

Appendix F.2: Water Framework Directive Compliance Statement

East Reading Mass Rapid Transit Scheme

Water Framework Directive Compliance Statement

On behalf of:



Project Ref: 28791/4005 | Rev: C | Date: October 2018



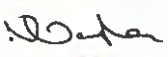
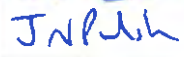
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Report Title: Water Framework Directive Compliance Statement

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1 Introduction

1.1 Background

- 1.1.1 Peter Brett Associates LLP (PBA) has been appointed by Reading Borough Council (RBC) Highways and Transport Department to produce a Water Framework Directive (WFD) Compliance Statement to support a planning application for the proposed East Reading Mass Rapid Transit (MRT) scheme.
- 1.1.2 The East MRT scheme is a segregated fast track public transport, pedestrian and cycle route that will support enhanced accessibility and continued sustainable growth in Reading, Wokingham Borough and the wider area. The purpose of the East MRT scheme is to improve access to and from Reading eastwards for buses, pedestrians and cyclists. This will help accommodate the forecast increase in travel demand along the heavily congested A4 corridor, which provides access to existing residential employment and educational sites, as well as Reading town centre, Reading railway station and substantial planned development in Wokingham Borough and Reading town centre.
- 1.1.3 The Proposed Development consists of construction of a segregated fast-track public transport, pedestrian and cycle bridge and viaduct, comprising concrete bridge structure supported by concrete columns, steel beams and reinforced soil embankment, together with new footway links and existing footway alterations, junction improvements and landscaping.
- 1.1.4 The East MRT is proposed to run adjacent to the proposed Thames Valley Park Park and Ride scheme (TVP P&R), providing a link to Napier Road, Reading town centre and the railway station. It will run to the south of the River Thames and crosses the River Kennet at Kennetmouth.
- 1.1.5 This WFD Compliance Statement will detail the potential impact that the Proposed Development and associated works could have on the watercourse's ability to meet WFD requirements.
- 1.1.6 Relevant reports and drawings are summarised within the document and, where appropriate, included in the Appendices.

1.2 The Water Framework Directive

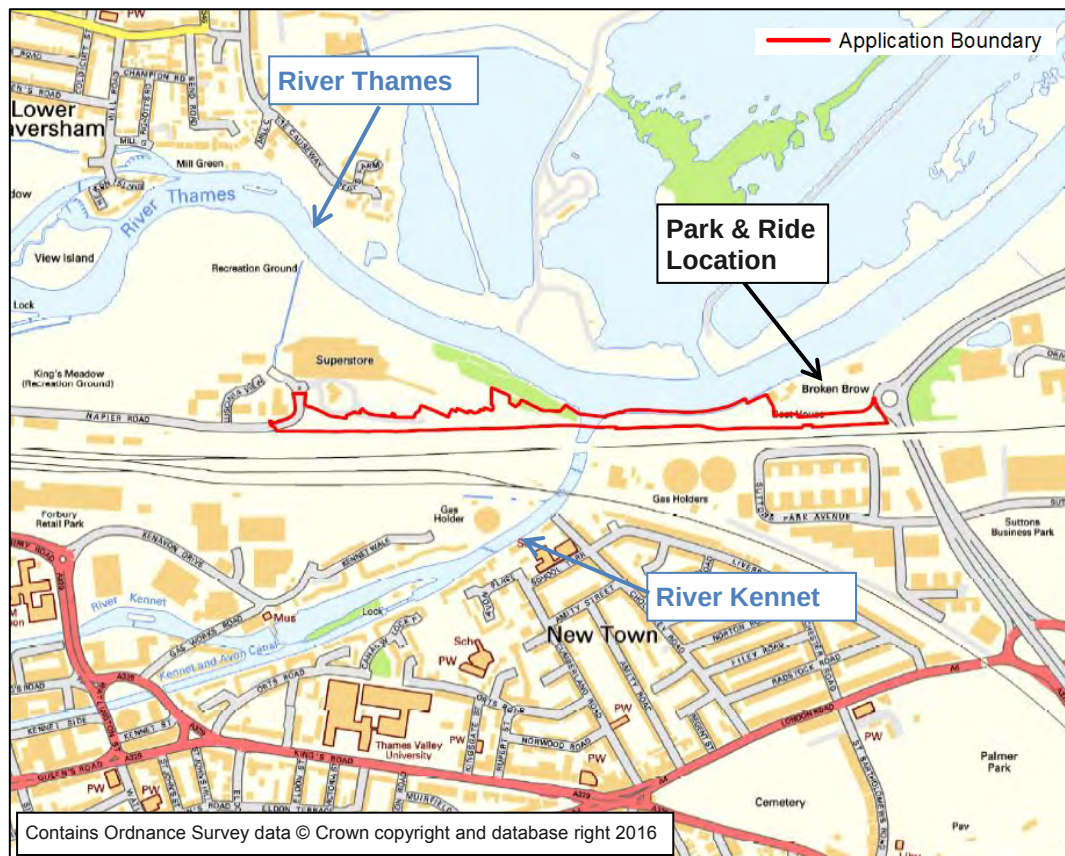
- 1.2.1 The WFD was transposed into law in England and Wales by the Water Environment Regulations 2003. These Regulations implement a holistic approach to the management, protection and monitoring of the water environment. The aim of the WFD is to prevent further deterioration in water resources (volume and quality); protect and enhance the status of aquatic ecosystems and associated wetlands; promote sustainable water consumption; and, contribute to mitigating the effects of floods and droughts.
- 1.2.2 The key objectives of the WFD are to prevent deterioration in the status of water bodies and aim to achieve good ecological and chemical status/potential (including quantitative status in groundwater bodies) by 2021. Water bodies must also comply with standards and objectives of Protected Areas (i.e. an area designated under another European Directive, such as a Special Area of Conservation or Special Protection Area), where these apply. In addition, discharges, emissions and losses of priority substances to surface water bodies must be progressively reduced and emissions of priority hazardous substances prevented. Finally, action must be taken to reverse any identified sustained upward trend in pollution concentrations in groundwater bodies.
- 1.2.3 The Thames River Basin Management Plan (RBMP, 2015) is the applicable management plan for the Application Site and has been used to assess the impacts of the proposals.

2 Scheme Overview

2.1 Site Description and Location

- 2.1.1 The proposed East MRT runs from Napier Road along a route to the immediate south of the Tesco Extra superstore and carpark (parallel with the railway line to the south), crossing the River Kennet at Kennetmouth, and continuing west along a corridor between the River Thames and the railway line to run adjacent to the TVP P&R (see **Figure 2-1**).
- 2.1.2 The proposed public transport route, cycleway and footway alignment provides a continuation of the existing Napier Road, and runs through land which is currently unused.
- 2.1.3 The proportion of the Application Site west of the River Kennet lies within the administrative boundary of the Borough of Reading, whereas the land east of the River Kennet lies within Wokingham Borough.

Figure 2-1: Application Site Location



2.2 Geology and Groundwater

- 2.2.1 According to the British Geological Society 'Geology of Britain Viewer', the Application Site is underlain by a bedrock of *Seaford Chalk Formation and Newhaven Chalk Formation*, and is overlain with superficial layers of *Alluvium – Clay, Silt, Sand and Gravel*.
- 2.2.2 Based on the Cranfield University online 'Soilscapes' website, the Application Site lies within Soilscapes 20, '*loamy and clayey floodplain soils with naturally high groundwater*'.

2.3 Surface Water Features

- 2.3.1 For the purpose of this study, the area of interest includes the WFD water body which runs through the Application Site, the downstream WFD water body, and the groundwater water body.
- 2.3.2 The Application Site is located at the confluence of the River Kennet with the River Thames. At this point, three WFD designated water bodies are present, which are listed below.
- 2.3.3 The following surface water features, three of which are WFD designated water bodies, are present in the vicinity of the Application Site:
- River Kennet – Kennet and Holy Brook WFD designated water body;
 - River Thames – Thames (Wallingford to Caversham) WFD designated water body;
 - River Thames – Thames (Reading to Cookham) WFD designated water body;
 - Caversham Lakes;
 - Sonning Eye gravel pit WFD designated lake; and
 - Berkshire Downs Chalk WFD designated groundwater body.

River Kennet

- 2.3.4 The River Kennet is a chalk stream and a major tributary of the River Thames. It rises in Marlborough and has its confluence with the River Thames at Reading. The Kennet has a catchment area of approximately 1,146km².
- 2.3.5 The River Kennet contains four WFD designated water bodies, from source to confluence. Of the four water bodies, the Kennet and Holy Brook, designated between Aldermaston (SU587641) and the River Thames confluence at Caversham (SU730738), is the most relevant for this Proposed Development. The designated reach is approximately 29.8km long and drains an area of approximately 48.9km².
- 2.3.6 The Application Site is located immediately west and east of Kennetmouth, the confluence of the River Kennet with the River Thames. At this point, three WFD designated river water bodies are present; one reach on the River Kennet, and two on the River Thames.

River Thames

- 2.3.7 The River Thames is the longest river in England, rising in Cirencester and flowing through London. It covers an area of approximately 9,938km² up to its tidal limit at Teddington.
- 2.3.8 The Application Site is bounded to the north by the River Thames, which, at this location, is split into two WFD designated reaches. The western half of the Application Site is situated within the Thames (Wallingford to Caversham) WFD designated water body, and the eastern half is situated within the downstream Thames (Reading to Cookham) WFD designated water body.
- 2.3.9 The Thames (Wallingford to Caversham) water body is designated between Shillingford (SU578932) and Caversham (SU730738), at the confluence of the River Thames and River Kennet. The designated reach is approximately 39.4km long and drains an area of approximately 186.5km².

- 2.3.10 The Thames (Reading to Cookham) water body is designated between Caversham (SU730738) and east of Cookham (SU908850). The designated reach is approximately 38.3km long and drains an area of approximately 238.6km².

Caversham Lakes

- 2.3.11 Caversham Lakes are located approximately 230m north of the Application Site. The lakes are formed from former gravel pits, which have since been infilled. The lakes are currently used for a number of leisure activities, including rowing, sailing, water skiing, angling and boating. The Lakes are not WFD designated water bodies, however they are hydraulically connected to Sonning Eye gravel pit and the River Thames.

Sonning Eye Gravel Pit

- 2.3.12 Sonning Eye gravel pit is the eastern most section of the Caversham Lakes, and is located approximately 1.8km north east of the Application Site (SU745753). It is a WFD designated water body with a surface area of approximately 0.6km².

Berkshire Downs Chalk

- 2.3.13 The Berkshire Downs Chalk is the WFD designated groundwater body that underlies the Application Site. It covers a large area of approximately 990.3km², including the majority of the River Kennet catchment area, between Marlborough, Swindon, Hungerford and Reading.

2.4 Proposed Development

- 2.4.1 The proposed development is described as follows.

“Construction of a segregated fast-track public transport, pedestrian and cycle bridge and viaduct, comprising concrete bridge structure supported by concrete columns, steel beams and reinforced soil embankment, together with new footway links and existing footway alterations, junction improvements and landscaping”

- 2.4.2 The proposed development comprises the following:

- creation of a new route for public transport only, including cycleway and footway between Napier Road and the A3290 at the Thames Valley Park approved Thames Valley Park and Ride;
- the erection of a new bridge over the River Kennet;
- formation of a new T-junction with Napier Road;
- connection to the approved Thames Valley Park & Ride;
- development of new and improved footpath links to Tesco and the towpath;
- associated infrastructure and landscaping;
- off-site ecological mitigation;
- provision of three new short stay visitor mooring platforms with associated riverside planting (marginal shelf);
- areas of marshy wetland and grasses beneath viaduct; and

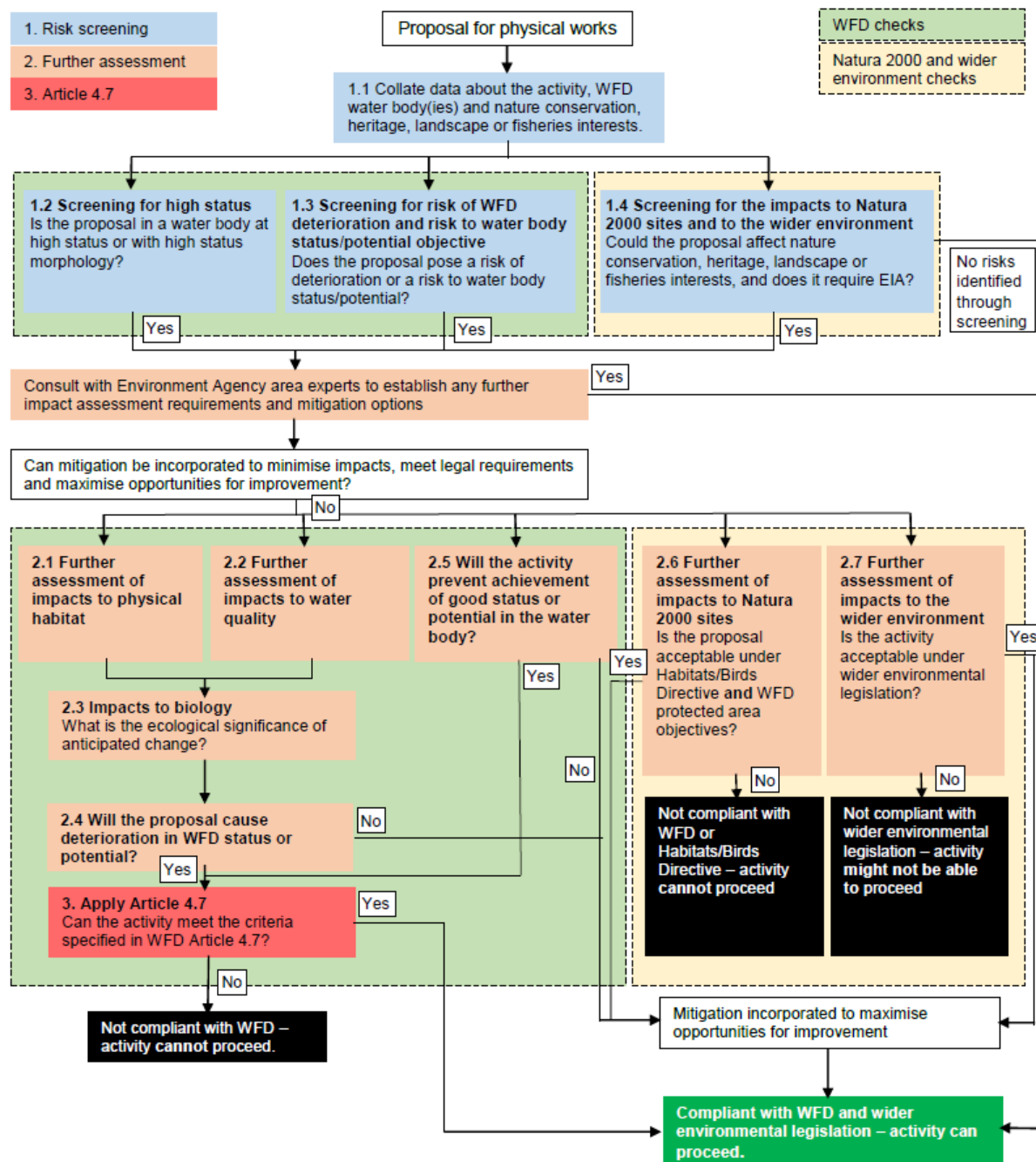
- relocation and repair of mosaic (and storyboards in public realm area).
- 2.4.3 The route extends from the A3290 and A4 (Thames Valley Business Park) along the southern bank of the River Thames and north of the Great Western Railway Line. The route crosses the mouth of the River Kennet and then travels along Napier Road into to Central Reading.
- 2.4.4 The proposed scheme comprises an approach public transport route, cycleway and footway off Napier Road, an approach embankment leading to the bridge with a 59m span. The section of carriageway to the west of the River Kennet will be constructed on a viaduct.

3 Screening Assessment

3.1 Methodology

3.1.1 The Environment Agency (EA) recommended methodology for WFD assessment, demonstrated in **Figure 3-1**, was followed and is detailed throughout **Section 3.3**.

Figure 3-1: EA WFD Methodology (2016) - sourced from EA Doc No 488_10¹

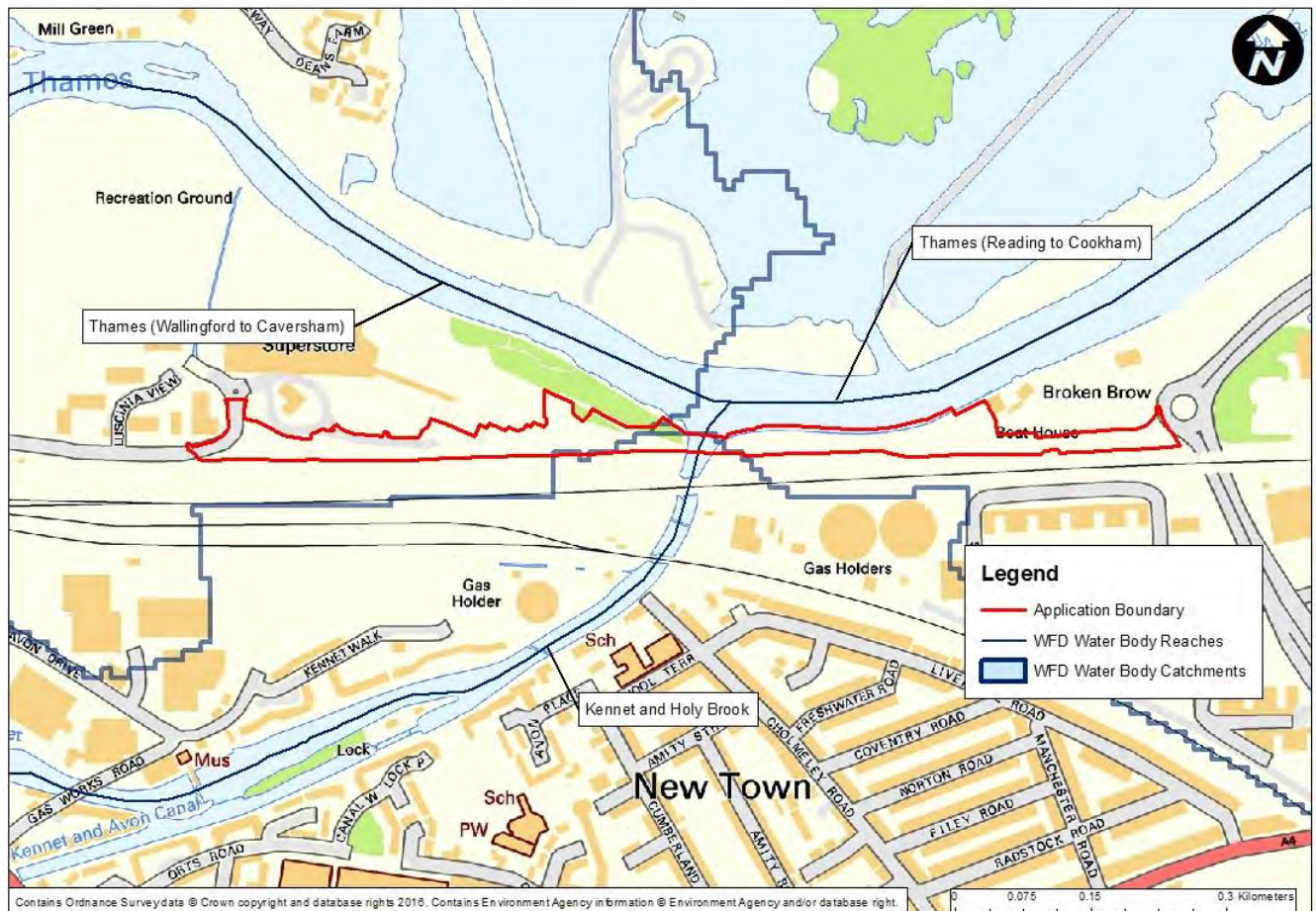


¹ Environment Agency, 2016, *Protecting and improving the water environment: Water Framework Directive compliance of physical works in rivers* (Doc No 488_10)

3.2 Waterbody Status and Catchment objectives

- 3.2.1 The Thames RBMP, December 2015, identifies that the Application Site lies within two management catchments, specifically the Thames and South Chilterns, and the Kennet and Tributaries. The proposed development is located within the Thames (Wallingford to Caversham), Kennet and Holy Brook, and Thames (Reading to Cookham) WFD designated water bodies as indicated in **Figure 3-2**.

Figure 3-2: Application Site Location in Comparison to WFD Water Bodies



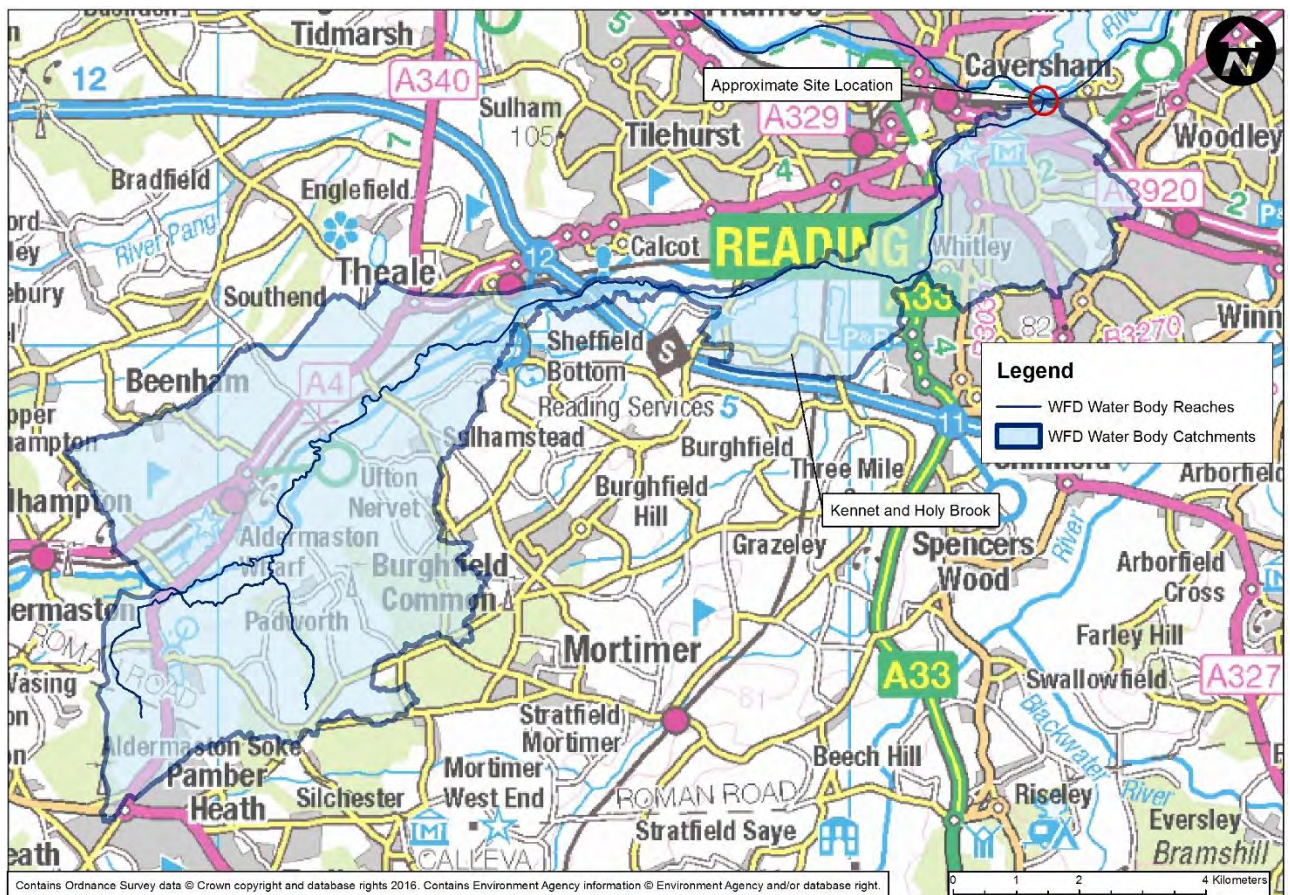
- 3.2.2 Since 2009 the EA has completed annual assessments of the water body with the view of updating the RBMP. The Cycle 2 data, accessed via the EA's Catchment Data Explorer (<http://environment.data.gov.uk/catchment-planning/>), therefore provides the best available information, which was used to inform this assessment.

WFD Water Body and Classifications: Kennet and Holy Brook

- 3.2.3 The Kennet and Holy Brook WFD water body (GB106039023140), located between Aldermaston and Caversham (see **Figure 3-3**), is a designated Heavily Modified Water Body (HMWB), which is currently (Cycle 2, 2016) classified as at overall moderate potential, driven by an ecological classification of moderate potential.
- 3.2.4 Ecologically, the failure is driven by a moderate potential for fish, moderate or less potential for mitigation measures assessment, and moderate potential for dissolved oxygen. The 'mitigation measures assessment' element demonstrates whether appropriate measures are in place in order to mitigate the impacts of any modification on ecology of the water body. A classification of moderate or less implies that there are not appropriate mitigation measures in place.

- 3.2.5 According to the EA Reasons for Not Achieving Good status (RNAG) the failure of fish and mitigation measures assessment are due to physical modification associated with recreation and agriculture and rural land management. No RNAG data is available for dissolved oxygen.
- 3.2.6 The chemical status of the water body was classified as at good status for Cycle 2 (2016).
- 3.2.7 The water body objective is to achieve good overall potential by 2027, and it is therefore not currently meeting its WFD objective.

Figure 3-3: Location of Kennet and Holy Brook WFD Water Body



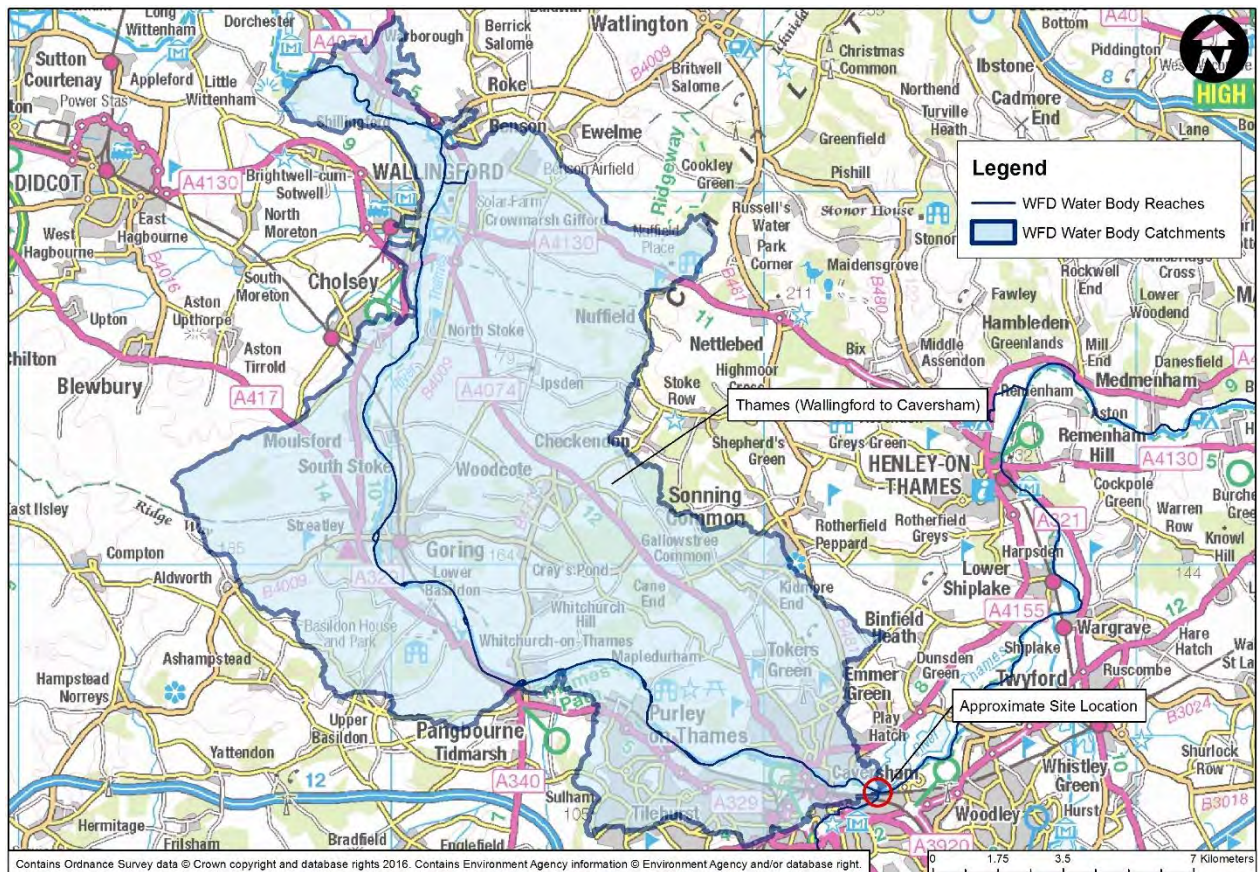
WFD Water Body and Classifications: Thames (Wallingford to Caversham)

- 3.2.8 The Thames (Wallingford to Caversham) WFD water body (GB106039030331), located between Shillingford and Caversham (see **Figure 3-4**), is a designated HMWB, which is currently (Cycle 2, 2016) classified as at overall moderate potential, driven by an ecological classification of moderate potential.
- 3.2.9 Ecologically, the failure is driven by a moderate potential for invertebrates, moderate or less potential for mitigation measures assessment, and moderate potential for phosphate.
- 3.2.10 According to RNAG data, the failure of phosphates is due to point source pollution in the form of discharge from sewage treatment works, and has been attributed to the water industry. The failure of invertebrates is noted to be due to invasive non-native species (INNS) in the form of the North American signal crayfish. The failure of mitigation measures assessment is noted to be due to physical modification due to recreation, navigation, and Local and Central Government.

3.2.11 The chemical status of the water body was classified as at good status for Cycle 2 (2016).

3.2.12 The water body objective is to achieve overall moderate potential by 2015, and it is therefore achieving its WFD objective.

Figure 3-4: Location of Thames (Wallingford to Caversham)



WFD Water Body and Classifications: Thames (Reading to Cookham)

3.2.13 The Thames (Reading to Cookham) WFD water body (GB106039023233), located between Caversham and east of Cookham, (see Figure 3-5), is a designated HMWB, which is currently (Cycle 2, 2016) classified as at overall moderate potential, driven by an ecological classification of moderate potential.

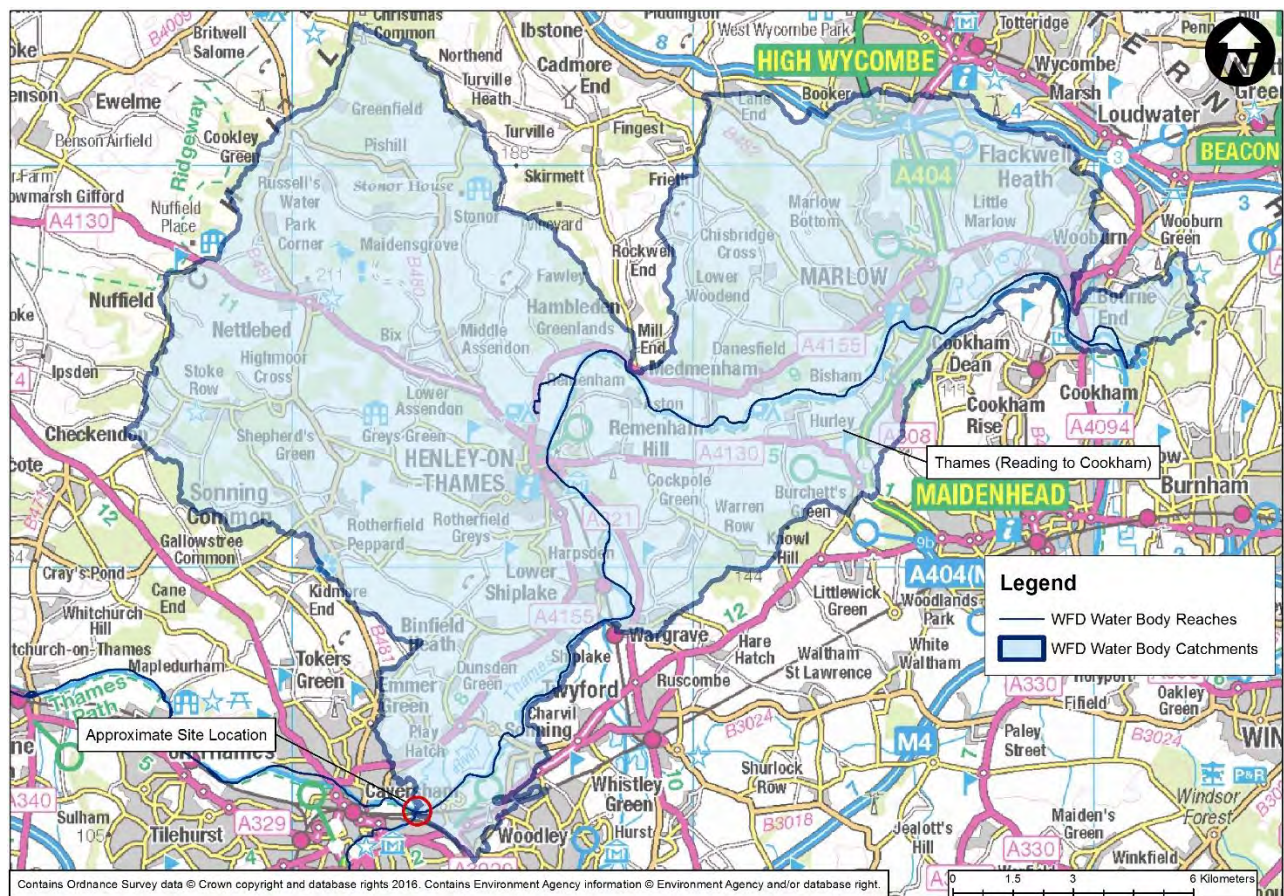
3.2.14 Ecologically, the failure is driven by the moderate potential of phosphate, moderate or less potential of mitigation measures assessment, and moderate potential of biological oxygen demand (BOD).

3.2.15 According to the EA RNAG data, the failure of phosphate is due to point source pollution due to discharge from sewage treatment works, and it attributed to the water industry. The moderate or less for mitigation measures assessment is due to physical modification for recreation and navigation. No RNAG data is available for BOD.

3.2.16 The chemical status of the water body was classified as at good status for Cycle 2 (2016).

3.2.17 The water body objective is to achieve overall moderate potential by 2015, and it is therefore achieving its WFD objective.

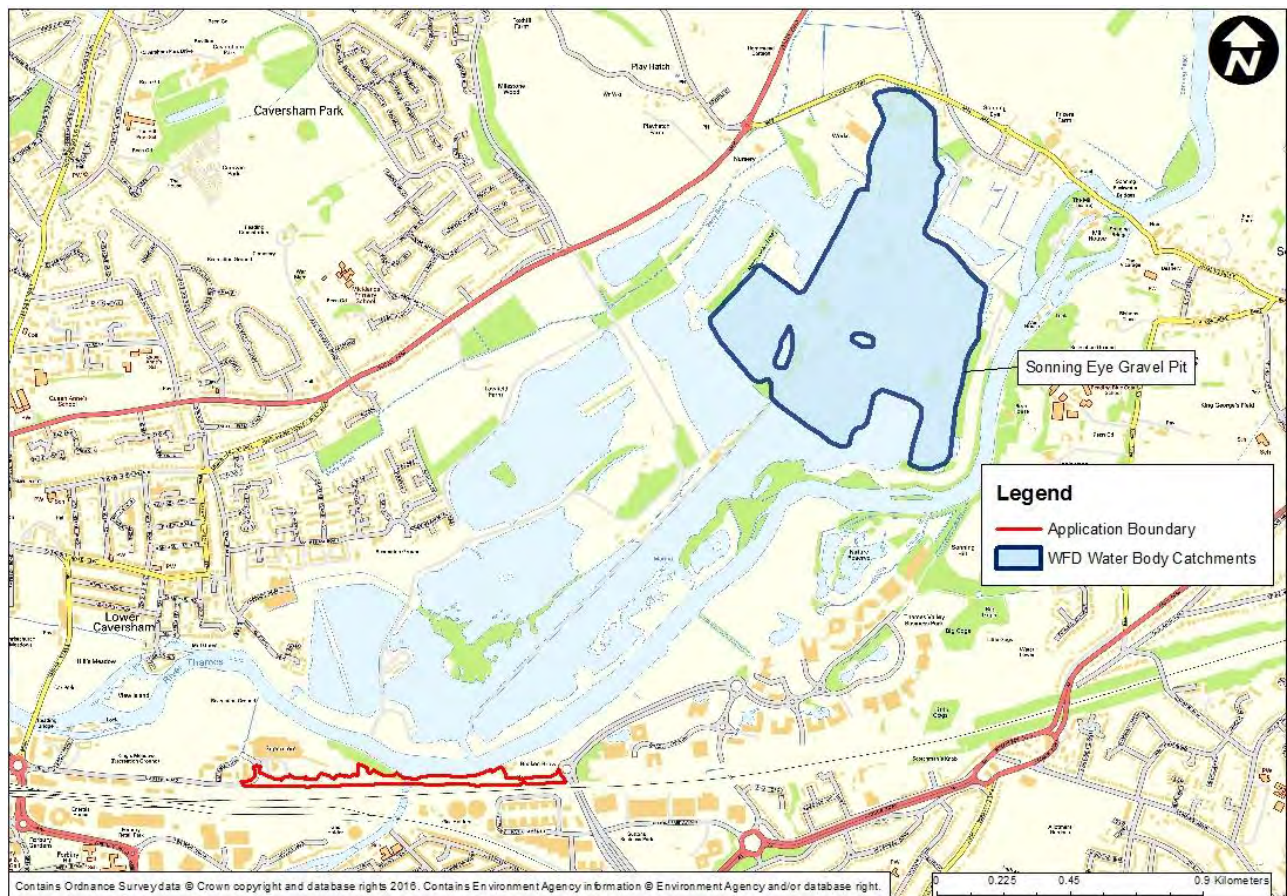
Figure 3-5: Location of Thames (Reading to Cookham) WFD Water Body



WFD Water Body and Classifications: Sonning Eye Gravel Pits

- 3.2.18 The Sonning Eye gravel pits WFD water body (GB30642393), located west of Sonning (see **Figure 3-6**), is an artificial lake which is currently (Cycle 2, 2016) classified as at overall good potential.
- 3.2.19 All ecological elements and sub-elements are classified as at good or high potential, with the exception of supporting elements (surface water), specifically expert judgement, an element used when there is limited or no monitoring data available. This is classified as at moderate potential, with the objective of achieving good potential by 2015.
- 3.2.20 In this instance, the failure of the element 'expert judgement' did not cause the overall failure of the water body due to the observed data, use of statistical analysis, and evidence of good potential collated for Cycle 1 (2009). This provided a stronger evidence base for assigning the Cycle 2 2016 overall potential than expert judgement. The expert judgement sub-element therefore provides an indication of the potential of the water body in Cycle 2 (2016), however, further evidence and observed data are required to alter the overall potential of the water body in Cycle 3.
- 3.2.21 The chemical status of the water body was classified as at good status for Cycle 2 (2016).
- 3.2.22 The water body objective is to achieve overall good potential by 2015, and it is therefore achieving its WFD objective.

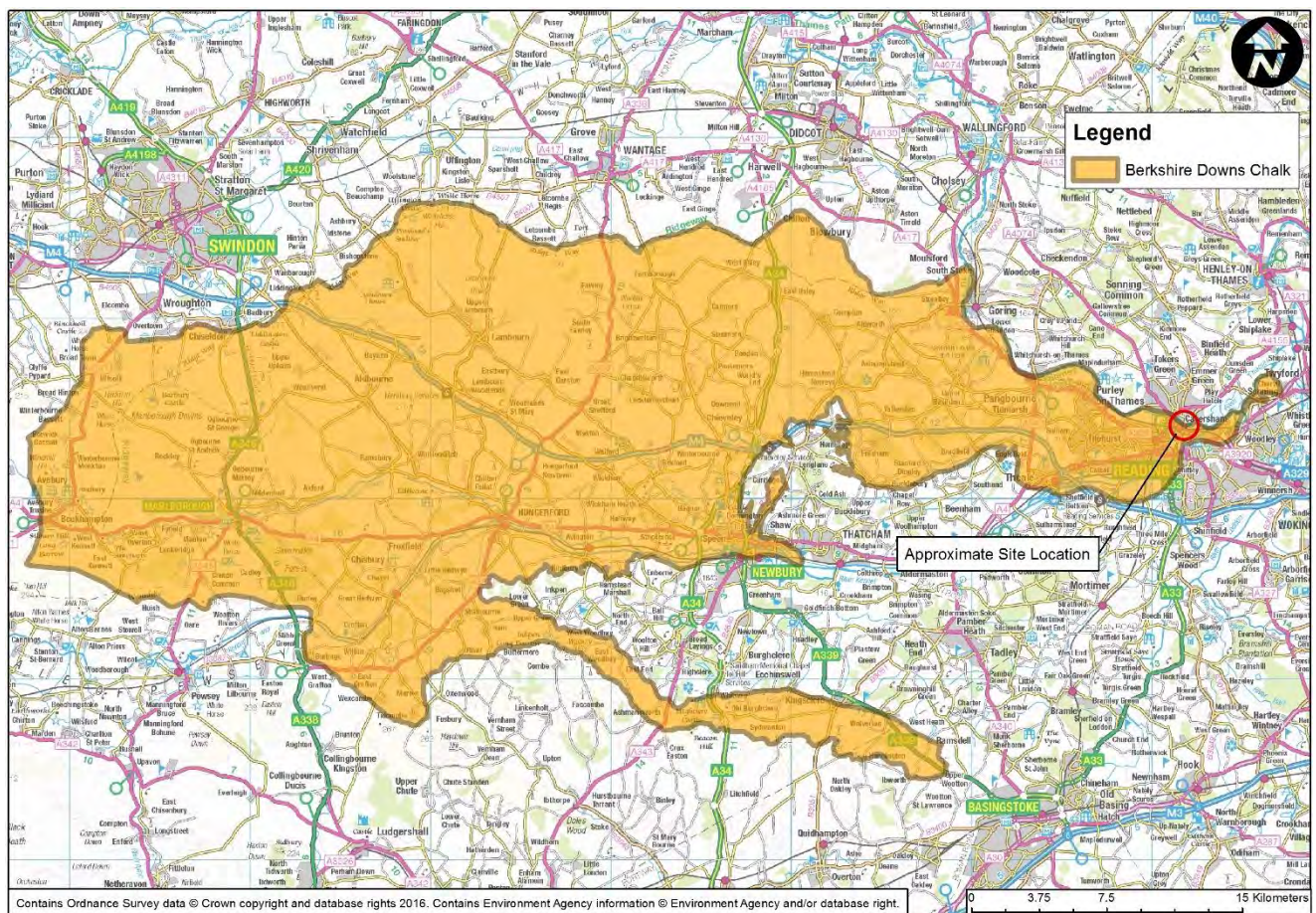
Figure 3-6: Location of Sonning Eye Gravel Pit WFD Water Body



WFD Groundwater Body and Classifications: Berkshire Downs Chalk

- 3.2.23 The Berkshire Downs Chalk WFD groundwater body (GB40601G600900), located between Marlborough and Reading (see **Figure 3-7**) is currently (Cycle 2, 2016) classified as at overall poor status.
- 3.2.24 The failure is driven by a number of failing elements, including quantitative dependent surface water body status, quantitative water balance, chemical drinking water protected area, and general chemical test.
- 3.2.25 According to the EA RNAG data, the failure of groundwater body is due to diffuse pollution and groundwater abstraction. The diffuse pollution is due to poor nutrient management from the agriculture and rural land management category, and is the reason for failure for the chemical drinking water protected area and general chemical test elements. Groundwater abstraction is attributed to the water industry, and is the reason for failure for the quantitative dependent surface water body status and quantitative water balance elements.
- 3.2.26 Although the groundwater body is currently classified as poor, it is noted that due to unfavourable balance of costs and benefits and disproportionate burdens, the overall water body objective is to achieve poor status by 2015. The groundwater body is therefore currently achieving its objectives under the WFD.

Figure 3-7: Location of Berkshire Downs Chalk WFD Groundwater Body



Thames Basin RBMP Objectives

3.2.27 The 2015 RBMP identifies a number of contributions made to achieve measures and identify future aims for the Kennet and tributaries management catchment, and the Thames and South Chilterns management catchment.

Kennet and Tributaries:

- Implementing habitat restoration and fish passage improvement schemes in the Middle Kennet and Lambourn to improve fish populations and improve hydromorphology by reducing the impact of impoundments;
- Reducing nitrate and phosphate pollution in the Middle Kennet and tributaries;
- Improve understanding of the relationship between water quality and algal growth, and implement a scheme to reduce the problems of algae and its impacts on plants;
- Improve the water quality of the Kennet and Avon Canal; and
- Improve treated waste water from small point source inputs.

Thames and South Chilterns:

- Habitat improvement projects creating a significant number and range of new habitats for fish and invertebrates;

- Reducing impacts of point source and diffuse source pollution;
- Increasing the amount of wetland areas across the Thames catchment; and
- Removal of fish barriers along the Thames river corridor.

3.2.28 It notes that the three main issues within the Kennet and tributaries management catchment are the interrelated impacts of nutrients, sediments and algal growth; channel modification and degradation of habitats; and pressures from abstraction within the catchment.

3.2.29 Within the Thames and South Chilterns management catchment, the three main issues are diffuse pollution from both rural and urban sources, point source pollution and habitat degradation.

3.3 Step 1: Screening Proposed Works

1.2 Screening for High Status

3.3.1 The proposed works are to be completed within the area designated as a combination of the Kennet and Holy Brook, Thames (Wallingford to Caversham), and the Thames (Reading to Cookham) WFD water bodies. The groundwater body, Berkshire Downs Chalk, which underlies the Application Site is currently at poor overall status.

3.3.2 These water bodies are currently at overall moderate potential, meaning the works will not pose a risk to an existing high status or potential, and is therefore compliant with risk assessment step 1.2 of the EA's process for ensuring physical works to water bodies meet legal requirements under WFD and under wider environmental legislation.

1.3 Screening for Risk of WFD Deterioration and Risk to Water Body Status/Potential Objective

3.3.3 The proposed works include:

- Vegetation clearance;
- Construction of a public transport route, cycleway and footway; and
- Construction of compensatory flood storage areas and moorings/marginal shelf.

3.3.4 The proposed development does not fall into the low risk activity register category 'Bridges and Crossings', as detailed by Table 1 of EA Doc No 488_10¹, due to the proposed works on the banks.

3.3.5 The proposed development was therefore screened against Table 2 of EA Doc No 488_10¹ to determine the risk category. Table 2 determined the works to be within risk category 1, the lowest risk category. The traffic light assigned to the works, at present, is amber, as a Flood Risk Activity Permit has not yet been submitted or approved. The risks of local and cumulative impacts will therefore need to be assessed for all relevant WFD water bodies within the vicinity of the Application Site.

3.3.6 The Application Site is currently vacant, disused and largely covered by dense vegetation including mature and semi-mature trees and shrub, and therefore the disruption of the land through works to clear vegetation and construct flood storage areas may result in the disturbance of pollutants or contaminants. The land use of the Application Site will be altered, which could introduce additional pollutants from urban sources.

- 3.3.7 The proposed works do not include works to the channel, and therefore the hydromorphology of the river will not be impacted, is not necessary to assess.
- 3.3.8 The failing elements will also be assessed to determine potential impacts of the proposed works upon the water body's ability to reach WFD objectives, or their potential to cause further deterioration, outlining appropriate mitigation measures where necessary. The below WFD components and elements have therefore been screened in for assessment and discussed in **Section 4:**
- Biological quality elements
 - Fish
 - Invertebrates
 - Physico-chemical quality elements
 - Phosphate
 - Chemical elements

1.4 Screening for Impacts to Natura 2000 Sites and to the Wider Environment

- 3.3.9 An assessment of existing Natura 2000 sites was completed. It was found that there are no existing Natura 2000 sites within a 1km buffer of the Application Site.
- 3.3.10 National and international designations, including Ramsar sites, Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI), and Biodiversity Action Plan (BAP) Habitats, were also assessed to determine whether wider environmental impacts would occur on significant locations. There are no nationally or internationally designated sites within a 1km buffer of the Application Site.
- 3.3.11 The lack of designated sites within the vicinity of the Application Site suggests that works will not impact upon Natura 2000 sites, nationally or internationally designated sites. The proposed works are therefore compliant with step 1.4 of the EA's process for ensuring physical works to water bodies are compliant with legal requirements under wider environmental legislation.

4 Step 2: Assessment of Potential Impacts

4.1 WFD Surface Water Bodies

- 4.1.1 The Application Site is located at the downstream extents of the Thames (Wallingford to Caversham) and Kennet and Holy Brook WFD water bodies, and the upstream extent of the Thames (Reading to Cookham) water body, and covers an area equivalent to 0.01% of the combined total catchment area. Any impacts that may occur will be negligible, due to the small size of the Application Site, the nature of the proposed works and the proposed land use of the Application Site. The Proposed Development will have negligible impacts upon the Caversham Lakes and Sonning Eye gravel pit due to their small scale and localised nature. Caversham Lakes and Sonning Eye gravel pit will therefore remain in a condition comparable to existing and therefore further assessment is not required.

Biological Quality Elements

- 4.1.2 Within the Kennet and Holy Brook WFD water body the biological quality element 'fish' is the only failing element. The RNAG have been stated within **Section 3.1** as physical modification due to and rural land management, specifically barriers causing ecological discontinuity, and land drainage features. These are suspected reasons for failure, and are therefore not confirmed.
- 4.1.3 The proposed development is not designed to alter the barriers currently in existence within the River Kennet.
- 4.1.4 Within the Thames (Wallingford to Caversham) WFD water body the biological quality element 'invertebrates' is the only failing element. The RNAG data states that INNS, specifically the North American signal crayfish is the suspected cause of failure. A significant improvement from bad potential to moderate potential between Cycle 1 (2009) and Cycle 2 (2016) has been recorded.
- 4.1.5 The Proposed Development will not introduce additional INNS to the water bodies, nor will it cause, enable or worsen the spread of existing INNS. The proposed development will therefore not cause detriment to the classification of invertebrates, nor will it prevent against it achieving its objectives under the WFD.
- 4.1.6 Within the Thames (Reading to Cookham) WFD water body there are no failing biological quality elements, and the water body is classified as at high potential for this element, particularly with regards to invertebrates. The EA's Catchment Data Explorer shows an improvement from good potential to high potential of invertebrates and the overall biological quality element between Cycle 1 and Cycle 2. It is currently exceeding the WFD objective for this element (good by 2015).
- 4.1.7 The proposed development is not expected to introduce significant sources of pollution or introduction/spread of INNS, which could compromise the current potential of the sub-element 'invertebrates'. It is also not anticipated that barriers will be introduced to the River Thames or River Kennet, therefore preventing against compromising the current potential of the sub-element 'fish'.
- 4.1.8 The Ecological Impact Assessment (EcIA), included in Chapter 13 of the Environmental Statement (PBA, 2018) includes a detailed assessment of the impact of the Proposed Development on the 'running water' habitat associated with the River Kennet and River Thames. This includes consideration associated with shading of the running water habitat on account of the proposed development. It concludes that 'no significant impacts' would be considered likely on this habitat.

- 4.1.9 It is therefore considered unlikely that shading due to the proposed development would have a detrimental impact upon the WFD classification of fish, or the general aquatic/riparian habitat, within the water bodies in the vicinity of the Proposed Development.

Physico-Chemical Quality Elements

- 4.1.10 Within the Kennet and Holy Brook WFD water body, dissolved oxygen is the only failing physico-chemical quality element, with the remainder meeting the WFD objectives for this element (good by 2015). RNAG data is not available for dissolved oxygen for this water body. Dissolved oxygen is largely controlled by organic matter, largely from diffuse pollution from rural/agricultural area and discharge from sewage treatment works. The proposed development marginally alters the land use of the Application Site from disused land to public transport route, cycleway and footway. This is localised change which will not significantly influence the content of the surface water runoff throughout the catchment of the water body. The proposed development will not increase the pressure on nearby sewage treatment works. It is therefore highly unlikely that the classification for dissolved oxygen will be altered, neither positively or negatively, as a result of the proposed development.
- 4.1.11 Within the Thames (Wallingford to Caversham) and Thames (Reading to Cookham) WFD water bodies the physico-chemical quality element 'phosphate' is noted to be moderate potential. RNAG data states the cause of failure is point source pollution due to discharge from sewage treatment works for both water bodies.
- 4.1.12 Within the Thames (Reading to Cookham) WFD water body, the physico-chemical quality BOD is currently (Cycle 2, 2016) classified as at moderate potential, however no RNAG data is available. BOD is influenced by organic matter largely from diffuse pollution from rural/agricultural area and discharge from sewage treatment works.
- 4.1.13 The proposed development does not increase existing pressure on sewage treatment works (STW) and therefore is not expected to increase sources of phosphate pollution of BOD within the water bodies from this pressure.
- 4.1.14 The proposed development marginally alters the land use of the Application Site from disused land to public transport route, cycleway and footway. This is localised change which will not significantly influence the content of the surface water runoff throughout the catchment of the water body, and therefore will not cause further detriment to the BOD classification of the Thames (Reading to Cookham) WFD water body.
- 4.1.15 The proposed development is therefore not expected to cause deterioration of the current potential of the physico-chemical quality element 'phosphates', nor compromise their ability to achieve good potential in the future, and is therefore considered compliant with WFD with regards to physico-chemical quality elements.

Chemical Elements

- 4.1.16 The Kennet and Holy Brook, Thames (Wallingford to Caversham), and Thames (Reading to Cookham) WFD designated water bodies are all currently classified as at good chemical status, with all assessed chemical sub-elements achieving good status, remaining consistent with the good chemical status achieved in 2009 (Cycle 1). The water bodies have therefore met their WFD objectives of good by 2015.
- 4.1.17 The proposed change in land use from disused land to public transport route, cycleway and footway use will result in additional pollutants associated with road-runoff, particularly silts and hydrocarbons, being present on site and potentially entering the watercourse.
- 4.1.18 The development proposal incorporates the SuDS 'treatment train' principles, whereby surface water runoff is allowed to pass through several different SuDS before reaching the receiving

watercourse or water bodies. This will effectively control and manage the potential additional pollutants which may be present as a result of the Proposed Development, and are designed to prevent the pollutants from entering the WFD designated water bodies. The details of this treatment train will be finalised at the detailed design stage.

- 4.1.19 The proposed development therefore incorporates sufficient mitigation measures to prevent against causing deterioration of the current chemical status of the Kennet and Holy Brook, Thames (Wallingford to Caversham), and Thames (Reading to Cookham) WFD designated water bodies, prevents against compromising the water bodies' ability to maintain good status in the future, and is therefore considered compliant with WFD with regards to chemical elements.

4.2 WFD Groundwater Water Body

- 4.2.1 The Application Site is underlain by the Berkshire Downs Chalk WFD designated groundwater body. The proposed development and associated works involve the installation of piled foundations. These foundations could provide a pathway through overlying Alluvium for migration of potential contaminants from the Made Ground to the Aquifer at depth. This has been identified at an early stage, and therefore appropriate mitigation has been embedded to the proposed works.
- 4.2.2 To minimise or prevent the potential for groundwater contamination, any piles installed as part of the Proposed Development will be designed and installed in accordance with the Environment Agency guidance for piling in potentially contaminated sites (EA, 2001² and 2002³). These mitigation measures will serve to prevent against potentially impacting upon the Berkshire Downs Chalk WFD designated groundwater body.
- 4.2.3 The proposed development therefore includes sufficient mitigation measures to prevent against causing deterioration of the current status and compromising the groundwater body's ability to achieve good status in the future, and is therefore considered compliant with WFD with regards to the quantitative and chemical elements.

4.3 Construction Phase

- 4.3.1 Construction activities will include the clearance of vegetation, topsoil stripping and stockpiling, establishment of compound areas, excavation and site levelling/re-profiling to create development platforms, preparation of public transport route, cycleway and footway, and construction of foundations.
- 4.3.2 Construction activities also have the potential to give rise to the contamination of surface water and groundwater resulting from spilled hydrocarbons/petrochemicals from construction plants and the mobilisation of silts and contaminants during soil stripping and earthworks operations, potentially leading to increased silt loading in watercourses.
- 4.3.3 Increased silt and mobilised soil matter within the River Kennet and River Thames watercourses could potentially impact the WFD designations.
- 4.3.4 In order to prevent against introducing increased silt and soil matter to the watercourses, best practice construction techniques will be used, and a Construction Environmental Management Plan (CEMP) will be implemented to control and mitigate impacts upon WFD designated water bodies. At this pre-planning stage of the Proposed Development, contractors have not been

² Environment Agency, 2001, Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention. National Groundwater & Contaminated Land Centre report: NC/99/73. Environment Agency, Solihull, West Midlands.

³ Environment Agency, 2002, Piling into Contaminated Sites, Environment Agency, Bristol.

engaged, however, it is expected that contractors will be engaged prior to seeking any Flood Risk Activity: Environmental Permits (FRAPs).

- 4.3.5 The CEMP will be informed by correspondence and advice received from the EA so that the works are being completed in accordance with their expectations, and to minimise and mitigate against causing detriment to the WFD potentials of the WFD designated water bodies during the construction phase of the proposed development.
- 4.3.6 The CEMP will be submitted together with the details of the proposals in a FRAP in advance of any works commencing, subject to and informed by Early Contractor Involvement (ECI) and discussions with the EA.
- 4.3.7 It has been identified that the proposed development and associated works will involve the installation of piled foundations. During construction, there is potential to introduce pollutants to the underlying groundwater if installed incorrectly and without appropriate mitigation measures in place.
- 4.3.8 Piles installation will be completed in accordance with the relevant EA guidance^{2,3} for piling in potentially contaminated sites, and in accordance with any further EA advice. These mitigation measures will serve to prevent against potentially impacting upon the Berkshire Downs Chalk WFD designated groundwater body.
- 4.3.9 It is known that piling can cause fish hearing loss to those located within 10m of piling activities. It is therefore proposed that the timing of piling works will aim to coincide with the least disturbing times of year where feasible and in discussion with the EA. This will be detailed within the CEMP in due course.
- 4.3.10 The impacts of the construction can therefore be mitigated against through the use of best practice techniques, a robust CEMP, and following relevant EA guidance for the works. Any residual impacts are expected to be short term and temporary in nature, limited to the construction phase, and are not anticipated to have any lasting impacts upon the surface water or groundwater WFD designated water bodies.

4.4 Cumulative Effects Assessment

- 4.4.1 **Sections 4.1, 4.2 and 4.3** demonstrate that the Proposed Development does not compromise the ability of the surface water or groundwater WFD designated water bodies to achieve WFD objectives or RBMP objectives, and are therefore compliant with WFD. Whilst the Proposed Development has been assessed in isolation, the combined impact of the Proposed Development and other nearby proposed developments must be assessed.
- 4.4.2 The recently approved TVP P&R, located approximately 500m east of the confluence of the River Kennet with the River Thames, will be utilised in conjunction with the proposed public transport route, cycleway and footway. The impacts of the East MRT scheme in combination with the TVP P&R facility will therefore be assessed.
- 4.4.3 The East MRT scheme will provide an additional route for the TVP P&R, increasing the connectivity of the facilities with a wider area of Reading and introduces a public transport connection where one does not currently exist. The post-completion impacts associated with the two schemes will therefore be due to increased urban runoff and subsequent pollution associated with these urban areas, including car parking and public transport routes (fuel spillages etc.). Without mitigation measures in place, there is the potential to be an increase in hydrocarbons associated with vehicle fuel entering the WFD designated water bodies.
- 4.4.4 The TVP P&R scheme was submitted to Wokingham Borough Council in June 2016 and approved in November 2016 (application number 161596 'Land to the West of Thames Valley Park Drive RG6 1PT'). Within the FRA submitted as part of the application, water quality

management was considered. Permeable paving was identified as the surface material for the parking areas, which provided sufficient mitigation against on-site pollution as part of the scheme, which was in line with recommendations within the SuDS Manual. For areas that were not to be served by permeable paving, it was recommended that proprietary treatment systems, such as oil interceptors and silt traps, were used to protect potential receptors of on-site discharge.

- 4.4.5 The TVP P&R scheme therefore provided sufficient mitigation measures to prevent against negatively impacting upon the potential of the receiving WFD designated water body.
- 4.4.6 Within this East MRT scheme, in accordance with SuDS principles, a treatment train, including oil interceptors, will be implemented to prevent against negative impacts on WFD designated water bodies in the vicinity of the Application Site, specifically in relation to the increase in urban area and therefore urban runoff.
- 4.4.7 The cumulative impacts of the two schemes are therefore efficiently managed within the two schemes. It is therefore not anticipated that the combined schemes compromise the ability of the surface water or groundwater WFD designated water bodies to achieve WFD objectives or RBMP objectives, and are therefore considered compliant with WFD

Delivery of GES/P Improvement Measures

4.5 Mooring Improvements and Marginal Shelf

- 4.5.1 Three timber mooring platforms will be provided as part of the proposed riverbank enhancements and marginal shelf landscaping improvements. These would be new river elements which will provide additional short stay visitor mooring facilities, which the EA have advised are lacking in the area.
- 4.5.2 PBA Drawing 28791/4001/013 and email correspondence with the EA dated March 2018 (both provided in **Appendix B** outline the concept design for proposed riverbank improvements measures proposed as part of the Proposed Development along the River Thames right (south) bank, downstream of Kennetmouth.
- 4.5.3 Based upon available guidance for mooring design and safety/access considerations, three moorings of 2x10m will be provided, the design of which will be finalised with input from the EA. In the locations of the mooring platforms, it is possible that the retaining wall can be reduced in height and buried, which would provide a gradual landscaped slope between the bankside plating and existing footpath. Using willow spilling (or similar) in this area to form a higher level tier/platform allows for a clear distinction from the lower level planting.
- 4.5.4 The leading edge of the marginal planting area is currently proposed to be formed using 3 rock rolls, placed onto the river bed and staked to create a structure that defines the edge and protects the marginal planting from the river flow.
- 4.5.5 An open water pool is proposed, which aims to provide additional variety to the habitat that is being created. The proposals, at this stage, are conceptual, and will be finalised through further correspondence with the EA. The open water pool is currently defined by using a single rock roll placed onto the bed to protect the area from the majority of river flow/wash and partially backfilled to provide the opportunity for submerged planting to establish.
- 4.5.6 It is the intention that the existing water depth in this location is retained, and could further enhance the pool by placing stone and gravel to form shoals. The shallow area which has a water depth of up to 100mm surrounding the open water pool feature would be complemented with submerged marginal planting.

- 4.5.7 The areas between the mooring platforms and open water feature would be kept at no more than 100mm above the standard water level with the leading edge formed using the stacked rock roll detail as described above for the mooring area. Retaining the existing structure allows the utilisation of the full 2m width at approximately 100mm above standard water level for marginal planting. This area can undulate and create local high and low spots to create some variety and the stacked rock roll could be substituted for a single unit to allow water to encroach into some of the areas. This would be informed through correspondence with the EA.
- 4.5.8 The EA have confirmed that such measures are contingent on the undertaking of repair works to restore the existing moorings at Kennetmouth to full functionality of existing facilities (a section of the existing river wall in this location has partially failed).
- 4.5.9 The existing moorings between Kennetmouth and the proposed new riverbank works are on land in 3rd party ownership (WBC and Reading University). Separately, and in parallel to this planning application, it is proposed that these existing moorings be reinstated to their full functionality by the riparian owner, in liaison and with the support of RBC. This will facilitate the issue of the future Flood Risk Activity Permit (FRAP) and Accommodation Licence required to deliver the new short stay visitor moorings and marginal shelf as stipulated by the EA.
- 4.5.10 Riverside, native, marginal planting will be planted along the newly created marginal shelf area at the edge of the River Thames, associated with the new mooring platforms for a length of 100m and a nominal width of 2m throughout, as agreed with the EA. The 2m width has been selected as 1.5m may be too narrow for tangible enhancement and 2.5m may not be considered acceptable due to navigation requirements. The variability of width will likely be finalised at detailed design stage. The existing concrete retaining wall is kept throughout with the proposed enhancements immediately in front which provide native riparian habitat for the varying levels of water at the river margin. Where possible, sections of the existing wall will be reduced in height and buried to create a more naturalistic bank profile.
- 4.5.11 The habitat creation through implementation of the marginal shelf area and native species planting would serve to provide localised improvements to the riverbank and the habitat available to, for example, some macrophyte and invertebrate species. This could serve to enhance the local ecological potential of the River Thames.

4.6 Assessment of Compliance with the WFD Objectives

- 4.6.1 The above summarises the proposal and the associated mitigation measures, both embedded and additional, which have been included within the Proposed Development. This has allowed the assessment of whether the Proposed Development is compliant with the WFD, and contributes to the delivery of the WFD objectives.
- 4.6.2 The above details demonstrate that the proposed works are not expected to have a detrimental impact on the objectives of the WFD, and are therefore considered compliant with the WFD.

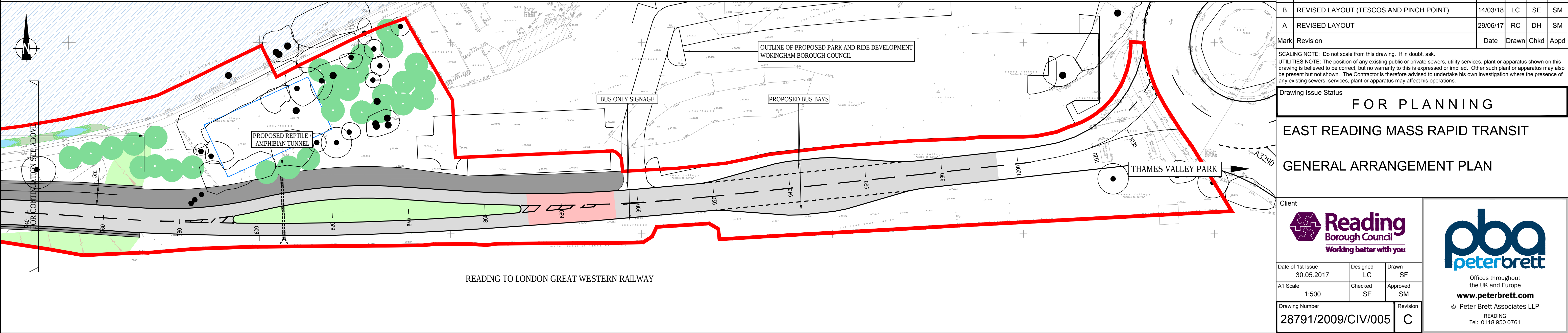
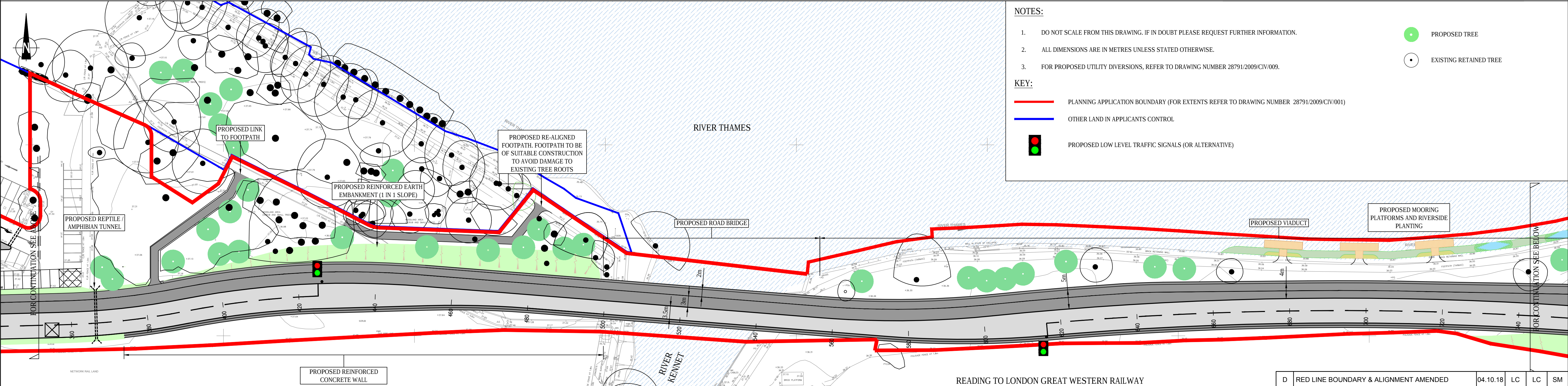
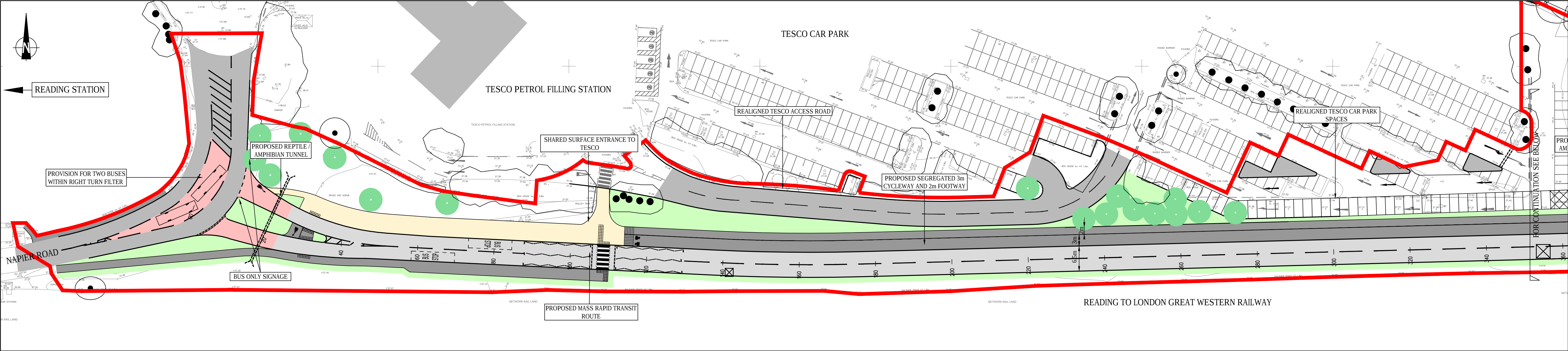
5 Summary and Conclusions

- 5.1.1 This Water Framework Directive (WFD) Compliance Statement has been prepared by Peter Brett Associates LLP (PBA) to support a planning application for the proposed East Reading Mass Rapid Transit (MRT) scheme.
- 5.1.2 The works to be completed within the vicinity of the WFD water bodies within the Application Site, specifically the Kennet and Holy Brook, Thames (Wallingford to Caversham), and Thames (Reading to Cookham), which could potentially impact the Berkshire Downs Chalk groundwater body, have been assessed within this WFD Compliance Statement.
- 5.1.3 It has demonstrated that the proposed construction of a public transport route, cycleway and footway, connecting the land east and west of the Kennetmouth to connect to the approved Thames Valley Park Park and Ride (TVP P&R), will not have significant long term impacts on the water quality within any of the aforementioned WFD water bodies.
- 5.1.4 The proposals do not result in a significant change away from baseline conditions, and, as demonstrated, are not expected to result in deterioration of the current overall moderate WFD potential of the three river water body reaches, the overall good potential of the Sonning Eye gravel pit water body, or the overall poor status of the Berkshire Downs Chalk WFD groundwater body. Habitat creation through implementation of marginal shelf and native species planting serve to provide localised ecological improvements.
- 5.1.5 The temporary impacts during the construction phase will be minimised through the adoption and best practice techniques and the implementation of a robust Construction Environmental Management Plan (CEMP). This will be informed by discussions and advice received from the Environment Agency (EA). Guidance for piling in potentially contaminated land, as set out by the EA, will be adhered to in order to prevent against contamination of groundwater.
- 5.1.6 The works are not anticipated to affect the ability for the key actions identified in the River Basin Management Plan to be implemented for the catchment.
- 5.1.7 As such, the works are compliant with the WFD and, in combination with the appropriate mitigation measures, are not expected to prevent the water bodies from achieving good ecological potential in the future.

Appendix A Proposal Information

Proposal drawings for East Reading Mass Rapid Transit, completed by PBA:

- 28791/2009/CIV/005 Rev C - General Arrangement Plan
- 28791/2009/CIV/008 - Proposed Surface Water Drainage Strategy



NOTES:

- DO NOT SCALE FROM THIS DRAWING. IF IN DOUBT PLEASE REQUEST FURTHER INFORMATION.
- ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.
- FOR PROPOSED UTILITY DIVERSIONS, REFER TO DRAWING NUMBER 28791/2009/CIV/009.

KEY:

- PLANNING APPLICATION BOUNDARY (FOR EXTENTS REFER TO DRAWING NUMBER 28791/2009/CIV/001)
- OTHER LAND IN APPLICANTS CONTROL
- PROPOSED LOW LEVEL TRAFFIC SIGNALS (OR ALTERNATIVE)

LEGEND:

- PROPOSED TREE
- EXISTING RETAINED TREE

D	RED LINE BOUNDARY & ALIGNMENT AMENDED	04.10.18	LC	LC	SM
C	AMENDMENT TO RED LINE BOUNDARY	25/05/18	DH	SM	SM
B	REVISED LAYOUT (TESCOS AND PINCH POINT)	14/03/18	LC	SE	SM
A	REVISED LAYOUT	29/06/17	RC	DH	SM
Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status

FOR PLANNING

EAST READING MASS RAPID TRANSIT

GENERAL ARRANGEMENT PLAN

Client

Reading Borough Council
Working better with you

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Offices throughout the UK and Europe
www.peterbrett.com
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READING
Tel: 0118 950 0761

Date of 1st Issue	Designed	Drawn
30.05.2017	LC	SF
A1 Scale	Checked	Approved
1:500	SE	SM
Drawing Number	Revision	
28791/2009/CIV/005	C	

Appendix B EA Correspondence

Email from Peter Brett Associates LLP to Environment Agency, dated 20th March 2018, *MRT East - Marginal Planting Shelf and Mooring Platforms* (RBC planning ref: 171108, EA ref: ENVPAC/WTHAMS/00515)

Letter from the Environment Agency dated 13th June 2018, ref: WA/2017/124095/03-L01

Drawing by Peter Brett Associates LLP, ref: 28791/4001/013 P01, *Proposed Mooring Platforms, Marginal Planting Shelf*

Natasha Vaughan

From: Scott Nicholson
Sent: 20 March 2018 17:58
To: Planning_THM@environment-agency.gov.uk
Cc: Richard Fisher; Robert Riddington; Sarah Matthews
Subject: MRT East - Marginal Planting Shelf and Mooring Platforms (RBC planning ref: 171108, EA ref: ENVPAC/WTHAMS/00515)

FAO: Matthew Wilcock - Planning Specialist, Thames Sustainable Places

Dear Matthew,

We are writing in response to the comments in the EA letter dated 6th February 2017, which provide information on the proposed mooring and bankside marginal planting detail forming part of the East Reading Mass Rapid Transit (MRT) Scheme. Since the original site meeting with the EA on the 4th January we have revisited the site to undertake additional inspection work and in-channel survey to inform the next stage of amendments to the proposal alongside your comments made on the 6th Feb.

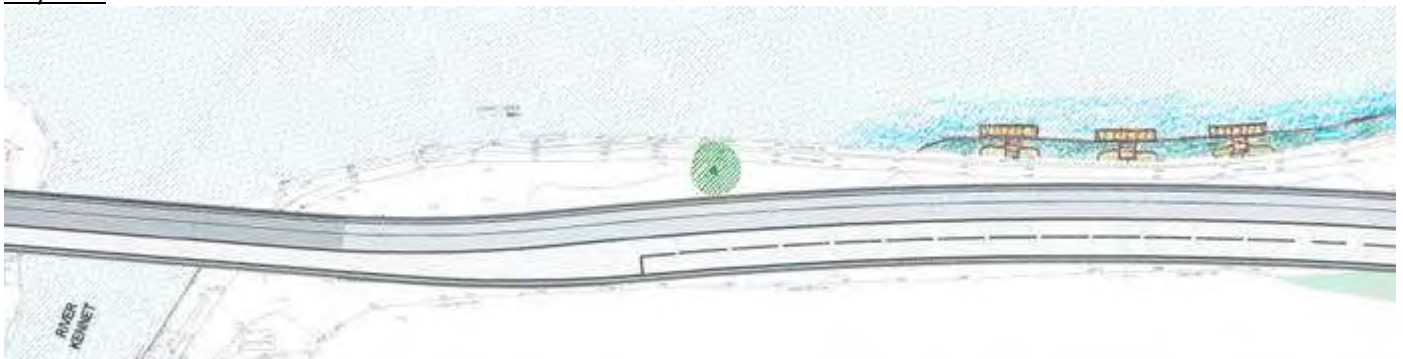
I appreciate that as these are not submitted planning documents the review is subject to the EA's cost recovery planning advice and we hope this can continue under the previous agreement to resolve the outstanding queries below (EA ref: ENVPAC/WTHAMS/00515).

We would like to emphasise that this is an opportunity for us to create a valuable ecological asset which also has the provision for temporary mooring which meets your expectations. If you have any comments/queries/recommendations can you call us directly so that we can, as efficiently as possible, make any necessary amendments or revisions to the planning documents?

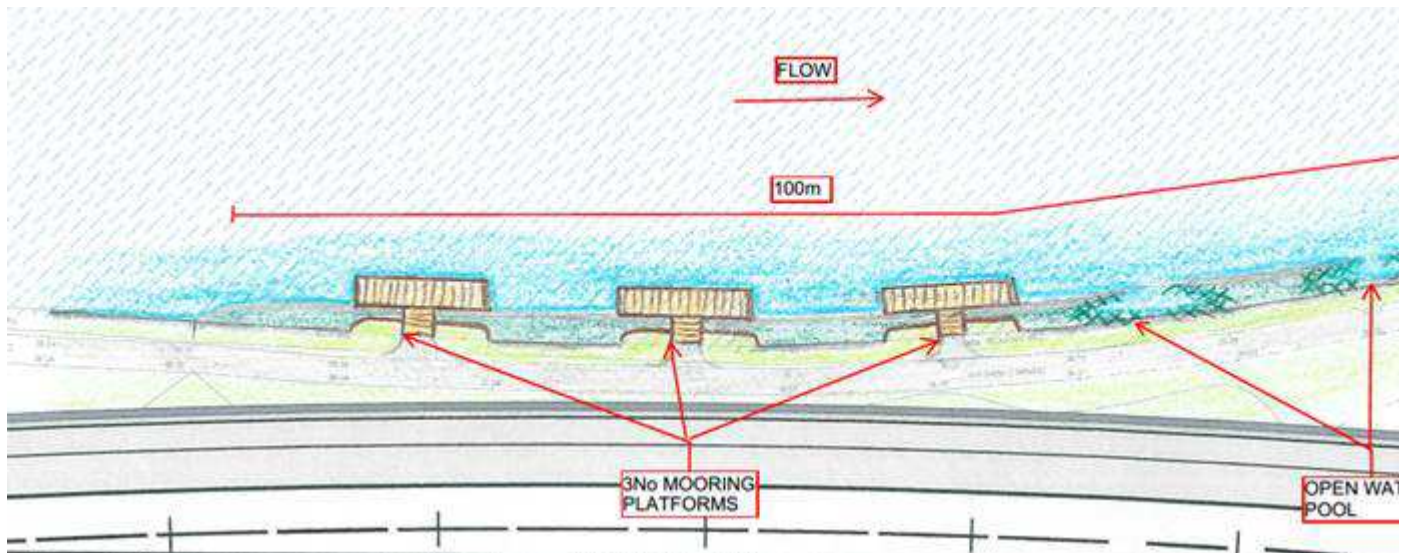
The sketches and comments below are a discussion aid and will be subject to detailed design. We would welcome your further comments.

Extent of Proposed Improvement Measures

Key Plan



Plan



The EA have expressed a preference for the extent of the marginal shelf to be increased and to vary in width along its length. We have extended the marginal shelf 30m further east to achieve a total extent of 100m, as requested by the EA, with a nominal width of 2m throughout. This 2m width has been selected between the 1.5m which may have been too narrow for a tangible enhancement, and 2.5m which was considered to be not acceptable due to navigation requirements. It is likely that this variability can be addressed at detailed design stage which can be informed bathymetric survey and take advantage of the variability of the existing bed profile.

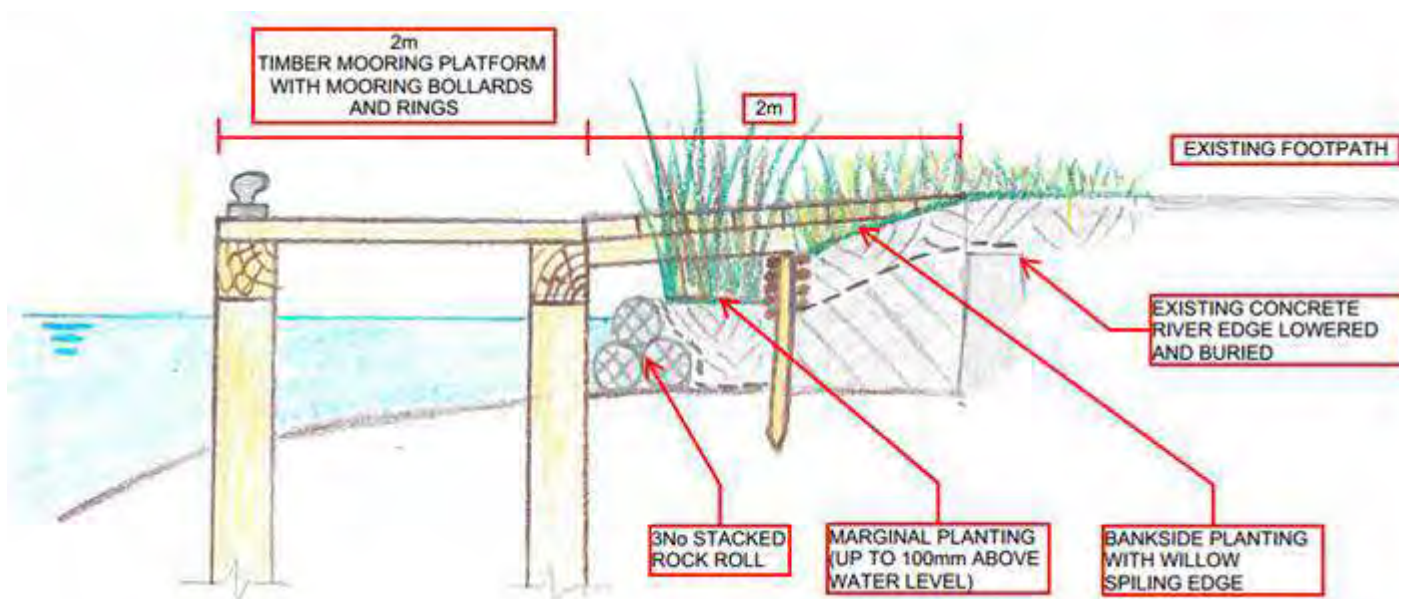
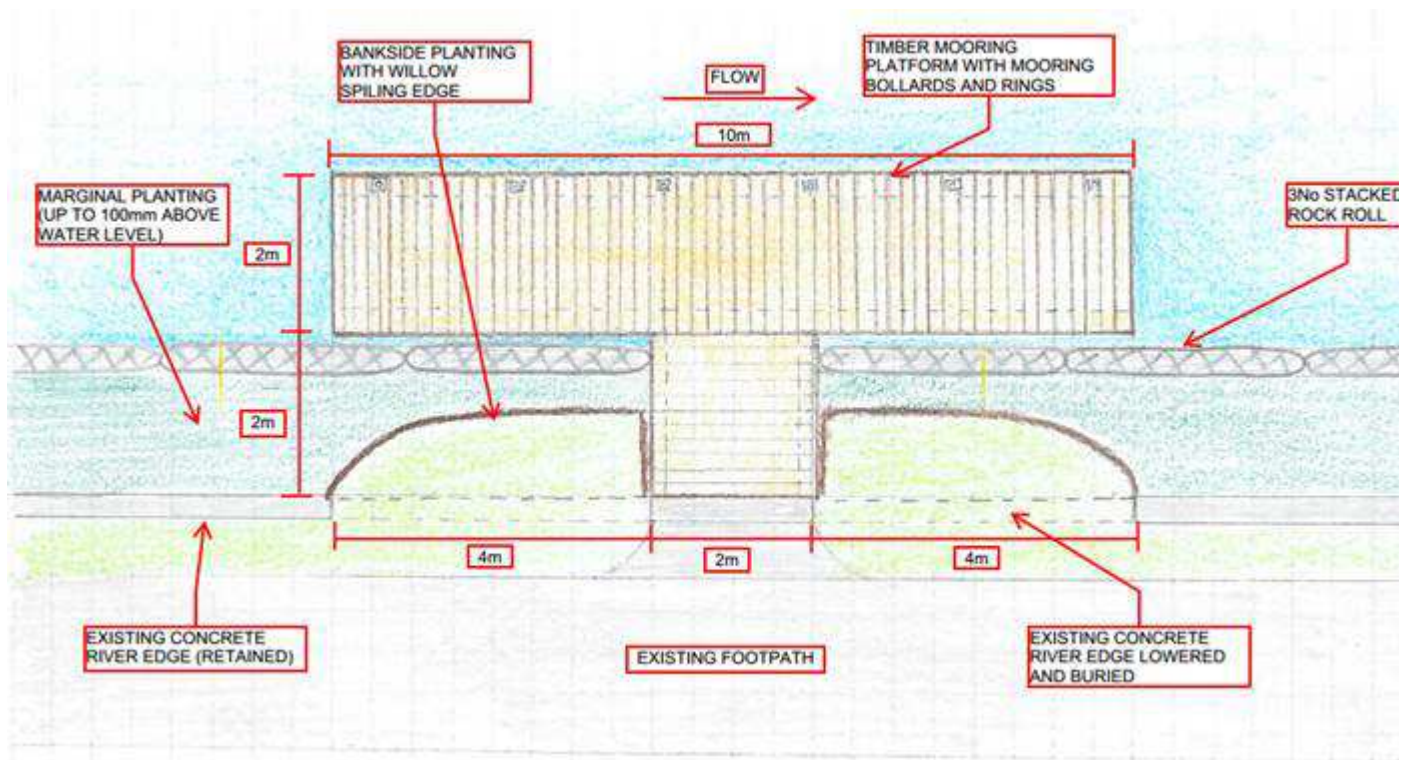
In reality, the selected method of defining the leading edge with rock rolls allows for flexibility in this dimension to create a more organic/less-linear shape. However, we would require clearer boundaries to achieve maximise the space for native marginal planting of local provenance to enhance the riparian habitat whilst not encroaching too far.

Based on the in-channel survey undertaken by PBA, we consider that the defined extent best utilises the existing shallow area of water which is ~400mm deep.

In addition, following our in-channel inspection we believe that the existing river edge in this location is formed using a concrete mass retaining structure (potentially reinforced), rather than the steel sheet pile and concrete capping that we originally expected.

In this area, a Thames Water foul rising main is located beneath the footpath. Our proposals need to consider the potential impact to the rising main during construction and permanently. As such we have developed the options below which either retains the existing retaining structure or reduces the height of the structure and bury the remaining section of the wall. This approach minimises the impact to the rising main and maximises the effective width of the marginal planting shelf.

Mooring Platforms

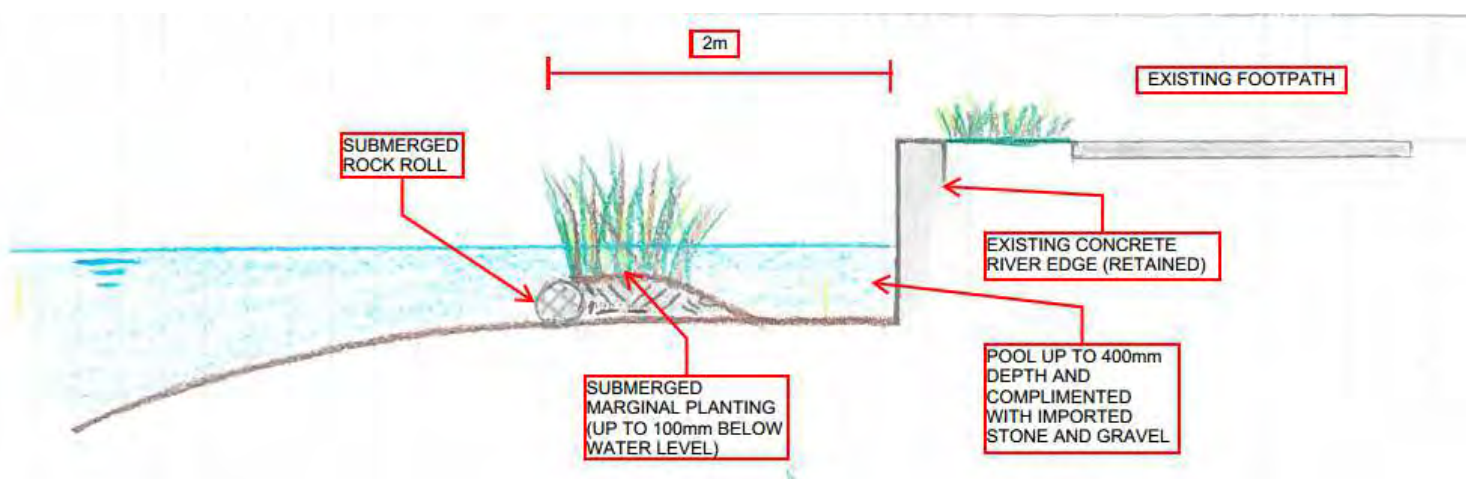
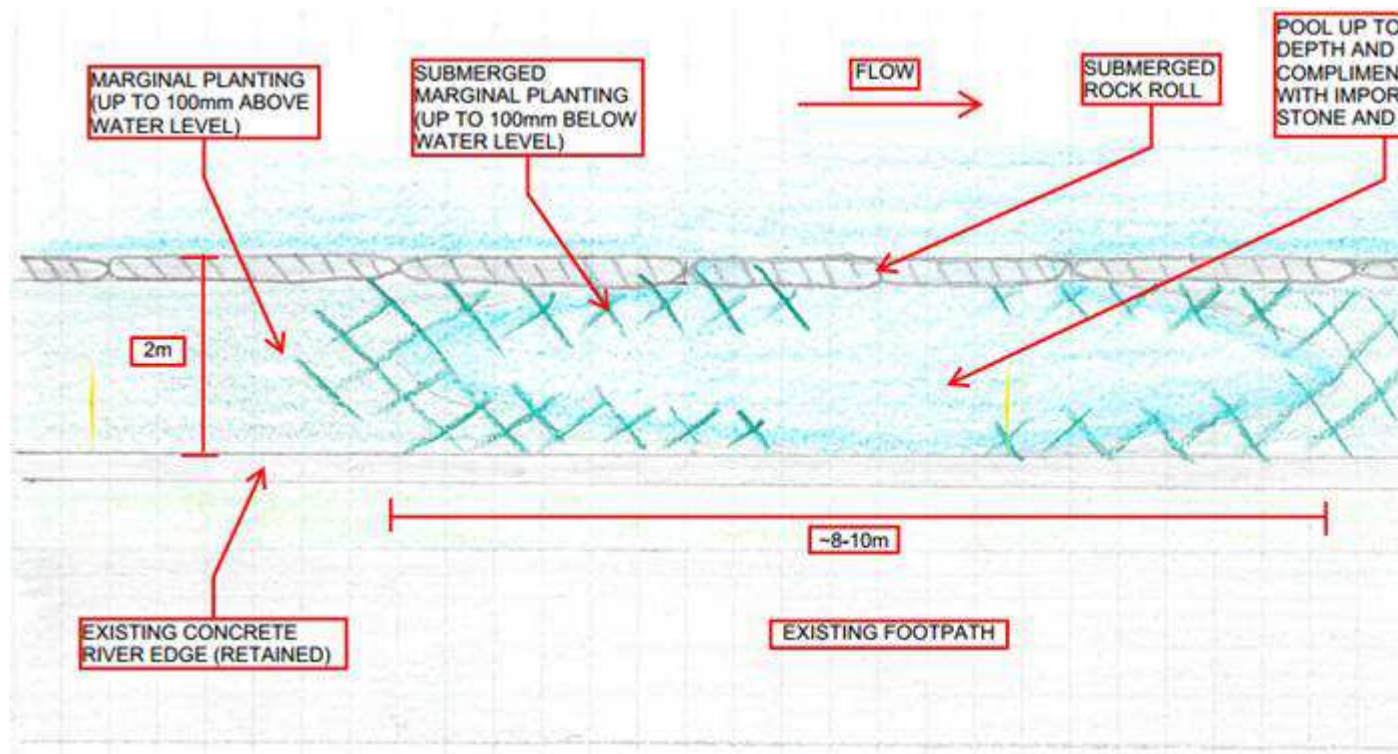


We note that you requested three 1x10m moorings but based on available guidance for mooring design and safety/access considerations we would recommend that this is increased to 2x10m. We would be happy to discuss this further to agree the design parameters. This would also include a conversation regarding the No of mooring bollards, mooring rings and appropriate signage.

In the location of the mooring platforms, it is possible that the wall height could be reduced in height and buried, which will provide a gradual landscaped slope between the bankside planting and the existing footpath. Using willow spiling in this area to form a higher level tier/platform allows for a clear distinction from the lower level planting.

The leading edge of the marginal planting area could be formed using 3No rock rolls, placed onto the river bed and stacked to create a structure which defines the edge and protects the marginal planting from the river flow. A very similar detail was used as part of the south bank improvements associated with Christchurch Bridge.

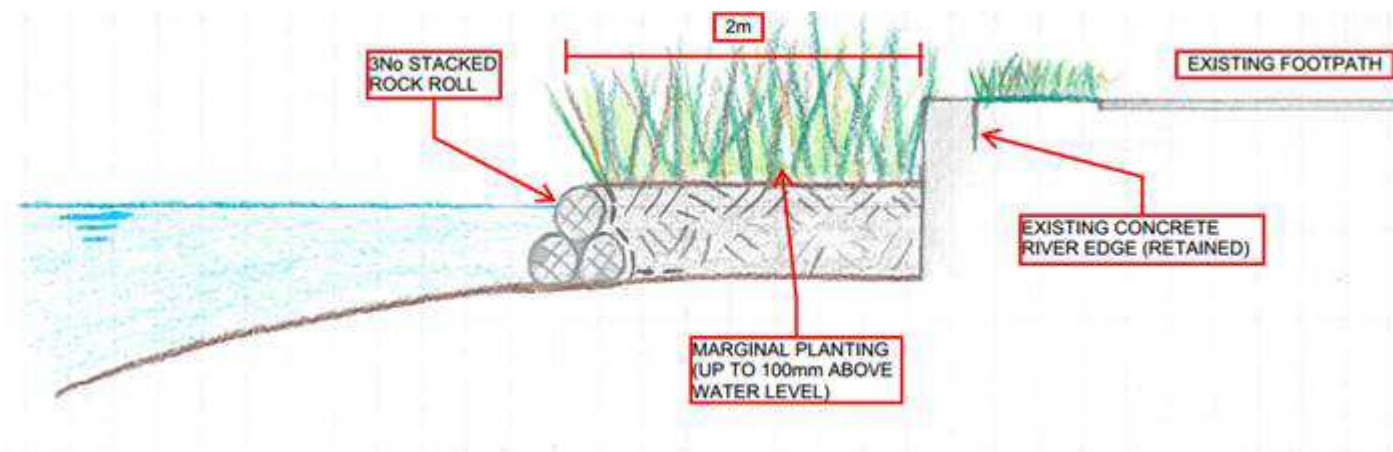
Open Water Pool



We have included "Open Water Pool" features to provide additional variety to the habitat that is being created. This area could be defined by using a single rock roll placed onto the bed to protect the area from the majority of the river flow/wash and partially backfilled to provide the opportunity for submerged planting to establish.

It would be the intention that the existing water depth in this location is retained and could further enhance the pool by placing stone and gravel to form shoals. The shallow area which has a water depth of up to 100mm surrounding the 'Open Water Pool' feature would be complemented with submerged marginal planting.

Marginal Shelf

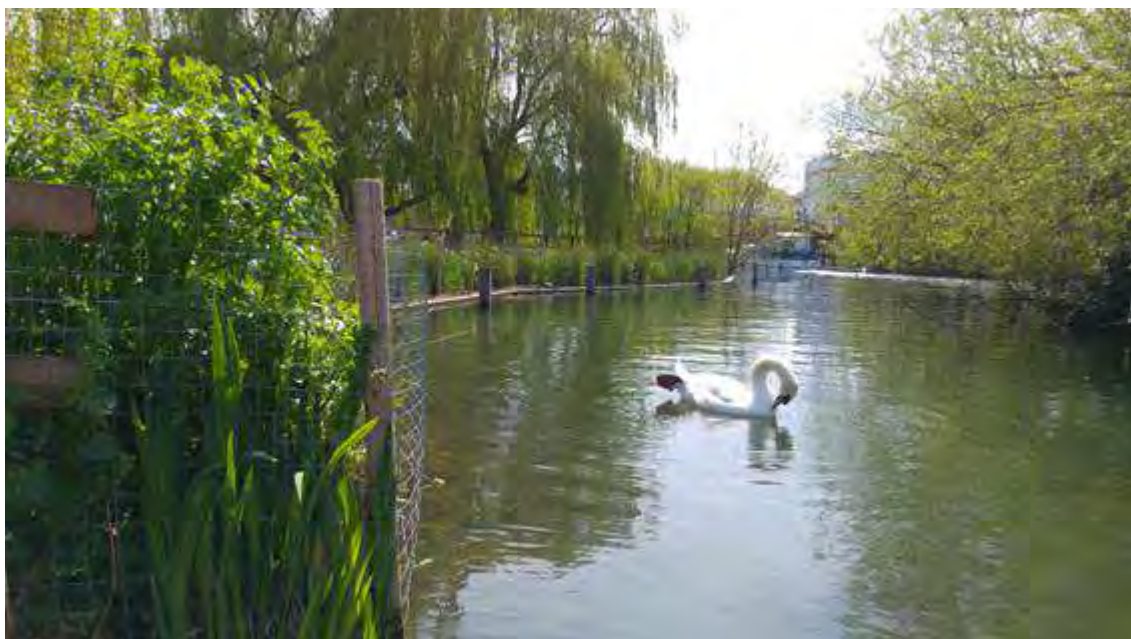


The areas between the mooring platforms and open water feature would be kept at no more than 100mm above the standard water level with the leading edge formed using the stacked rock roll detail as described above for the mooring area.

Retaining the existing structure allows us to utilise the full 2m width at ~100mm above standard water level for marginal planting. This area can undulate and create local high and low spots to create some variety and the stacked rock roll detail could be swapped for a single unit to allow water to encroach into some of the areas. This would be based on the EA's preference/recommendations.

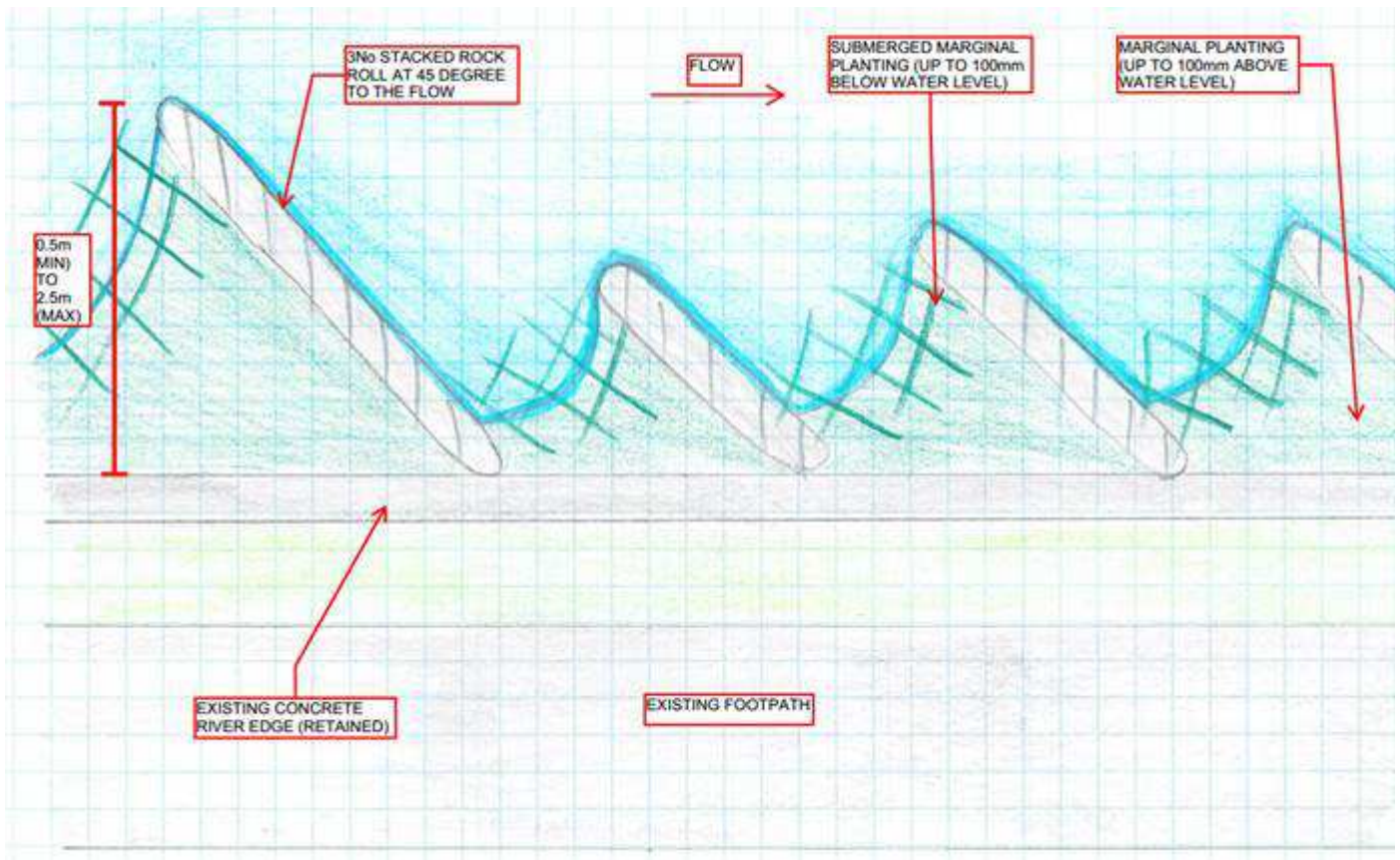
Temporary Fencing

It is likely that temporary timber post and wire mesh will be used throughout to protect the marginal planting in the early stages of development, something which is not indicated currently on the sketches above. A similar detail was used as part of the wetland adjacent to Christchurch Bridge, as you can see from the images below the fence even if left in place soon becomes barely visible.





Alternative Option - Wetland



It is possible that in addition to the originally proposed 70m length of marginal shelf, the 30m extension is formed not as a shelf but a series of groynes/deflectors forming a wetland feature which incorporates areas of shallow and deeper water. Again this could be formed by placing rock rolls angled from the bankline that project a varied amount into the channel. This could act as a transition feature back into existing at the downstream end of the marginal planting. Your thoughts on this would be appreciated.

I am out of the office for the next two days, but if you have any immediate comments please can you call Rob Riddington (01189520346). I will catch up with you myself on Friday.

We trust that this will be forwarded to Sophie, Nick and Lesley.

We hope we have accurately incorporated your recommendations, addressed your concerns and would appreciate your further input on the points above. Hopefully, we are very close to agreeing on a positive enhancement to the riverbank environment in this location.

Kind regards,

Scott Nicholson EngTech MICE

Senior Engineer

For and on behalf of Peter Brett Associates LLP - [Reading](#)



t 01189520623
e snicholson@peterbrett.com
w peterbrett.com



Mr Richard Eatough
Reading Borough Council
Development Control
PO Box 17
Reading
Berkshire
RG1 7TD

Our ref: WA/2017/124095/03-L01
Your ref: 171108
Date: 13 June 2018

Dear Mr Eatough

***Additional information submitted* construction of a segregated fast-track public transport, pedestrian and cycle bridge and viaduct, comprising concrete bridge structure with a river span of 59.5m and a land span of 316m, supported by concrete columns, steel beams and reinforced soil embankment, together with new footpath links and existing footpath alterations, replacement supermarket car parking provision, junction improvements and landscaping**

Land between Thames Valley Business Park Napier Road Reading

Thank you for consulting the Environment Agency on the above application.

Having reviewed the revised documents submitted we **withdraw our objection** to the proposed development subject to the conditions listed within this letter being attached to any planning permission granted. Without these conditions the proposed development on this site poses an unacceptable risk to the environment and we would wish to object to the application.

Flood Risk

The Environment Agency accepts in principle that there is scope to deliver the flood compensation proposed within the Flood Risk Assessment Addendum (FRA) (version 2, April 2018) as included in Appendix 4.1 in the Environmental Statement Addendum (version 2, April 2018). We are satisfied with the revised details and consider that any further details relation to flood risk can be adequately dealt with via appropriate planning conditions. This will include approval of at the detail design stage although we are satisfied with the principles in the FRA and FRA Addendum. We are now able to remove our objection on the basis of flood risk.

We can confirm that the complete Flood Risk Assessment therefore comprises of the following key referenced plans/documents:

- Flood Risk Assessment - Project Ref: 28791/4002 | Rev: - | Date: June 2017 (included in the Environmental Statement, Appendix 10-1 dated June 2017)

- Flood Risk Assessment Addendum (and accompanying appendices) - Project Ref: 28791/4002 | Rev: 2 | Date: April 2018 (included in the Environment Statement Addendum, Appendix 4-1 dated April 2018)
- Design and access statement April 2018

The principles established in the above documents and their appendices provide all the necessary information necessary for us to overturn our objection subject to adequate planning conditions.

We would recommend that the flood compensation areas agreed as part of any condition are undertaken prior to commencement of the development of the bridge as discussed with the Council. In addition, prior to the commencement of the development we would need to see the updated details and designs so as to ensure that the agreed principles and final compensatory storage volumes remain in place.

Condition 1

Prior to commencement of development, details to final alignment of the road and ground level changes for compensatory storage mitigation to be provided in line with the principles demonstrated in the flood risk assessment and addendum reports. In particular, any works affecting the flood plain and flood plain storage will need to be taken into account in an appropriate assessment.

Reason

To prevent flooding elsewhere by ensuring that compensatory storage of flood water is provided in accordance with the provisions of the National Planning policy Framework (NPPF).

Groundwater Protection

Condition 2

No development approved by this planning permission shall commence until a remediation strategy to deal with the risks associated with contamination of the site has been submitted to, and approved in writing by, the Local Planning Authority. This strategy will include the following components:

1. A preliminary risk assessment which has identified:
 - all previous uses;
 - potential contaminants associated with those uses;
 - a conceptual model of the site indicating sources, pathways and receptors; and
 - potentially unacceptable risks arising from contamination at the site.
1. A site investigation scheme, based on (1) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.
2. The results of the site investigation and the detailed risk assessment referred to in (2) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.
3. A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (3) are complete and identifying any requirements for longer-term monitoring of

pollutant linkages, maintenance and arrangements for contingency action.

Note: The Environment Agency has reviewed the PBA Phase 1 Ground Condition Assessment (Contamination and Geotechnical) for the East Reading Mass Rapid Transit Scheme dated May 2017 and is satisfied that part 1 of this condition has been fulfilled.

Any changes to these components require the written consent of the local planning authority. The scheme shall be implemented as approved.

Reason

A large part of this site is underlain with Alluvium over Kempton Park Gravel Formation (both Secondary A Aquifers) over the Newhaven and Seaford Chalk Formations (Principal Aquifer - under the whole site). Groundwater from these aquifers provides base flow for the River Thames located on the boundary of the site. We need to protect these aquifers and the river from any contamination (which may be in the soils as a result of previously contaminative uses of the site or from pollutants within the historic landfill) and which could be disturbed and hence mobilised during construction.

We have reviewed the PBA Phase 1 Ground Condition Assessment (contamination and Geotechnical) for the East Reading Mass Rapid Transit Scheme dated May 2017 and this has identified the potentially contaminative previous uses of this site by Zones. Whilst a site investigation has been carried out for Zone D (PBA East Reading Mass Rapid Transit Scheme Phase 2 Ground Condition Assessment dated June 2017) the other most potentially contaminative zones have not been investigated – namely Zones A (tanks); B (depot and tanks) and C (depot and landfill). We understand from the 'Introduction' in the Phase 2 report that a contamination assessment of the site will be dealt with during the ground investigations for 'design purposes'. We need site investigations to target potential contamination hot spots identified in the Phase 1 report with a view to protecting groundwater and surface water quality.

Condition 3

Prior to any part of the permitted development being brought into use a verification report demonstrating the completion of works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to, and approved in writing, by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met.

Reasons

A large part of this site is underlain with Alluvium over Kempton Park Gravel Formation (both Secondary A Aquifers) over the Newhaven and Seaford Chalk Formations (Principal Aquifer - under the whole site). Groundwater from these aquifers provides base flow for the River Thames located on the boundary of the site. We need to protect these aquifers and the river from any potential contamination (which may be in the soils as a result of previously contaminative uses of the site or from pollutants within the historic landfill) and which could be disturbed and hence mobilised during construction.

Condition 4

Piling using penetrative methods shall not be carried out other than with the written consent of the local planning authority. The development shall be carried out in accordance with the approved details.

Reason

A large part of this site is underlain with Alluvium over Kempton Park Gravel Formation (both Secondary A Aquifers) over the Newhaven and Seaford Chalk Formations (Principal Aquifer - under the whole site). We need to protect these aquifers from any potential contamination (which may be in the soils as a result of previously contaminative uses of the site e.g. depot/ tanks or from pollutants within the historic landfill) and which could be mobilised by the use of piling. We therefore need to see the results of site investigations of the identified potentially contaminative parts of this site before we can comment on any proposed foundation design. The PBA Phase 1 Ground Condition Assessment (contamination and Geotechnical) dated May 2017 states that the proposed bridge and viaduct structures will be supported by pile foundations extending into the Chalk. The PBA Environmental Statement Volume 1 Main Report dated June 2017 states that concrete columns will be used. We need to see the proposed foundation design that should ensure that pathways are not created for river water to enter the Chalk Aquifer.

Condition 5

No infiltration of surface water drainage into the ground at land used for the East Reading Mass Rapid Transit Scheme is permitted other than with the written consent of the Local Planning Authority. The development shall be carried out in accordance with the approved details.

Reason

A large part of this site is underlain with Alluvium over Kempton Park Gravel Formation (both Secondary A Aquifers) over the Newhaven and Seaford Chalk Formations (Principal Aquifer - under the whole site). We need to protect these aquifers from any potential contamination (which may be in the soils as a result of previously contaminative uses of the site or from pollutants within the historic landfill) and which could be mobilised by the use of soakaways. We need to see the results of site investigations of the identified potentially contaminative parts of this site.

Fisheries and Biodiversity

We have reviewed the amended plans and supporting information referred to in the re-consultation letter from Richard Eatough, Planning, Reading Borough Council in his letter of 4 May 2018. We are pleased to note the proposed amendments listed in this letter where they lessen the ecological impact of the scheme on the river corridor and on The Coal woodland. Additionally, we are pleased to note the inclusion of the proposed marginal planting shelf areas to the east of Kennetmouth, although it should be noted that this is the southern (right) bank of the Thames, not the north bank as stated in the list of amendments.

With regard to the marginal shelves, willow spiling is shown in Section A-A on drawing number 28791/4001/013 Rev P01 (Proposed Mooring Platforms/Marginal Planting Shelf). If this is done using live willow, this is likely to grow, shading out the

marginal plants and adding to the required maintenance. Dead willow or hazel could be used as an alternative.

The principle of creating marshy areas beneath the flyover is good, however, there is no indication of how much shade there will be here and there is a strong possibility that plants will not grow as anticipated.

Mitigation for the ecological impacts of the proposals still rely on 'management' with some of that being proposed off-site as shown on Figure 6.2 Rev A (Ecological Mitigation and Enhancement Proposals). During our meeting on site on 4 January 2018, additional mitigation/enhancement proposals were discussed including crown lifting of trees to allow more light to the river margin and enhancement of that margin to the west of Kennetmouth. Likewise, there is a lowered area to the north west of the Tesco store that was proposed could be enhanced through selected lowering of areas to create wet scrapes and increase diversity. This is not included currently, but would contribute further to the no net loss/net gain issue.

Installation of bird and bat boxes is proposed in Hills Meadow, but further thought should be given to installing these in the area around Kennetmouth also. All the proposed off-site measures appear to be within Reading Borough, and we would expect some to be included within Wokingham Borough also. All details relating to the ecological mitigation and enhancement proposals should be agreed formally. It is stated that the repairs to the river wall/moorings downstream of Kennetmouth are to be carried out by a third party separate to this planning application. If this is not included within this application, it is not clear how these repairs will be ensured.

Condition 6

No development shall take place until a method statement/construction environmental management plan that is in accordance with the approach outlined in the Planning/Environmental Statement, has been submitted to and approved in writing by the local planning authority. This shall deal with the treatment of any environmentally sensitive areas, their aftercare and maintenance as well as a plan detailing the works to be carried out showing how the environment will be protected during the works. Such a scheme shall include details of the following:

- The measures to be used during the development in order to minimise environmental impact of the works (considering both potential disturbance and pollution)
- The ecological enhancements as mitigation for the loss of habitat resulting from the development
- A map or plan showing habitat areas to be specifically protected (identified in the ecological report) during the works, including an agreed buffer zone to the River Thames and River Kennet.
- Any necessary mitigation for protected species
- Construction methods
- The timing of the works
- Any necessary pollution protection methods
- Information on the persons/bodies responsible for particular activities associated with the method statement that demonstrate they are qualified for the activity they are undertaking.

The works shall be carried out in accordance with the approved method statement.

Reason

This condition is necessary to ensure the protection of wildlife and supporting habitat and secure opportunities for the enhancement of the nature conservation value of the site in line with national planning policy.

The National Planning Policy Framework (NPPF) paragraph 109 recognises that the planning system should aim to conserve and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible. Paragraph 118 of the NPPF states that if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused and that opportunities to incorporate biodiversity in and around developments should be encouraged.

Article 10 of the Habitats Directive stresses the importance of natural networks of linked habitat corridors to allow the movement of species between suitable habitats, and promote the expansion of biodiversity. River corridors are particularly effective in this way. Such networks and corridors may also help wildlife adapt to climate change.

Condition 7

No development shall take place until a landscape and ecological management plan, including long- term design objectives, management responsibilities and maintenance schedules for all landscaped areas (except privately owned domestic gardens), shall be submitted to and approved in writing by the local planning authority. The landscape management plan shall be carried out as approved and any subsequent variations shall be agreed in writing by the local planning authority.

The scheme shall include the following elements:

- detailed designs for the proposed marginal shelf/mooring areas on the River Thames
- details of the extent and type of new planting (NB all planting to be locally native species of UK genetic provenance). This shall be based on the principles contained within the Landscape and Ecology Strategy Rev F (April 2018)
- details of all maintenance regimes for all areas proposed to be created, enhanced and managed, both on site and in agreed off-site areas
- details of any new habitat created on site
- details of treatment of site boundaries and/or buffers around water bodies
- details of management responsibilities
- details of funding to ensure on-going maintenance in perpetuity

Reasons

This condition is necessary to ensure the protection of wildlife and supporting habitat and secure opportunities for the enhancement of the nature conservation value of the site in line with national planning policy.

This condition is supported by the National Planning Policy Framework (NPPF),

paragraph 109 which recognises that the planning system should aim to conserve and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures. Paragraph 118 of the NPPF also states that opportunities to incorporate biodiversity in and around developments should be encouraged.

In addition, this is supported by the Natural Environment and Rural Communities Act (2006) which requires Local Authorities to have regard to nature conservation and article 10 of the Habitats Directive which stresses the importance of natural networks of linked corridors to allow movement of species between suitable habitats, and promote the expansion of biodiversity.

Waterways/Navigation

We welcome the provision of three new short stay visitor moorings as outlined by the current drawings. There is a lack of short stay visitor moorings in Reading and this is an issue that is often raised by our customers. The provision of new moorings would therefore be extremely beneficial to the boating community. The moorings must be suitably marked and managed as short stay visitor moorings to provide boaters passing through Reading a place to stop for short periods, for example overnight or for a few hours whilst they visit the town. The landowner or an agent working on their behalf will need to actively manage the moorings to ensure that they are used for their designed purpose and to prevent boats from overstaying on the moorings.

We find the current proposal for the marginal shelf acceptable as it will allow for the safe construction of the three mooring platforms, however this is on the proviso that the existing failing mooring section at Kennet Mouth will be fully repaired as part of the scheme.

The detailed finalised design for the shelf and mooring platforms including sizes and dimensions will need to be agreed. The marginal shelf and the mooring platforms will be subject to the annual accommodations fee. The prices are worked out based on the square meterage. See charges on the corporate tariff found here:

<https://www.gov.uk/government/collections/river-thames-accommodation-licence>.

An accommodations licence must be approved and issued before construction starts on the marginal shelf and mooring platforms.

Environmental Permitting Regulations

Elements of this development will require an Environmental Permit from the Environment Agency under the terms of the Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2016 for any proposed works or structures, in, under, over or within 8 metres of the top of the bank of designated 'main rivers'. This was formerly called a Flood Defence Consent. Some activities are also now [excluded](#) or [exempt](#). An environmental permit is in addition to and a separate process from obtaining planning permission. Further details and guidance are available on the GOV.UK website: <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>.

Decision Notice Request

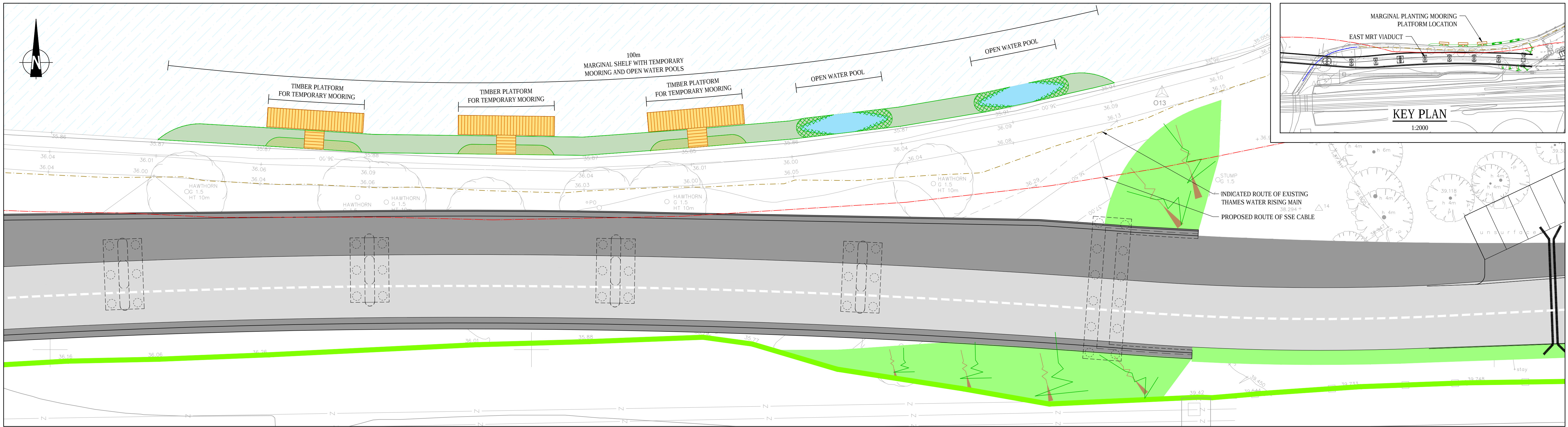
The Environment Agency requires decision notice details for this application, in order to report on our effectiveness in influencing the planning process. Please email decision notice details to Planning_THM@environment-agency.gov.uk.

We trust this response is helpful as you consider this application. Should you have any further queries please do not hesitate to contact us.

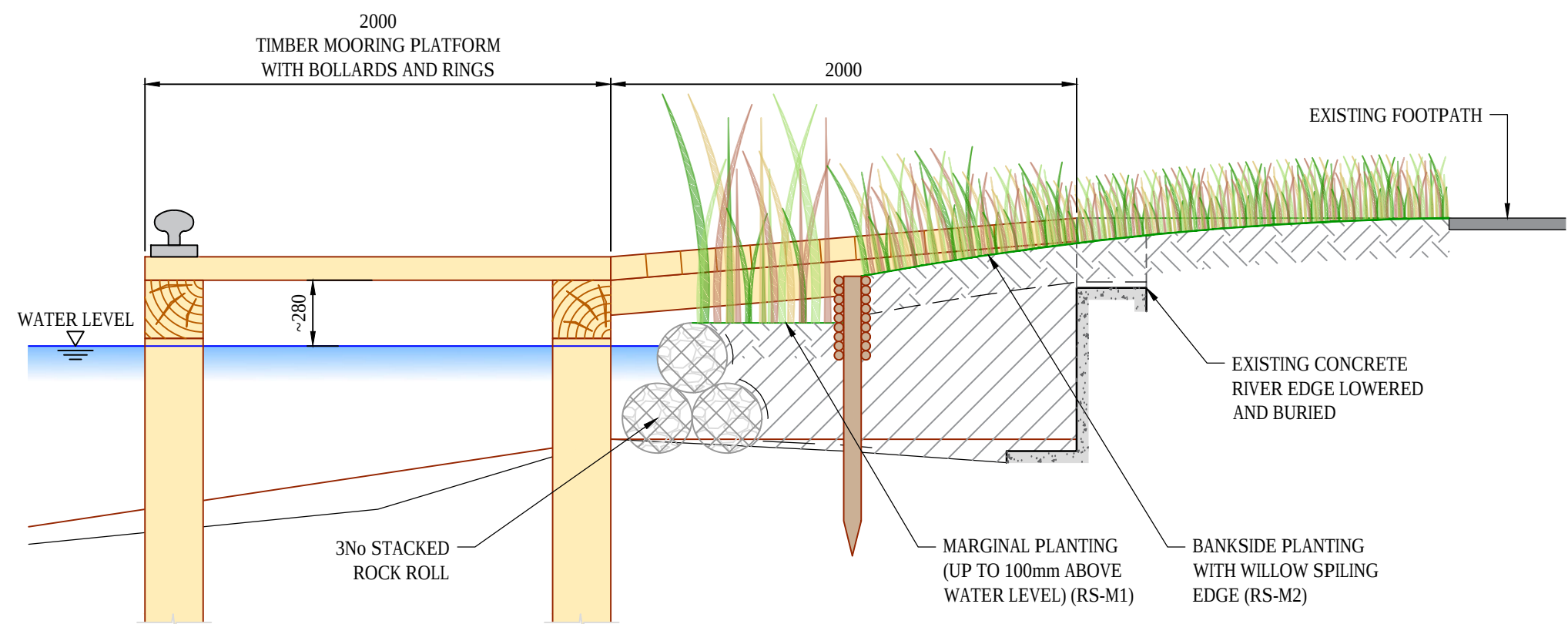
Yours sincerely

Mr Matthew Wilcock
Sustainable Places team

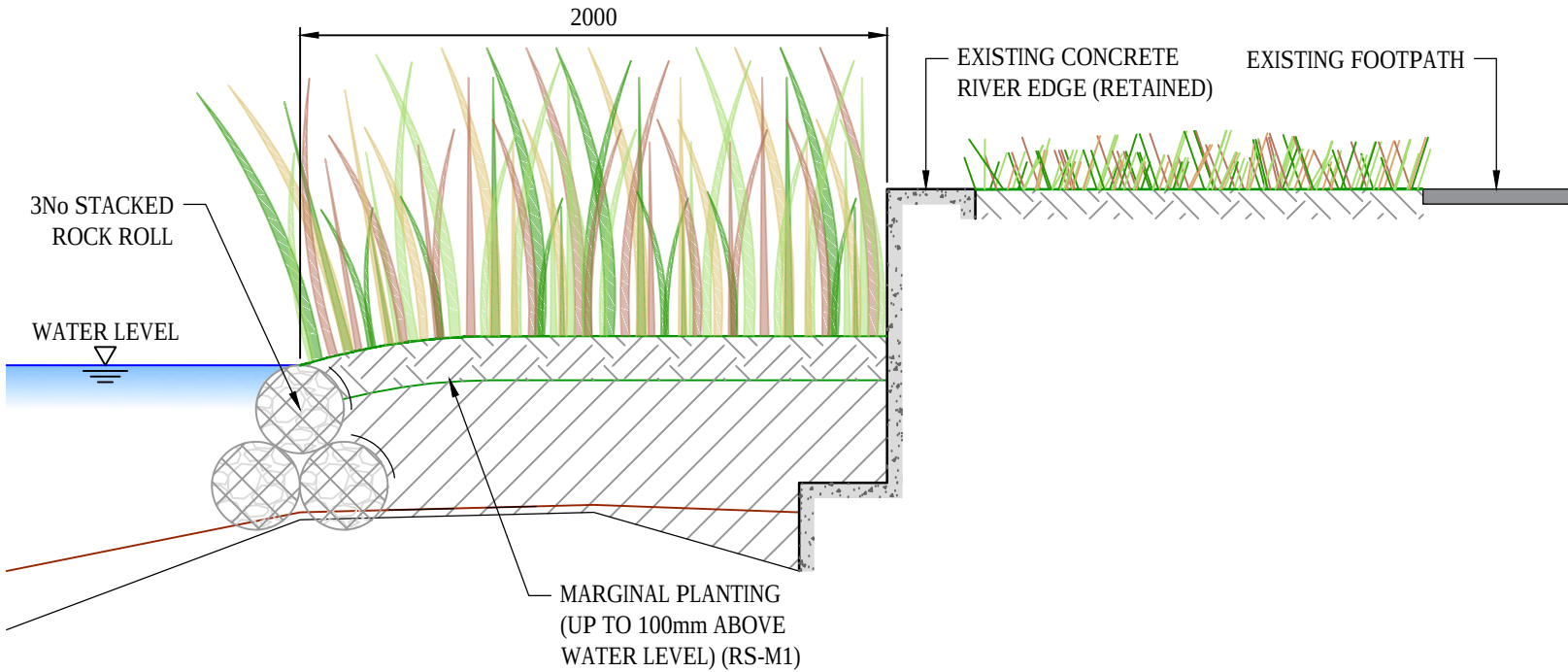
Direct e-mail Planning_THM@environment-agency.gov.uk



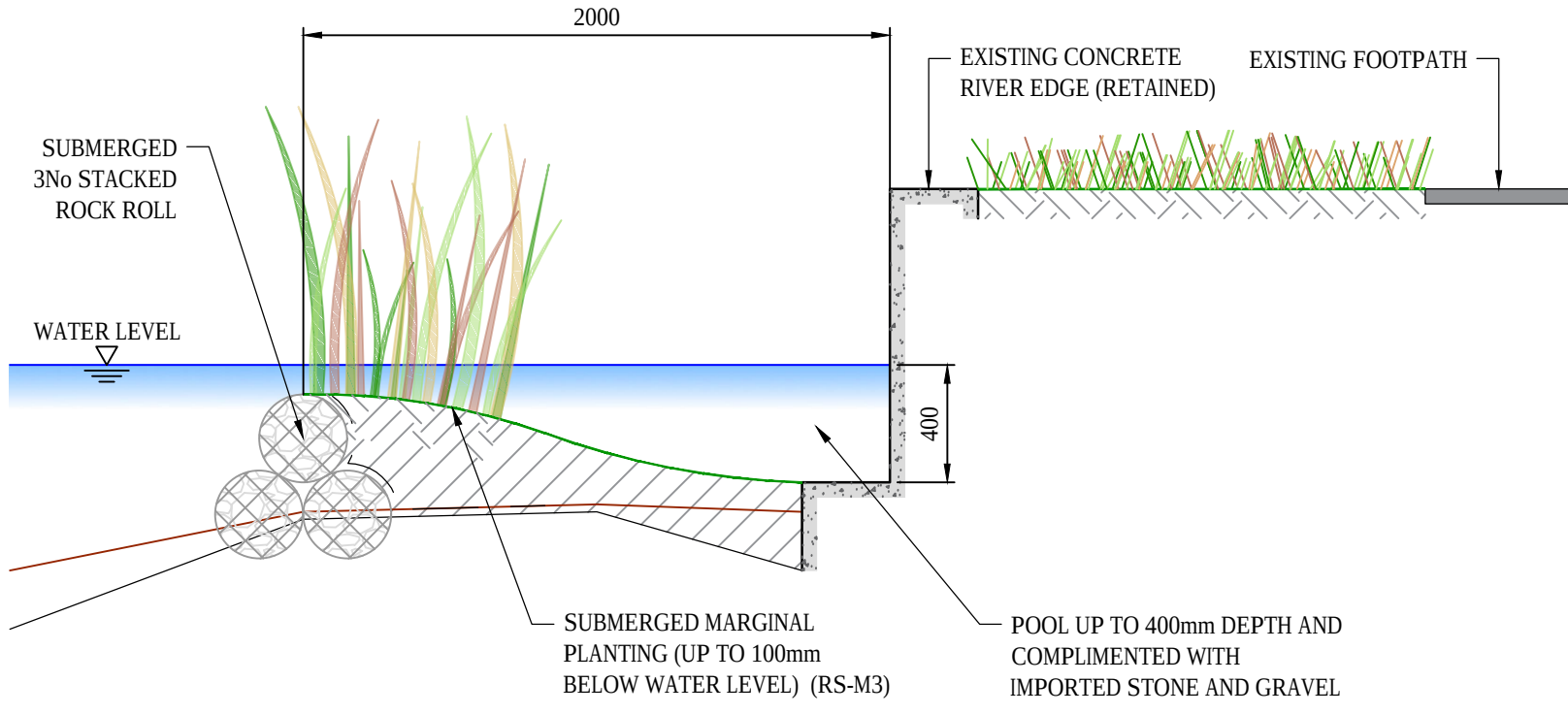
MARGINAL PLANTING AND MOORING PLAN
1:200



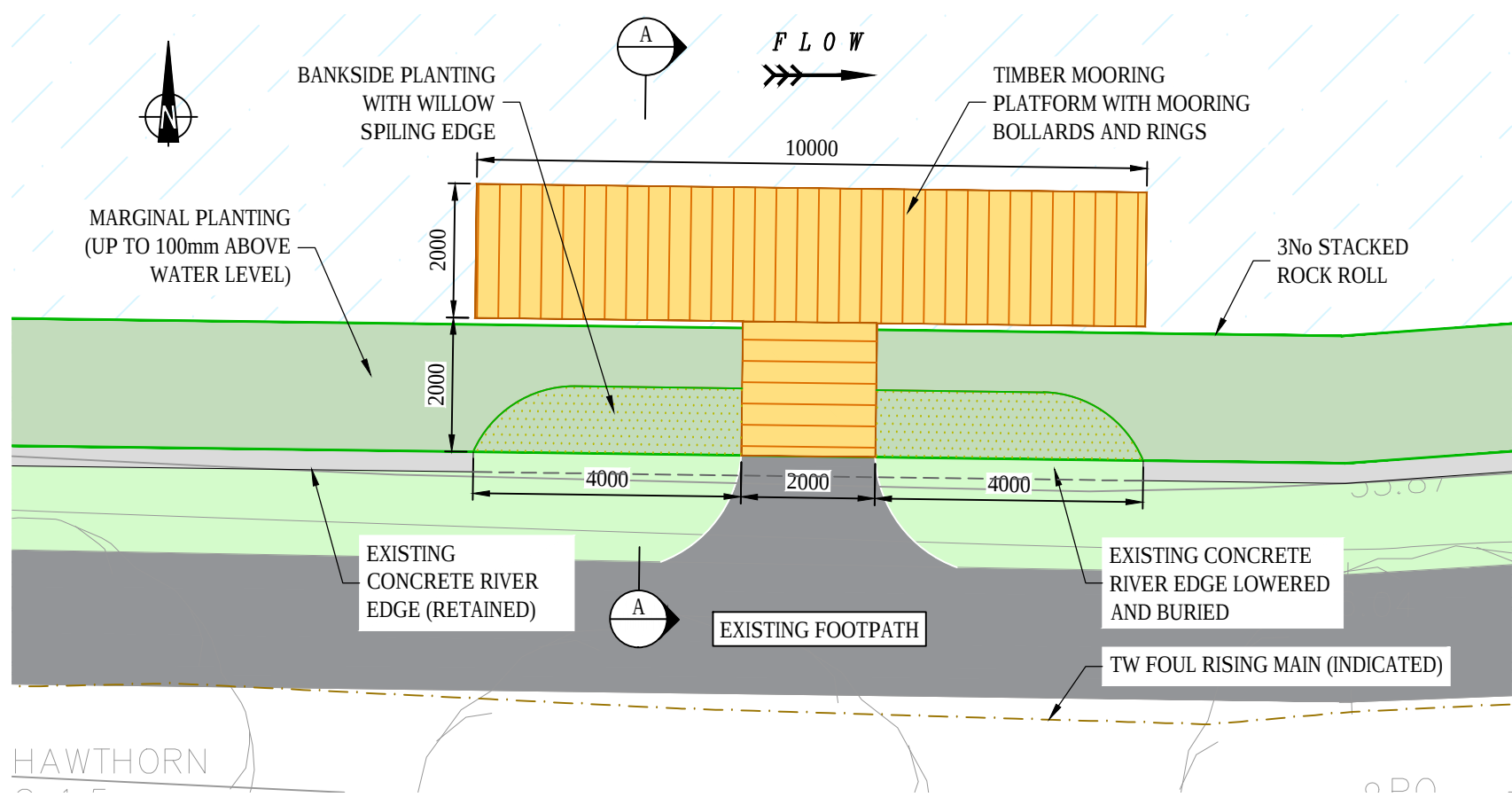
SECTION A-A
TIMBER PLATFORM FOR TEMPORARY MOORING
1:25



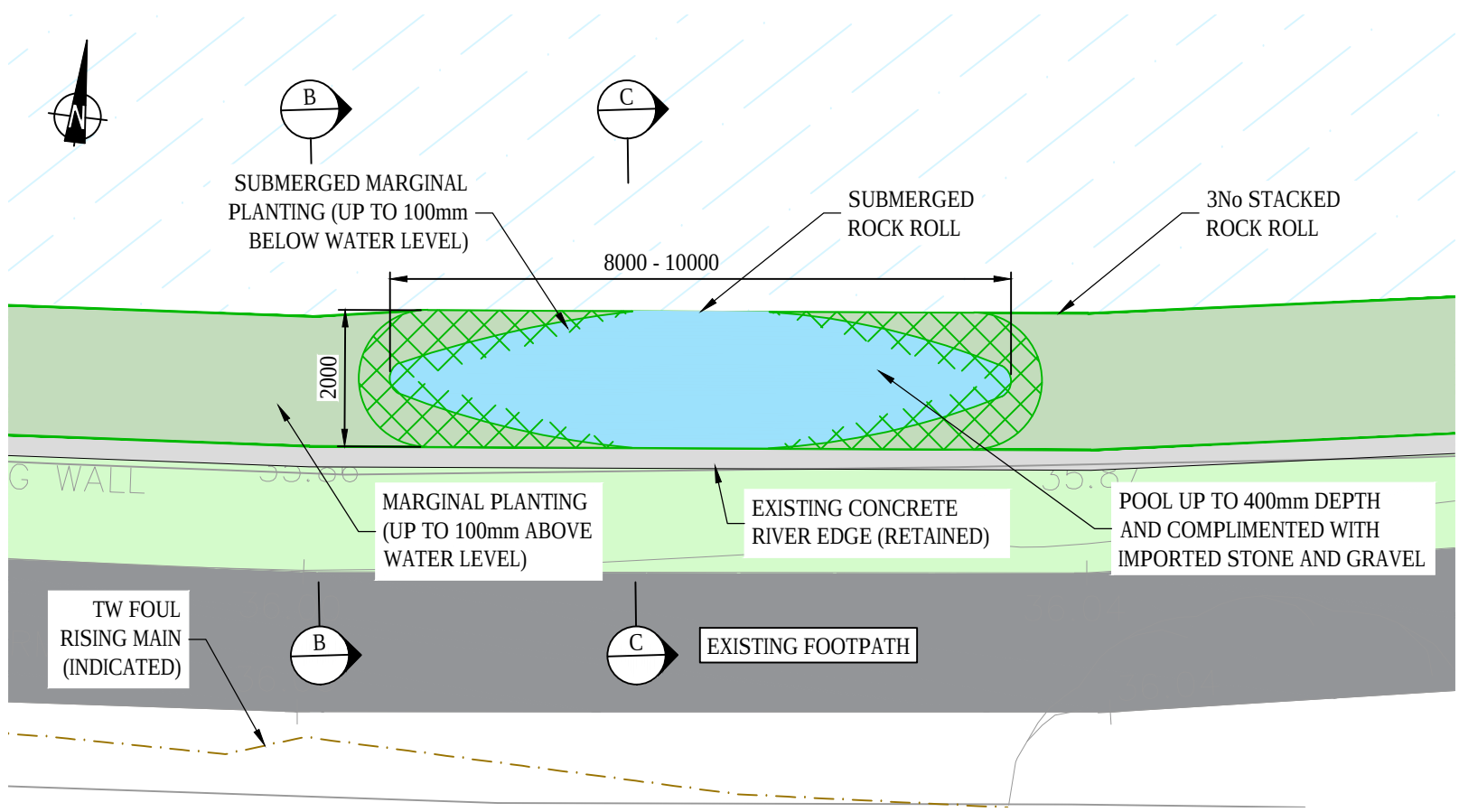
SECTION B-B
MARGINAL PLANTING SHELF
1:25



SECTION C-C
OPEN WATER POOL
1:25



PLAN
TYPICAL MOORING
1:100



PLAN
TYPICAL OPEN WATER POOL
1:100

- NOTES:
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OF DRAWINGS.
 - FOR DETAILS OF THE PLANTING PLAN, SEE DRAWINGS 28791/3008/004 - 005.

P01	FIRST ISSUE	05.05.18	SAN	RF	
Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status
FOR PLANNING

**EAST READING - MASS RAPID TRANSIT
BRIDGE AND VIADUCT
PROPOSED MOORING PLATFORMS
MARGINAL PLANTING SHELF**

Client

Reading Borough Council
Working better with you

Date of 1st Issue: 06.04.2018
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A1 Scale: AS SHOWN
Checked: RF

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