



TECHNICAL NOTE: FLOOD RISK: 8.3

DECARBONISATION

Cory Decarbonisation Project

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Revision A

QUALITY CONTROL

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REV A	May 2024		Stephanie Haberfield	Joanna Goodwin	Jenny Warhurst



Contents

QUALITY CONTROL	1
1. FLOOD RISK	1
1.1. Introduction	1
1.2. Extent of Flood Zone 3a and 3b	1
1.3. Assessment and Mitigation	2
1.4. Conclusion	3

FIGURE

Figure A: Fluvial Flood Zone 3a and 3b Extents

1. FLOOD RISK

1.1. INTRODUCTION

1.1.1. This Technical Note details supplementary information in response to the Section 51 Advice received from the Planning Inspectorate on the 18th April 2024, regarding Appendix 11-2: Flood Risk Assessment (FRA) (Volume 3) of the Environmental Statement (Document Reference 6.3) (referred to as ‘the FRA’) for the Cory Decarbonisation Project (referred to as the ‘Proposed Scheme’). The information confirms that the position remains that the Proposed Scheme will not result in a net loss of floodplain storage.

1.2. EXTENT OF FLOOD ZONE 3A AND 3B

- 1.2.1. Figure A: Fluvial Flood Zone 3a and 3b Extents shows the fluvial only extents of Flood Zone 3a and Flood Zone 3b. Fluvial Flood Zone 3 comprises both Flood Zone 3a and Flood Zone 3b. The fluvial only extents of Flood Zone 3a and Flood Zone 3b have been derived from the Environment Agency’s Marsh Dykes hydraulic model¹ using just the fluvial flooding mechanisms (rather than the combined surface water and fluvial extents that are also represented in the model). The flood extents shown in the FRA for the Proposed Scheme use the combined surface water and fluvial flooding mechanisms from the Marsh Dykes hydraulic model, and therefore are different to those presented in Figure A. Flood Zone 3b is also shown in the mapping provided in the London Borough of Bexley Level 1 Strategic Flood Risk Assessment (SFRA) (2022)² and is based on the Environment Agency’s Marsh Dykes hydraulic model¹.
- 1.2.2. Flood Zone 3a is defined in the Planning Practice Guidance (PPG) for Flood Risk and Coastal Change³ (paragraph 078) as land having a 1% or greater annual probability of fluvial flooding.
- 1.2.3. Flood Zone 3b (functional floodplain) is defined in the PPG for Flood Risk and Coastal Change³ (paragraph 078) as land where water has to flow or be stored in times of flood, but that the identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters.
- 1.2.4. A review of the fluvial only model outputs indicates that the fluvial only Flood Zone 3b extents are largely the same as the modelled fluvial only Flood Zone 3 extents (i.e. the 1% annual probability extents). The only differences relate to the watercourses located along the eastern boundary of the Carbon Capture Facility. These areas have

¹ Environment Agency. (2020). ‘Marsh Dykes Model’.

² Wood. (2019). ‘London Borough of Bexley Strategic Flood Risk Assessment Level-1’. Available at: <https://www.bexley.gov.uk/sites/default/files/2021-05/Strategic-flood-risk-assessment-level-1-November-2020.pdf>

³ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government. (2022). ‘National Planning Practice Guidance, Flood risk and coastal change’. Available at: <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

been removed from the Flood Zone 3b extents as the watercourses are culverted in this area and therefore are not considered to have a functional floodplain.

- 1.2.5. Review of the fluvial mapped outputs and model cross sections (1D part of the Marsh Dykes hydraulic model¹) indicates that the mapped flood extents of fluvial only Flood Zone 3b are largely limited to the channel cross sections included within the model and do not indicate flooding that extends beyond the top of the bank of channel.
- 1.2.6. The Applicant has also considered the reference to floodplain storage areas as provided in the PPG³ (Paragraph 049), that states “*The loss of floodplain storage is less likely to be a concern in areas benefitting from appropriate flood risk management infrastructure or where the source of flood risk is solely tidal*”. This guidance has been considered in the FRA for the Proposed Scheme. Flooding in the Study Area for the Proposed Scheme is tidally dominated and protected by flood defences. Water level in the Marsh Dykes watercourse network is also managed by pumping stations. A detailed description of the Marsh Dykes is provided in paragraphs 5.2.6 to 5.2.8 of the FRA for the Proposed Scheme.
- 1.2.7. Review of the information presented above therefore indicates that the fluvial only Flood Zone 3b extents would largely be limited to the watercourse channels, and that any loss of these areas (including that located outside of the watercourse channels albeit this is minimal as discussed below) may not be considered as loss of floodplain storage as defined by the PPG³. An assessment of the Proposed Scheme within the fluvial only Flood Zone 3b extents and an assessment of the impact of losing any of these areas as a result of the Proposed Scheme (including the proposed mitigation) is discussed below.

1.3. ASSESSMENT AND MITIGATION

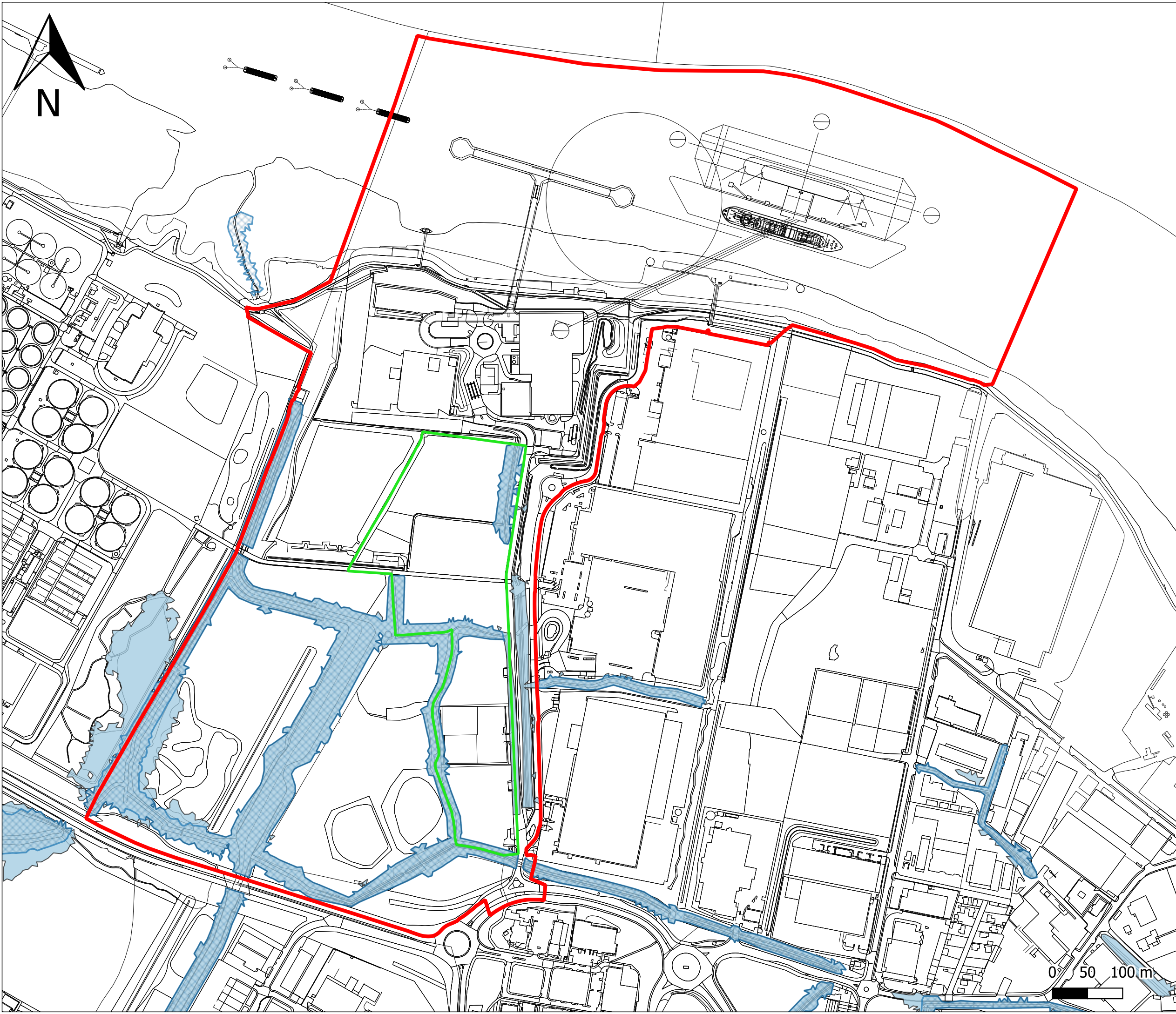
- 1.3.1. Paragraphs 8.6.20 to 8.6.23 and Section 9.3 of the FRA for the Proposed Scheme summarise the mitigation proposed to manage flood risk impacts associated with Norman Road Stream (MR4) and the Marsh Dykes watercourses. A concise summary of this is provided below:
 - maintaining the alignment and open channel of Norman Road Stream (MR4) in the northeast of the Carbon Capture Facility;
 - maintaining the alignment and open channel of the watercourses (OW16 and OW11(b)) that flow adjacent to the western boundary of the Carbon Capture Facility;
 - maintaining the alignment and open channel of other watercourses within the Site Boundary that are outside of the footprint of the Carbon Capture Facility;
 - maintaining hydraulic connectivity of ditches that will be infilled (OW4, OW15 and OW11(a), as described in paragraph 10.2.1 of the FRA) beneath the footprint of the Carbon Capture Facility; and
 - providing compensation of the loss of mapped fluvial flood extent that encroaches to within the footprint of the Carbon Capture Facility; and maintaining a suitable

offset to Norman Road Stream (MR4) and the watercourses that flow adjacent to the western boundary of the Carbon Capture Facility (OW16 and OW11(b)).

- 1.3.2. As discussed in the FRA, the Proposed Scheme will provide floodplain compensation to ensure that there is no overall net loss of fluvial floodplain storage. As discussed above, a review of flood mapping indicates these areas are relatively minimal given the general containment of fluvial flooding within Norman Road Stream (MR4) and the channel of the Marsh Dykes network of watercourses and intention to retain these open channels in the north and along the western boundary of the Carbon Capture Facility.
- 1.3.3. Compensation for the loss of floodplain will be provided within the detailed design of the Proposed Scheme. An example of how this could be achieved could include thin strips (i.e., easement strips which are 5m minimum from the top of bank) alongside Norman Road Stream (MR4) and the watercourses along the western boundary (OW16 and OW11(b)) of the Carbon Capture Facility, with appropriate gradients and a length and depth that would allow for full compensation to be delivered. This would allow flood waters to be trapped in the lower lying area between the top of bank and the development platform. However the final approach would be agreed with the EA, as is already provided for in the FRA.
- 1.3.4. The area of mapped floodplain associated with OW11(a) located broadly in the centre of the Carbon Capture Facility is likely to be infilled as part of the Proposed Scheme. This section of channel provides field drainage to part of the area of the Carbon Capture Facility and provides connectivity between the highway drainage channel alongside the eastern side of Norman Road and outfalls to the Marsh Dykes. This section of field drain will be replaced by a new channel to the south of the Carbon Capture Facility. The loss of this short section of open channel is not predicted to cause increased flood risk to the Proposed Scheme or elsewhere. The loss of fluvial floodplain storage will be considered in the detailed design of the Proposed Scheme and, given the relatively small area, it is expected that any required floodplain compensation can be accommodated within the footprint of the Proposed Scheme.. Mitigation developed during detailed design will be informed by the results of the Environment Agency's Marsh Dykes hydraulic model¹ with interpretation to determine the best representation of the fluvial flood extents. This is expected to be provided by the proposed 5m easements but will be confirmed at detailed design.
- 1.3.5. This approach demonstrates that the loss of fluvial floodplain can be sufficiently compensated for within the design of the Carbon Capture Facility during the detailed design phase. As a result, the FRA demonstrates that a position of no net loss of floodplain storage can be achieved.

1.4. CONCLUSION

- 1.4.1. The sections above provide information regarding the fluvial only Flood Zone 3a and the fluvial only Flood Zone 3b in relation to the Proposed Scheme. The mitigation outlined above will be included within Section 9 of the FRA for the Proposed Scheme.



LEGEND:

- Site Boundary
- Carbon Capture Facility
- Fluvial Flood Zone 3a
- Fluvial Flood Zone 3b

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WSP, 6 Devonshire Square
 London, EC2M 4YE
 Tel: +44 (0) 20 7337 1700
 www.wsp.com

CLIENT Cory Environmental Holdings Ltd

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