

A12 Chelmsford to A120 widening scheme

TR010060

9.49 Attenuation Ponds in Floodplain

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A12 Chelmsford to A120 widening scheme

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1 Introduction and Purpose

- 1.1.1 This technical note has been prepared to address the Environment Agency's (EA) concerns regarding the location of the proposed scheme's highway drainage attenuation ponds within the floodplain. The EA preference is for the highway drainage attenuation ponds to be located within Flood Zone 1, so that they do not displace the flood water and/or impact the existing flood plain and not be at risk of flooding, see EA Relevant Representation (RR-011) and reference F17 of the Statement of Common Ground (REP2-008) between the EA and National Highways (NH).

2 Attenuation Pond Locations

- 2.1.1 Highway drainage attenuation ponds for the proposed scheme have been located outside Flood Zones (FZ) 2 and 3 wherever practicable. The location of proposed attenuation ponds identified within FZ 2 and 3 and their comparison with the modelled 1% (1 in 100) plus climate change extent are shown on Plate 4.1 to 4.4 of this technical note.
- 2.1.2 It is noted that subsequent to NH's response provided within RR-011 which included three attenuation ponds, one additional pond has been identified within FZ 2 and 3 so four proposed attenuation ponds are located within or partially within FZ 2 and 3 as listed below:
- Attenuation Pond S1-OU13 (See Plate 4.1). Also refer to Sheet 5 of 21 of Drainage and Surface Water Plan Part 2 [APP-034]
 - Attenuation Pond S2-OU4 (See Plate 4.2). Also refer to Sheet 8 of 21 of Drainage and Surface Water Plan Part 2 [APP-034]
 - Attenuation Pond S2-OU19 (See Plate 4.3). Also refer to Sheet 12 of 21 of Drainage and Surface Water Plan Part 2 [APP-034]
 - Attenuation Pond S3-OU26B (See Plate 4.4). Also refer to Sheet 17 of 21 of Drainage and Surface Water Plan Part 2 [APP-034]

3 Hydraulic Modelling and Flood Risk Assessment

- 3.1.1 Detailed hydraulic modelling has been undertaken to inform the Flood Risk Assessment (FRA) [APP-162] for the proposed scheme. This is considered to be more detailed and accurate due to recent site investigations and detailed topographic survey, than those larger scale models that have been used to develop EA FZ mapping. Detailed hydraulic modelling has been undertaken of the watercourses that the four ponds listed above drain to and has informed their location.
- 3.1.2 The EA has accepted the hydraulic modelling undertaken to inform the FRA [APP-162] and have confirmed it to be 'fit for purpose' (paragraph 2.1 of their Relevant Representation (RR-011) dated 4/11/22). Therefore, while the aforementioned proposed attenuation ponds are within the published FZ2 and

3, they are outside the modelled 1% (1 in 100) Annual Exceedance Probability (AEP) event, plus an allowance for climate change extent, equivalent to the present and future FZ3. Based on the hydraulic modelling undertaken the location of these attenuation ponds would not put them at risk of flooding or impact existing flood plain.

4 Surface Water Drainage Design and Water Quality

- 4.1.1 The current locations for attenuation ponds are in accordance with the surface water drainage design requirements for the proposed scheme as explained in the Surface Water Drainage Strategy Section 4.9 [APP-174]. The key elements of the functionality of surface water drainage design which have been taken into account and achieved through the current locations for attenuation ponds are to minimise the flood risk and water quality impact of surface water runoff being discharged to the natural environment (refer to [APP-158] for the Water Quality Assessment undertaken for the proposed scheme). Moving the attenuation ponds outside the FZ 2 and 3 would not be effective in achieving their desired functionality e.g, moving the proposed attenuation pond S2-OU4 outside the extents of FZ2 and 3 would have an impact on the water quality benefits achieved in the current assessment. This is because by moving the pond outside the published FZ it would not be possible to collect the flows from the entire highway drainage catchment draining to pond S2-OU4, which is achievable in its current location due to its proximity to the outfall and receiving watercourse.

Plate 4.1 Proposed Attenuation Pond S1-OU13

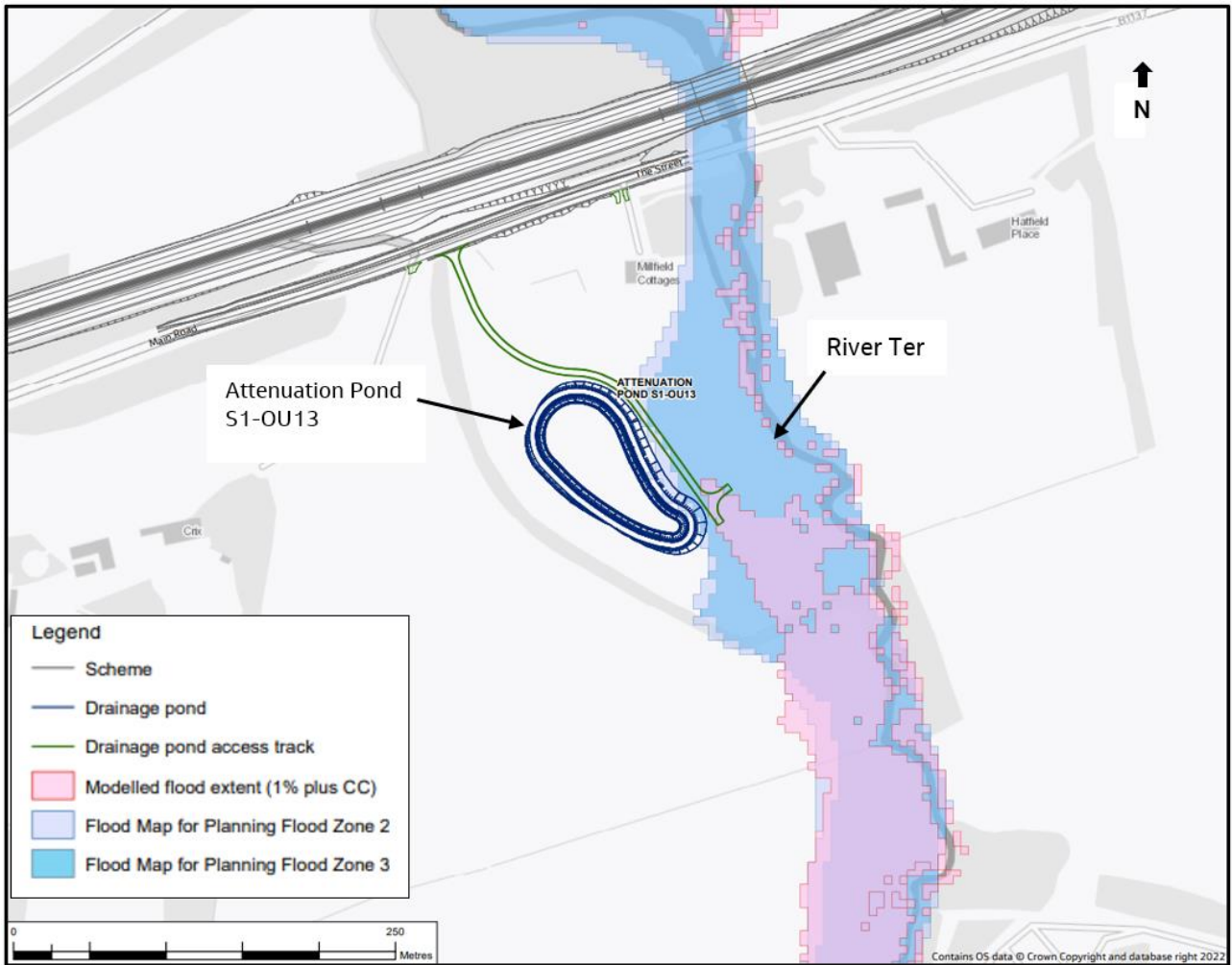


Plate 4.2 Proposed Attenuation Pond S2-OU4

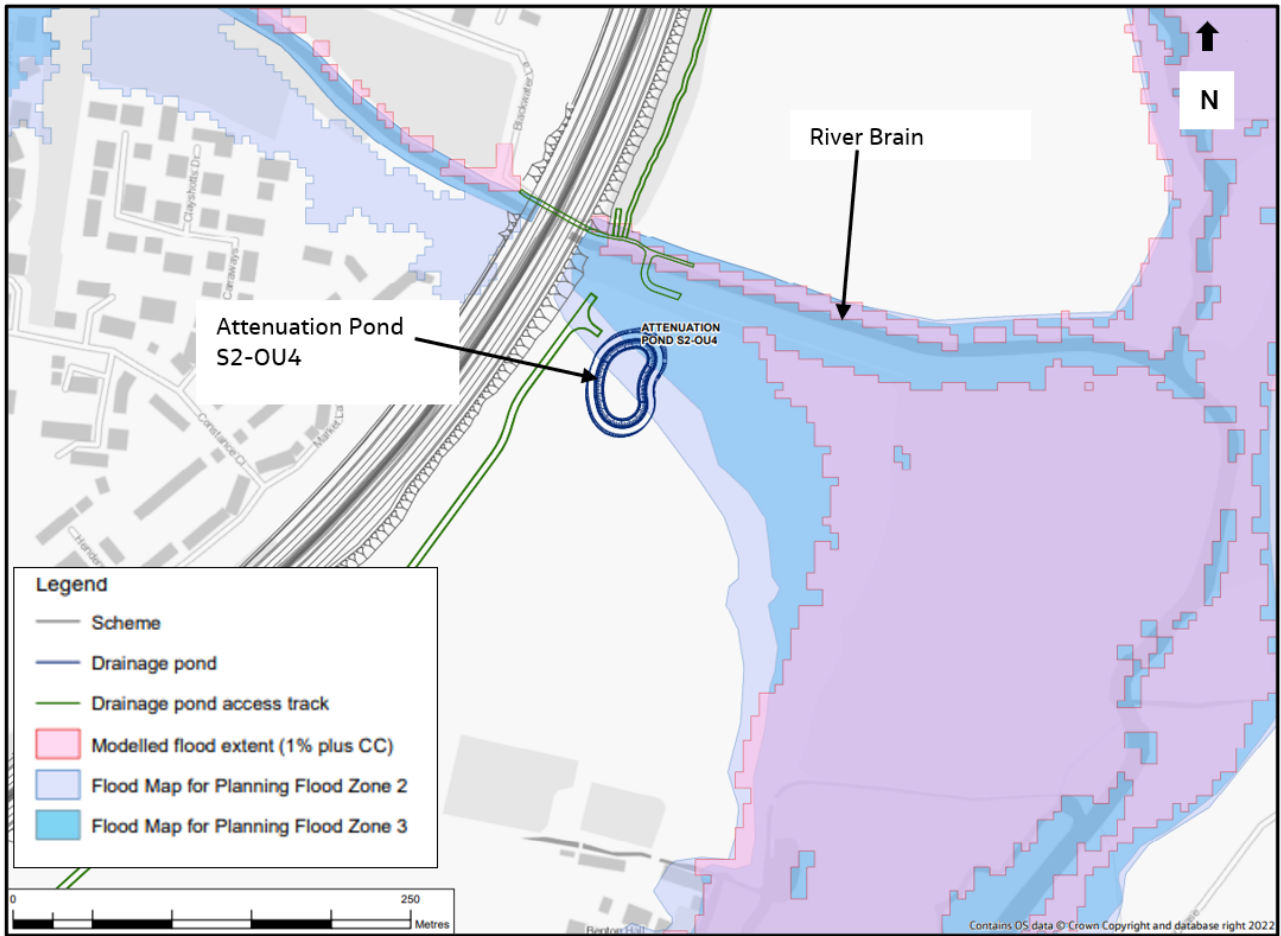


Plate 4.3 Proposed Attenuation Pond S2-OU19

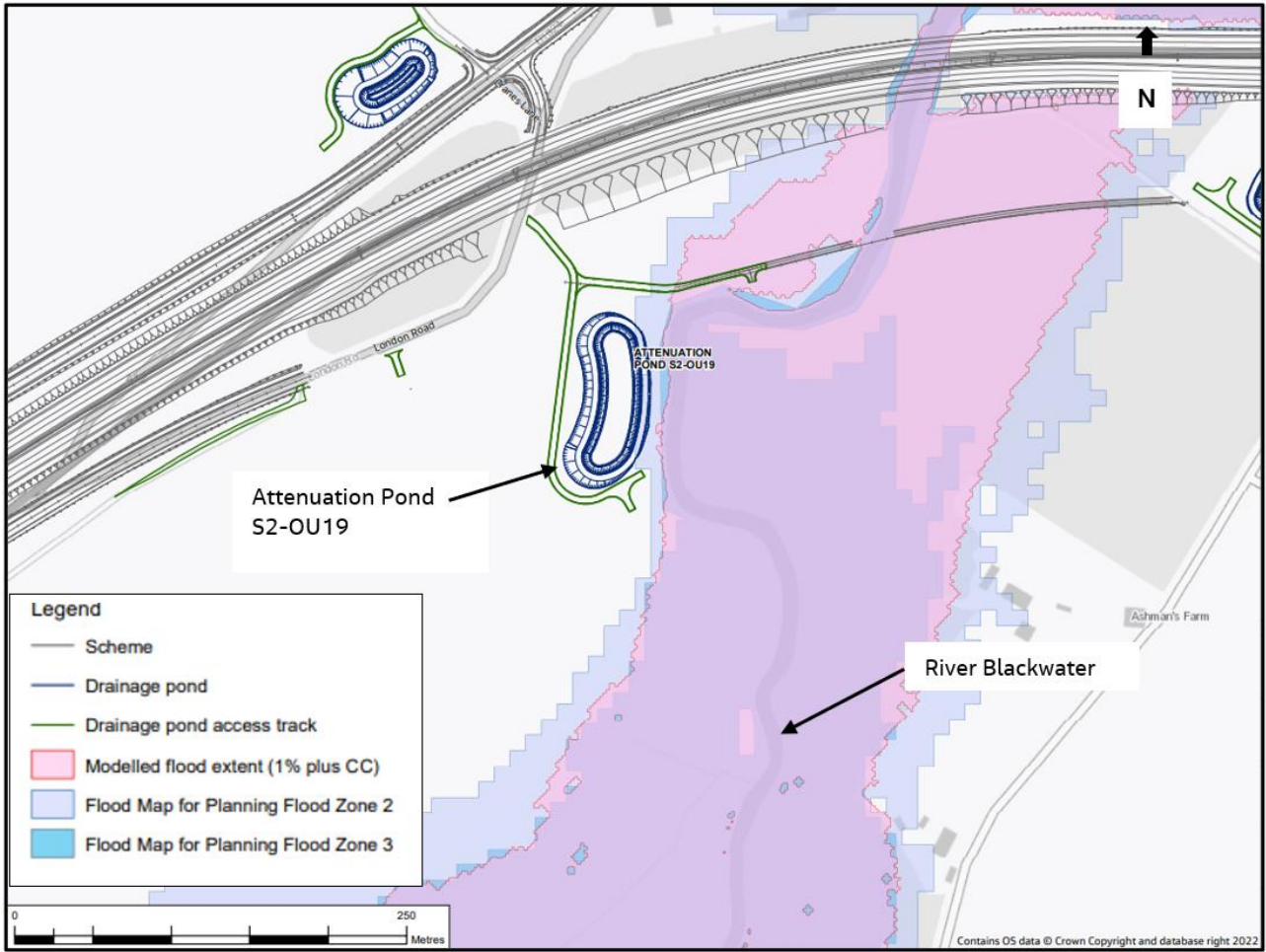
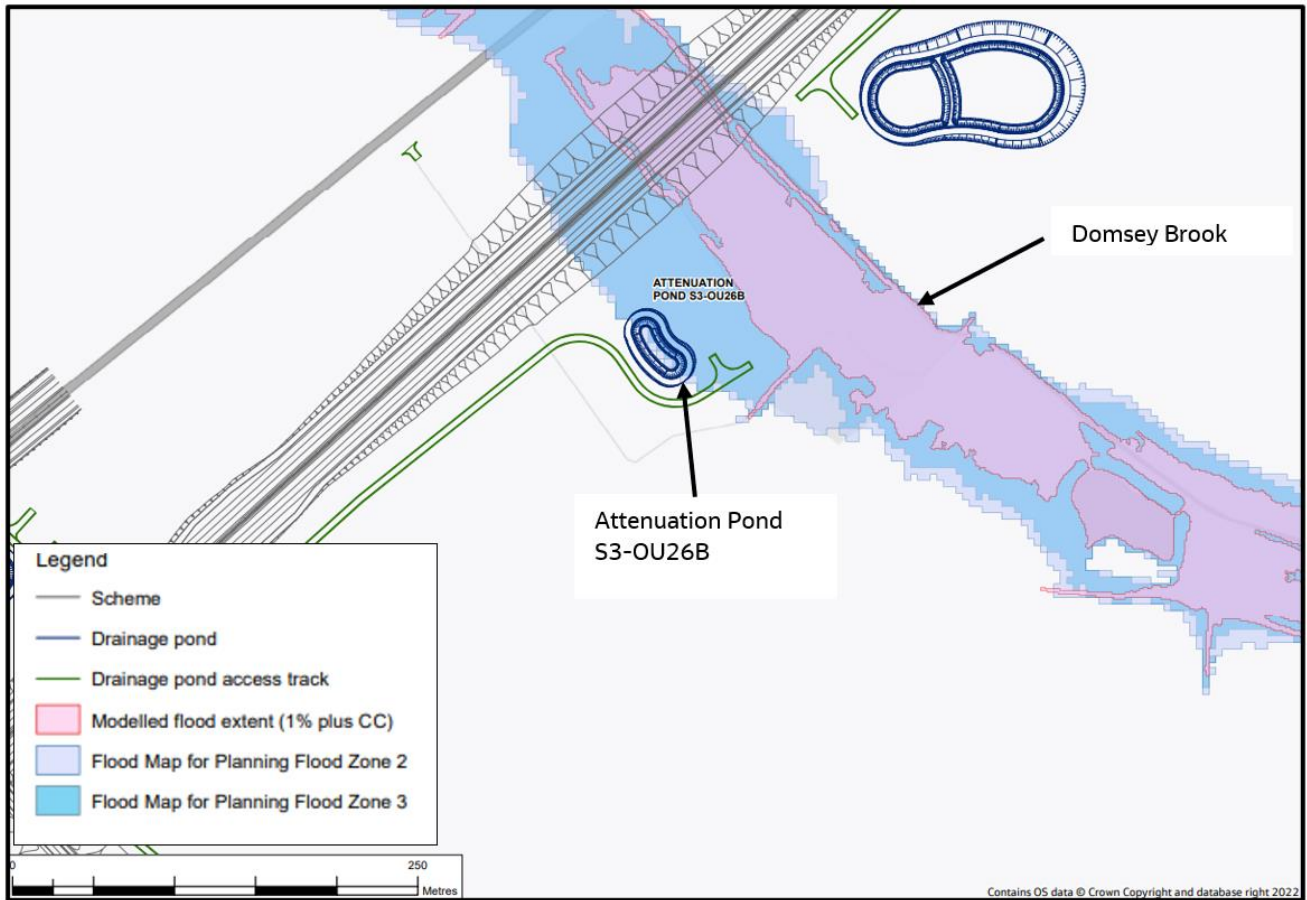


Plate 4.4 Proposed Attenuation Pond S3-OU26B



5 Conclusion

- 5.1.1 Four proposed drainage attenuation ponds have been identified as being at least partially located within the extent of the published FZ 2 or 3. Hydraulic modelling has been undertaken to support the FRA which has informed the location of the ponds. All attenuation ponds are located outside the modelled 1% (1 in 100) AEP plus climate change extent. The hydraulic modelling undertaken for the proposed scheme is considered to be more accurate than that to inform the published EA FZ. Based on the more accurate and detailed hydraulic modelling, the attenuation ponds will not remove existing floodplain and/or cause any displacement of floodwater or be at risk of flooding.
- 5.1.2 The current locations of attenuation ponds will therefore also maintain their desired functionality in order to minimise the flood risk from the proposed scheme and water quality impact of surface water runoff being discharged to the natural environment.