

Response to Examining Authority's Second Written Questions (WQ2) A428 Black Cat to Caxton Gibbet Improvement Scheme

Deadline 4: 4th November 2021

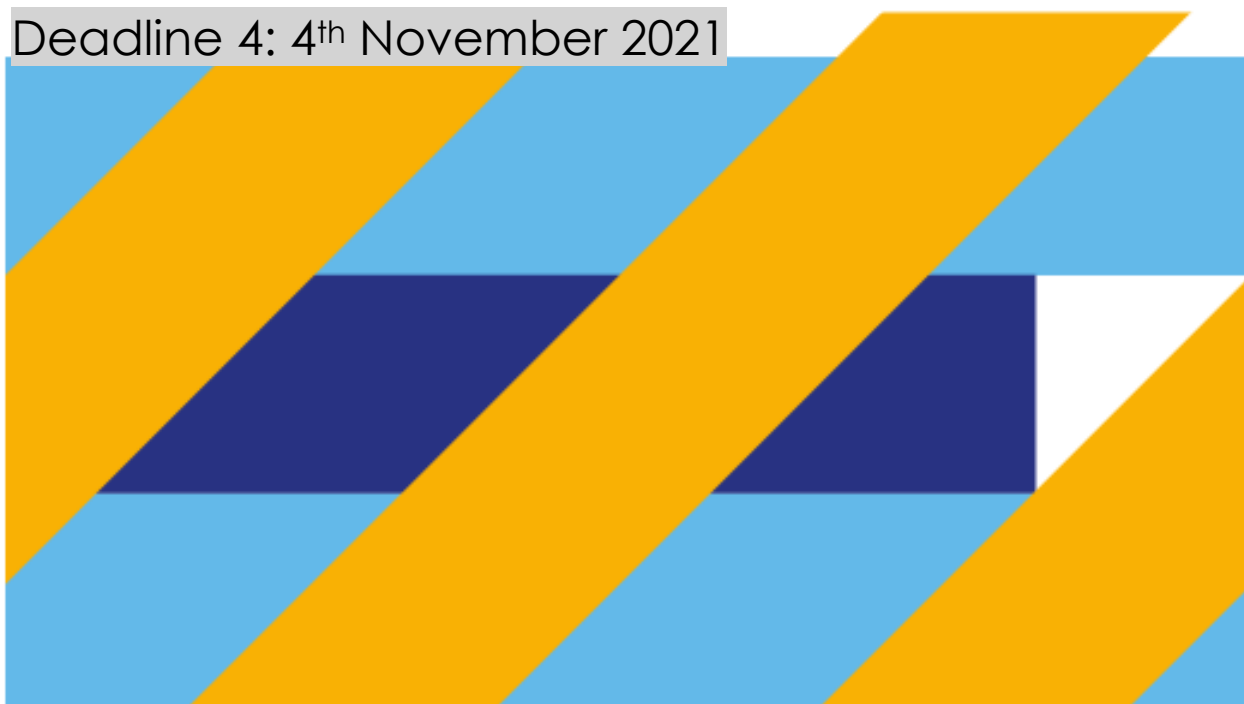


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Appendix 1: Potential Interfaces with Value Managed Design

1. Introduction

- 1.1. This is East West Railway Company Limited's (EWR Co) response to the Examining Authority's (ExA) Written Questions submitted for Deadline 4 of the A428 Black Cat to Caxton Gibbet examination.

2. Q2.10.1.1

Local Authorities / All Parties

"(b) Do you feel that the design principles and features of specific structures [REP3-014, Appendix C] cover the range of physical structures, landscape features, and other measures that design principles should be set out for?"

- 2.1. EWR Co considers that it is necessary and appropriate to include a design principle to require the consideration at detailed design of the opportunities to integrate the Scheme and the EWR Project, both in terms of design changes to allow for engineering efficiencies and the coordination of construction programmes. As set out in the below response to WQ2.10.2.1, it is appropriate that EWR Co should be consulted by NH about both the EWR Project specific design principle and to any changes to be made to the Scheme during detailed design.
- 2.2. Whilst the Applicant may consult EWR Co as a matter of good practice, the inclusion of such a principle is appropriate as it will *ensure* engagement in the public interest.
- 2.3. The below design principle is proposed for inclusion in the Environmental Management Plan [APP-234]:

"In preparing the detailed design and the construction programme, the potential interfaces with the East West Rail Project shall be taken into account. So far as reasonably practicable, the detailed design and construction programme shall provide for and demonstrate the realisation of design and programming efficiencies between the Scheme and the East West Rail Project."

3. Q2.10.2.1

"Local Authorities / All Parties

(a) Are you clear about the design development process and which parties would be consulted through the process [REP3-014, Section 5]?"

(b) Are you content with the proposed design development process and which parties would be consulted through the process [REP3-014, Section 5]?"

- 3.1. It is not clear from [REP3-014] which parties would be consulted during the design development process, how these parties would be identified or how the requirement to consult is secured. In light of the potential interfaces between the Scheme and the EWR Project, as identified in [REP1-074], [AS011] and the Appendix to this response, EWR Co considers that it should be a consultee to the design development process.

3.2. Paragraph 5.1.1 of [REP3-014] identifies that the nature of the changes anticipated during detailed design relate to engineering efficiency and the generation of information for construction. Given the potential for engineering and construction efficiencies to be achieved through the coordination of the Scheme and the EWR Project, EWR Co should be consulted in respect of:

- the consideration of engineering efficiencies and the coordination of construction programmes pursuant to the EWR Project design principle proposed in the above response to WQ2.10.1.1(b);
- the identification of any necessary changes; and
- the realisation of any such changes.

3.3. In order to secure the consultation in respect of the design development process, the below amendment to requirement 12 of Schedule 2 to the dDCO [APP-025] is proposed:

“Detailed Design

12. - (1) The detailed design for the authorised development must accord with:

(a) the preliminary scheme design shown on the works plans, the general arrangement plans and the engineering section drawings;

(b) the principles set out in the environmental masterplan; and

(c) the First Iteration EMP,

unless otherwise agreed in writing by the Secretary of State following consultation with the relevant local authority on matters related to their functions, and in the case of the First Iteration EMP consultation with East West Railway Company Limited, provided that the Secretary of State is satisfied that any amendment would not give rise to any materially new or materially different environmental effects in comparison with those reported in the environmental statement.

(2) The detailed design for the authorised development must be prepared in consultation with East West Railway Company in respect of the consideration of engineering efficiencies and the coordination of construction programmes between the authorised development and East West Rail pursuant to the East West Rail design principle contained within the First Iteration EMP.

(3) Where amended details are approved by the Secretary of State under paragraph (1), those details are deemed to be substituted for the corresponding plans or sections and the undertaker must make those amended details available in electronic form for inspection by members of the public.”

4. Q2.17.4.1

“East West Rail

The EWR Company have submitted material [REP1-073][REP3-048] relating to where, and to some degree, how the Proposed Development would interface with the proposed EWR scheme. Various interface points were also described at the ASI by the EWR Company [EV-022].

(a) EWR Company, provide oral summaries of that explained to the ExA at each stopping point of the ASI.

(b) Applicant, provide details of any design changes currently proposed or being developed for the Proposed Development on the basis of the information received to date.”

(a) Oral Summary of ASI

- 4.1. Prior to the ASI, EWR Co provided a written commentary of the matters for consideration by the ExA in Additional Submission [AS-011] - Submission regarding the Draft Itinerary for the Accompanied Site Inspection A428 Black Cat to Caxton Gibbet Improvement Scheme. This document made reference to the numbered stops proposed in [REP1-025], and proposed an additional stop at Roxton Road. The oral explanations provided to the ExA during the ASI were based upon the written descriptions of the potential interactions set out in [AS-011] and EWR Co’s response to Q1.17.4.1 (b) [REP1-074].
- 4.2. In light of the ExA’s request for further information, and so as to ensure that the most recent information in respect of EWR Co’s ongoing option development and emerging preferences is before the Examination, the Appendix to this response has been prepared for submission at Deadline 4.
- 4.3. The potential interfaces referred to in [REP1-074] and [AS011] were described by reference to a design that had been developed in December 2020 for the purposes of comparing the various route alignments. Since the close of EWR Co’s non-statutory consultation on 9 June 2021, the potential options to capitalise on value management opportunities in respect of the EWR Project have been considered further. The Appendix to this response both provides further descriptions of the potential interfaces referred to in [REP1-074] and [AS011] and describes the potential interfaces with the value managed design. It is important to note that these represent potential changes, and have not been incorporated in the EWR Project, but illustrate how the interfaces with the Scheme could be managed differently in an alternative scenario.

(b) Design changes currently proposed or being developed

- 4.4. EWR Co’s position is reserved, pending receipt of the Applicant’s response.

APPENDIX 1: POTENTIAL INTERFACES WITH VALUE MANAGED DESIGN

Deadline 4: 4th November 2021

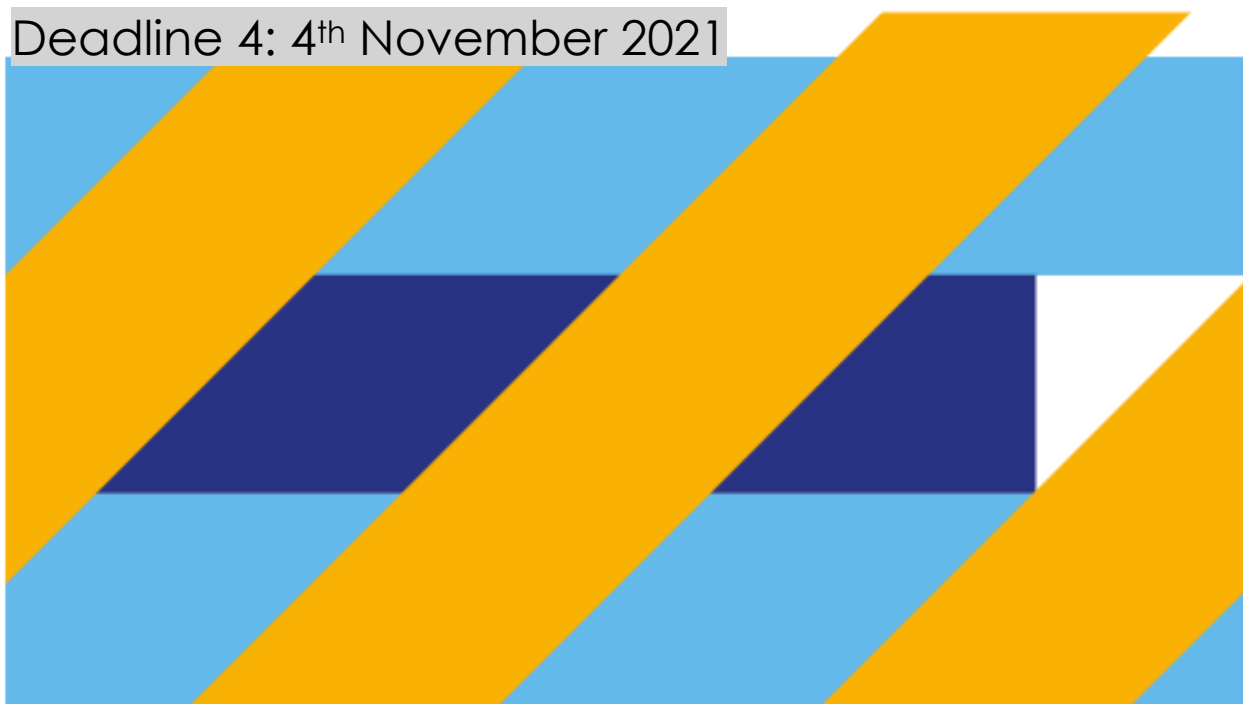


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APPENDIX 1: POTENTIAL INTERFACES WITH VALUE MANAGED DESIGN

1. Introduction

- 1.1.1. As detailed in EWR CO's previous submissions to the Examination ([REP1-074] and [AS-011]), there are several potential interfaces between the EWR Project and the Scheme. In [REP1-074] and [AS-011], the potential interfaces were described with reference to the five EWR Route Alignments (1, 2, 6, 8 and 9) shortlisted in the 2021 EWR Project non-statutory consultation (NSC).
- 1.1.2. Since the close of the EWR 2021 Non-Statutory Consultation on 9 June 2021, potential value management opportunities in respect of the shortlisted Route Alignments have been considered further. If taken forward, the value managed Route Alignments could decrease the number of interfaces between a number of the shortlisted Route Alignments and the Scheme, depending on the Route Alignment in question, as well as potentially changing the nature of a number of those interfaces. Therefore, it is helpful to understand how such value management could affect those interfaces, although no decision has yet been taken by EWR Co on either the selection of a preferred Route Alignment or the inclusion of value management measures.
- 1.1.3. As detailed in [REP1-074] and [AS-01], both Route Alignment 1 and Route Alignment 9 were expressed as emerging preferences in the EWR 2021 Non-Statutory Consultation documentation.
- 1.1.4. In order to ensure that the most recent information in respect of potential consequences of EWR Co's ongoing design development work and emerging preferences is before the Examination, this Appendix outlines the interactions between the EWR Project and the Scheme both if:
 - (a) the EWR 2021 Non-Statutory Consultation design was pursued; and
 - (b) emerging value management opportunities were adopted in relation to the EWR Route Alignments referred to as "VM Alignments".
- 1.1.5. For completeness, in addition to identifying the value management opportunities in respect of Route Alignments 1 and 9, (described as emerging preferences in the EWR 2021 Non-Statutory Consultation), this Appendix also outlines the interactions between the Scheme and the remaining Shortlisted Route Alignments (2, 6 and 8) for the EWR Project resulting from the value management opportunities identified. This focusses on potential interfaces.
- 1.1.6. In reading this Appendix, it should be borne in mind that the results of the EWR 2021 Non-Statutory Consultation are being taken into account prior to the announcement of a Preferred Route Alignment; and consideration by EWR Co of areas of the project such as construction logistics, utilities and environmental mitigation is ongoing. As

such, the Route Alignments and associated works presented in this Appendix are subject to review and the potential for change in response to the design development process, comments raised at the non-statutory consultation and ongoing stakeholder engagement.

1.1.7. The references in this Appendix to ‘Areas’ are to the areas set out in Figure 1 of [AS-011], as reproduced below:

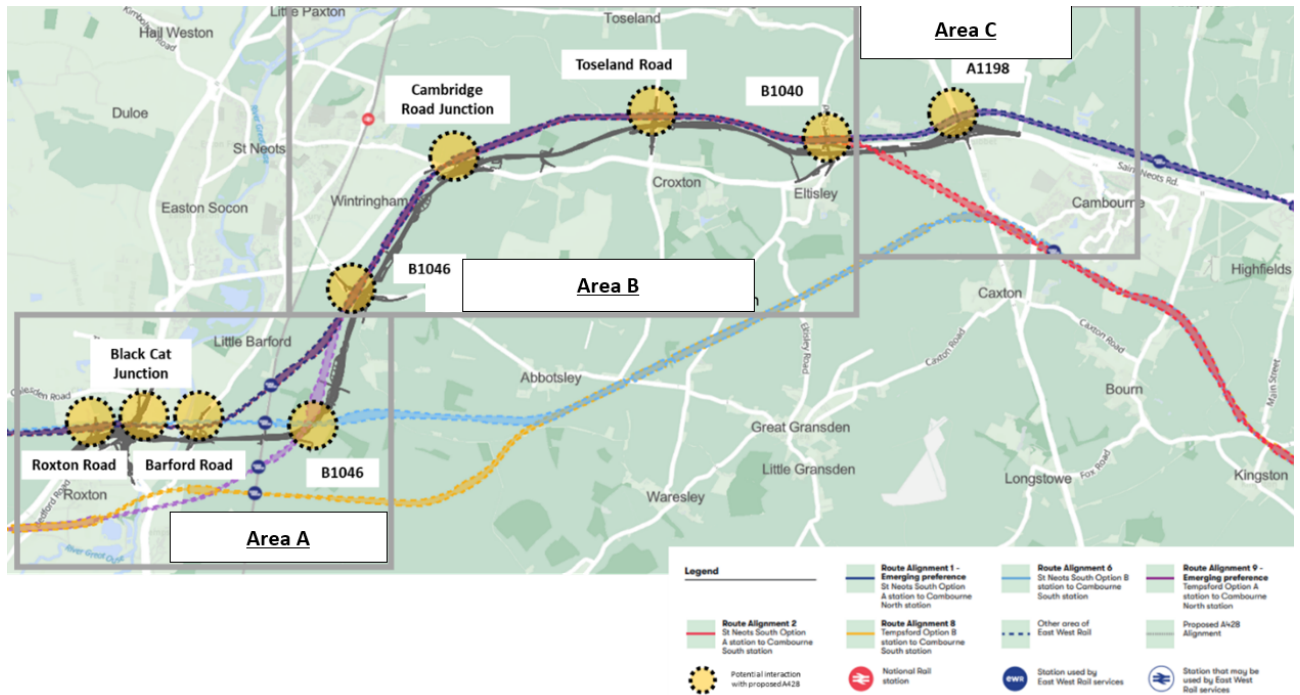


Figure 1 - Potential engineering interaction locations of the EWR Project with the Scheme

2. Route Alignment 8

2.1.1. The emerging VM design currently being considered for Route Alignment 8 does not deviate from the designs presented at NSC for Route Alignment 8 with respect to interactions with the Scheme and those interactions would not differ from that presented in [REP1-074] and [AS-011]. As such Route Alignment 8 is not described further in this Appendix.

3. Area A – Route Alignments 1, 2 & 6

- 3.1.1. Through Area A the VM Alignment designs for Route Alignments 1, 2 & 6 currently being considered by EWR Co. do not differ from the designs presented at NSC. As such, the likely interfaces between the EWR Project and the Scheme presently remain as described in [REP1-074] and [AS-011].
- 3.1.2. The below text provides further detail as to the potential nature of the interactions.
- 3.1.3. Figure 2 below, included within [AS-011], illustrates the interface locations between the A428 Scheme and EWR Project, for the Shortlisted Route Alignments.

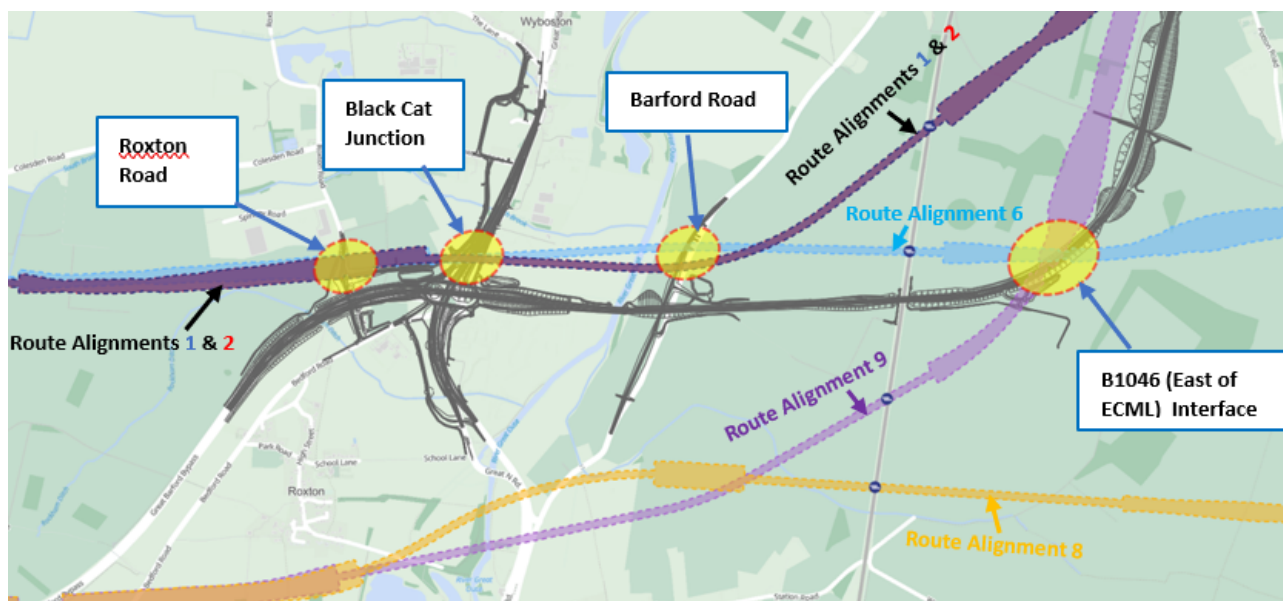


Figure 2 - Potential engineering interaction locations between the Scheme and EWR Project Route Alignments within Area A

3.2. Roxton Road

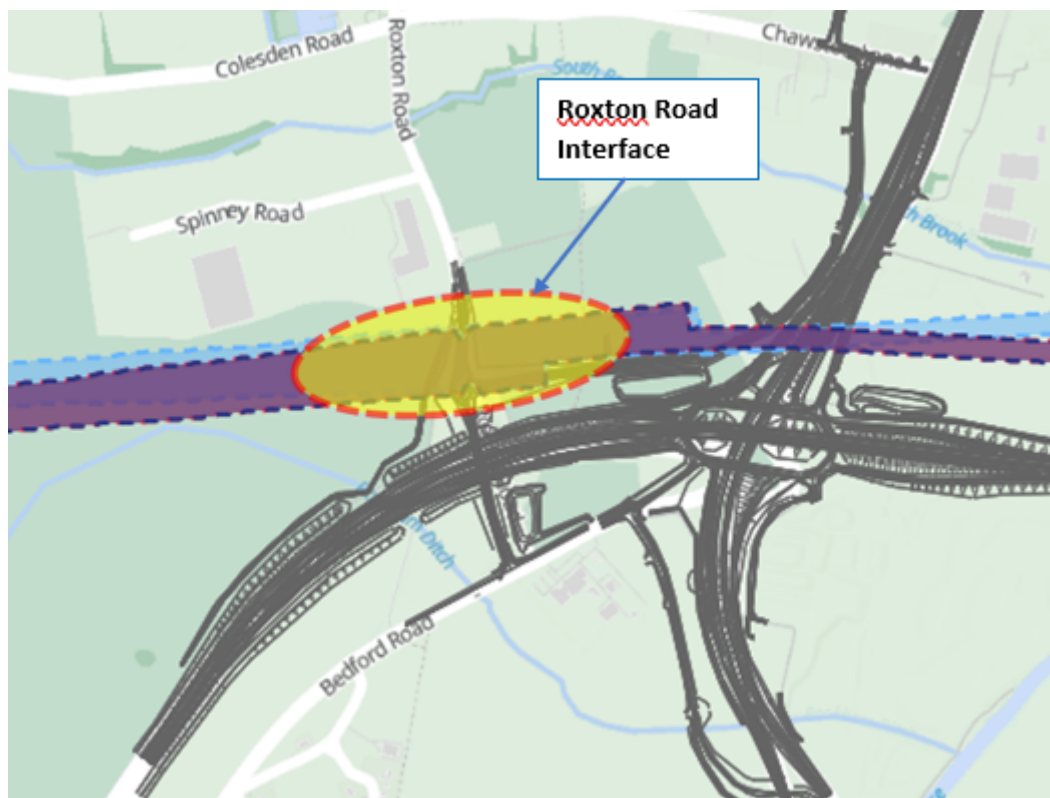


Figure 3 - Potential engineering interaction locations between the Scheme and EWR Project Route Alignments 1, 2 and 6 at Roxton Road (included in [AS-011])

- 3.2.1. In this area it is presently anticipated that the EWR alignment would be supported by a ~10 m high embankment at the intersection with Roxton Road. Due to track geometry constraints, the present view of EWR Co in respect of the NSC design is that it would not be possible to maintain Roxton Road on its current alignment by rerouting it over or under the EWR alignment. Therefore, a diversion of Roxton Road would be proposed as part of the EWR Project, which would connect Roxton Road from the north to Roxton Road Link South after passing beneath EWR through a new underbridge.
- 3.2.2. To the west of Roxton Road, Route Alignments **1**, **2** & **6**, whether or not VM is adopted, would continue to run on an embankment. This would pass through the location of a large borrow pit proposed by the Scheme. The interface between these works would require appropriate phasing through construction and a coordinated environmental strategy post-construction. It would also be beneficial to the EWR Project for the Scheme to optimise the working of the borrow pit to minimise or avoid permanent excavations beneath the proposed footprint of the earthworks associated with Route Alignments **1**, **2** & **6**.

3.3. Black Cat Junction

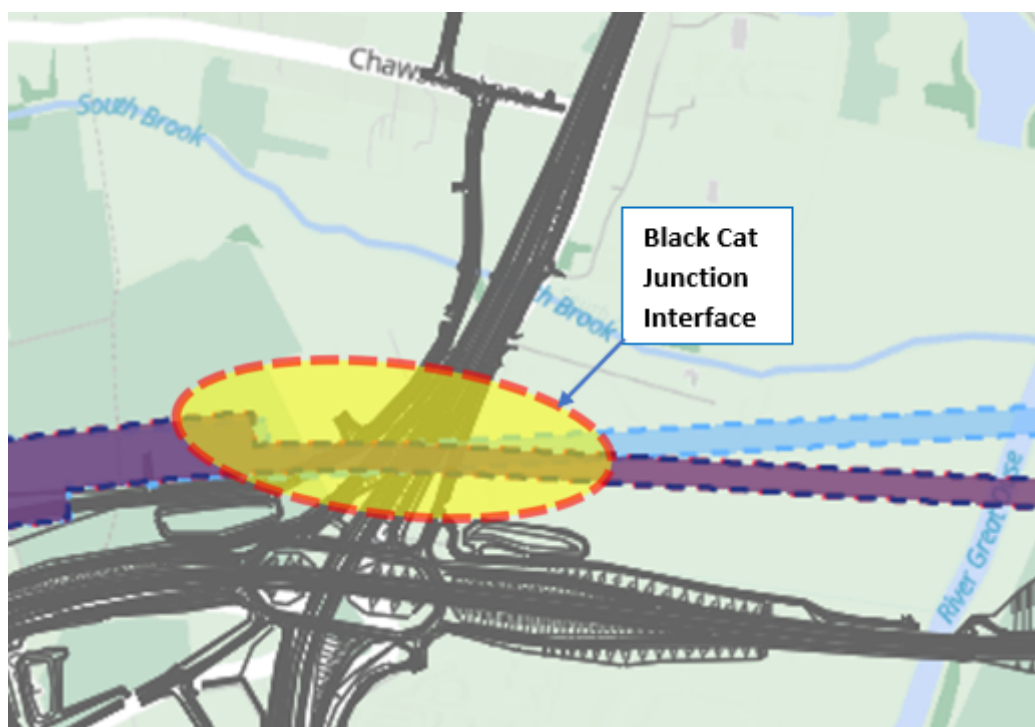


Figure 4 - Potential engineering interaction location between the Scheme and EWR Project Route Alignments 1, 2 and 6 at the Black Cat Junction (included in [AS-011])

- 3.3.1. The NSC design proposes that Route Alignments **1**, **2** & **6** would pass over Black Cat Junction on a viaduct, which would avoid the remodelling of any major roads in this area (either existing, or those remodelled as part of the Scheme) but may require modification of some local road infrastructure such as Roxton Road. This is subject to design development and EWR Co is seeking to minimise impact on the A428 Scheme and other receptors.
- 3.3.2. While the viaduct is subject to ongoing detailed design work, keeping the EWR Project footprint to a minimum would reduce the potential for interactions with the Scheme's proposals.
- 3.3.3. To the east of Black Cat Junction, the NSC proposal is for Route Alignments **1**, **2** & **6** to be elevated on a viaduct passing over a borrow pit proposed to be utilised by the Scheme. The interface between these works would require appropriate phasing through construction and a coordinated environmental strategy post-construction. It would also be beneficial to the EWR Project for the Scheme to use the borrow pit in a way that minimises or avoids permanent excavations that would adversely affect the foundations of the viaduct proposed by the EWR Project.

3.4. Barford Road



Figure 5 - Potential engineering interaction location between the Scheme and EWR Project Route Alignments 1, 2 and 6 at Barford Road (included in [AS-011])

- 3.4.1. The NSC design proposes that Route Alignments **1, 2 & 6** would pass over Barford Road on a viaduct, which would avoid the remodelling of roads in this area (either existing roads, or those remodelled as part of the Scheme).
- 3.4.2. While the viaduct is subject to ongoing detailed design work, it is presently considered that keeping the EWR Project footprint to a minimum would reduce the potential for interactions with the Scheme's proposals.

4. Area A – Route Alignments 6 & 9 (B1406 – East of ECML Interface)

- 4.1.1. The emerging VM Alignment designs currently being considered for Route Alignments 6 & 9 do not deviate from their respective NSC designs with respect to interactions with the Scheme. These interactions would not differ from that presented in [REP1-074] and [AS-011].
- 4.1.2. Immediately to the east of the proposed new ECML Interchange Station, as per the NSC Designs, it is presently proposed that Route Alignments 6 & 9 would pass under the Scheme in a west east or south-west north-east orientation respectively, within the vicinity of the Bedford – Central Bedfordshire Boundary.
- 4.1.3. Route Alignment 9 would directly impact a proposed A428 Scheme drainage pond, which would need to be relocated as part of the EWR Project, and an alternative access provided



Figure 6 - Potential engineering interaction location between the Scheme and EWR Project Route Alignments 6 and 9 at the B1046 (East of ECML) (included in [AS-011])

- 4.1.4. Figure 6 above, included within [AS-011], illustrates the potential engineering interface locations between the A428 Scheme and EWR to the east of the B1046 (East of the ECML), for Route Alignments 6 & 9.

5. Area B (Route Alignments 1, 2 & 9)

5.1.1. Figure 7 below illustrates the potential engineering interaction locations between the A428 Scheme and EWR in Area B.

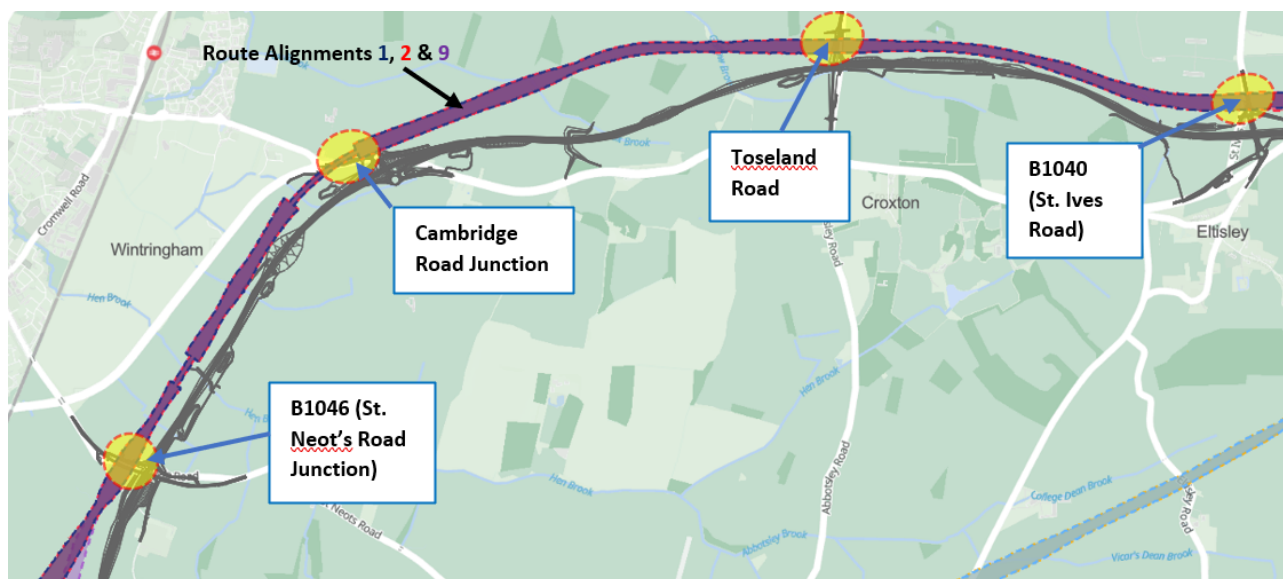


Figure 7 - Potential engineering interaction locations between the A428 Scheme and EWR in Area B (Alignments 1, 2 and 9) (included in [AS-011])

5.2. B1046 (St. Neots Road Junction)

- 5.2.1. At the B1046, the emerging VM Alignment design does not differ from the NSC designs for Route Alignments 1, 2 or 9. As such, the likely interfaces between the EWR Project and the Scheme would remain as described in [REP1-074] and [AS-011]. The below text provides further detail as to the potential nature of the interactions.
- 5.2.2. In this location Route Alignments 1, 2 and 9 could be in a cutting, passing beneath the B1046, as realigned by the Scheme. The VM solution proposes that a highway overbridge at the intersection would be introduced by the EWR Project. If adopted, this approach would not require a deviation to the vertical or horizontal alignment of the Scheme's proposed realigned B1046. There would be considerable benefit to the construction programmes of both the EWR Project and the Scheme if the underbridge proposed as part of the EWR Project was built at the same time as the B1046 highway realignment proposed by the Scheme.
- 5.2.3. In addition to the works at the B1046, if a VM solution was adopted, the emergency access and maintenance road proposed as part of the Scheme would need to be reconfigured by the EWR Project to be situated on the embankment between the A428 and the EWR Project as a slip road.
- 5.2.4. Figure 8 below illustrates the potential engineering interaction location between the A428 Scheme and EWR at the B1046 St. Neots Road (Route Alignments 1, 2 and 9).



Figure 8 - Potential engineering interaction location between the A428 Scheme and EWR at the B1046 St. Neots Road (Route Alignments 1, 2 and 9) (included in [AS-011])

5.3. Cambridge Road Junction

- 5.3.1. In the emerging value management opportunities, there is the potential that the nature of the interaction between the Scheme and Route Alignments 1, 2 or 9 would differ from that presented in [REP1-074] and [AS-011]. This is described below. For ease of reference, Figure 9 below illustrates the potential engineering interaction location between the A428 Scheme and EWR at the Cambridge Road Junction, as included in [AS-011].

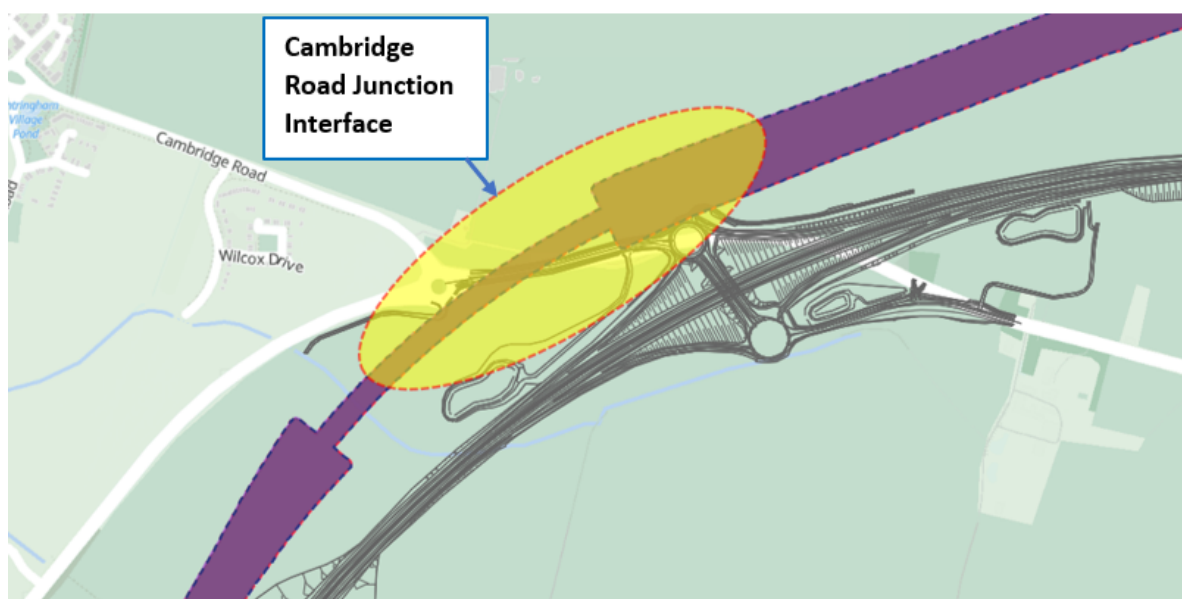


Figure 9 - Potential engineering interaction location between the A428 Scheme and EWR at the Cambridge Road Junction (Route Alignments 1, 2 and 9) (included in [AS-011])

2021 Non-Statutory Consultation Design

- 5.3.2. The NSC designs at Cambridge Road Junction, as presented in [REP1-074] and [AS-011], feature high embankments and a 600 m long viaduct over the north roundabout access road proposed by the Scheme. Whilst this would avoid realigning new (as proposed by the Scheme) or existing highways, the scale of the earthworks required for the EWR Project would mean that there would remain interaction with the Scheme, including the requirement to construct earthworks as part of the EWR Project within areas presently proposed by the Scheme for soil storage.

Emerging VM Design

- 5.3.3. In developing the designs following the 2021 Non-Statutory Consultation, EWR Co is considering a lower VM Alignment for Route Alignments 1, 2 and 9. This could lower the EWR alignment into a shallow cutting in this location; thereby reducing earthwork requirements and avoiding the need for a viaduct. The EWR alignment would also be realigned horizontally to provide greater clearance to the existing A428 roundabout, avoid a soil storage area proposed by the Scheme and minimise overhead powerline diversions in the area.

- 5.3.4. However, in this scenario, the Scheme's proposed access road which connects to the northern roundabout of the Cambridge Road junction, would require realignment and the introduction of an overbridge, as part of the EWR Project.
- 5.3.5. If this Value Management opportunity is progressed by EWR Co., there could well be considerable benefit to the construction programme of the EWR Project and the Scheme (either in construction or to minimise disruption in operation) if the Scheme's proposed access road which connects to the northern roundabout of the dumbbell junction were realigned to the location required by the EWR Project and the underbridge proposed as part of the EWR Project was built at the same time as the Scheme's proposed access road.

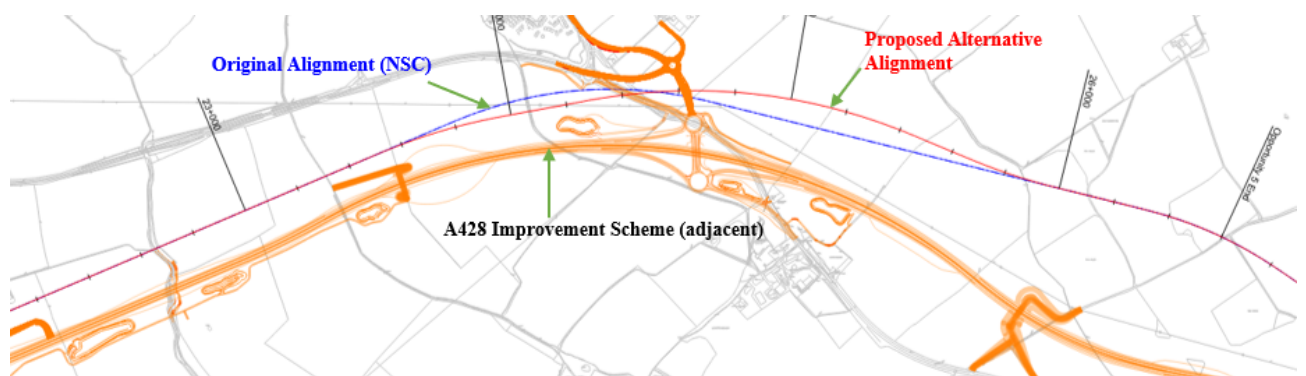


Figure 10: EWR Value Management Opportunity under development – Cambridge Road Junction 5

5.4. Toseland Road

- 5.4.1. For ease of reference, Figure 11 below illustrates the potential engineering interaction location between the A428 Scheme and Route Alignments 1, 2 and 9 at the Cambridge Road Junction, as included in [AS-011].

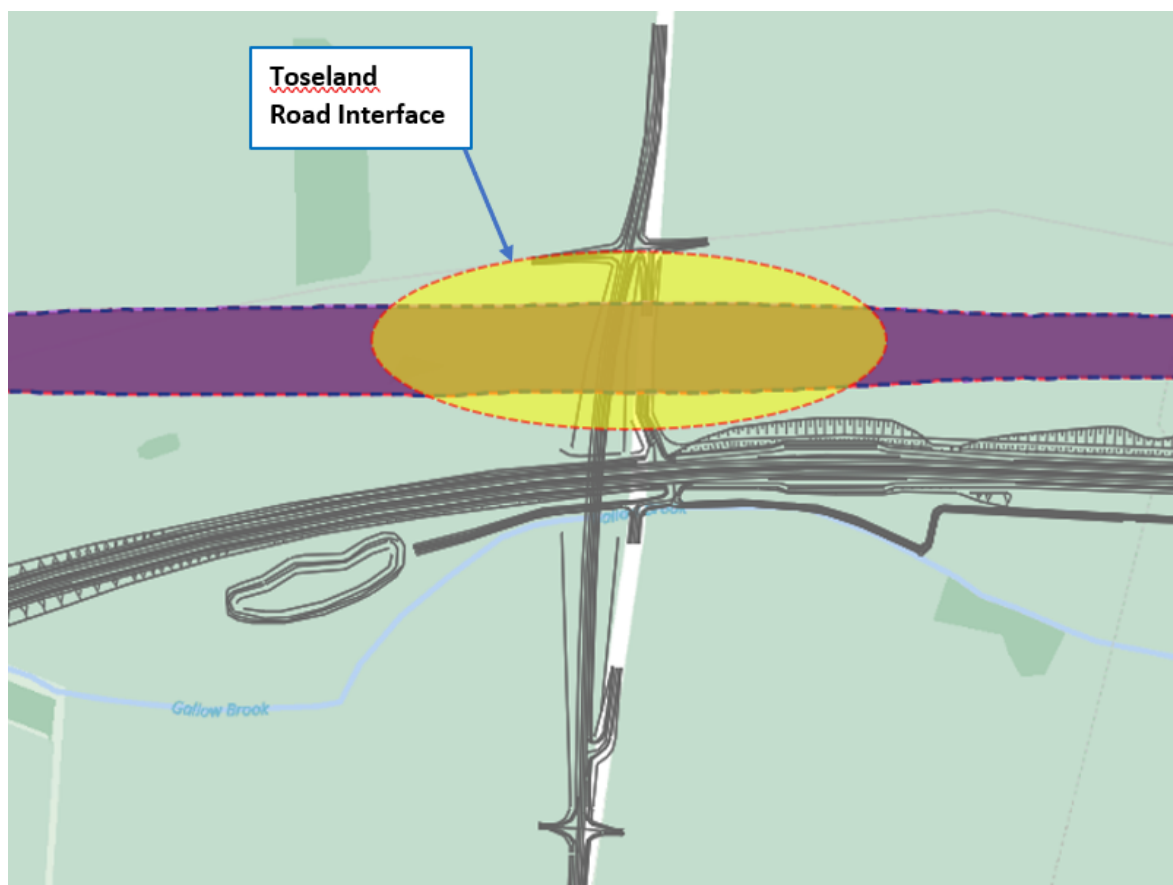


Figure 11 - Potential engineering interaction location between the A428 Scheme and EWR at Toseland Road (Route Alignments 1, 2 and 9) (included in [AS-011])

- 5.4.2. At Toseland Road, the emerging VM Alignment design currently being considered does not deviate from the NSC design for Route Alignments 1, 2 or 9.
- 5.4.3. In this location, the NSC design proposes that Route Alignments 1, 2 and 9 would be in a cutting passing underneath the Scheme's realigned Toseland Road. It is anticipated that a highway overbridge at the intersection would be introduced, which it is not presently expected would require any deviation to the vertical or horizontal alignment of the Scheme's realigned Toseland Road.
- 5.4.4. There could be considerable benefit to the construction programme of the EWR Project and the Scheme (either in construction or to minimise disruption in operation) if the Toseland Road highway overbridge proposed as part of the EWR Project was built at the same time as the highway realignment proposed by the Scheme.
- 5.4.5. In addition, if the NSC design were pursued it is anticipated that the emergency access and maintenance road proposed by the Scheme would need to be realigned to some degree (horizontally and/or vertically) by the EWR Project. This is due to Route Alignments 1, 2, and 9 crossing perpendicular to, and severing, the Scheme's proposed

northern carriageway emergency access. If this were to be relocated by the Scheme prior to implementation there could be benefit to the construction programme of the EWR Project and the Scheme (either in construction or to minimise disruption in operation).

5.5. B1040 (St Ives Road)

- 5.5.1. In the emerging value management opportunities, there is the potential that the nature of the interaction between the Scheme and Route Alignments 1, 2 or 9 would differ from that presented in [REP1-074] and [AS-011]. This is described below; For ease of reference, Figure 12 below illustrates the potential engineering interaction location between the A428 Scheme and EWR at the B1040 St. Ives Road, as included in [AS-011].

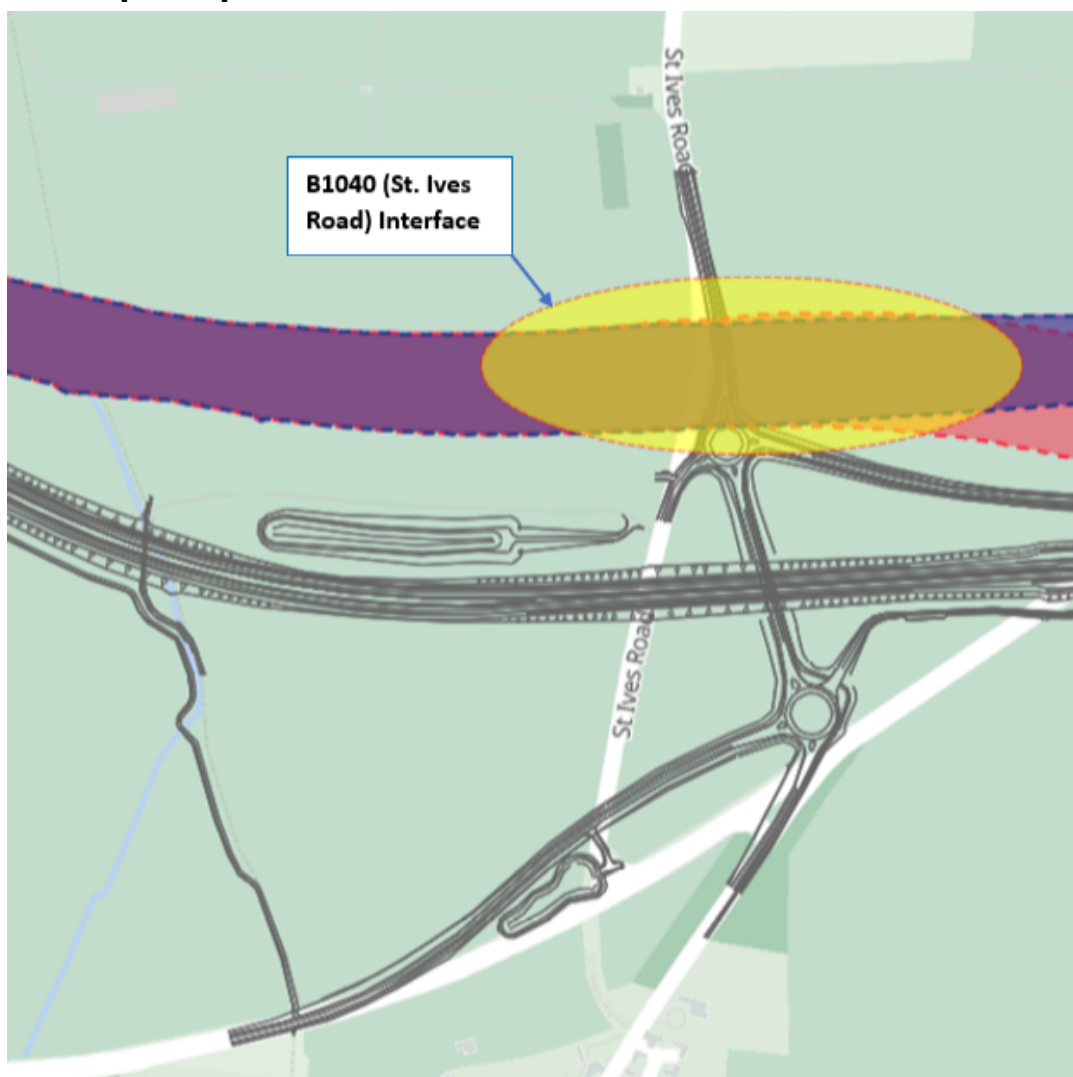


Figure 12 - Potential engineering interaction location between the A428 Scheme and EWR at the B1040 St. Ives Road (Route Alignments 1, 2 and 9) (included in [AS-011])

2021 Non-Statutory Consultation Design

- 5.5.2. The NSC designs for Route Alignments 1, 2 and 9 feature high embankments and a rail bridge over the Scheme's realigned B1040 St Ives Road. If adopted, this would result in

an interaction between the EWR Project and the Scheme, due to the proximity of the EWR Project earthworks and the junction of the B1040 and A428. This would have several disadvantages for the EWR alignments, including decreased rail operational performance due to the track gradients required and the need to construct on a historic landfill site.

Emerging VM Alignment Design

- 5.5.3. EWR Co is considering whether VM Alignments for Route Alignments 1 and 9 can be lowered to be closer to ground level. As a result, the realigned B1040 St Ives Road would need to be further realigned by the EWR Project to bridge over the EWR alignment. This would avoid the need for otherwise complex interactions between the EWR Project and the Scheme. Further, it is anticipated that the reduction in the height of the railway embankments proposed in the NSC design may lead to a lower visual impact and improved rail performance. The emerging VM Alignments would result in the permanent railway infrastructure associated with the EWR alignment falling outside the Order limits of the Scheme.

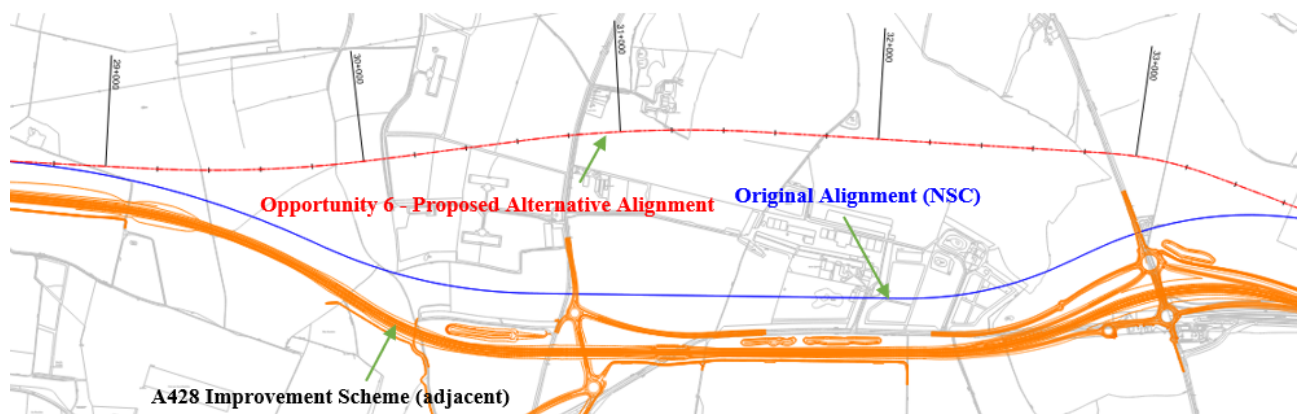


Figure 13: EWR Value Management Opportunity

6. Area C (Route Alignments 1 & 9)

6.1. A1198 Interface

- 6.1.1. In the emerging value management opportunities, there is the potential that the nature of the interaction between the Scheme and Route Alignments 1 or 9 would differ from that presented in [REP1-074] and [AS-011]. This is described below. For ease of reference, Figure 14 below illustrates the potential engineering interaction location between the A428 Scheme and EWR at the A1198 for Route Alignments 1 and 9, as included in [AS-011].

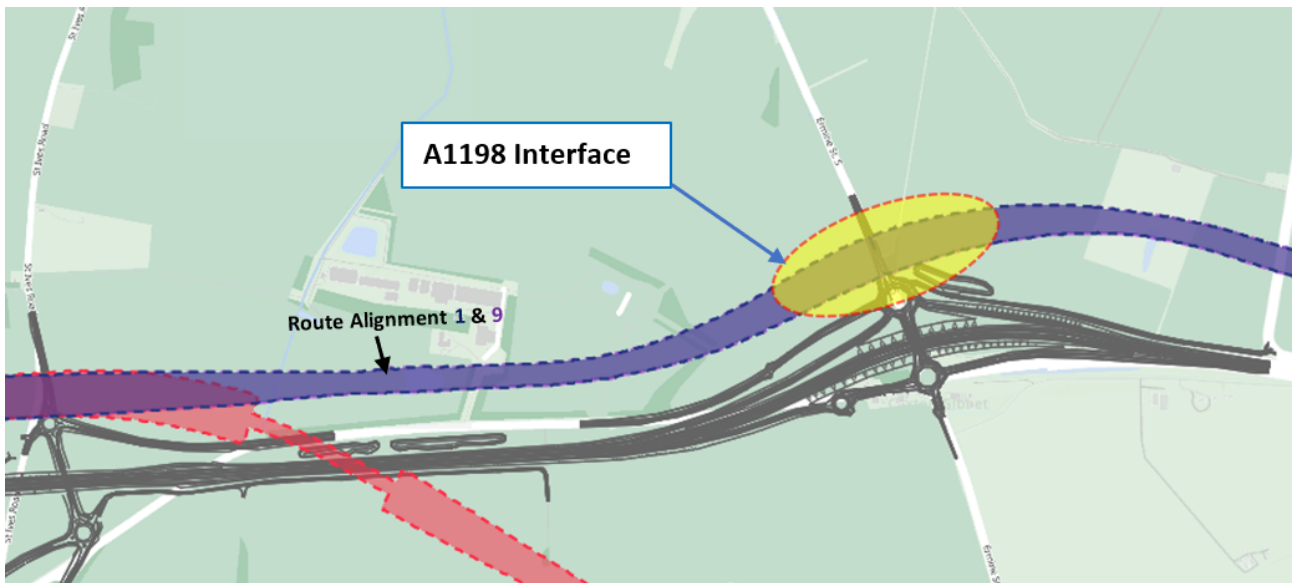


Figure 14 - Potential engineering interaction location between the A428 Scheme and EWR at the A1198 (Route Alignments 1, and 9) (included in [AS-011])

2021 Non-Statutory Consultation Design

- 6.1.2. In the NSC design, it was currently envisaged that Route Alignments 1 and 9 would feature high embankments and a rail bridge over the Scheme's reconfigured A1198 Ermine Street South. This would result in interactions between the EWR Project and the Scheme, including the requirement for the EWR Project to carry out construction activities in the location of two borrow pits proposed by the Scheme. As a result of the design proposed at NSC to minimise interaction with the Scheme and the existing road network there would be several disadvantages for the EWR alignments and the surrounding area, including negative visual impacts, decreased rail operational performance and the requirement for the demolition of property.

Emerging Statutory Consultation Design

- 6.1.3. In the emerging VM proposals (as illustrated in Figure 13), Route Alignments 1 and 9 would be moved away from the NSC designs and lowered to be closer to ground level. The A1198 Ermine Street South highway would be realigned by the EWR Project to

bridge over the EWR alignment. This would avoid the need for otherwise complex interactions between the EWR Project and the Scheme. Further, it is anticipated that the reduction in the height of the railway embankments proposed by the NSC design may lead to a lower visual impact and improved rail performance. In addition, the emerging VM Alignment design would allow for one of the Scheme's borrow pits to be avoided, while the footprint of the railway earthworks would also be reduced by being closer to existing ground level.

7. Area C (Route Alignment 2)

- 7.1.1. In Area C, the emerging VM Alignment design currently being considered for Route Alignment 2 does not deviate from the NSC designs for Route Alignment 2 with respect to interactions with the Scheme and those interactions and would not differ from that presented in [REP1-074] and [AS-011].
- 7.1.2. For ease of reference, Figure 15 below illustrates the potential engineering interaction location between the A428 Scheme and EWR at the A1198 for Route Alignments 1, 2 and 9, as included in [AS-011].

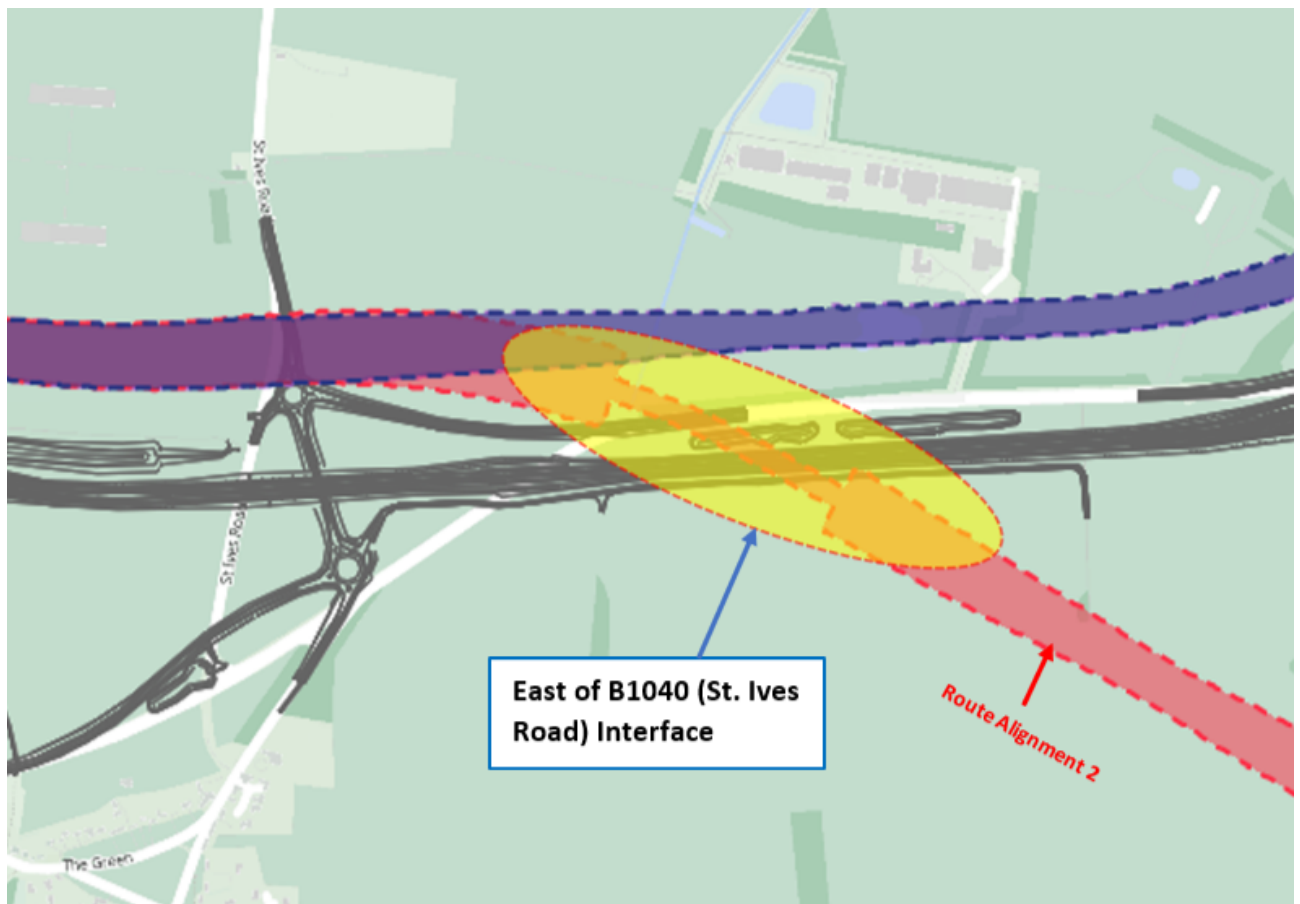


Figure 15 - Potential engineering interaction location between the A428 Scheme and EWR to the east of the B1040 (Route Alignment 2) (included in [AS-011]).