
- ESC – River Way Bridge Road
 - 2.7.1 *MS and ECC agree to set out (via reference to design standards) why the existing road width over the bridge is acceptable/not acceptable respectively for retention.*
 - Vectos undertook a review of the existing road width and concluded it was adequate for existing and future use, including traffic associated with GPE. A Report was provided to ECC that referenced Essex's own design guide, a report from Essex to the contrary was not received.
- ESC – River Way Roundabout
 - 2.8 *ECC raised queries relating to visibility provision on approaches to River Way roundabout.*

- Drawings VD17516-EC-123-VS & 123.1-VS demonstrate the proposed horizontal and vertical visibility envelopes on each approach to the River Way roundabout, to DMRB and MfS where appropriate on the west arm..
- **RSA1 – Stage 1 Road Safety Audit**
 - *2.14.1 MS to instruct RSA1 in a phased manner, progressing initially an RSA1 to reflect the main crossing proposals and a Supplementary RSA1 to reflect village junction updates still to be concluded.*
 - The RSA1 was commissioned in March 2020 and a full pack of drawings issued to the independent auditor for reference, including the updated junction and alignment proposals for ESC Road 1 passing between Pye Corner and Terlings Park, as had been the basis of discussions with HCC earlier in the year. The Audit Team were advised of the proposed amendments to the junction layouts of Village 1 (V1 – sustainable access only), Village 1 East (V1E – access for all other vehicles) and Village 2 (V2) and the auditor would consider the proposals once issued. The Audit Brief, including HCC and ECC comments, was issued along with the updated CSC and ESC GA layouts to the Auditor to allow the auditor to prepare the Audit, all drawings assessed being listed in the Audit. For completeness, the Interim V1/V1E and Interim V2 junction layouts were issued, illustrating junction access proposals to be put in place ahead of the full crossings. Village 6 (V6) junction layout has also been changed and the proposed V6 GA was also included in the pack to be Audited. The ESC pack of drawings issued for audit include the River Way roundabout junction inclusive of the proposed new cycle and foot bridge over the railway.
 - The RSA1 is Appended to this Report along with a draft Designers Response, which is awaiting comments from the highway authorities before finalising.
- **Eastwick Road Pedestrian and Cycle Bridge Amendments**
 - *3.1 EHDC requested a discussion regarding the impacts of the Pedestrian and Cycle Bridge. Furthermore, EHDC addressed that their desire was to have flexibility in parameters in order to have a meaningful design competition. AH raised concern over pedestrian and cyclist conflict, particular along the chicanes.*
 - *3.2 EHDC requested simplified drawings of the technical drawings provided by Vectos.*
 - A less detailed Design Parameters Schedule was prepared and circulated to EHDC in February 2020 and the application drawings amended to include notes to reference the Eastwick Road cycle and foot bridge proposals as “illustrative”, as contained in Appendix A of the Addendum.

- The General Arrangement drawings in Appendix A have been simplified, with scheme detail transferred on to other supporting drawings where more appropriate. Less text on each layout allows the reviewer to identify the key proposals and puts more emphasis on the landscaped areas and sustainable transport links.

3.2.2.3 Structures and Drainage Meeting 2 – 18/03/2020

- 1. River Way Bridge
 - 1.1 Carriageway width increase from 7.1m to 7.3m. MS described Technical Note issued to ECC for review, setting out references supporting a 6.75m wide road as being appropriate for intended use by Pfp, such that the existing 7.1m road width was sufficient and did not require widening to 7.3m.
 - This item has been responded to under sub-heading 3.2.2.2 above.
- 2. River Way Roundabout
 - 2.1 Forward visibility query on approaches to the proposed roundabout. Vectos to circulate SSD visibility long section envelopes for four approaches to ECC. MS to provide ECC with a topographical survey on existing carriageways as requested by PW.
 - This item has been responded to under sub-heading 3.2.2.2 above.
- 3. Central Stort and Eastern Stort Crossing
 - 3.1 Rail Bridge Central Reserve (CSC) and RSA1 (CSC & ESC). MS to circulate previous "RSA1 Audit Brief for Approval" emails from early 2019 and more recently. (Note – includes previous auditor details). Vectos to issue current TMS Audit Brief to FS (ECC) and HCC as soon as possible (ie on 19-03-20). Vectos confirmed RSA1 is booked for w/c 24-03-20 and as such, ECC/HCC to respond by return with any comments to the current Brief
 - Refer to response under sub-heading 3.2.2.2 above on RSA1 timetable and Report.

3.2.2.4 Highway Drainage Meeting – 22/05/2020

- i. Drainage Strategy
 - To be recirculated, following updates as set out later in Minutes
- ii. Drainage Hierarchy
 - Drainage Strategy to reaffirm the reasons for infiltration being unavailable.
 - Drainage Strategy sets out that highway runoff is to be attenuated within piped network prior to discharge to SUDS (though SUDS have substantial storage capability, this is used to achieve dwell time in the SUDS to reflect SUDS Manual (9 minutes).
 - Confirms SUDS are set to operate at 1 in 30 year flood condition.
- iii. SUDS discharge locations

- *MS confirmed current drawings detailed each highway runoff discharge location, SUDS proposals (modelled in 3D) and discharge locations.*
 - *MS advised that CRT (re Stort Navigation) has provided correspondence regarding future requirements (post planning) to apply for discharge consent to the Stort Navigation. Details to be included with the Drainage Strategy*
- iv. *Ditches proposed for SUDS discharge*
- *Vectos to provide details of proposed discharge routes and rates (ordinary watercourses and non-designated ordinary watercourses (ie ditches)) for both LLFAs to review. Vectos to issue ASAP to LLFAs.*
- v. *Preliminary highway drainage networks*
- *Vectos to prepare preliminary highway drainage networks and undertake a Quick Storage assessment which will identify volume of storage required, discharge rate, confirm period of any standing water on the carriageway*
 - *AECOM to provide discharge rates discussed with EA.*
 - *Quick storage to assess 1 in 1, 1 in 30, 1 in 100, 1 in 100+40%*
- vi. *Exceedance*
- *LS interested to understand period standing water will sit on c/way – unlikely to be long as c/ways elevated 3-6m above flood level (1 in 1000) in Stort Valley.*
 - *Main area of interest is around Terlings Park, west of Fiddlers Brook road bridge.*
 - *JR proposed this can be conditioned.*
- vii. *Detailed Maintenance Plan*
- *Will list SUDS features*
 - *Will provide an indication that maintenance frequencies and maintenance schedules will be in accordance with CIRIA Best Practice Guidelines for SUDS Maintenance, full details to be provided as part of the detailed design process*
 - *Provision of full details to be conditioned.*
 - *The Drainage Strategy will reference the “Exceptional Maintenance Schedule”, to be prepared at detailed design stage, to set out additional maintenance needs following storm periods in excess of 1 in 30 year period (up to 1 in 100 year storm), typically to include additional inspections of SUDS for damage/blockage/specific cleaning out and follow up inspections of control devices.*
- viii. *River Way Roundabout SuDS*
- *LS queried if possible to install any bioretention at this location.*
 - *NM advised location, visibility and levels make this unviable. LS requested a statement in the drainage strategy that evidences and discounts bioretention features here should be acceptable.*
 - *The Appended Drainage Strategy and SUDS Drawings respond to each of the above items and clarify how each requirement will be dealt with, namely via detailed design.*

3.2.2.5 **River Way bridge and proposed ESC junction with River Way (River Way roundabout) – weekly workshop meetings 05/06/2020 to 14/08/20**

- *ECC advised that the existing River Way bridge had deteriorated significantly and required a weight limit and ongoing repair works, requiring operation of River Way to reduce to a single lane of traffic under signal control in the very near future, indefinitely.*
- *ECC/PfP set up a weekly collaborative workshop design group to consider options for bridge replacement and upgrades to the existing River Way road to best reflect a 60kph DMRB compliant highway alignment.*
- *The existing River Way vertical alignment was constrained to local road design standard, connecting to existing road levels of Mead Park access to the west and River Way road levels north of the railway bridge, whilst needing to rise at a steeper than DMRB compliant gradient to reflect the crest height of the adjacent road bridge over the railway.*
- *Options looked at providing a more compatible “through road” DMRB vertical alignment for River Way passing over the bridge and heading north to connect to Road 3 at a proposed new junction, mindful of impacts on the adjacent west and east side roads (Mead Park access and the continuing River Way heading east into Temple Fields employment site).*
- *Initial options considered replacing the May 19 application 50m diameter roundabout with a traffic signal controlled junction which offered a smaller footprint and therefore resulted in shallower side road longitudinal gradients, mindful the “through route” proposed road levels were circa 1.5m above existing River Way road levels north of the bridge at the proposed junction location.*
- *Traffic capacity modelling of the traffic signal-controlled junction identified a material increase in northbound afternoon peak queuing on approach to the junction, for traffic from Edinburgh Way. Detailed LINSIG modelling options with different timings and amendments to pedestrian/cycle crossing timings did not offer a material reduction in queuing length back towards Edinburgh Way.*
- *Reduced diameter roundabout options were also reviewed to remove the consequential queueing associated with a full traffic signal-controlled junction. A 45m diameter roundabout was deemed most appropriate to accommodate the through movement of vehicles whilst providing as close as could be achieved 60kph DMRB compliant geometric layout.*
- *Initial design options for the traffic signal-controlled junction and 45m diameter roundabout schemes and Departure and Relaxations associated with successive iterations of the layouts were reviewed and where possible, designed out.*
- *ECC reviewed the various design proposals throughout the two-month period of optioneering and design evolution. The preferred 45m diameter roundabout scheme with optimised vertical alignments for the through route and the two side road approaches was included into the ESC proposals at the end of August 2020, replacing the previous 50m diameter roundabout layout.*

The updated River Way scheme included the replacement bridge proposal scheme and was taken through a Stage One Road Safety Audit process.

3.2.2.6 **HCC Structures Comments 2 – 28/08/2020 & Vectos Response**

- **Following receipt of the comments from HCC, a meeting was held between Vectos and HCC (Oliver Sowerby and Graham Lambert) where the majority of items were closed out. Please**

refer to Appendix H for a full record of items and tracked responses. The outstanding items listed below have been reviewed further by the design team and incorporated in to this Addendum and Appendices. This information was also issued separately to Graham Lambert of HCC on 04/11/20 to conclude this technical review:

- AADs for the Eastern Crossing structures, which include detailed drawings and sections (including parapets) for each of the structures.
- Carbon Footprint Assessment for the Multi-span Culverts and Road 3 Viaduct – assessment based on the Inventory of Carbon & Energy (ICE)
- VRS proposals and Schedule for both the Central and Eastern Crossings
- Indicative maintenance route drawing demonstrating full access for the Road 3 Multi-span Culverts and Viaduct
 - *Note: The proposed Fiddlers Brook bridge can be maintained via a variety of potential access points (Terlings Park, Pye Corner, proposed agricultural access to south of Road 1). Details of the preferred access point and any additional hardstanding areas/steps down embankments will be agreed with Herts at detailed design stage.*

3.3 ESC Route description

3.3.1 General Summary

3.3.2 A summary list of the main changes to the ESC scheme is provided below, with a more detailed review of each location provided in Section 3.4:

- Road 1 realigned
- Existing Access to Terlings Park via Eastwick Road retained.
- Access to Terlings Park from Pye Corner junction removed
- Fiddlers Brook bridge cross-section reduced
- SuDS (Sustainable Drainage Solutions) proposals improved and clarified
- Central Roundabout relocated
- Village 2 Access will now be a signalised junction
- Interim Village 2 Access layout has been developed

3.4 Detailed Changes

3.4.1 Road 1 & Pye Corner Junction

3.4.1.1 Aligned further north so that southern channel of Road 1 is now approximately 14m further from Terlings Park than scheme in April 19 Options Report.

3.4.1.2 Junction with Terlings Park removed, vehicular access to Terlings Park retained via existing Eastwick Road.

3.4.1.3 As a consequence, only single lane entries and exits are proposed on all arms of the junction with Pye Corner.

3.4.1.4 Acoustic Barrier installed, to benefit Terlings Park, along the south side of new Fiddlers Brook bridge and along southern verge of Road 1 to extents shown in drawing VD17516-EC-100. Acoustic barrier to take the form of a 'living and woven willow noise screen' within the southern verge, and a '3 metre high timber noise fence' on the bridge section, deck and wing walls.

- 3.4.1.5 Fiddlers Brook Footbridge retained but stepped access up to the junction removed. An alternative, at-grade realigned footpath is provided below and in front of the west abutment of the new Fiddlers Brook road bridge linking the footbridge to the footway network of Terlings Park, retaining usage. The ESC application proposes structural enhancements to the bridge including the repointing of brickwork, and the replacement of the existing modern balustrade with a design more in keeping with the original listing description of the asset. A management plan will also be prepared to ensure its long term conservation.
- 3.4.1.6 Cross section of Fiddlers Brook road bridge significantly reduced to reflect the highway and footway/cycleway cross section requirements. Please refer to section 4.1.1 for more information on the changes to this structure.
- 3.4.2 **Road 1**
- 3.4.2.1 Alignment moved north and lowers at easternmost extents to tie in with new central roundabout location.
- 3.4.2.2 SuDS to south of road have been improved to form 3 distinct treatment trains - in accordance with the EIA.
- 3.4.2.3 As alignment and new road bridge over Fiddlers Brook has been moved north, away from Terlings Park, the new road bridge wing wall adjacent Terlings Park has been extended to accommodate level difference but retain Fiddlers Brook footbridge in current location.
- 3.4.2.4 Improvements to pedestrian and cycle provision has been implemented across the ESC, in keeping with Garden Town principles and modal shift away from private vehicles.

3.4.2.5 Further satisfying the desirables of a Garden Town, consistent rear verges and verge buffers are provided between the carriageways and segregated foot/cycleways to provide an enhanced landscaped corridor. Recent changes to standards (brought in at end of July 2020) recommend straight across pedestrian/cycle crossings rather than staggered crossings. The removal of staggered pedestrian/cycle crossings has been made to the RW roundabout junction proposals and updated where practicable at other pedestrian/cycle crossing locations on ESC. There is no effect on the cycle/footway cross section provided along the ESC roads.

3.4.3 **Central Roundabout**

3.4.3.1 The Road 1/2/3 central roundabout has been relocated approximately 15m to the west and lowered, significantly reducing earthworks to the south of the roundabout on the banks of the former tip. The relocation of the roundabout assisted with provision of landscaping and SUDS serving the ESC Central roundabout, providing sufficient space within the redline for maintenance of the highway and SUDS. There is no change to the redline in this location

3.4.3.2 The SuDS feature to the south of the roundabout has been removed, the decision based on the size of earthworks and vegetation clearance not being justified by the catchment and overall function of that SuDS treatment process.

3.4.3.3 Many updated design standards have been brought into use from March 2020 onwards with the updating of the “Design Manual for Roads and Bridges” (DMRB). The Central Roundabout diameter has been reviewed to achieve compliant deflection and entry angles to DMRB CD 116,

3.4.4 **Road 2 & Village 2 Access**

3.4.4.1 The southernmost extents of Road 2 have been reduced slightly to accommodate the relocated Central Roundabout, with the vertical profile adjusted to tie in with the lower circulatory.

3.4.4.2 At the junction with the existing Eastwick Road, where a roundabout was formerly proposed in the May 19 submission, a three-arm signalised junction will now be installed.

3.4.4.3 The northern arm shall serve as the Village 2 Access whereas the eastern arm ties back into the existing Eastwick Road. To the west, Eastwick Road shall be stopped up with a turning head provided on Eastwick Road, west of the stopped-up end of Eastwick Road, immediately adjacent to and west of the proposed three arm junction. There is no vehicular connection from Eastwick Road via Pye Corner and the proposed three arm Village 2 junction. This will create an Access Only road, with entry/exit from the junction of Eastwick Road and Road 1 (by Pye Corner adjacent to Fiddlers Brook road bridge). Eastwick Road will function as a cul-de-sac, with appropriate signage provided at the junction with Road 1 to advise against use for through traffic.

3.4.4.4 Sustainable modes of transport are promoted via Bus Priority, in the form of Bus Only approach lanes on the south and north arms, whilst a 5.0m segregated footway and cycle way spans the west side of Road 2 and continues in to Village 2.

3.4.5 **Village 2 interim**

3.4.5.1 To facilitate development of Village 2 whilst the ESC is being procured (design, tendering and construction), a Village 2 Interim junction scheme is proposed to form a simple priority junction off the existing Eastwick Road.

The interim solution is to deliver the northern arm of the permanent solution and tie back in with the existing Eastwick Road. This approach minimises abortive work and allows some permanent landscaping of the earthworks and verges to be installed ahead of procurement of the ESC.

3.4.5.2 V2 Interim includes provision of the permanent junction north arm and reflects the permanent north kerblines amendments to Eastwick Road (east of the proposed three arm junction) – to avoid future disruption once permanent V2 access is formed. Eastwick Road will remain fully open during this period until the ESC is constructed, thereafter facilitating the stopping up/closure of the short section of Eastwick Road, immediately west of the new proposed three arm junction, resulting in the length of Eastwick Road passing through Pye Corner functioning as a cul-de-sac.

3.4.6 Road 3

3.4.6.1 Westernmost end extended by circa 10m to tie in with relocated Central Roundabout.

3.4.6.2 Strategy and proposals largely unchanged apart from rationalising SuDS to ensure that a) the SUDS proposals are located within 3m of the bottom of earthworks supporting the road embankments and b) bed levels of any SUDS channels remain operation in the 1 in 30yr + climate change (CC) flood level. This is in response to LLFA request that SUDS remain functional up to a given flood event.

3.5 Eastern Stort Crossing Vertical Profile

3.5.1 As a consequence of separating Terlings Park access from the junction of Road 1 and Eastwick Road (at Pye Corner), the road alignment for Road 1 has been amended slightly. The amended alignment results in the road cross section being at a shallower gradient than previously, reducing from a 7% gradient to a 3.5% gradient in the vicinity of the junction of Eastwick Road and Road 1 and across Fiddlers Brook road bridge.

3.5.2 At the Village 2 Access, the proposed Road 2 levels connect to Eastwick Road, before the northern arm rises gradually into the development.

3.5.3 The proposed level of the Central Roundabout has been lowered to reduce the extent of earthworks on the south side of the roundabout. Consequently, the vertical profiles of Roads 1, 2 & 3 are slightly lowered to meet the new roundabout level.

3.6 General Considerations

3.6.1 Existing speed limits are shown in drawing VD17516-EC-141.

3.6.2 Proposed speed limits associated with the ESC are detailed on drawing VD17516-EC-140. In general, the ESC is proposed to operate under a 40mph speed limit and complies with current design standards reflecting a 70kph design speed (40mph). As a consequence of the ESC removing through traffic from the existing local roads adjacent to the ESC, several local roads are proposed to operate at a maximum 20mph speed limit. This will offer many benefits to users and local residents, whereby vehicle speeds will be reduced and these routes will offer a safer environment for pedestrians and cyclists. The roads proposed to operate at 20mph are shown on drawing VD17516-EC-140 and include:

- Burnt Mill Lane – between Eastwick Road and the CSC
- Eastwick Road - from Terlings Park access westwards, to the CSC Village 1 East junction/Burnt Mill Lane junction,
- Eastwick Road – from junction with ESC Road 1 north and eastward, through Pye Corner, to the point at which Eastwick Road abuts ESC Road 2/Village 2 access.
- Gilston Lane, from its retained junction with Eastwick Road, northwards.
- Mead Park access will continue to operate under the existing 10mph speed limit.

3.6.3 Burnt Mill Lane is being upgraded to a sustainable transport route south of existing premises at the north end of Burnt Mill Lane. This will involve use by pedestrians and cyclists only south of the existing premises, providing a sustainable active route, southwards towards Harlow Station and the CSC. Vehicular access is maintained for existing premises from Eastwick Road and ESC Road 1 at the north end of Burnt Mill Lane.

3.6.4 Earthworks batter slopes are generally proposed at a slope angle of 1 in 2.5 on embankments and 1 in 3 where in cutting, to allow more flexibility at detailed design. Flood Compensation area adjusted accordingly.

3.7 Alignment Standards

3.7.1 DMRB standards have been adopted for a 70kph (40mph) design speed for the Eastern Crossing as follows, reflecting the updated standards current as of July 2020:

- CD 127 “Cross sections and Headroom” for dual carriageway cross section, including carriageway and central reserve;
- CD 109 “Highway Link Design” for design speed, sight distance, horizontal alignment, super-elevation and vertical alignment;
- CD 123 “Geometric Design of at-grade priority and signal-controlled junctions” for visibility standards, deceleration and merge lanes and junction radii;
- Traffic Signs Manual Chapters 1 (Original), 3, 4, 5 and 7;
- The Traffic Signs Regulations and General Directions 2016.
- CD 353 “Design Criteria for Footbridges” with respect to the proposed crossing above the new A414 junction;
- CD 116 – Geometric design of roundabouts
- HD 42/17 “Walking, Cycling & Horse-Riding Assessment and Review”.
- LTN 120 “Cycle Infrastructure Design”

3.8 Pedestrian and Cycleway Provision

3.8.1 A Walking, Cycling & Horse-Riding Assessment (WCHRA) reviewed the existing provisions within the study area and identified the existing and future trip generators. The findings influenced the design strategy and proposed design as part of the April 19 Options Report.

3.8.2 The principles established from the WCHRA Assessment have been retained and improved in areas to further promote healthier alternatives to private vehicle use.

3.8.3 The initial findings of the WCHRA have still wholly been applied across the ESC with the following additional improvements being introduced since the May 19 submission:

- PROW 29 & 30 verified as having minimum 2.8m headroom under Fiddlers Brook Bridge deck.
- Existing PROW 31 route is maintained over Road 1 with stepped access down the 1 in 3 cut slopes and dropped kerbs over the carriageway. A Toucan crossing is provided for users who wish to cross more safely at the Central Roundabout.
- New footpath aligned around the inside of the west abutment of Fiddlers Brook Bridge to provide continued access to Fiddlers Footbridge.
- A 3.0m wide shared use foot/cycleway is provided on the east side of the Pye Corner/Road 1 junction to connect to existing footway facilities along Eastwick Road within Pye Corner and Gilston, to provide improved connectivity to existing residences with the cycle and footway facility along the ESC.
- Between Terlings Park and Burnt Mill Lane, a segregated cycle/footway now runs along the northern side of Eastwick Road; tying in with the provision being delivered as part of the CSC to the west and connecting to Road 1, via a stepped noise screen arrangement, to the east.
- At Village 2 Access, Controlled Crossings are provided over all three arms with pedestrian links to Pye Corner.

4 STRUCTURES

4.1 Summary of changes to ESC proposed structures

- Fiddlers Brook Bridge – CHANGED
- River Way Railway Bridge – CHANGED
- Road 3 Viaduct – NO CHANGE

4.2 Fiddlers Brook Bridge

4.2.1 Following the redesign of the Pye Corner junction, which removed the southern junction arm which would have served as the access to Terlings Park, Road 1 has been realigned slightly northwards and as such, Fiddlers Brook Road bridge amended in location accordingly.

4.2.2 The cross section is significantly reduced to serve the proposed Road 1 single carriageway, whilst reducing from 3 spans to 2 spans; including 1.0m hardstrips, a footway on the north side and a continuation of the proposed segregated 5m wide plus buffer footway and cycleway on the south side. Full detailed cross section information, including dimensions for the proposed road bridge, is included in the Detailed Application submission, within Appendix B of this Addendum document.

4.2.3 Headroom to PROW 29 & 30 are verified at minimum 2.8m.

4.2.4 The position and orientation of the piers and abutments was slightly changed to take account of the watercourse and PROW alignment below the new road bridge location. The deck and supporting structural beams below are adjusted which makes the cross section arrangement more balanced for a continuous super-structure over the piers. Foundations for the proposed abutments and piers supporting the deck are robust and do no prejudice amendment to the structure at a future date.

4.2.5 The west wing wall on the north side is extended around the Pye Corner junction to avoid earthworks conflicting with the listed Fiddlers Brook footbridge. Consequently, the footbridge may remain in its existing location with a new footpath delivered under the ESC and routed around the inside of the new bridge's west abutment.

4.2.6 Low road noise surfacing area specified along Road 1 in proximity of Pye Corner and Terlings Park, provided from the west end of Road 1 through to the east extent of Fiddlers Brook road bridge.

4.2.7 Noise mitigation screens provided along south side of Road 1, adjacent to Terlings Park and across Fiddlers Brook road bridge.

4.3 River Way Railway Bridge

4.3.1 The existing River Way railway bridge is to be demolished and replaced with a new road bridge on an alignment similar to the existing River Way bridge, reflecting physical constraints either side of River Way. The proposed new road bridge includes a 5m segregated cycle and footway plus buffer along the west verge, a 7.3m wide carriageway and a 2m footway along the east verge.

4.3.2 The new road bridge reflects headroom constraints above the railway line below and includes an improved vertical alignment to deliver an improved River Way road alignment above. Parapets are 1.8m in height above the adjacent footway levels and will meet current DMRB requirements for high containment impact loading above the railway.

4.3.3 The bridge construction is formed from pre-cast concrete beams with a concrete deck slab above. Extended wingwalls are provided which become independent retaining walls away from the bridge structure, necessary to retain the raised level of River Way either side of the bridge deck.

4.4 Road 3 bridge

4.4.1 Proposals are unchanged from April 19 Options Report.

4.4.2 Further to dialogue between Vectos and HCC Structures team, additional supporting information has been prepared by the design team consisting of Carbon Footprint Assessment and indicative maintenance routes for the Road 3 viaduct and multi-span culverts. This information is included within Appendix H.

4.5 Multi-span Culverts

4.5.1 Proposals are unchanged from April 19 Options Report.

4.5.2 Further to dialogue between Vectos and HCC Structures team, additional supporting information has been prepared by the design team consisting of Carbon Footprint Assessment and indicative maintenance routes for the Road 3 viaduct and multi-span culverts. This information is included within Appendix H.

4.6 Geology

4.6.1 The EIA includes the “Phase 1 Geotechnical and Geo-environmental Desk Study Report – River Stort Crossing Options” dated 2015, prepared by AECOM to assess the ground conditions for the identified crossing options. Site investigation has not been undertaken at this time along the highway corridor or at the proposed bridge/structure locations. Reference to the AECOM Report, which includes existing available borehole and other available geotechnical information, is included in the WSP/PB Report, specifically Section 3 and Section 4.6.

4.6.2 Further intrusive geotechnical investigation will need to be undertaken to determine ground conditions and ground material properties to inform the foundation design process for the structures along the crossing, to classify materials to be used in the highway works and to prepare the Geotechnical Design Report(s).

4.6.3 Structural foundations are currently expected to include abutments located on piles mindful of the following criteria:

- Piles are expected to extend down to the London Clay or Lambeth Group.
- Ground water is shallow (between 2m to 4m below ground).
- The valley ground surface is likely to unstable and saturated.

4.7 Loading and lateral clearance

4.7.1 All highway structures shall be designed to withstand loading defined within DMRB and conform to current standards.

4.8 Environmental constraints

- 4.8.1 All environmental aspects are covered within the Environmental Assessment (EA), inclusive of specific impacts relating to Stort Navigation (canal) amenity value, flood storage loss (due to footprint of new structures and embankments) and visual intrusion.

5 ENGINEERING ASSESSMENT

5.1 Construction Access

5.1.1 Construction access is intended to be restricted such that construction traffic and deliveries for the two main crossings shall be required to use the A414 from the north west or Edinburgh Way from the south. Eastwick Road is not deemed appropriate for use by construction traffic for the two main crossings. Construction traffic will be required to use Eastwick Road to construct the Village 2 Interim junction works.

5.2 Temporary traffic constraints and requirements

5.2.1 The scope of proposed highway works for both the Central and Eastern Stort Crossing as shown on the General Arrangement layouts enable the CSC to be procured initially, with the ESC delivered at a later date with minimal impact at the tie in along Eastwick Road. Should the two schemes come forward concurrently, there will be a need to consider; overall impacts on traffic flow along Eastwick Road; impacts on Terlings Park and Gilston Village to the east; and to design the best workable solution. Appendix 3.3 (Early Delivery of the Eastern Stort Crossing Sensitivity Analysis) of the ES Addendum confirms that concurrent delivery would make no material change to the assessment conclusions should the delivery of the ESC be brought forward and carried out in parallel with the CSC. Construction traffic and deliveries are not to be routed via Eastwick Road east of Fifth Avenue, or Burnt Mill Lane.

5.3 Construction phasing and timescales

5.3.1 Construction phasing has been considered in terms of the likely build programme and whether temporary construction access requirements may result in environmental impacts additional to the effects of the permanent works footprint.

5.3.2 Phasing plans have been prepared which identify the expected sequence of construction and associated access routes. The phasing plans are included in Appendix E.

5.4 Bridge Maintenance Boundaries

5.5 Bridge Material choice

5.5.1 The AAD Reports and drawings located in Appendix B include detailed plans and elevations of the proposed bridges.

5.6 Design life, operation and maintenance

5.7 Design standards

5.7.1 The proposed ESC shall be designed and procured in accordance with the DMRB.

5.7.2 The ESC proposed highway cross section shall be in accordance with CD 127 “Cross sections and Headroom” for an urban road classification. The urban classification reflects the presence of the new Gilston Area development, located at the north extent of the ESC, with Harlow town located at the south extent.

5.8 Constraints & Departure from Standard

5.9 Adapting for future infrastructure developments

5.9.1 The proposed carriageway cross section is deemed sufficient to cater for the traffic generated by the Gilston Area development and wider growth across Harlow, whilst providing congestion relief for the existing local road network.

5.9.2 A list of Departures and Relaxations applicable to the highway alignment proposals is included in Appendix J of this Addendum.

5.9.3 The bridge structure proposals are to be compliant with DMRB. No Departures from Standard have been identified.

5.10 Utilities

5.10.1 Statutory Undertakers equipment affected by the proposed Crossing scheme will be diverted where affected at existing highways affected by the Crossing works.

5.10.2 A public sewer crossing the Stort Valley will be locally diverted around the piers supporting the proposed new Road 3 viaduct structure, preliminary discussions having been held with the sewer authority.

5.11 Surface water discharge

5.11.1 Refer to SuDS drawings in Appendix D and the Highway Drainage Strategy in Appendix E for details of how the proposed ESC will be drained; how it is treated and discharge locations.

5.12 Health and Safety

5.12.1 Health and Safety matters will be overseen by the Principal Designer and Principal Contractor during the design and construction stages of the scheme. H&S Files shall be provided to the maintaining highway authorities detailing maintenance requirements and specific maintenance tasks.

5.12.2 The proposed ESC scheme shown on the detailed application plans contained within Appendix A has been subject to a Stage 1 Road Safety Audit (RSA1), Appendix H, carried out in June 2020 subject to GG119.

5.13 Network Rail

5.13.1 Replacement of the existing ECC-owned River Way road bridge with a new improved road bridge over the railway, requires rail possessions to be arranged a minimum of two years in advance of works coming forward. This will involve preparation of a construction programme, risk assessments and method statements of proposed working. Discussions are continuing with Network Rail ahead of planning consent to agree preliminary proposals and secure access to the rail network for surveys to inform the design process and for future access for demolition and new bridge construction.

5.13.2 Early progress of the bridge design “Approval in Principle” (AIP) as part of NR’s “Easement & Wayleave” internal review process is to be put in place ahead of detailed design commencing for the structure.

- 5.13.3 Programming of the demolition and replacement of the bridge structure has been reviewed with ECC as part of the collaborative approach during June, July and August 2020 to determine a new bridge structure and River Way road improvement scheme. Mindful of River Way north of the bridge being a cul-de-sac, completion of the ESC and provision of the new River Way roundabout junction will need to be in place to function as a diversion route to Temple Fields and Mead Park during bridge works, during which access will be unavailable via River Way. Options are to be considered at detailed design stage for access arrangements for pedestrians and cyclists accessing Temple Fields and Mead Park during the period that River Way is closed for bridge works. Discussions have considered upgrading the existing pedestrian route from Temple Fields to Cambridge Road to the east of Temple Fields. Bridge demolition and replacement works are not expected to commence until 2025 or later.
- 5.13.4 Advance works are to be progressed for the relocation of framework gantries supporting the overhead electric cables to the railway, to facilitate the provision of the new, replacement bridge over the railway and discussions are progressing with Network Rail.

6 LIST OF DRAWINGS AND DOCUMENTS ACCOMPANYING THE REPORT

*Highlighted documents denote those updated since November 2020 Stort Crossings Full Application submission	
APPENDIX A	
VD17516-EC-100-GA	Eastern Stort Crossing - General Arrangement (Sheet 1 of 3) P05
VD17516-EC-100.1-GA	Eastern Stort Crossing - General Arrangement (Sheet 2 of 3) P05
VD17516-EC-101-GA	Eastern Stort Crossing - General Arrangement (Sheet 3 of 3) P04
VD17516-EC-102-LS	Eastern Stort Crossing - Longitudinal Section (Sheet 1 of 3) P03
VD17516-EC-103-LS	Eastern Stort Crossing - Longitudinal Section (Sheet 2 of 3) P02
VD17516-EC-104-LS	Eastern Stort Crossing - Longitudinal Section (Sheet 3 of 3) P03
VD17516-EC-104.1-LS	Eastern Stort Crossing - Longitudinal Section (RIVER WAY) P01
VD17516-EC-107-BE	Eastern Stort Crossing - Proposed Structure Elevation over Flood Plain P02 DRAWING REMOVED FROM APPLICATION
VD17516-EC-108-RL	Eastern Stort Crossing - EIA Red Line Boundary P03
VD17516-EC-109-EX	Eastern Stort Crossing - Existing Site Plan P02
VD17516-EC-110-XS	Eastern Stort Crossing - Typical Cross Sections (Sheet 1 of 2) P02
VD17516-EC-111-XS	Eastern Stort Crossing - Typical Cross Sections (Sheet 2 of 2) P03
VD17516-EC-112-TR	ESC – Village 1 Access - Swept Paths P01
VD17516-EC-113-TR	ESC - Fiddlers' Brook Junc - 10m HGV Swept Paths P03
VD17516-EC-114-TR	ESC - Pye Corner Rbt - Car & 16.5m Artic Swept Paths P02
VD17516-EC-115-TR	ESC - Pye Corner Rbt - 10m Rigid Vehicle Swept Paths P02
VD17516-EC-116-TR	ESC - Internal Site Rbt - Car & 16.5m Artic Swept Paths P02
VD17516-EC-117-TR	ESC - Internal Site Rbt - 10m Rigid Vehicle Swept Paths P02
VD17516-EC-118-TR	ESC - River Way Rbt - Car & 16.5m Artic Swept Paths P02
VD17516-EC-119-TR	ESC - River Way Rbt - 10m Rigid Vehicle Swept Paths P02
VD17516-EC-119.1-TR	ESC - River Way Rbt - 10m Rigid Vehicle Swept Paths P02
VD17516-EC-120-VS	ESC - Fiddlers' Brook Junc - Proposed Visibility P03
VD17516-EC-120.1-VS	ESC – Road 1 - Proposed Visibility P01
VD17516-EC-121-VS	ESC - Pye Corner Rbt - Proposed Visibility P02
VD17516-EC-122-VS	ESC - Internal Site Rbt - Proposed Visibility P02
VD17516-EC-123-VS	ESC - River Way Rbt - Proposed Visibility P02
VD17516-EC-123.1-VS	River Way Rbt - Proposed Visibility LONGSECTIONS

VD17516-EC-140-SP	ESC and CSC - Proposed Speed Limit Strategy P03		
VD17516-EC-141-SP	ESC and CSC - Existing Speed Limits P01		
VD17516-EC-142-SURF	Proposed vs Existing Surfaces P02		
VD17615-EC-150-GEO	Central Roundabout Geometry P02		
VD17615-EC-151-GEO	River Way Roundabout Geometry P02		
VD17615-EC-155-DfS	Departures From Standard (Relaxation Required) P02		
VD17615-EC-170-AP	ESC - Adoption Plan (1 of 3) P02		
VD17615-EC-171-AP	ESC - Adoption Plan (2 of 3) P02		
VD17615-EC-172-AP	ESC - Adoption Plan (3 of 3) P02		
VD17516-EC-400-VRS	Proposed Vehicle Restraint Systems P02		
VD17516-EC-401-VRS	Proposed Vehicle Restraint Systems P03		
VD17516-SCH-400	Schedule of Vehicle Restraint Systems		
VD17516-RW-RBT-120-DfS	Departures From Standard (River Way) P06		
VD17516-V2i-100-GA	Village 2 Interim scheme P01		
APPENDIX B			
AAD 2.1 Prelim Des	ESC Fiddlers Brook Bridge Rev 3		
AAD 2.1 Prelim Des	ESC River Way Footbridge Rev 1		
AAD 2.1 Prelim Des	ESC Stort Valley Multi-span Bridge Rev 1		
AAD 2.1 Prelim Des	ESC Stort Valley Multi-span Culverts Rev 2		
VD17516-EC-180-ST	Structures Location Plan P03		
17516-EC-STR-030	Fiddler's Brook Road 1 Bridge - Preliminary Design GA P03		
17516-EC-STR-040	Stort Valley Road 3 Crossing - Preliminary Design GA (1 of 2) P02		
17516-EC-STR-041	Stort Valley Road 3 Crossing - Preliminary Design GA (2 of 2) P01		
17516-EC-STR-045	Road 3 Proposed Structure Sheet 1 of 2 P02		
17516-EC-STR-046	Road 3 Proposed Structure Sheet 2 of 2 P01		
17516-EC-STR-060	River Way Bridge - Preliminary Design GA P02		
APPENDIX C			
VD17516-EC-124-PH1	Eastern Stort Crossing - Construction Phasing 1 of 8 P03		

VD17516-EC-125-PH2	Eastern Stort Crossing - Construction Phasing 2 of 8 P03		
VD17516-EC-126-PH3	Eastern Stort Crossing - Construction Phasing 3 of 8 P03		
VD17516-EC-127-PH4	Eastern Stort Crossing - Construction Phasing 4 of 8 P03		
VD17516-EC-128-PH5	Eastern Stort Crossing - Construction Phasing 5 of 8 P03		
VD17516-EC-129-PH6	Eastern Stort Crossing - Construction Phasing 6 of 8 P03		
VD17516-EC-130-PH7	Eastern Stort Crossing - Construction Phasing 7 of 8 P03		
VD17516-EC-131-PH8	Eastern Stort Crossing - Construction Phasing 8 of 8 P02		
APPENDIX D			
VD7516-EC-500	Preliminary Drainage - Proposed Catchment Areas (1 of 3) Rev F		
VD7516-EC-501	Preliminary Drainage - Proposed Catchment Areas (2 of 3) Rev F		
VD7516-EC-500.1	Preliminary Drainage - Proposed Catchment Areas (3 of 3) Rev E		
VD7516-EC-504	Preliminary Drainage Strategy (3 of 3) Rev F		
VD7516-EC-505	Preliminary Drainage Strategy (3 of 3) Rev F		
VD7516-EC-506	Preliminary Drainage Strategy (3 of 3) Rev E		
VD7516-EC-507	Preliminary Drainage - Swale E1B P01		
VD7516-EC-508	Preliminary Drainage - Swale E1A P01		
VD7516-EC-509	Preliminary Drainage - Swale E1 P01		
VD7516-EC-510	Preliminary Drainage - Swale E2 P01		
VD7516-EC-512	Preliminary Drainage - E4 Outfall Rev A		
APPENDIX E			
EHUK-VEC-1XX-XX-TN-D-09001	Highways Drainage Strategy FINAL Rev B		
APPENDIX F			
MINUTES	Drainage & Structures Meeting no.1 - 26/11/2019		
MINUTES	Remaining Matters Meeting – 12/02/2020		
MINUTES	Drainage & Structures Meeting no.2 - 18/03/2020		
MINUTES	Highway Drainage Meeting – 22/05/2020		
REVIEW	HCC Structures Comments 1 – 05/06/20 & Vectos Response		
REVIEW	HCC/WSP Crossings and RSA1 Review – August 2020 & Vectos Response		

REVIEW	HCC Structures Comments 2 – 28/08/2020 & Vectos Response; Inc Road 3 Maintenance Routes & Carbon Footprint Assessment		
REVIEW	WSP River Way Review – 27/08/2020 & Vectos Response		
APPENDIX G			
Report	Gilston – ESC River Way Railway Bridge Cross Section		
N105-MM-A414	Speed Reduction Strategy		
APPENDIX H			
15805	Road Safety Audit - Stage 1		
15805-RSA1	RSA1 Designers Response DRAFT		
APPENDIX I			
Report	ESC Options Report, April 2019		
APPENDIX J			
Report	ESC Departures Schedules		

APPENDIX A – DETAILED APPLICATION DRAWINGS

APPENDIX B – BRIDGE AAD REPORTS AND ELEVATION DRAWINGS

APPENDIX C – CONSTRUCTION PHASING DRAWINGS

APPENDIX D – SUDS DRAWINGS

APPENDIX E – DRAINAGE STRATEGY

APPENDIX F – MINUTES OF CONSULTATIONS

APPENDIX G – REPORTS

APPENDIX H – RSA1

APPENDIX I – APRIL 2019 OPTIONS REPORT

APPENDIX J – DEPARTURES SCHEDULES