Southampton to London Pipeline Project

Volume 6

Environmental Statement (Volume D) Appendix 8.6: Water Framework Directive Compliance Assessment

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Appendix 8.6 Water Framework Directive Compliance Assessment

1.1 Introduction

Project Description

1.1.1 Esso Petroleum Company, Limited (Esso) is making an application for development consent to replace 90km (56 miles) of its existing 105km (65 miles) aviation fuel pipeline that runs from the Fawley Refinery near Southampton, to the Esso West London Terminal storage facility in Hounslow. The replacement pipeline is 97km (60 miles) long, and is referred to as the project within this report.

1.1.2 The Water Framework Directive Compliance Assessment has been produced to support the application for development consent under the Planning Act 2008. It also underpins the water assessment within the accompanying Environmental Statement. This assessment has been undertaken in line with the Planning Inspectorate's Advice Note 18 The Water Framework Directive. Whilst most regulatory authorities are required to exercise their 'relevant functions' so as to secure compliance with the WFD (Regulation 3), functions under the Planning Act 2008 are not 'relevant functions' for this purpose. Instead, the Secretary of State (SoS) in exercising its functions under the Planning Act needs to have regard to the relevant River Basin Management Plan (RBMP), and any supplementary plans made under it. The SoS would need to consider the implications of the project, firstly in relation to the specific duty to have regard to the RBMP and supplementary plans, and secondly, in more general terms in relation to the UK's ability to comply with the WFD.

Assessment Background

1.1.3 At the time of writing, the UK Government is committed to leaving the European Union, but the UK has not yet left. During any implementation period the UK is committed to not regressing from European levels of protection and that implementation period will last until after this application is determined. The report therefore continues to refer to the relevant European Directives.

1.1.4 The Water Framework Directive (WFD) (2000/60/EC) is a substantial piece of EU water legislation that came into force in 2000, with the overarching objective of requiring all water bodies in Europe to attain Good or High Status/Potential. These are implemented through The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 in England. The Status/Potential comprises a series of biological, physico-chemical and hydromorphological 'quality elements', which should not be allowed to deteriorate in the event of modifications being made to a WFD water body. The Environment Agency is the competent authority in England for delivering WFD targets.

1.1.5 The WFD outlines the following objectives in Article 4(1)(a) for the protection of surface water bodies:

- prevent deterioration in the status of surface water bodies;

- protect, enhance and restore surface water bodies with the aim of achieving 'Good Status' by 2021 (or 2027 at the latest);
- protect and enhance surface water bodies designated as artificial or heavily modified, with the aim to achieve 'Good Potential' by 2021 or 2027 (depending on feasibility); and
- reduce pollution from priority substances and cease discharges, emissions and losses of priority hazardous substances.

1.1.6 In addition, Article 4(1)(b) outlines the following objectives for the protection of groundwater bodies:

- prevent or limit the input of pollutants into groundwater;
- prevent the deterioration in the status of groundwater;
- protect, enhance and restore groundwater bodies with the aim of achieving 'Good' groundwater status by 2021 (or 2027 at the latest); and
- implement measures necessary to reverse any upward trends in the concentration of pollutants resulting from human activity.

1.1.7 'Good Status' refers to water bodies whose quality elements show only a slight deviation from a natural/near natural condition.

1.1.8 'Good Potential' refers to water bodies that are designated as Artificial and Heavily Modified Water Bodies (A/HMWB) that are approaching the maximum quality possible.

1.1.9 A/HMWBs are WFD water bodies that have been extensively modified or have been artificially constructed, to deliver important socioeconomic functions e.g. navigation or flood protection (UKTAG, 2008a). These WFD water bodies are not required to achieve Good Status, as to do so likely to have significant adverse effects on the wider environment or important socioeconomic functions.

1.1.10 The WFD also outlines that the objectives and standards for protected areas, e.g. Special Protection Areas (EU Birds Directive, 79/409/EEC), also need to be observed and complied with.

1.1.11 Where a development is considered to cause deterioration, or where it could contribute to a failure of the water body to meet Good Status/Potential, then an Article 4.7 assessment is required. Should a modification or change meet all the conditions set out in Article 4.7 then it is considered as being WFD compliant.

Study Area

1.1.12 A study area has been defined for the WFD assessment by considering all receptors that could be affected by the project. The study area was defined as a 500m buffer either side of the Order Limits. This allows for an understanding of the potential receptors that could be directly and/or indirectly impacted by construction and operational activities associated with the project. The buffer encompasses watercourses and WFD water bodies upstream and downstream of the pipeline crossing. The study area crosses 39 surface WFD water bodies (34 fluvial, one

lacustrine, two transitional/coastal and two artificial) and 10 groundwater bodies across two River Basin Districts. The River Basin Districts are Thames and South East.

1.2 Methodology

WFD Assessment Methodology

1.2.1 A WFD assessment follows key guidance provided by the Environment Agency, UK Technical Advisory Group (UKTAG) (UKTAG 2003; UKTAG 2005; UKTAG 2008a; UKTAG 2008b; UKTAG 20011) and The Planning Inspectorate advice note (Planning Inspectorate, 2017). A sequence for undertaking an assessment of compliance with the WFD has been developed in line with the guidance and is formed of three key stages: Screening, Scoping, and Impact Assessment.

Stage 1: WFD Screening

1.2.2 The screening stage identifies the extent to which the project is likely to affect the WFD water bodies, defining the zone of influence and providing a justification for excluding receptors, project activities and environmental topic areas. For this project, this includes surface water and groundwater WFD water bodies, WFD quality elements and project components. This stage involved:

- identifying relevant River Basin Management Plans and WFD water bodies;
- outlining the project elements;
- identifying the study area and the potential zone(s) of influence from the project on WFD water bodies; and
- establishing whether any WFD water bodies or project components could be screened out and why.

Stage 2: WFD Scoping

1.2.3 The scoping stage identifies risks from project activities to receptors based on the relevant WFD water bodies and their water quality elements. This stage involved:

- an initial assessment to identify potential impacts arising from the project, and which project components required a detailed assessment;
- identifying which WFD water bodies required further assessment; and
- identifying which WFD quality elements were required to be scoped in for each WFD water body.

1.2.4 Scoping and methodologies for the assessment of surface water, including WFD, were discussed and agreed with the Environment Agency at a meeting held on 17 May 2018. A subsequent meeting was held on 6 September 2018 to discuss watercourse sensitivity assessments and findings of the WFD Screening and Scoping Assessment.

Stage 3: WFD Impact Assessment

1.2.5 The WFD Impact Assessment is a detailed assessment of the WFD water bodies and activities carried forward from the WFD screening and scoping stage. This involves the:

- description of the project;
- identification of baseline conditions of the biological, physico-chemical and hydromorphological quality elements;
- identification of potential impacts from the project on quality elements;
- review of actions to deliver specific mitigation measures; and
- assessment of the project against WFD status objectives, other EU legislation and overall compliance (including identification of any required mitigation).

Report Structure

1.2.6 This WFD Compliance Assessment primarily addresses Stage 3 of the WFD methodology. Stages 1 and 2 are covered in the preceding WFD Scoping and Screening document which identified 26 WFD water bodies (16 surface water and 10 groundwater) as requiring further assessment. A summary of Stage 1 and 2 is provided in Section 1.3. The WFD Impact Assessment (i.e. Stage 3) is provided in the following sections of this report:

- Section 1.4: Baseline Identification;
- Section 1.5: Identification of Potential Impacts;
- Section 1.6: WFD Specific Mitigation Measures; and
- Section 1.7: WFD Assessment.

1.2.7 To support the assessment, desk-based assessment and field surveys were undertaken.

Desk Study

1.2.8 A desk-based study has been carried out to inform this assessment, reviewing existing information for the preferred corridor and study area to develop an initial baseline for the WFD water bodies crossed by the project. The following are key sources of data used for the desk study:

- Environment Agency Catchment Data Explorer (Environment Agency, 2018);
- Thames River Basin Management Plan (Environment Agency, 2015a);
- South East River Basin Management Plan (Environment Agency, 2015b);
- contemporary Ordnance Survey maps;
- geology (British Geological Survey, 2018) and soil maps (Cranfield University, 2018);
- British Geological Survey (BGS) map data identifying areas susceptible to groundwater flooding;

- British Geological Survey map data identifying where karst features could be present (Farrant and Cooper 2008);
- Environment Agency data obtained from http://environment.data.gov.uk or via an information request relating to:
  - licensed groundwater abstractions;
  - pollution incidents which could have affected groundwater;
  - groundwater quality monitoring points; and
  - groundwater levels measured in boreholes monitored by the Environment Agency.
- current aerial photography;
- historical maps (National Library of Scotland, 2018); and
- designated areas (Defra, 2018).

1.2.9 Data requests were also made to a range of consultees for information regarding fish and macroinvertebrates, as well as macrophyte, phytobenthos (diatom), invasive and non-native species.

1.2.10 Consultees included the Environment Agency, Hampshire Biodiversity Information Centre, Surrey Biodiversity Information Centre and Thames Angling Conservancy. Further information regarding the data received can be found in Chapter 7 Biodiversity.

Field Surveys

1.2.11 Surveys were carried out on a number of watercourses between the 24 – 26 July 2018. Not all watercourses crossed by the project were visited. The watercourses visited, and the extent of the survey, was informed by professional judgement, watercourse sensitivity (as defined in Chapter 8 Water) and land access constraints. Limitations are discussed in more detail in the following section.

1.2.12 A full list of watercourses visited is held in Annex A, which also details whether the watercourse was subject to a full survey (covering 1km), short survey (covering 250m), or a spot check.

1.2.13 The surveys gathered information on watercourse ecology and hydromorphological features (where present), specifically:

- habitat for fish, macrophytes and macroinvertebrates;
- sightings of fish, macrophytes and macroinvertebrates;
- quality and dynamics of flow;
- channel width and depth variation;
- bed substrate and structure; and
- features of the riparian zone.

1.2.14 A survey was conducted on 21 September 2018 to collect fish eDNA samples. Five watercourses were visited (Cove Brook, Chobham Park Brook and Unnamed Watercourses 5, 6 and 79).

1.2.15 Detailed findings from the ecological surveys can be found in Chapter 7 Biodiversity.

1.2.16 Hydrogeological reconnaissance surveys comprised site walkovers of a number of potential groundwater dependent terrestrial ecosystems (GWDTEs). For two of the GWDTEs, Chobham Common SSSI and Folly Bog area of Colony Bog and Bagshot Heath SSSI, a shallow soil survey was undertaken to identify potential shallow groundwater pathways. Further details of all the GWDTE surveys are provided in Appendix 8.3 Groundwater Dependent Terrestrial Ecosystems.

Limitations

1.2.17 Surveys could not be completed in some areas within the Order Limits due to landowner access refusals. Three watercourses were unable to be surveyed (Unnamed Watercourse 42 and Chobham Park Brook) or were limited to a less extensive survey than planned (River Wey). In these locations, the assessment has relied upon desk survey information and information collected during nearby site visits, where available. The access constraints are not considered to substantially affect the robustness of the assessment.

1.2.18 The site visits were undertaken during a prolonged period of hot and dry weather. All watercourses were at a low flow state, with many dry, limiting assessment of ecological and hydrological conditions. These conditions had to be inferred from site observations and using desk-based techniques.

1.2.19 Where data have been supplied by third parties, these have been accepted at face value without further verification. Any inaccuracies in third party data have the potential to reduce the accuracy of the assessment.

1.3 Summary of WFD Screening and Scoping Stages

1.3.1 A Preliminary WFD Assessment was undertaken as part of the Scoping Report (Esso, 2018). As part of this, screening and scoping exercises were undertaken for the WFD water bodies, scheme components and WFD water body quality elements. A summary of these stages is provided below.

Stage 1 (WFD Screening)

1.3.2 During Stage 1 of the Preliminary WFD assessment, 39 surface WFD water bodies and 10 groundwater WFD water bodies were identified as being within the 500m study area around the Order Limits.

1.3.3 Of these, 23 surface WFD water bodies and 10 groundwater WFD water bodies were screened in for further assessment. A breakdown of the surface WFD water body types identified is shown in Table 1. In addition, 18 potential GWDTEs have been identified as outlined in Section 1.4.

Table 1: Summary of Screening Assessment

WFD water body type		Total Identified During Screening	Total Screened In
Surface water	Fluvial	34	19
	Lacustrine	1	1
	Transitional and coastal	2	1
	Artificial	2	2
Groundwater		10	10

1.3.4 Screening out of WFD water bodies was justified based on distance from the project, with all WFD water bodies located over 1km from the project screened out as they were unlikely to be impacted by construction or operation of the project.

1.3.5 All surface water and groundwater WFD quality elements were screened in.

Stage 2 (WFD Scoping)

1.3.6 During Stage 2 of the Preliminary WFD assessment, the following project components were identified as having potential impacts on the WFD water bodies:

- pipeline installation (including watercourse crossings);
- haul road construction;
- off-site haul road construction;
- set-up of construction compounds and logistics hubs; and
- operation of the pipeline.

Both Stage 1 and Stage 2 were documented within Appendix A5.1 Water Framework Directive Screening and Scoping Assessment of the Scoping Report (Esso, 2018). The scope of the assessment was discussed with the Environment Agency as part of the ongoing engagement.

1.3.7 Of the 23 surface WFD water bodies screened in for further assessment during Stage1, 14 were scoped in for further assessment, all of which are fluvial. This has been revised as part of this WFD Impact Assessment to 15, as a result of the following:

- Basingstoke Canal and King George VI Reservoir Water Transfer artificial WFD water bodies were scoped in. This follows comments from the Inspectorate and the need to consider biological quality elements associated with these WFD water bodies.
- Main River Hamble fluvial WFD water body was scoped out following changes to the design, with interaction between project components and WFD quality elements unlikely to occur.

1.3.8 Figures A8.6.1 and A8.6.2 show the WFD water bodies scoped in, in relation to the project Order Limits.

1.4 Baseline Identification

Surface WFD Water Bodies

1.4.1 The following provides an overview of the baseline conditions for each WFD surface water body. This should be read in conjunction with Chapter 8 Water. Annex B holds information relating to the ecological, geomorphological and water quality sensitivity of each watercourse.

Horton Heath Stream

1.4.2 Horton Heath Stream has its source at Lower Upham and typically has a straight planform as it flows southwest to Horton Heath. From Horton Heath the channel planform becomes increasingly sinuous as it flows southeast to its confluence with the River Hamble, north of Botley.

1.4.3 Arable agriculture is the dominant land use within the catchment, with two large golf courses, some woodlands and the small settlements of Boorley Green, Durley, Horton Heath and Wintershill also present. No notable changes to the watercourse have been recorded since 1888.

1.4.4 The WFD water body is currently achieving Good WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from Environment Agency (2018) and a summary of the findings from the site visits are outlined in Annex C. The project Order Limits crosses three watercourses within Horton Heath Stream WFD water body: Ford Lake Stream and two unnamed watercourses. Only Ford Lake Stream is classed as a Main River.

Upper Hamble

1.4.5 The River Hamble has its source north of Bishop's Waltham and typically has a sinuous planform throughout the catchment. From its source it flows southwest through Bishop's Waltham, where some flow is diverted into Bishop's Waltham Pond. The watercourse continues to flow southwest out of Bishop's Waltham until it enters the River Hamble WFD water body.

1.4.6 Arable agriculture is the dominant land use within the catchment, with several large woodland areas located north of Dean. The small settlements of Bishop's Waltham, Dean and Upham are also present. The only historical record of channel change along the River Hamble is the reshaping of Bishop's Waltham Pond to accommodate the B2177 (which appears to have been undertaken since 1961).

1.4.7 The WFD water body is currently achieving Moderate WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C. The project Order Limits cross three unnamed watercourses within the Upper Hamble WFD water body. No Main Rivers are crossed.

Caker Stream

1.4.8 The Caker Stream has its source south of Alton and typically has a straight planform throughout the catchment. It flows north, joining the River Wey at Alton. Arable agriculture is the dominant land use within the catchment, with some areas of woodland. The watercourse also flows through the town of Alton and smaller settlements, including Four Marks, Monkwood, Upper and Lower Farrington. The only record of historical channel change along the watercourse is the abandonment of a backwater at Alton (present on historical maps until 1961).

1.4.9 The WFD water body is currently achieving Moderate WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from Environment Agency (2018) and site visits, is outlined in Annex C. The project Order Limits cross 10 watercourses within the Caker Stream WFD water body: Caker Stream, Water Lane and eight unnamed watercourses. Only the Caker Stream is classified as a Main River.

North Wey (Alton to Tilford)

1.4.10 The River Wey flows into the North Wey (Alton to Tilford) WFD water body catchment to the northwest of Alton. Within this reach, the river has a predominantly meandering planform, with short lengths where the channel has been straightened. It flows northeast until it reaches Farnham, from where it flows southeast to Tilford and into the Wey (Tilford to Shalford) WFD water body catchment.

1.4.11 Arable agriculture is the dominant land use within the catchment, although the east of the catchment is heavily urbanised at, and around, the town of Farnham. Other smaller settlements within the catchment include Bentley, Upper and Lower Froyle and Dippenhall. Historic changes to the channel, observed from historical maps, include channel straightening beneath the A31 (present since 1961), and channel straightening and realignment at Farnham (noted at three locations from 1920-1961).

1.4.12 The WFD water body is currently achieving Moderate WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.13 The project Order Limits cross six watercourses within North Wey (Alton to Tilford) WFD water body; the River Wey, Ryebridge Stream and four unnamed watercourses. Only the River Wey is classified as a Main River.

Hart (Crondall to Elvetham)

1.4.14 The River Hart has its source at Crondall (as Ashley Head Spring) and typically has a straight planform throughout the catchment. It flows north from Crondall until it reaches Elvetham where it flows into the Hart (Elvetham to Hartley Wintney) WFD water body. The Basingstoke Canal also passes through the catchment.

1.4.15 Land use within the catchment is a mixture of arable agriculture, woodland and urban areas, which include the town of Fleet and the smaller settlements of Crondall, Ewshot, Mill Lane, Crookham Village and Dogmersfield. Historical changes to the

channel, observed from historical maps, include the culverting of the channel beneath Crondall Road (1897-1902), apparent abandonment of a mill race at Dogmersfield (1897-1958), channel straightening west of Fleet (since 1959) and the bypass/abandonment of an online lake at Elvetham (since 1959).

1.4.16 The WFD water body is currently achieving Poor WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.17 The project Order Limits cross nine unnamed watercourses within the Hart (Crondall to Elvetham) WFD water body. No Main Rivers are crossed.

Fleet Brook

1.4.18 The Fleet Brook has its source east of Fleet and has a predominantly straight planform as it flows west through Fleet. Downstream of Fleet, the channel planform becomes increasingly sinuous until it joins the River Hart at Elvetham. The catchment is covered by large areas of woodland, with some areas of arable agriculture also present. The town of Fleet is the main settlement within the catchment, with smaller settlements including Minley Manor also present. Historical changes to the channel, observed from historical maps, include the reduction in the size of Fleet Pond (since 1959), abandonment of a mill race in north Fleet (1896-1959) and channel realignment around the M3 (since 1959).

1.4.19 The WFD water body is currently achieving Moderate WFD Potential (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.20 The project Order Limits cross six watercourses within the Fleet Brook WFD water body; Gelvert Stream and five unnamed watercourses. Only Gelvert Stream is classed as a Main River. The Basingstoke Canal also passes through the WFD water body catchment but is classified as a separate (artificial) WFD water body.

Cove Brook

1.4.21 The Cove Brook has its source west of Farnborough Airport and has a predominantly straight planform throughout the catchment. It flows north through Farnborough until it joins the River Blackwater at Hawley. Land use within the catchment is predominantly woodland in the south with urban areas in the north. The town of Farnborough is the main settlement within the catchment. Historical changes to the channel, observed from historical maps, include culverting and channel realignment beneath Farnborough Airport (since 1959) and multiple examples of channel straightening and realignment during the urbanisation of Farnborough (typically occurring from 1896 onwards).

1.4.22 The WFD water body is currently achieving Bad WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.23 The project Order Limits cross five watercourses within the Cove Brook WFD water body, including the Cove Brook, Ively Brook and three unnamed watercourses. Both Cove Brook and Ively Brook are classed as Main Rivers.

Blackwater (Aldershot to Cove Brook confluence at Hawley)

1.4.24 The River Blackwater has its source to the southwest of Aldershot. The channel typically has a sinuous planform throughout the catchment, although some lengths have been extensively modified. From its source, the River Blackwater flows east along the southern border of Aldershot, before flowing north through the town and then onto Farnborough. The River Blackwater passes into the Blackwater (Hawley to Whitewater confluence at Bramshill) WFD water body at Hawley.

1.4.25 Land use within the catchment is predominantly urban, with several large towns present (namely Aldershot, Farnborough and Frimley) and some smaller settlements such as Ash, Tongham and Runfold. Arable agriculture and wooded areas are present, but primarily along the eastern and southern edges of the catchment. Historical changes to the channel, observed from historical maps, include multiple examples of channel straightening and realignment as the watercourse passes through Aldershot and Farnborough. Channel modification is particularly extensive where it is crossed by major highways, such as the A331 (occurring from 1896 onwards).

1.4.26 The WFD water body is currently achieving Poor WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.27 The project Order Limits cross three watercourses within the Blackwater (Aldershot to Cove Brook confluence at Hawley) WFD water body; the River Blackwater and two unnamed watercourses. Only the River Blackwater is classed as a Main River. In addition a single water feature, referred to as the Blackwater Valley, is also crossed.

Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham)

1.4.28 The Hale/Mill Bourne has its source west of Bagshot and typically has a straight planform as it flows southeast through Bagshot. As the watercourse flows east out of Bagshot it has a more sinuous planform, joining the Chertsey Bourne at Mimbridge.

1.4.29 Land use within the catchment is predominantly agricultural, with some small settlements such as Bagshot, Chobham, Lightwater, Burrowhill, Windlesham also present. Historical changes to the channel, observed from historical maps, include culverting and channel realignment through Bagshot (since 1959), channel straightening east of Lightwater (since 1959), removal of a weir and pond at Brooklands Farm (1897-1959), channel straightening between Lightwater and Chobham (since 1961) and multiple examples of channel straightening between Chobham and the confluence with the Chertsey Bourne (since 1961).

1.4.30 The WFD water body is currently achieving Moderate WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.31 The project Order Limits cross 10 watercourses within the Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham) WFD water body; Hale Bourne, Clappers Brook and eight unnamed watercourses. The Hale Bourne and Unnamed Watercourse 57 (tributary of Mill Bourne) are classed as Main Rivers.

Chertsey Bourne (Virginia Water to Chertsey)

1.4.32 The Chertsey Bourne flows out of Virginia Water (a large lake) in the northwest of the catchment and has a predominantly sinuous planform as it flows southeast. Approximately 4km downstream of the lake, the watercourse flows into the Chertsey Bourne (Chertsey to River Thames confluence) WFD water body west of Chertsey. The land use within the catchment is a mix of woodland, agriculture and urban areas, including the settlements of Virginia Water, Wentworth and Englefield Green. The only recorded historical channel change is extensive straightening and realignment of the channel around Junction 2 of the M3 (present on maps from 1961).

1.4.33 The WFD water body is currently achieving Moderate WFD Potential (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.34 The project Order Limits cross four unnamed watercourses within the Chertsey Bourne (Virginia Water to Chertsey) WFD water body. No Main Rivers are crossed.

Chertsey Bourne (Chertsey to River Thames confluence)

1.4.35 The Chertsey Bourne flows into the Chertsey Bourne (Chertsey to River Thames confluence) WFD water body at Chertsey. From there it flows southeast to join the River Thames at Hamhaugh Island. The planform of the watercourse varies through the catchment, with straight and sinuous reaches present. Land use within the catchment is a mix of woodlands, agriculture and urban areas, including the towns of Chertsey and Addlestone and smaller settlements of Ottershaw and Lyne. The only recorded historical channel change is channel straightening through Chertsey (since 1961). A series of small lakes/large ponds have also been formed to the northwest of Chertsey (present on maps from 1961).

1.4.36 The WFD water body is currently achieving Poor WFD Status (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.37 The project Order Limits cross 12 watercourses within the Chertsey Bourne (Chertsey to River Thames confluence) WFD water body; The Bourne and 11 unnamed watercourses. Only The Bourne is classified as a Main River.

Thames (Egham to Teddington)

1.4.38 The River Thames flows into the Thames (Egham to Teddington) WFD water body at Egham and has a primarily sinuous planform. Many of the meanders have,

however, been bypassed by navigation channels. The river flows south from Egham to Chertsey, and then east to Surbiton, before flowing north to Teddington and into the Thames Upper transitional WFD water body.

1.4.39 Land use within the catchment is predominantly urban, with the towns of Egham, Staines-upon-Thames, Walton-on-Thames, Kingston-Upon-Thames and Teddington occupying much of the catchment alongside the smaller settlements of Hanworth, Shepperton and Littleton. A number of reservoirs are also present. The only recorded historical channel change is the construction of a navigation channel cutting off a meander bend at Shepperton (between 1897 and the 1920s).

1.4.40 The WFD water body is currently achieving Poor WFD Potential (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.41 The project Order Limits cross three watercourses within Thames (Egham to Teddington) WFD water body; the River Thames and two unnamed watercourses. Only the River Thames is classified as a Main River.

Surrey Ash

1.4.42 The River Ash has its source at Staines-upon-Thames and has a predominantly straight planform. The River Ash flows southeast, joining the River Thames at Sunbury. Land use within the catchment is predominantly urban, with the river passing through the town of Staines-upon-Thames and smaller settlements of Littleton and Laleham. Two large offline reservoirs are also present within the catchment. The King George VI Reservoir Water Transfer also passes through the catchment, crossing the River Ash twice between Ashford and Staines-upon-Thames. The only recorded historical channel change along the River Thames on the available mapping which dates back to 1880, is the straightening and realignment of the channel to accommodate the construction of Queen Mary Reservoir (between 1897 and the 1920s).

1.4.43 The WFD water body is currently achieving Moderate WFD Potential (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

1.4.44 The project Order Limits cross four watercourses within the Surrey Ash WFD water body; the River Ash, Queen Mary Reservoir intake channel and two unnamed watercourses. The River Ash and Unnamed Watercourse 85 are classified as Main Rivers. The King George VI water transfer also passes through the WFD water body catchment but is classified as a separate (artificial) WFD water body.

Basingstoke Canal

1.4.45 The Basingstoke Canal is an artificial watercourse used for navigation purposes. It was constructed in 1794 and connects Basingstoke with the River Thames at Weybridge.

1.4.46 The WFD water body is currently achieving Moderate WFD Potential (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C.

King George VI Reservoir Water Transfer

1.4.47 The King George VI Reservoir Water Transfer (formerly Staines Aqueduct) draws water from the River Thames just above Bellweir Lock, to the north of Egham. It is an artificial watercourse that flows east from Bellweir Lock, through Staines-upon-Thames and Ashford, before flowing into an unnamed reservoir in Kempton. The channel is joined by an additional branch from the King George VI and Staines Reservoirs at Birch Green.

1.4.48 The WFD water body is currently achieving Moderate WFD Potential (Cycle 2, 2016 classification). WFD baseline information, obtained from the Environment Agency (2018) and site visits, is outlined in Annex C. The project Order Limits cross the surface water transfer at two locations.

Groundwater WFD Water Bodies

1.4.49 The following provides an overview of the baseline conditions for each WFD groundwater body. This should be read in conjunction with Chapter 8 Water and Appendix 8.1 Groundwater Baseline and 8.2 Detailed Trenchless and Targeted Open Cut Assessment.

1.4.50 The following sections also list the GWDTEs that have been identified within the groundwater study area present. Further detail of all the GWDTEs is provided in Appendix 8.3 Groundwater Dependent Terrestrial Ecosystems.

1.4.51 The pipeline route has been divided into four groundwater study areas (GWSA) from south to north as part of the overall assessment undertaken for the Environmental Statement. These study areas run south to north, from GWSA-A to GWSA-D.

1.4.52 Groundwater WFD water body baselines are held in Annex D.

South East Hants Bracklesham Group

1.4.53 The South East Hants Bracklesham Group WFD groundwater body has an overall WFD Status (Cycle 2, 2016 classification) of Poor, the combination of a good quantitative status and a poor chemical status. This WFD groundwater body is located within GWSA-A. The Ford Lake Valley and part of the Durley Green Lane GWDTEs are present in this WFD groundwater body.

East Hants Lambeth Group

1.4.54 The East Hants Lambeth Group WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of Poor, the combination of a poor quantitative status and a good chemical status. This WFD groundwater body is located partly in the north of GWSA-A, and largely in GWSA-B. The Wintershill GWDTE is located on the southern edge of the WFD groundwater body.

East Hants Chalk

1.4.55 The East Hants Chalk WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of Poor, the combination of a poor quantitative status and a poor chemical status. This WFD groundwater body is located within GWSA-B and is part of the Chalk aquifer. No GWDTEs are located in this WFD groundwater body.

River Itchen Chalk

1.4.56 The River Itchen Chalk WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of Poor, the combination of a poor quantitative status and a poor chemical status. This WFD groundwater body is located with GWSA-B and is part of the Chalk aquifer. No GWDTEs are located in the WFD groundwater body.

Alton Chalk

1.4.57 The Alton Chalk WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of Good, the combination of both a good quantitative and good chemical status. The WFD groundwater body is located within GWSA-B and is part of the Chalk aquifer. Peck Copse, Caker and Lavant Streams and Floodplain of the River Wey GWDTEs are located in this WFD groundwater body.

Basingstoke Chalk

1.4.58 The Basingstoke Chalk WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of Poor, the combination of both a poor quantitative and chemical status. This WFD groundwater body is located within GWSA-B and is part of the Chalk aquifer. Ashley Head Springs GWDTE is located on the northern boundary of the WFD groundwater body.

Old Basing Tertiaries

1.4.59 The Old Basing Tertiaries WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of Poor, the combination of a poor quantitative status and a good chemical status. The WFD groundwater body is located within GWSA-C and is associated with the Lambeth Group Secondary A aquifer. No GWDTEs are present in the WFD groundwater body.

Farnborough Bagshot Beds

1.4.60 The Farnborough Bagshot Beds WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of Good, the combination of a good quantitative status and a good chemical status. The WFD groundwater body is located within GWSA-C and is associated with the Bagshot Formation, the Windlesham Formation and the Camberley Sand Formation which are all Secondary A aquifers. Bourley and Long Valley, Eelmoor Marsh, Cove Brook and Ively Road and Blackwater Valley GWDTEs are located in this WFD groundwater body.

Chobham Bagshot Beds

1.4.61 The Chobham Bagshot Beds WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of Good, the combination of a good quantitative status and a

good chemical status. This WFD groundwater body is located within GWSA-C and is associated with the Bagshot Formation, the Windlesham Formation and the Claygate Member, all of which are classed as Secondary A aquifers. Colony Bog and Bagshot Heath (including Folly Bog), Chobham Common, Foxhills, Addlestone Moor, Chertsey Meads and Dumsey Meadow GWDTEs are located in this WFD groundwater body.

Lower Thames Gravels

1.4.62 The Lower Thames Gravels WFD groundwater body has a WFD Status (Cycle 2, 2016 classification) of 'Good', the combination of a good quantitative status and a good chemical status. This WFD groundwater body is located within GWSA-D and is associated with the superficial geology aquifers in this area. No GWDTEs are located in this WFD groundwater body.

1.5 Identification of Potential Impacts

Introduction

1.5.1 This section aims to provide a specific assessment of the project on the WFD quality elements at a WFD water body scale. For the surface water WFD water bodies, this includes the biological, physico-chemical and hydromorphological quality elements; for the groundwater WFD water bodies this includes the qualitative and quantitative WFD water bodies.

1.5.2 The following project components were scoped in for assessment:

- installation of pipeline (open cut);
- installation of pipeline (trenchless);
- temporary installation of bank and bed reinforcement and in-channel structures (including haul roads);
- use of haul roads;
- use of temporary construction compounds and logistics hubs; and
- operation of pipeline.

1.5.3 Where haul roads cross watercourses, a flume pipe (or pipes) would be installed beneath the haul roads to carry these crossings.

Design and Good Practice Measures

1.5.4 The project has been designed to avoid crossing watercourses where practicable. Further details relating to the routing of the project can be found in Chapter 4 Design Evolution. In addition, Chapter 3 Project Description contains the following details relevant for this assessment:

- A stone road and apron would be laid on a geotextile membrane to provide an all-weather surface access to the local highway; and

- The installed pipe would have a nominal internal diameter of 30cm and a nominal wall thickness of 11.9 mm. The wall thickness is greater than PD8010 standards to provide additional long term protection from deterioration or damage.

1.5.5 This appendix contains a number of project commitments to reduce impacts on the environment. These are indicated by a reference number like this (G23). Commitments include embedded design measures, good practice measures and mitigation required to reduce potentially significant effects. All commitments are listed within the Register of Environmental Actions and Commitments (REAC), which is included within Chapter 16 Environmental Management and Mitigation.

1.5.6 Good practice measures are set out in the REAC and secured through Development Consent Order (DCO) requirements such as the Code of Construction Practice. The good practice measures that are most relevant to the WFD assessment are listed in Table 2. These are applicable to all areas unless stated otherwise. The following assessment is based on these good practice measures being in place.

Table 2: Good Practice Measures within the REAC

Ref	Commitment Description
G11	Runoff across the site would be controlled by the use of a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding.
G130	The Construction Environmental Management Plan (CEMP) would follow the principles set out in the Outline CEMP and would set out the water mitigation and management measures and where they would need to be used. These measures would include, but not be restricted to, the following: • details of when dewatering would be likely; • measures to segregate construction site runoff from natural catchment runoff; • details of measures to attenuate runoff rates before discharging at controlled rates to receiving watercourses; • design of any holding or settlement lagoons or other treatment system required prior to discharge to the environment; • details of mitigation measures for all work or compound areas located within flood risk areas; • where construction activities would be located, preferably outside of the floodplain; and • details of any water abstraction and discharge points relating to the works.
Key commitments in relation to the mitigation of potential surface water and groundwater effects include:	
G4	The DCO would seek sufficient powers to allow continued access to environmental mitigation works for the purposes of monitoring as necessary.
G34	Where restrictions to working are required due to ecological seasonality e.g. for hibernation or breeding of protected species, standard timings have been indicated. However, due to alterations in weather patterns and temperatures from year to year, the restricted season may alter. It would be at the discretion of the Environmental Clerk of Works (ECoW) in consultation with Natural England where applicable, to decide the actual dates for restriction of works.
G37	Hibernation Seasons: Habitat with the potential to support hibernating reptiles, amphibians, dormice and hedgehogs not to be removed between November and March without supervision by the ECoW, or unless previous mitigation has been implemented to exclude, remove, or encourage these animals from the works area (e.g. trapping and translocation of GCN; habitat manipulation for dormice and reptiles)..
G39	Appropriate buffer zones would be established within Order Limits adjacent to identified watercourses.

Ref	Commitment Description
G42	A suitable methodology would be produced to set out how identifiable areas with the potential presence of Schedule 9 plant species or other invasive species would be demarcated, and how any affected soils would be appropriately managed throughout the works.
G53	Replacement hibernacula and refugia would be provided within the Order Limits to mitigate habitat loss to reptiles and amphibians.
G62	Vegetation arisings would be disposed of responsibly. Small quantities may be reused on site to create ecological habitat.
G71	For all areas, the following strategic approach would be taken for the management of both known and unknown land contamination: • a desk based qualitative risk assessment would be undertaken on the basis of available information to ascertain areas of known and unknown contamination; • working methodologies would be produced based on the assessment; • contingency plans would be developed for dealing with various forms of known or unknown contamination to allow work to progress with limited delay. These procedures would clearly define methods for dealing with any areas of unexpected contamination to manage immediate risks and prevent any contamination, ground gas, airborne contaminants or odour spreading from the affected area, and for appropriate disposal. Measures would contain protocols for dealing with areas of potential asbestos-containing materials, should they be encountered. For areas where potential contamination is known or strongly suspected to be present as a result of past activities, the following would also be undertaken: • ground investigation information would be shared and developed as appropriate; • risks to receptors would be assessed, and mitigation and working methods to control those risks would be developed. Risks would include: encountering contaminated dust, soils and groundwater; and where the presence of ground gas and/or vapours may lead to confined space risks, such as in excavations; • a Suitably Experienced Person would ensure that risk areas are identified, working methods followed and mitigation carried out appropriately; • made ground and materials known or strongly suspected of being contaminated would be segregated from natural and inert materials; and • ground arisings deemed unsuitable for re-use within the project would be disposed of appropriately for example to a soil treatment centre or landfill.
G87	Vegetation clearance, retention, protection and replanting/reinstatement drawings would be produced prior to the construction phase. The contractor(s) would implement these plans including agreed mitigation where practicable.
G88	Where possible, reinstatement of vegetation would generally be using the same or similar species to that removed (subject to restrictions for planting over and around pipeline easements).
G121	All refuelling, oiling and greasing of construction plant and equipment, would take place above drip trays and also away from drains as far as is reasonably practicable. Vehicles and plant would not be left unattended during refuelling. Appropriate spill kits would be made easily accessible for these activities.
G122	For open cut watercourse crossings and installation of vehicle crossing points, mitigation measures would include: • only use a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working; • install a pollution boom downstream of the works; • use and maintain temporary lagoons, tanks, bunds, silt fences or silt screens as required; • have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident; • place all static plant such as pumps in appropriately sized spill trays; • prevent re-fuelling of any plant or vehicle within 15m of a watercourse;

Ref	Commitment Description
	• inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids; and • re-instate the riparian vegetation and natural bed of the watercourse using the material removed when appropriate on completion of the works and compact as necessary. If additional material is required, appropriately sized material of similar composition would be used.
G125	With the exception of the Thames flood plain, all construction compounds would be located outside of Flood Zone 3.
G126	Where new or additional surfacing is required on any access tracks and compound areas, these would be permeable surfaces where ground conditions allow.
G132	The contractor(s) would ensure that the time the trench is open in the vicinity of certain features, would only be as long as necessary for the installation of the pipeline. The required dewatering of the trench would be undertaken only as and when necessary to enable safe working and preparation for pipe installation.
G134	Temporary stanks would be installed within the trench prior to undertaking dewatering/draining activities, to prevent migration of water within the trench.
G138	Water levels would be monitored immediately prior to and as dewatering takes place. This would be in the potentially affected abstraction or watercourse as appropriate.
G142	Fuels, oils and chemicals would be stored responsibly, away from sensitive water receptors. They would be stored >15m from watercourses, ponds and GWDTE.
G143	The quality of water generated by dewatering would be tested prior to discharge.
O6	The pipeline as laid will not lie within existing SPZ 1 areas associated with licensed abstractions.
O7	Where required, water stops (or “stanks”) would be installed at intervals through the pipe bedding and side fill.
O8	The principles of inherent safe design have been incorporated into the design of the pipeline as per Esso design standards for fuel pipelines, relevant industry codes of practice and standards and the requirements of the Pipeline Safety Regulations 1996..
O9	Inclusion of remotely operated valves to allow isolation of sections of the pipeline if required.
O10	24-hour remote monitoring of pipeline operation to detect leaks and enable remote shut down of the pipeline if required.
G118	The detailed design for Horizontal Direct Drilling would include depth and profile and consider methods to reduce the risk of groundwater breakout during Horizontal Direct Drilling.
G144	As part of negotiations with landowners within the Order Limits which are affected by the project, active private water supplies (PWS) would be identified with the landowner. Appropriate mitigation would be considered during construction.
G199	Specific areas in the vicinity of GWDTEs would be identified where increased frequency of stanks would be required to safeguard sensitive habitats which depend on groundwater.
W11	Dewatering would be limited in areas where abstraction/drainage of shallow groundwater may lead to a fall in groundwater levels in the vicinity of GWDTEs or adversely affect surface water quality.
NW12	Working width reduced to 15m and positioned towards the western half of the Order Limits to reduce impacts to a recorded spring over an approximate distance of 47m. (Grid ref: SU8268552667 to SU8269352711) within Bourley and Long Valley SSSI.

1.5.7 Table 3 demonstrates how the good practice measures outlined in Table 2 would reduce impacts associated with the project components scoped in for assessment.

Table 3: Project Components, Impacts and Good Practice Measures

Project Components	Impacts	Good Practice Measures	Further Comments
Installation of pipeline (trenchless)	Mobilisation of fine sediments and contaminants from construction activities	G11, G71	A stone road and apron would be laid on a geotextile membrane to provide an all-weather surface access to the local highway (see Chapter 3 Project Description). This would reduce the risk of sediment mobilisation.
	Riparian vegetation removal	G42, G87, G88	
	Bank destabilisation from digging launch/reception pits	G39	
	Dewatering	G130	
	Disturbance of pre-existing groundwater contamination	G143	
Installation of pipeline (open cut) and haul road crossings, and in-channel construction	Mobilisation of fine sediments and contaminants from construction activities	G11, G71	A stone road and apron would be laid on a geotextile membrane to provide an all-weather surface access to the local highway (see Chapter 3 Project Description). This would mitigate the risk of sediment mobilisation.
	Riparian vegetation removal	G42, G87, G88	
	Channel destabilisation	G4, G122	
	Disturbance/destruction of in-channel habitat	G87, G88, G122	
	Disturbance of aquatic fauna	G34, G37	
	Alteration of bed substrate through introduction of material for haul roads	G122	
	Modification of watercourse flow	G34, G122	
	Pollution events (direct and diffuse sources)	G121, G122, G130, G142, O6	O6 would reduce the risk of potential effects on protected aquifers
Use of haul roads	Road runoff/pollutants entering watercourse	G11, G130	
	Mobilisation of fine sediments	G11, G122	A stone road and apron would be laid on a geotextile membrane to provide an all-weather surface access to the local highway (see Chapter 3 Project Description). This would mitigate the risk of sediment mobilisation.
	Disturbance of aquatic fauna	G34, G37	
	Compaction of bed substrate where roads cross watercourses	G122	
Use of temporary construction	Increase in peak watercourse discharge resulting from efficient	G125, G126	Resulting from the implementation of G125 and G126, there would be no

Project Components	Impacts	Good Practice Measures	Further Comments
compounds and logistics hubs	compound drainage/hardstanding		requirement for positive drainage from construction compounds.
	Pollution events (direct and diffuse sources)	G11, G130	
	Mobilisation of fine sediments/contaminants	G11, G122	A stone road and apron would be laid on a geotextile membrane to provide an all-weather surface access to the local highway (see Chapter 3 Project Description). This would mitigate the risk of sediment mobilisation.
Operation of pipeline	Pollutant release	O8, O9, O10	The installed pipe would have a nominal internal diameter of 30cm and a nominal wall thickness of 11.9 mm. The wall thickness is greater than PD8010 standards to provide additional long term protection from deterioration or damage (see Chapter 3 Project Description).
	Water supply water quality	O6, O8, O9, O10	
	Long term groundwater flow disruptions	G134, O7, W10	W10 would be particularly relevant to Bourley and Long Valley SSSI – southerly wet woodland; and Folly Bog area of Colony Bog and Bagshot Heath SSSI – northeastern sub-site.

Summary of WFD Water Bodies and Relevant Project Components

1.5.8 Table 4 and Table 5 identify where project components interact with the WFD water bodies and, where applicable, specific watercourses.

Table 4: Surface Water Bodies and Watercourses Identified as Interacting with Specific Project Components

WFD Water Body	Watercourse	Pipeline (open cut)	Pipeline (trenchless)	In-channel Construction	Haul Road	Construction Compound
Horton Heath Stream	Ford Lake Stream	×	✓	×	×	✓
	Unnamed Watercourse 2	✓	×	✓	✓	
	Unnamed Watercourse 3	✓	×	×	×	
Upper Hamble	Unnamed Watercourse 4	✓	×	✓	✓	✓
	Unnamed Watercourse 5	✓	×	✓	✓	
	Unnamed Watercourse 6	✓	×	✓	✓	
Caker Stream	Unnamed Watercourse 7	×	×	✓	✓	✓
	Unnamed Watercourse 9	✓	×	✓	✓	

WFD Water Body	Watercourse	Pipeline (open cut)	Pipeline (trenchless)	In-channel Construction	Haul Road	Construction Compound
	Unnamed Watercourse 10	✓	×	✓	✓	
	Caker Stream	✓	×	✓	✓	
	Unnamed Watercourse 11	✓	×	✓	✓	
	Water Lane	✓	×	✓	✓	
	Unnamed Watercourse 12	✓	×	✓	✓	
	Unnamed Watercourse 13	✓	×	✓	✓	
	Unnamed Watercourse 14	✓	×	✓	✓	
	Unnamed Watercourse 90	✓	×	✓	×	
North Wey (Alton to Tilford)	Unnamed Watercourse 15	✓	×	✓	✓	✓
	River Wey	×	✓	×	×	
	Unnamed Watercourse 16	✓	×	✓	✓	
	Ryebridge Stream	✓	×	✓	✓	
	Unnamed Watercourse 17	✓	×	✓	✓	
	Unnamed Watercourse 87	✓	×	✓	×	
Hart (Crondall to Elvetham)	Unnamed Watercourse 18	✓	×	✓	✓	✓
	Unnamed Watercourse 19	✓	×	✓	✓	
	Unnamed Watercourse 20	✓	×	✓	✓	
	Unnamed Watercourse 22	✓	×	✓	✓	
	Unnamed Watercourse 23	✓	×	✓	✓	
	Unnamed Watercourse 24	×	✓	×	✓	
	Unnamed Watercourse 25	✓	×	✓	✓	
	Unnamed Watercourse 26	✓	×	✓	✓	
	Unnamed Watercourse 27	✓	×	✓	✓	
Fleet Brook	Unnamed Watercourse 28	✓	×	✓	×	✓
	Unnamed Watercourse 29	✓	×	✓	×	

WFD Water Body	Watercourse	Pipeline (open cut)	Pipeline (trenchless)	In-channel Construction	Haul Road	Construction Compound
	Unnamed Watercourse 31	×	✓	×	×	
	Unnamed Watercourse 32	×	✓	×	×	
	Gelvert Stream	×	✓	×	×	
	Unnamed Watercourse 35	✓	×	✓	×	
Cove Brook	Unnamed Watercourse 34	✓	×	✓	×	✓
	Unnamed Watercourse 36	✓	×	✓	×	
	Ively Brook	✓	×	✓	✓	
	Cove Brook	×	✓	✓	✓	
	Unnamed Watercourse 38	✓	×	✓	✓	
Blackwater (Aldershot to Cove Brook confluence at Hawley)	River Blackwater	×	✓	×	✓	✓
	Blackwater Valley	✓	✓	×	✓	
	Unnamed Watercourse 44	✓	✓	✓	×	
	Unnamed Watercourse 46	×	×	✓	✓	
Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham)	Unnamed Watercourse 49	✓	×	✓	×	✓
	Unnamed Watercourse 50	✓	×	✓	×	
	Unnamed Watercourse 51	✓	×	✓	✓	
	Hale Bourne	×	✓	×	×	
	Unnamed Watercourse 52	✓	×	✓	✓	
	Unnamed Watercourse 53	✓	×	✓	✓	
	Clappers Brook	✓	×	✓	✓	
	Unnamed Watercourse 57	×	✓	✓	✓	
	Unnamed Watercourse 59	×	✓	✓	✓	
	Unnamed Watercourse 88	✓	×	✓	✓	
Chertsey Bourne (Virginia Water to Chertsey)	Unnamed Watercourse 60	×	✓	✓	✓	✓
	Unnamed Watercourse 62	✓	×	✓	×	
	Unnamed Watercourse 63	✓	×	✓	✓	

WFD Water Body	Watercourse	Pipeline (open cut)	Pipeline (trenchless)	In-channel Construction	Haul Road	Construction Compound
	Unnamed Watercourse 91	✓	×	✓	×	
Chertsey Bourne (Chertsey to River Thames confluence)	Unnamed Watercourse 64	✓	×	✓	✓	✓
	Unnamed Watercourse 65	✓	×	✓	✓	
	Unnamed Watercourse 66	✓	×	✓	×	
	Unnamed Watercourse 68	×	✓	×	×	
	Unnamed Watercourse 70	×	×	✓	✓	
	Unnamed Watercourse 75	✓	×	✓	✓	
	Unnamed Watercourse 76	✓	✓	✓	✓	
	Unnamed Watercourse 77	✓	✓	✓	✓	
	Chertsey Bourne	×	✓	×	×	
	Unnamed Watercourse 82	✓	×	✓	✓	
	Unnamed Watercourse 83	✓	×	✓	✓	
	Unnamed Watercourse 92	×	✓	×	×	
Thames (Egham to Teddington)	River Thames	×	✓	×	×	✓
	Unnamed Watercourse 78	✓	×	✓	✓	
	Unnamed Watercourse 89	✓	×	✓	×	
Surrey Ash	River Ash	×	✓	×	×	✓
	Queen Mary Reservoir Intake Channel	×	✓	×	×	
	Unnamed Watercourse 81	×	✓	×	×	
	Unnamed Watercourse 85	✓	×	✓	×	
Basingstoke Canal	Basingstoke Canal	×	✓	×	×	×
King George VI Water Transfer	King George VI Reservoir Water Transfer	×	✓	×	×	×

Table 5: Groundwater WFD Water Bodies that Interact with the Project Components

WFD Water Body	Pipeline (open cut)	Pipeline (trenchless)	Pipeline (operation)
South East Hants Bracklesham Group	✓	✓	✓
East Hants Lambeth Group	✓	×	✓
East Hants Chalk	✓	✓	✓
River Itchen Chalk	✓	✓	✓
Alton Chalk	✓	✓	✓
Basingstoke Chalk	✓	×	✓
Old Basing Tertiaries	✓	×	✓
Farnborough Bagshot Beds	✓	✓	✓
Chobham Bagshot Beds	✓	✓	✓
Lower Thames Gravels	✓	✓	✓

WFD Impact Assessment

1.5.9 Impacts on each WFD water body are explored in more detail in Table 6 to Table 20 (surface WFD water bodies), and Table 21 and Table 30 (groundwater WFD water bodies). A high level of confidence is attributed to the assessment undertaken on GWDTEs in Appendix 8.3, and the subsequent residual impacts on GWDTEs which rest on qualitative Conceptual Site Models.

1.5.10 The operation of the pipeline is not considered to have an impact on any of the surface WFD water bodies. Therefore, it is not included in any of the subsequent assessment tables. This is based on there being no outfalls or permanent culverts in the channels, or any requirement to discharge to surface or groundwater.

1.5.11 Colour coding is used in the impact assessment tables to highlight risk of deterioration to WFD quality elements posed by project components:

- Black - No or negligible change (no mitigation required);
- **Green** - Low risk of deterioration of status (good practice measures required);
- **Orange** - Medium risk of deterioration of status (specific mitigation required); and
- **Red** - High risk of deterioration of status (non-compliant and major mitigation required).

Table 6: Horton Heath Stream Surface WFD Water Body Impact Assessment

Water Body	**Horton Heath Stream**				
Component	**Construction**				
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	The design indicates that launch/reception pits should be more than 75m from Ford Lake Stream and would not impact on aquatic flora/fauna at a WFD water body scale.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main river or ordinary watercourse whilst still ensuring safe working, (see Table 2, measure G122) impacts would be localised, resulting in a low risk of WFD water body status deterioration.		Use of haul roads that cross the watercourse could locally alter any aquatic fauna and flora present. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 50m of the nearest watercourse Negligible effect on aquatic flora/fauna at a local or WFD water body scale, given the distance between the compound and receptors.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain could mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of the measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and from the floodplain) and disruption of sediment sources could cause change in the sediment loading in the channel. Impacts would be localised which, along with the measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments could increase sediment loading. Likely to be a localised impact which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 50m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	The design indicates that launch/reception pits should be greater than 75m from Ford Lake Stream, therefore the impact of construction activities on in-channel morphology at either local or WFD water body scale would be negligible.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow processes and the longitudinal continuity of the channel would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of the bank/bed profile could cause channel destabilisation.		Use of haul roads across/adjacent to watercourses could cause localised compaction of the bed and/or banks/riparian zone. This could affect the long term structure of the bed and riparian zone. Fine sediments could also become	The closest compound would be sited within 50m of the nearest watercourse. Impacts would be localised, with negligible impact on in-channel processes or WFD water body status, given the distance between the compound and receptors and

Water Body	**Horton Heath Stream**			
		Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	mobilised and smother the channel bed. Aggregate forming the crossing point could also become mobilised, altering local sediment transport dynamics. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	requirement for contractor(s) to adhere to consent conditions regarding discharge activities (see Table 2).
	Impact: **Negligible**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 7: Upper Hamble Surface WFD Water Body Impact Assessment

Water Body	**Upper Hamble**			
Component	**Construction**			
Quality Element	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter the abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.		Use of haul roads that require a crossing of the watercourses could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 20m of the nearest watercourse. Negligible impact on any aquatic flora/fauna at a local or WFD water body scale, given the distance between the compound and receptors.
	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	Removal of localised riparian vegetation which could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and from the floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts would be localised which, along with measures in Table 2, result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments could increase sediment loading. Impact likely to be localised, and measures set out in Table 2 should minimise the risk of WFD water body status deterioration.	The closest compound would be sited within 20m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect on physico-chemical quality at a WFD water body scale.

Water Body	Upper Hamble		
	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	Fine sediments would be likely to be mobilised during construction activities, smothering bed substrate. There would also be the potential for direct disturbance of the channel bed. Flow processes and longitudinal continuity of the watercourse would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Presence of access road crossings and works adjacent to the watercourses could cause localised compaction of the bed and/or banks/riparian zone. This could affect the structure of the bed and riparian zone. Fine sediments could also become mobilised and enter the watercourse. Aggregate forming the crossing could also become mobilised, altering local sediment transport dynamics. Impacts would be localised which, along with measures set out in Table 2, result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 20m of the nearest watercourse. Impacts would be localised, with negligible impact on in-channel processes or WFD water body status, given the distance between the compound and receptors and requirement for contractor(s) to adhere to consent conditions regarding discharge activities (see Table 2).
	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 8: Caker Stream Surface WFD Water Body Impact Assessment

Water Body	Caker Stream			
Component	Construction			
Quality Element	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter the abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.Table 2		Use of haul roads that cross watercourses could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 80m of the nearest watercourse. Negligible impact on aquatic flora/fauna at a local or at WFD water body scale, given the distance between the compound and receptors.
	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**

Water Body	Caker Stream		
Physico-chemical	Removal of riparian vegetation could reduce channel shading, potentially increasing water temperature. Mobilisation of sediment (in-channel and from the floodplain) and disruption of sources could cause change in sediment loading. Impacts would be localised which, along with the measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Mobilisation of fine sediments could also increase sediment loading. Impacts would be localised which, along with the measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 80m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.
	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	Fine sediments could be mobilised during construction activities, smothering bed substrate. There would also be the potential for direct removal or compaction of the channel bed. Flow processes and longitudinal continuity would be disrupted during the in-channel construction activities, especially of the Caker Stream. However, these are likely to be limited to a local scale and short temporal scale (approximately one month). Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Addition of aggregate into the channel to form haul roads, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in low risk of WFD water body status deterioration.	Presence of haul road crossings and works adjacent to the watercourses could cause localised compaction of the bed and/or banks/riparian zone. This could affect the structure of the channel bed and riparian zone. Fine sediments could also become mobilised and enter the watercourse. Aggregate forming the crossing point could also become mobilised, altering local sediment transport dynamics. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 80m of the nearest watercourse. Impacts would be localised, with negligible impact on in-channel processes or WFD water body status, given the distance between the compound and receptors and requirement for contractor(s) to adhere to consent conditions regarding discharge activities (see Table 2).between the compound and receptors.
	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 9: North Wey (Alton to Tilford) Surface WFD Water Body Impact Assessment

Water Body	**North Wey (Alton to Tilford)**				
Component	**Construction**				
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	The design indicates that launch/reception pits should be more than 50m from all watercourses and would not impact on aquatic flora/fauna at a WFD water body scale.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration..(See Table 2)		Use of haul roads that cross watercourses could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited more than 100m of the nearest watercourse. No impacts anticipated.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain may mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body, with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and from floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments could increase sediment loading. Impacts likely to be localised which, along with the measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited over 100m of the nearest watercourse. No impacts anticipated.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	The design indicates that launch/reception pits should be over 50m from watercourse. Impacts on local flow and sediment processes within the channel would be minimal and not significant at a WFD water body scale.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow processes and longitudinal continuity would be disrupted as part of the in-channel construction activities.		Use of haul roads across/adjacent to watercourses could cause localised compaction of the bed and/or banks/riparian zone. This could affect long term	The closest compound would be sited over 100m of the nearest watercourse. No impacts anticipated.

Water Body	North Wey (Alton to Tilford)			
		Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	structure of bed and riparian zone. Fine sediments could also become mobilised and enter the watercourse. Aggregate forming the crossing point could also become mobilised, altering local sediment transport dynamics. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	
	Impact: **Negligible**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 10: Hart (Crondall to Elvetham) Surface WFD Water Body Impact Assessment

Water Body	Hart (Crondall to Elvetham)				
Component	Construction				
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	The design indicates that the reception pit likely to be within 10m of unnamed watercourse 24. This could require removal of riparian vegetation, therefore disturbing marginal habitat and channel shading. Impacts would be localised, with minimal impact on WFD water body status.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration. (See Table 2)		Use of haul roads that cross watercourses could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 30m of the nearest watercourse. Negligible impact on any aquatic flora/fauna at a local or at WFD water body scale, given the distance between the compound and receptors.
	Impact: **LOW**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**

Water Body	Hart (Crondall to Elvetham)			
Physico-chemical	Construction activities within the floodplain could mobilise fine sediments and/or contaminants. Impact likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and on floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Mobilisation of fine sediments could increase sediment loading. This likely to be a localised impact which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 30m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.
	Impact: **Negligible**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	The design indicates that the reception pit likely to be within 10m of unnamed watercourse 24 potentially increasing fine sediment supply from floodplain construction activities, which could lead to smothering of bed substrate. Despite close proximity of works to watercourse, significant impacts would be unlikely at WFD water body scale due to the modified nature of the channel.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow processes and longitudinal continuity would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Use of access roads across/adjacent to watercourses could cause localised compaction of the bed and/or banks/riparian zone. This could affect structure of bed and riparian zone. Fine sediments could also become mobilised and enter the watercourse. Aggregate forming the crossing point could also become mobilised, altering local sediment transport dynamics. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 30m of the nearest watercourse. Impacts would be localised, with negligible impact on in-channel processes or WFD water body status, given the distance between the compound and receptors and requirement for contractor(s) to adhere to consent conditions regarding discharge activities (see Table 2).
	Impact: **LOW**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 11: Fleet Brook Surface WFD Water Body Impact Assessment

Water Body	**Fleet Brook**			
Component	**Construction**			
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Construction compounds
Biological	The design indicates that launch/reception pits should be more than 75m from all watercourses, therefore negligible impact anticipated on aquatic flora/fauna at a WFD water body scale.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration. (See Table 2)		The design indicates that the closest compound would be sited 100m from the nearest watercourse. No impacts anticipated.
	Impact: **Negligible**	Impact: **LOW**		Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain may mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and on floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		The design indicates that the closest compound would be sited 100m from the nearest watercourse. No impacts anticipated.
	Impact: **Negligible**	Impact: **LOW**		Impact: **Negligible**
Hydro-morphological	The design indicates that launch/reception pits should be more than 75m from all watercourses, therefore impacts at a local and WFD water body scale likely to be negligible.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow processes and longitudinal continuity would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		The design indicates that the closest compound would be sited 100m from the nearest watercourse. No impacts anticipated.
	Impact: **Negligible**	Impact: **LOW**		Impact: **Negligible**

Table 12: Cove Brook Surface WFD Water Body Impact Assessment

Water Body	**Cove Brook**				
Component	**Construction**				
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	The design indicates that launch/reception pits likely to be 25m from Cove Brook. Local loss of riparian vegetation and therefore habitat likely to occur, however, the localised nature of the impact should not significantly impact on the WFD water body status.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.(see Table 2)		Use of haul roads that cross watercourses could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. Despite close proximity to the watercourse, implementation of measures set out in Table 2 would result in negligible impacts on local aquatic flora/fauna and at WFD water body scale.
	Impact: **LOW**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain may mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and on floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments could increase sediment loading. This likely to be a localised impact which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	The design indicates that launch/reception pits likely to be 25m from Cove Brook. This could impact on local flow and sediment processes, for	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed.		Use of haul roads across/adjacent to watercourses could cause localised compaction of the bed and/or	The closest compound would be sited within 10m of the nearest watercourse. Potential for

Water Body	Cove Brook			
	example increasing fine sediment supply from floodplain construction activities. With appropriate mitigation measures in place, the impact of construction should not be significant at a local or WFD water body scale.	Flow processes and longitudinal continuity would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile may cause channel destabilisation. Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	banks/riparian zone. This could affect long term structure of bed and riparian zone. Fine sediments could also become mobilised and enter the watercourse. Aggregate forming the crossing point could also become mobilised, altering local sediment transport dynamics. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	increased peak discharges arising from modified land drainage. Despite close proximity to the watercourse, implementation of measures set out in Table 2 would result in negligible impacts on in-channel processes and at WFD water body scale.
	Impact: **LOW**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 13: Blackwater (Aldershot to Cove Brook confluence at Hawley) Surface WFD Water Body Impact Assessment.

Water Body	**Blackwater (Aldershot to Cove Brook confluence at Hawley)**				
Component	**Construction**				
Quality Element	Pipeline (trenchless, includes assessment of both horizontal directional drilling (HDD) and Auger Bore trenchless crossing methods of the River Blackwater and Blackwater Valley)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	HDD The design indicates that launch/reception pits should be more than 50m from all watercourses, therefore negligible impact anticipated on aquatic flora/fauna at a WFD water body scale. Auger Bore The design indicates that reception pits likely to be 15m from River Blackwater. Local loss of riparian vegetation and therefore habitat likely to occur, however, the localised nature of the impact should not significantly impact on the WFD water body status.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.		Use of haul roads across and adjacent to watercourses could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. Despite close proximity to the watercourse, implementation of measures set out in Table 2 would result in negligible impacts on local aquatic flora/fauna and at WFD water body scale.
	Impact (HDD): **Negligible** Impact (Auger Bore): **LOW**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	HDD and Auger Bore Construction activities within the floodplain could mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and on floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts likely to be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments may also increase sediment loading. This likely to be a localised impact which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.

Water Body	Blackwater (Aldershot to Cove Brook confluence at Hawley)			
	Impact: **Negligible**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	HDD The design indicates that launch/reception pits should be more than 50m from all watercourses. Impacts on local flow and sediment processes within the channel would be minimal and not significant at a WFD water body scale. Auger Bore The design indicates that reception pits likely to be 15m from River Blackwater. This could impact on local flow and sediment processes, for example increasing fine sediment supply from floodplain construction activities. Despite the close proximity of works to the watercourse, measures set out in Table 2 and the localised nature of the impacts should result in a low risk of WFD water body status deterioration.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow processes and longitudinal continuity would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Addition of aggregate to form access road, as well as compaction of existing bed substrate. Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Use of haul roads across/adjacent to watercourses and water bodies could cause localised compaction of the bed and/or banks/riparian zone, impacting long term structure of bed, banks and riparian zone. Fine sediments could also become mobilised and enter the watercourse. Aggregate forming crossing point could also become mobilised, altering local sediment transport dynamics. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. Potential for increased peak discharges arising from modified land drainage. Despite close proximity to the watercourse, implementation of measures set out in Table 2 would result in negligible impacts on local in-channel processes and at WFD water body scale.
	Impact (HDD): **Negligible** Impact (Auger Bore): **LOW**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 14: Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham) Surface WFD Water Body Impact Assessment

Water Body	**Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham)**				
Component	**Construction**				
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	The design indicates that launch/reception pits likely to be within 10m of the Hale Bourne. Local loss of riparian vegetation and therefore habitat likely to occur, however the localised nature of the impact should not significantly impact on the WFD water body status.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.		Use of haul roads across the watercourse could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. Despite close proximity to the watercourse, implementation of measures set out in Table 2 would result in negligible impacts on local aquatic flora/fauna and at WFD water body scale.
	Impact: **LOW**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain could mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and on floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments could increase sediment loading. This likely to be a localised impact which, along with measures set out in Table 2 should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**

Water Body	**Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham)**			
Hydro-morphological	The design indicates that launch/reception pits likely to be within 10m of the Hale Bourne. This could impact on local flow and sediment processes, for example increasing fine sediment supply from floodplain construction activities. Despite the close proximity of works to the watercourse, measures set out in Table 2 and the localised nature of the impacts should result in a low risk of WFD water body status deterioration.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow processes and longitudinal continuity would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Use of haul roads across/adjacent to watercourses could cause localised compaction of the bed and/or banks/riparian zone. This could affect long term structure of bed and riparian zone. Fine sediments could also become mobilised and enter the watercourse. Aggregate forming the crossing point may could become mobilised, altering local sediment transport dynamics. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. Potential for increased peak discharges arising from modified land drainage. Despite close proximity to the watercourse, implementation of measures set out in Table 2 would result in negligible impacts on local in-channel processes and at WFD water body scale.
	Impact: **LOW**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 15: Chertsey Bourne (Virginia Water to Chertsey) Surface WFD Water Body Impact Assessment

Water Body	**Chertsey Bourne (Virginia Water to Chertsey)**				
Component	**Construction**				
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	The design indicates that the reception pit likely to be within 10m of unnamed watercourse 60. Local loss of riparian vegetation and therefore habitat likely to occur, however the localised nature of the impact should not significantly impact on the WFD water body status.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.		Use of haul roads across the watercourse could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 30m of the nearest watercourse. Negligible effect on aquatic flora/fauna at a local or at WFD water body scale, given the distance between the compound and receptors.
	Impact: **LOW**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain could mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and on floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments could also increase sediment loading. This would be a localised impact which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 30m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**

Water Body	Chertsey Bourne (Virginia Water to Chertsey)			
Hydro-morphological	The design indicates that the reception pit likely to be within 10m of unnamed watercourse 60. This could impact on local flow and sediment processes, for example increasing fine sediment supply from floodplain construction activities. Despite the close proximity of works to the watercourse, measures set out in Table 2 and the localised nature of the impacts should result in a low risk of WFD water body status deterioration.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow processes and longitudinal continuity would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Use of haul roads across/adjacent to watercourses could cause localised compaction of the bed and/or banks/riparian zone. This could affect long term structure of bed and riparian zone. Fine sediments could also become mobilised and enter the watercourse. Aggregate forming the crossing point could also become mobilised, altering local sediment transport dynamics. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 30m of the nearest watercourse. Impacts would be localised, with negligible impact on in-channel processes or WFD water body status, given the distance between the compound and receptors and requirement for contractor(s) to adhere to consent conditions regarding discharge activities (see Table 2).
	Impact: **LOW**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 16: Chertsey Bourne (Chertsey to River Thames confluence) Surface WFD Water Body Impact Assessment

Water Body	**Chertsey Bourne (Chertsey to River Thames confluence)**				
Component	**Construction**				
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	The design indicates that launch/reception pits likely to be within 15m of the Chertsey Bourne. Local loss of riparian vegetation and therefore habitat likely to occur, however the localised nature of the impact should not significantly impact on the WFD water body status.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.		Use of haul roads across the watercourse could alter localised presence of aquatic fauna and flora. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. Despite close proximity to the watercourse, implementation of measures set out in Table 2 would result in negligible impacts on local aquatic flora/fauna and at WFD water body scale.
	Impact: **LOW**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain may mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of sediment (in-channel and on floodplain) and disruption of sediment sources could cause change in sediment loading. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments could increase sediment loading. This would be a localised impact which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**

Water Body	Chertsey Bourne (Chertsey to River Thames confluence)			
Hydro-morphological	The design indicates that launch/reception pits likely to be within 15m of the Chertsey Bourne. This could impact on local flow and sediment processes, for example increasing fine sediment supply from floodplain construction activities. Despite the close proximity of works to the watercourse, measures set out in Table 2 and the localised nature of the impacts should result in a low risk of WFD water body status deterioration.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow process and longitudinal continuity would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	Use of haul roads across/adjacent to watercourses and water bodies could cause localised compaction of the bed and/or banks/riparian zone. This could affect long term structure of bed and riparian zone. Aggregate forming crossing point could also become mobilised, altering local sediment transport dynamics. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The closest compound would be sited within 10m of the nearest watercourse. Potential for increased peak discharges arising from modified land drainage. Despite close proximity to the watercourse, implementation of measures set out in Table 2 would result in negligible impacts on local in-channel processes and at WFD water body scale.
	Impact: **LOW**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 17: Thames (Egham to Teddington) Surface WFD Water Body Impact Assessment

Water Body	**Thames (Egham to Teddington)**				
Component	**Construction**				
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Haul roads	Construction compounds
Biological	The design indicates that launch/reception pits should be more than 75m from the River Thames, therefore negligible impact anticipated on aquatic flora/fauna at a WFD water body scale.	Potential for removal and disturbance of aquatic flora and fauna when working adjacent to watercourses, whilst any reinforcement of bank could alter abundance of species and habitat availability. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.		Use of haul roads that cross the watercourse could locally alter any aquatic fauna and flora present. This impact would be restricted to the haul road crossing location and should result in a low risk of WFD water body status deterioration.	The design indicates that the closest compound would be sited within 40m of the nearest watercourse. Negligible impact on aquatic flora/fauna at a local or at WFD water body scale, given the distance between the compound and receptors.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain may mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of floodplain sediment and disruption of sediment sources could cause change in sediment loading. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.		Mobilisation of fine sediments may also increase sediment loading. This would be a localised impact which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The design indicates that the closest compound would be sited within 40m of the nearest watercourse. The measures set out in Table 2 should mitigate the effect that this component has on physico-chemical quality at a WFD water body scale.
	Impact: **Negligible**	Impact: **LOW**		Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	The design indicates that launch/reception pits should be more than 75m from the River Thames, therefore impacts at a local and WFD water body scale likely to be negligible.	Fine sediments are likely to be mobilised during construction activities, with banks also disturbed. Flow processes and the longitudinal continuity of the channel would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile may cause channel destabilisation.		Use of haul roads across/adjacent to watercourses could cause localised compaction of the bed and/or banks/riparian zone. This could affect the long term structure of the bed and riparian zone. Fine sediments could also become	The design indicates that the closest compound would be sited within 40m of the nearest watercourse. Impacts would be localised, with negligible impact on in-channel processes or WFD water body status, given the distance

Water Body	**Thames (Egham to Teddington)**			
		Addition of aggregate into the channel to form an access road, as well as compaction of existing bed substrate, could disturb local morphological processes e.g. cause preferential erosion upstream of the crossing, or removal of morphological features. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	mobilised and smother the channel bed. Aggregate forming the crossing point could also become mobilised, altering local sediment transport dynamics. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	between the compound and receptors and requirement for contractor(s) to adhere to consent conditions regarding discharge activities (see Table 2).
	Impact: **Negligible**	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 18: Surrey Ash Surface WFD Water Body Impact Assessment

Water Body	**Surrey Ash**			
Component	**Construction**			
Quality Element	Pipeline (trenchless)	Pipeline (open cut)	In-channel structures	Construction compounds
Biological	The design indicates that the reception pit likely to be within 10m of River Ash. Local loss of riparian vegetation and therefore habitat likely to occur, however the localised nature of the impact should not significantly impact on the WFD water body status.	Potential for removal and disturbance of aquatic flora and fauna, whilst any reinforcement of bed/bank could alter abundance of species. By only using a 10m working width for open cut crossings of a main or ordinary watercourse whilst still ensuring safe working (see Table 2, measure G122), impacts would be localised, resulting in a low risk of WFD water body status deterioration.		The design indicates that the closest compound would be sited more than 100m from the nearest open watercourse. A compound likely to be located within 40m of unnamed watercourse 85, however the watercourse is extensively culverted. No impact anticipated at a local or WFD water body scale.
	Impact: **LOW**	Impact: **LOW**		Impact: **Negligible**

Water Body	Surrey Ash		
Physico-chemical	Construction activities within the floodplain may mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.	Removal of riparian vegetation could reduce shade, potentially increasing water temperature. Mobilisation of floodplain sediment and disruption of sediment sources could cause change in sediment loading. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The design indicates that the closest compound would be sited more than 100m from the nearest open watercourse. A compound likely to be located within 40m of unnamed watercourse 85, however the watercourse is extensively culverted. No impact anticipated at a local or WFD water body scale.
	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**
Hydro-morphological	The design indicates that the reception pit likely to be within 10m of the River Ash. This could impact on local flow and sediment processes, for example increasing fine sediment supply from floodplain construction activities. Despite the close proximity of works to the watercourse, appropriate mitigation measures and the localised nature of the impacts should result in a low risk of WFD water body status deterioration.	Fine sediments likely to be mobilised during construction activities, with bed substrate also disturbed. Flow processes and longitudinal continuity would be disrupted as part of the in-channel construction activities. Removal of riparian vegetation and alteration of bank/bed profile could cause channel destabilisation. Impacts would be localised which, along with measures set out in Table 2, should result in a low risk of WFD water body status deterioration.	The design indicates that the closest compound would be sited more than 100m from the nearest open watercourse. A compound likely to be located within 40m of unnamed watercourse 85, however, the watercourse is extensively culverted. No impact anticipated at a local or WFD water body scale.
	Impact: **LOW**	Impact: **LOW**	Impact: **Negligible**

Table 19: Basingstoke Canal Surface WFD Water Body Impact Assessment

Water Body	Basingstoke Canal
Component	**Construction**
Quality Element	Pipeline (trenchless)
Biological	The design indicates that launch/reception pits should be more than 75m from the Basingstoke Canal, therefore it would be unlikely that riparian vegetation would be removed. Therefore, impacts at a local or WFD water body scale would be negligible.
	Impact: **Negligible**

Water Body	Basingstoke Canal
Physico-chemical	Construction activities within the floodplain could mobilise fine sediments and/or contaminants. However, as the works would be more than 75m from the watercourse it would not lead to a significant impact at a local or WFD water body scale.
	Impact: **Negligible**
Hydro-morphological	The design indicates that launch/reception pits should be more than 75m from the Basingstoke Canal, therefore the impact of construction activities on in-channel morphology at either local or WFD water body scale would be negligible.
	Impact: **Negligible**

Table 20: King George VI Reservoir Surface WFD Water Body Impact Assessment

Water Body	King George VI Reservoir Water Transfer
Component	**Construction**
Quality Element	Pipeline (trenchless)
Biological	The design indicates that launch/reception pits likely to be within 25m of the surface water transfer. Local loss of riparian vegetation and therefore habitat likely to occur, however the localised nature of the impact would not significantly impact on the WFD water body status.
	Impact: **Negligible**
Physico-chemical	Construction activities within the floodplain could mobilise fine sediments and/or contaminants. However, there is unlikely to be a pathway to the WFD water body with the implementation of measures set out in Table 2.
	Impact: **Negligible**
Hydro-morphological	The design indicates that launch/reception pits likely to be 25m from the surface water transfer. This could impact on local flow and sediment processes, for example increasing fine sediment supply from floodplain construction activities. With appropriate mitigation measures in place (see Table 2), the impact of construction would not be significant at a local or WFD water body scale.
	Impact: **Negligible**

Table 21: South East Hants Bracklesham Group Groundwater WFD Body Impact Assessment

Water Body	South East Hants Bracklesham Group	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** No dewatering (abstraction) would be required at the trenchless crossing, and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources is anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the WFD groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTE within this water body from the proposed works has been identified.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Ford Lake Valley and Durley Green Lane: **Negligible**	Impact: Ford Lake Valley: **None** Durley Green Lane: **Negligible**
	Water balance element HDD drilling methods for trenchless crossings do not require abstraction (dewatering) so no change to the water balance would be expected. No substantial long term abstraction (dewatering) would be required during open cut methods. Therefore no impact would be expected.	**Water balance element** No abstraction (dewatering) is required during operation.
	Impact: **None**	Impact: **None**
Chemical	**No saline or other intrusion element** No dewatering (abstraction) would be required at the trenchless crossing and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.

Water Body	South East Hants Bracklesham Group	
	sources is anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant impacts on the GWDTE within this water body have been identified.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Ford Lake Valley and Durley Green Lane: **Negligible**	Impact: Ford Lake Valley, Durley Green Lane: **Negligible**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element**. Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 22: East Hants Lambeth Groundwater WFD Body Impact Assessment

Water body	East Hants Lambeth	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** No trenchless crossings are in this groundwater body and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTE from the proposed works within this WFD water body should occur.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Wintershill: **Negligible**	Impact: Wintershill: **None**
	Water balance element No significant abstraction (dewatering) would be required during open cut methods (any dewatering would be short term), therefore no significant long term impact would be anticipated.	**Water balance element** No abstraction (dewatering) would be required during operation.
	Impact: **None**	Impact: **None**
Chemical	**No saline or other intrusion element** No trenchless crossings are in this groundwater body and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.

Water body	East Hants Lambeth	
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTE from the proposed works within this WFD water body should occur.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Wintershill: **None**	Impact: Wintershill: **None**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 23: East Hants Chalk Groundwater WFD Body Impact Assessment

Water Body	East Hants Chalk	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** No dewatering (abstraction) is likely to be required at the trenchless crossings, and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.

Water Body	East Hants Chalk	
	other sources would be anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No GWDTEs have been identified within this groundwater body.	**GWDTE element** No GWDTE have been identified within this groundwater body.
	Impact: **Not applicable**	Impact: **Not applicable**
	Water balance element There are no trenchless crossings in this groundwater body that likely to require dewatering, and no significant abstraction (dewatering) would be required during open cut methods (any dewatering would be short term). Therefore no significant long term impact would be anticipated.	**Water balance element** No abstraction (dewatering) would be required during operation.
	Impact: **None**	Impact: **None**
Chemical	**No saline or other intrusion element** There are no trenchless crossings in this groundwater body that are likely to require dewatering and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No GWDTEs have been identified within this groundwater body.	**GWDTE element** No GWDTEs have been identified within this groundwater body.

Water Body	**East Hants Chalk**	
	Impact: **Not applicable**	Impact: **Not applicable**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 24: River Itchen Chalk Groundwater WFD Body Impact Assessment

Water Body	**River Itchen Chalk**	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** There are no trenchless crossings in this groundwater body that are likely to require dewatering and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element	**GWDTE element**

Water Body	River Itchen Chalk	
	No GWDTEs have been identified within this groundwater body.	No GWDTEs have been identified within this groundwater body.
	Impact: **Not applicable**	Impact: **Not applicable**
	Water balance element There are no trenchless crossings in this groundwater body that are likely to require dewatering, and no significant abstraction (dewatering) would be required during open cut methods (any dewatering would be short term). Therefore no significant long term impact would be anticipated.	**Water balance element** No abstraction (dewatering) would be required during operation.
	Impact: **None**	Impact: **None**
Chemical	**No saline or other intrusion element** There are no trenchless crossings in this groundwater body that are likely to require dewatering and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No GWDTEs have been identified within this groundwater body.	**GWDTE element** No GWDTEs have been identified within this groundwater body.
	Impact: **Not applicable**	Impact: **Not applicable**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.**

Water Body	**River Itchen Chalk**	
		Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 25: Alton Chalk Groundwater WFD Body Impact Assessment

Water Body	**Alton Chalk**	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** There are no trenchless crossings in this groundwater body that are likely to require dewatering and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTE from the proposed works within this WFD water body should occur.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Peck Copse: **Negligible** Caker and Lavant Streams and Floodplain of the River Wey: **None**	Impact: Peck Copse, Caker and Lavant Streams and Floodplain of the River Wey: **None**
	Water balance element There are no trenchless crossings in this groundwater body that are likely to require dewatering, and no significant abstraction (dewatering) would be required during open cut methods (any dewatering would be short term). Therefore no significant long term impact would be anticipated.	**Water balance element** No abstraction (dewatering) would be required during operation.

Water Body	Alton Chalk	
	Impact: **None**	Impact: **None**
Chemical	**No saline or other intrusion element** There are no trenchless crossings in this groundwater body that are likely to require dewatering and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTE from the proposed works within this WFD water body should occur.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Peck Copse and Caker and Lavant Streams: **Negligible** Floodplain of the River Wey: **None**	Impact: Peck Copse and Caker and Lavant Streams: **Negligible** Floodplain of the River Wey: **None**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 26: Basingstoke Chalk Groundwater WFD Body Impact Assessment

Water Body	Basingstoke Chalk	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** There are no trenchless crossings in this groundwater body and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction would be likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTE from the proposed works within this WFD water body should occur.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Ashley Head Springs: **None**	Impact: Ashley Head Springs: **None**
	Water balance element There are no trenchless crossings in this groundwater body that likely to require dewatering, and no significant abstraction (dewatering) would be required during open cut methods (any dewatering would be short term). Therefore no significant long term impact would be anticipated.	**Water balance element** No abstraction (dewatering) would be required during operation.
	Impact: **None**	Impact: **None**
Chemical	**No saline or other intrusion element** There are no trenchless crossings in this groundwater body and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.

Water Body	Basingstoke Chalk	
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element Ashley Head Springs GWDTE has been identified within this groundwater body. No significant damage to the GWDTE from the proposed works within this WFD water body should occur.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline should occur.
	Impact: Ashley Head Springs: **Negligible**	Impact: Ashley Head Springs: **Negligible**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 27: Old Basing Tertiaries Groundwater WFD Body Impact Assessment

Water Body	Old Basing Tertiaries	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** There are no trenchless crossings and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No GWDTEs are present in this groundwater body.	**GWDTE element** No GWDTEs are present in this groundwater body.
	Impact: **Not applicable**	Impact: **Not applicable**
	Water balance element There are no trenchless crossings proposed so no change to the water balance would be expected. No significant abstraction (dewatering) would be required during open cut methods and therefore no impact would be anticipated.	**Water balance element** No abstraction (dewatering) would be required during operation.
	Impact: **None**	Impact: **None**
Chemical	**No saline or other intrusion element** No trenchless crossings are proposed and the shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.

Water Body	Old Basing Tertiaries	
	Impact: **None**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No GWDTEs are present in this groundwater body.	**GWDTE element** No GWDTEs are present in this groundwater body.
	Impact: **Not applicable**	Impact: **Not applicable**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 28: Farnborough Bagshot Beds Groundwater WFD Body Impact Assessment

Water Body	Farnborough Bagshot Beds	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** Two trenchless crossings would require dewatering in proximity of Southwood (former military land) and some distance away from Farnborough (north) (former railway sidings) and south of Frimley Station (former landfill). Risks with these sites have been assessed as low in Chapter 8 Water. The shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **Negligible**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTEs from the proposed works within this water body has been identified.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Bourley and Long Valley, Cove Brook and Ively Road: **Negligible** Eelmoor Marsh, Blackwater Valley: **None**	Impact: Bourley and Long Valley: **Negligible** Eelmoor Marsh, Cove Brook and Ively Road, Blackwater Valley: **None**
	Water balance element Two trenchless crossings would require dewatering. However, the volumes should be limited and temporary. As a result, no significant change to the water balance would be expected. No significant abstraction (dewatering) would be required during open cut methods and therefore no impact would be anticipated.	**Water balance element** No abstraction (dewatering) would be required during operation.
	Impact: **Negligible**	Impact: **None**

Water Body	Farnborough Bagshot Beds	
Chemical	**No saline or other intrusion element** Two trenchless crossings would require dewatering near Southwood (former military land), Farnborough (north) (former railway sidings) and south of Frimley Station (former landfill). Risks associated with these sites have been assessed as low in Chapter 8 Water. The shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **Negligible**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage on the GWDTE from the proposed works within this water body have been identified.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Bourley and Long Valley, Eelmoor Marsh, Cove Brook and Ively Road and Blackwater Valley: **Negligible**	Impact: Bourley and Long Valley, Eelmoor Marsh, Cove Brook and Ively Road and Blackwater Valley: **Negligible**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels, however, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No significant impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 29: Chobham Bagshot Beds Groundwater WFD Body Impact Assessment

Water Body	Chobham Bagshot Beds	
Component/ Quality Element	**Construction**	**Operation**
Quantitative	**No saline or other intrusion element** There are five trenchless crossings proposed which would require dewatering. Abbey Moor Golf Club (former landfill) would be expected to be located within a zone of influence, which would be considered to represent a low risk to the groundwater body due to any contamination being localised with significant dilution. Although within the radius of influence of two trenchless crossings, no significant pathway was identified with Laleham landfill, Home Farm landfill, Queen Mary Quarry and south of Queen Mary Reservoir landfill for the groundwater body as the deeper deposits are clayey and it is only shallow groundwater in superficial deposits which is likely to require dewatering. If required, following a detailed assessment, sheet piling or similar would be used to control groundwater ingress to the trenchless crossing pits. As such, impacts are considered to be negligible. The shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body; therefore, no anthropogenically induced trend in flow direction would be likely to result in significant intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **Negligible**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTE from the proposed works within this WFD water body should occur.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.
	Impact: Colony Bog and Bagshot Heath (including Folly Bog), Chobham Common, Chertsey Meads: **Negligible** Foxhills, Addlestone Moor, Dumsey Meadow: **None**	Impact: Colony Bog and Bagshot Heath (including Folly Bog), Chobham Common: **Negligible** Foxhills, Addlestone Moor, Chertsey Meads, Dumsey Meadow: **None**
	Water balance element	**Water balance element**

Water Body	Chobham Bagshot Beds	
	Five trenchless crossings may require dewatering. However, the volumes are expected to be limited and temporary. As a result, no significant change to the water balance would be expected. No significant abstraction (dewatering) would be required during open cut methods, therefore no impact would be anticipated.	No abstraction (dewatering) would be required during operation.
	Impact: **Negligible**	Impact: **None**
Chemical	**No saline or other intrusion element** There are five trenchless crossings proposed which would require dewatering. Abbey Moor Golf Club (former landfill) would be expected to be located within a zone of influence, which would be considered to represent a low risk to the groundwater body due to any contamination being localised with significant dilution. Although within the radius of influence of two trenchless crossings, no significant pathway was identified with Laleham landfill, Home Farm landfill, Queen Mary Quarry and south of Queen Mary Reservoir landfill for the groundwater body as the deeper deposits are clayey and it is only shallow groundwater in superficial deposits which is likely to require dewatering. If required, following a detailed assessment, sheet piling or similar would be used to control groundwater ingress to the trenchless crossing pits. As such, impacts are considered to be negligible. The shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body; therefore, no anthropogenically induced trend in flow direction would be likely to result in significant intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **Negligible**	Impact: **None**
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No significant damage to the GWDTE from the proposed works within this WFD water body should occur.	**GWDTE element** No significant damage to the GWDTE within this water body from the operational pipeline has been identified.

Water Body	Chobham Bagshot Beds	
	Impact: Colony Bog and Bagshot Heath (including Folly Bog), Chobham Common, Chertsey Meads, Dumsey Meadow: **Negligible** Foxhills, Addlestone Moor: **None**	Impact: Colony Bog and Bagshot Heath (including Folly Bog), Chobham Common, Foxhills, Chertsey Meads, Dumsey Meadow: **Negligible** Addlestone Moor: **None**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No significant impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

Table 30: Lower Thames Gravels Groundwater WFD Body Impact Assessment

Water Body	Lower Thames Gravels	
Component/ Quality Element	Construction	Operation
Quantitative	**No saline or other intrusion** Three trenchless crossings may require dewatering. Two of the trenchless crossings could require dewatering in proximity to Hitchcock and King (former railway siding) and two trenchless crossings may require dewatering in proximity to St David's School (former landfill). Dilution and attenuation of contaminants over time, and distance of the former sidings from the site likely to result in low risks to groundwater. If required, following a detailed assessment, sheet piling or similar would be used to control groundwater ingress to the trenchless crossing pits. As such, impacts are considered to be negligible.	**No saline or other intrusion** No impacts on the groundwater body from the operation of the pipeline.

Water Body	Lower Thames Gravels	
	The shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	
	Impact: **Negligible**	Impact: **None**
	Surface water element No significant diminution of surface water flow and impact on ecology has been identified.	**Surface water element** No significant diminution of surface water flow and impact on ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No GWDTEs are located in this groundwater body.	**GWDTE element** No GWDTEs are located in this groundwater body.
	Impact: **Not applicable**	Impact: **Not applicable**
	Water balance element Three trenchless crossings may require dewatering. However, the volumes are expected to be limited and temporary. As a result, no significant change to the water balance would be expected. No significant abstraction (dewatering) would be required during open cut methods and therefore no impact would be anticipated.	**Water balance element** No abstraction (dewatering) would be required during operation.
	Impact: **Negligible**	Impact: **None**
Chemical	**No saline or other intrusion element** Three trenchless crossings could require dewatering. Two of the trenchless crossings may require dewatering in proximity to Hitchcock and King (former railway siding) and two trenchless crossings could require dewatering in proximity to St David's School (former landfill). Dilution and attenuation of contaminants over time, and distance of the former sidings from the site likely to result in low risks to groundwater. If required, following a detailed assessment, sheet piling or similar would be used to control groundwater ingress to the trenchless crossing pits. As such, impacts are considered to be negligible. The shallow depth of the trench excavation would be unlikely to allow ingress of water of lower quality into the groundwater body. Therefore, no ingress of water from other sources would be anticipated and no anthropogenically induced trend in flow direction likely to result in such intrusions.	**No saline or other intrusion element** No impacts on the groundwater body from the operation of the pipeline.
	Impact: **Negligible**	Impact: **None**

Water Body	Lower Thames Gravels	
	Surface water element No significant diminution of surface water chemistry and ecology has been identified.	**Surface water element** No significant diminution of surface water chemistry and ecology has been identified.
	Impact: **Negligible**	Impact: **Negligible**
	GWDTE element No GWDTEs are located in this groundwater body.	**GWDTE element** No GWDTEs are located in this groundwater body.
	Impact: **Not applicable**	Impact: **Not applicable**
	No deterioration in quality of waters for human consumption element Potential for pollutant releases which could alter groundwater conditions and pollutant levels. However, impacts on groundwater quality would not be significant.	**No deterioration in quality of waters for human consumption element** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**
	No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element. No impacts on groundwater quality on a water body scale have been identified.	**No significant impairment of human uses; and no significant environmental risk from pollutants across a groundwater body element.** Extremely low likelihood that significant pollutant releases from the pipe would occur.
	Impact: **None**	Impact: **Negligible**

1.6 WFD Specific Mitigation Measures

Operational Catchment Mitigation Measures

1.6.1 The River Basin Management Plans for the South East and Thames River Basin Districts outline significant water management issues that require consideration to maintain/achieve WFD compliance by 2021 or 2027. These have been identified by the Environment Agency (2015a and 2015b) as:

- physical modifications;
- pollution from waste water;
- pollution from towns, cities and transport;
- changes to the natural flow and level of water;
- negative effects of invasive non-native species; and
- pollution from rural areas.

1.6.2 At the operational catchment level, a series of generic mitigation measures are identified within the River Basin Management Plans for specific watercourses or catchments to address the above issues. The project needs to demonstrate that it would not compromise or prevent measures from being implemented that have been identified to maintain or achieve compliance. A review of these specific measures has not identified any that would be anticipated to be compromised or prevented from being implemented as a result of the project.

WFD Water Body Specific Mitigation Measures

1.6.3 For the WFD water bodies classified as heavily modified or artificial, specific mitigation measures are identified to help achieve Good Potential by 2021 or 2027. These mitigation measures only relate to specified WFD water bodies and are either classed as being 'in place' or 'not in place'. Table 31 to Table 34 detail the WFD specific mitigation measures in place for each heavily modified or artificial surface WFD water body. An assessment is then provided as to the potential implications of the project on the implementation of each measure.

1.6.4 No mitigation measures are identified for the groundwater WFD water bodies.

Table 31: Horton Heath Stream Surface WFD Water Body Specific Mitigation Measures

Specific Mitigation Measure	Is Project Compliant?	Details
Remove or soften hard bank	Yes	No hard bank reinforcement has been identified at crossing locations and would not be expected on those watercourses not visited. No hard reinforcement would be implemented as part of the project.
Selective vegetation control	Yes	Project would not alter any existing control measures. Vegetation removed by the project would be reinstated as set out in, measures G87, G88 and G122 of the REAC.
Vegetation control	Yes	
Vegetation control timing	Yes	

Specific Mitigation Measure	Is Project Compliant?	Details
Invasive species techniques	Yes	Project would not interfere with current control measures and invasive species encountered would be removed as set out in measure G42 of the REAC.
Maintain channel bed/margins	Yes	Channel would be disturbed by crossing, however, mitigation in place to reinstate to pre-project state as set out in measure G122 of the REAC.

Table 32: Chertsey Bourne (Virginia Water to Chertsey) Surface WFD Water Body Specific Mitigation Measures

Specific Mitigation Measure	Is Project Compliant?	Details
Remove or soften hard bank	Yes	Based on site visit observations, hard banks are not anticipated to be encountered at the crossing locations
Preserve or restore habitats	Yes	Habitats could be disturbed by project, however, mitigation in place to reinstate to pre-project state as set out in measures G53 and G87 of the REAC.
In-channel morph (sic) diversity	Yes	Channels crossed by project are drainage channels, with little morphological diversity.
Bank rehabilitation	Yes	Banks would be disturbed by project, however, mitigation in place to reinstate to pre-project state as set out in the measure G122 of the REAC.
Fish passes	Yes	The watercourses crossed by the project within this surface water body are considered to be artificial drainage ditches. As such, it is unlikely that there would be any fish present that would be impeded by watercourse crossings. Trenchless crossings are proposed for those watercourses identified as medium or high sensitivity from an aquatic ecology perspective.
Enhance ecology	Yes	Project would not interfere with proposals to enhance ecology. Vegetation and habitats removed would be reinstated as set out in measures G53 and G87 of the REAC.
Selective vegetation control	Yes	Project would not interfere with current control measures. Vegetation removed would be reinstated as set out in G87 and 88 of the REAC.
Vegetation control	Yes	
Vegetation control timing	Yes	
Invasive species techniques	Yes	Project would not interfere with current control measures and invasive species encountered would be removed as set out in measure G42 of the REAC.
Invasive species awareness	Yes	
Recreation awareness	Yes	Project would not interfere with this mitigation measure.
Enhance ecology (recreation)	Yes	Project would not interfere with this mitigation measure.

Table 33: Thames (Egham to Teddington) Surface Water Body Mitigation Measures

Specific Mitigation Measure	Is Project Compliant?	Details
Re-engineer river (in place)	Yes	Mitigation measure already in place, project would not interfere with measure.
Remove or soften hard bank	Yes	No hard banks would be anticipated to be encountered at crossing locations.

Specific Mitigation Measure	Is Project Compliant?	Details
Preserve or restore habitats	Yes	Habitats could be disturbed by project, however, mitigation in place to reinstate to pre-project state as set out in measures G53 and G87 of the REAC.
In-channel morph (sic) diversity	Yes	Watercourses crossed using open cut techniques have been assessed as drainage ditches, and as such would possess little morphological diversity. The project would not interfere with this mitigation measure.
Bank rehabilitation	Yes	Banks would be disturbed by project, however, mitigation in place to reinstate to pre-project state as set out in measure G122 of the REAC.
Re-opening culverts	Yes	Project would not interfere with this mitigation measure.
Alter culvert channel bed	Yes	Project would not interfere with this mitigation measure.
Flood bunds	Yes	Project would not interfere with this mitigation measure.
Set-back embankments	Yes	Project would not interfere with this mitigation measure.
Floodplain connectivity	Yes	Project would not interfere with this mitigation measure.
Fish passes	Yes	The watercourses in this surface water body crossed by the project are deemed to be artificial drainage ditches. As such, it is unlikely that there would be any fish present that would be impeded by watercourse crossings. Trenchless crossings are proposed for those watercourses identified as medium or high sensitivity from an aquatic ecology perspective
Reduce fish entrainment	Yes	No in-channel structures or gates proposed and therefore entrainment would not be anticipated.
Enhance ecology	Yes	Project would not interfere with proposals to enhance ecology. Vegetation and habitats removed would be reinstated as set out in measures G53, G61 and G87 of the REAC.
Changes to locks etc	Yes	Project would not interfere with this mitigation measure.
Avoid the need to dredge	Yes	Project would not interfere with this mitigation measure.
Dredging disposal strategy	Yes	Project would not interfere with this mitigation measure.
Reduce impact of dredging	Yes	Project would not interfere with this mitigation measure.
Reduce sediment resuspension	Yes	Project would not interfere with this mitigation measure. Some sediment resuspension could occur from construction activities, but this likely to be localised.
Retime dredging or disposal	Yes	Project would not interfere with this mitigation measure.
Sediment management	Yes	Project would not interfere with this mitigation measure.
Dredge disposal site selection	Yes	Project would not interfere with this mitigation measure.
Manage disturbance	Yes	Project would cause some disturbances to watercourses and surrounding riparian zone, however, this would be localised and mitigated through reinstatement of bed, banks and vegetation post-project as set out in measures G87, G88 and G122 of the REAC.
Manage artificial drawdown	Yes	Project would not interfere with this mitigation measure.
Phased dewatering	Yes	Project would not interfere with this mitigation measure.
Selective vegetation control (in place)	Yes	Mitigation measure already in place. Project unlikely to interfere with measure, with vegetation removed to be
Vegetation control (in place)	Yes	

Specific Mitigation Measure	Is Project Compliant?	Details
Vegetation control timing (in place)	Yes	reinstated post-project. Invasive species encountered would be removed as set out in measure G42 of the REAC.
Invasive species techniques (in place)	Yes	
Retain habitats	Yes	Habitats could be disturbed by the project, however, mitigation is in place to reinstate post-project as set out in measures G53, G61 and G87 of the REAC.
Sediment management strategy (in place)	Yes	Mitigation measure already in place, project would not interfere with measure.
Maintenance – minimise habitat impact (in place)	Yes	Mitigation measure already in place, project would not interfere with measure.
Align and attenuate flow	Yes	Open cut crossings will modify flow on a temporary basis only, with no long term impediment to mitigation measure.
Modify vessel design	Yes	Mitigation measure already in place, project would not interfere with measure.
Vessel Management	Yes	
Boats in central track	Yes	
Invasive species awareness		Project would not interfere with current control measures and invasive species encountered would be removed as set out in measure G42 of the REAC.
Boat wash awareness	Yes	Project would not interfere with this mitigation measure.
Educate landowners (flood risk)	Yes	Project would not interfere with this mitigation measure.
Recreation awareness	Yes	Project would not interfere with this mitigation measure.
Enhance ecology (recreation)	Yes	Project would not interfere with this mitigation measure.

Table 34: Surrey Ash Surface WFD Water Body Mitigation Measures

Specific Mitigation Measure	Is Project Compliant?	Details
Identify polluted surface water outfalls Ash & Stanwell Brook CB2013	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Identify and remediate unsatisfactory CSO's [Combined Sewer Overflows] CB2013	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Installation of SuDS [Sustainable Drainage Systems] associated high impact/benefit sites on whole water body CB2013	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Rectify misconnections in Ash and Stanwell Brook CB2013	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
From Fordbridge Rd, Shepperton remove hard bank and weirs and restore 250m to caravan site	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Remove weir/ford bed at 509294/167754	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
At Sunbury Golf Course (between railway and Gaston Bridge) remove hard bank	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.

Specific Mitigation Measure	Is Project Compliant?	Details
protection and weirs. Restore and regrade banks, sinuosity and riparian buffer zones.		
At Splash Meadow recreation (between railway embankment and M3) remove hard bank protection. Restore and regrade banks, sinuosity and riparian buffer zones.	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Reinstate flood plain connectivity downstream of M3, Shepperton (315m)	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Narrow over-widened channel at 507001/168449. Introduce riparian buffer zone.	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Remove weirs and restore over-wide channel to natural form at Shepperton Studios.	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Improve fish/mammal passage within culverts and improve channel diversity if de-culverting not possible at 506275/170910	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Remove hard bank protection at 505828/171280. Restore and regrade banks, sinuosity and riparian buffer zone	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Remove weirs, hard bank protection and de-culvert at 504502/171782.	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
De-culvert, introduce riparian buffer zone at 504290/171932.	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Remove weir near Staines Aqueduct at Birch Green	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Open culverted channel under aqueduct and access road at 503947/172074	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Remove hard engineering and restore natural channel north of Birch Green road to A308 (0.36 km)	Yes	Project would not interfere with this mitigation measure as it is outside of the project Order Limits.
Improve sediment management through ‘Sediment matters’ approach	Yes	Project would not interfere with this mitigation measure.
De-culvert, introduce sinuosity and riparian buffer zone for the whole of the Stanwell Brook	Yes	Project crosses Stanwell Brook on Woodthorpe Road, however, it would not cross any existing culverts or permanently introduce new culverts, therefore the project would not prevent this mitigation measure from being carried out.
Deliver improvements where practical and appropriate (opportunistic)	Yes	Project would not interfere with this mitigation measure.

Specific Mitigation Measure	Is Project Compliant?	Details
Implement appropriate riparian vegetation management and control	Yes	Project would not interfere with current control measures. Vegetation removed would be reinstated as set out in measures G87 and G88 of the REAC.
Educate landowners and riparian users on preventing the spread of invasive species	Yes	Project would not interfere with current control measures and invasive species encountered would be removed as set out in measure G42 of the REAC.
Maintain channel bed/margins	Yes	Channels would be disturbed by open cut and haul road crossings; however, measures are in place, as set out in measure G122 of the REAC, to prevent the delivery of this WFD mitigation measure from being compromised.
Removal of debris is undertaken only where this may contribute to reducing flood risk	Yes	Project would not interfere with this mitigation measure as any in-channel vegetation would be retained where not affected by works as set out in measures G87 and G88 of the REAC.
Refine appropriate water level management strategy	n/a	Not relevant to project
Review/update of the existing hydraulic model to more accurately assess the level of flood risk	n/a	Not relevant to project
Deliver engagement and awareness programme	n/a	Not relevant to project
Modification of structures to enable fish passage	Yes	Project will not interfere with this mitigation measure, and pipe/road crossing locations have been designed to allow for the passage of fish.
Deliver improvements where practical and appropriate	Yes	Project will not interfere with this mitigation measure.

1.7 WFD Compliance Assessment

EU legislation

1.7.1 As noted in paragraph 1.1.3, at the time of writing, the UK Government is committed to leaving the European Union, but the UK has not yet left. During any implementation period the UK is committed to not regressing from European levels of protection and that implementation period will last until after this application is determined. The report therefore continues to refer to the relevant European Directives.

1.7.2 Article 6 of the WFD specifies that where an area requires special protection under another EC Directive, as listed in Appendix IV of the WFD, then these areas should be identified as ‘protected areas’.

1.7.3 Protected areas are those that are:

- designated for the abstraction of water for human consumption;
- designated for the protection of economically significant aquatic species;
- bodies of water designated as recreational waters (including bathing waters);
- nutrient sensitive areas; and

- designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection.

1.7.4 The project passes through a number of sites classed as protected areas. Table 35 outlines the sites within the study area; which WFD water body they are within; and a description of the impacts of the project upon their designation.

Table 35: Protected Areas Under EU Legislation Crossed by Project.

Legislation	Protected Area Name/Designation	WFD Water Body	Impacts
Drinking Water Directive (98/83/EEC) (surface water)	Thames (Egham to Teddington)	Thames (Egham to Teddington)	No impacts are expected, as construction works would be temporary with limited localised impacts on water quality. No operational impact as the pipeline is a replacement of an existing pipeline.
	Queen Mary Reservoir	Surrey Ash	
Drinking Water Directive (98/83/EEC) (groundwater)	All WFD groundwater bodies		No impacts are expected, as construction works would be temporary with no or limited localised impacts on water quality. No operational impact as the pipeline is a replacement of an existing asset with very low likelihood that the pipe would have significant pollutant releases.
Urban Waste Water Treatment (UWWT) Directive (91/271/EEC)	River Wey	North Wey (Alton to Tilford)	No impacts are expected, as construction works would be temporary with limited localised impacts on water quality. No operational impact as the pipeline is a replacement of an existing pipeline.
	River Blackwater	River Blackwater (Aldershot to Cove Brook confluence at Hawley)	
	River Thames	Thames (Egham to Teddington)	
Nitrates Directive (91/676/EEC)	Hamble Estuary Eutrophic Nitrate Vulnerable Zone (NVZ)	Horton Heath Stream Upper Hamble	No impacts expected, as runoff from project components e.g. construction compounds, would be controlled using various techniques (see Table 2, measure G11) and treated where required (see Table 2, measure G130). No operational impact as the pipeline is a replacement of an existing pipeline.
	Hampshire Chalk NVZ	Upper Hamble Caker Stream	
	Upper Hamble NVZ	Upper Hamble	
	North Wey (Alton to Tilford) NVZ	Caker Stream North Wey (Alton to Tilford)	
	Kingsclere and Greywell NVZ	North Wey (Alton to Tilford) Hart (Crondall to Elvetham)	
	Hart (Elvetham to Hartley Wintney) NVZ	Hart (Crondall to Elvetham) Fleet Brook Cove Brook	
	Chertsey Bourne (Chertsey to River Thames confluence) NVZ	Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham) Chertsey Bourne (Virginia Water to Chertsey)	

Legislation	Protected Area Name/Designation	WFD Water Body	Impacts
		Chertsey Bourne (Chertsey to River Thames confluence)	
EU Birds Directive (79/409/EEC)	Thames Basin Heaths Special Protection Area (SPA)	Fleet Brook Cove Brook Blackwater (Aldershot to Cove Brook confluence at Hawley) Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham)	No likely significant effects (see Habitats Regulations Assessment (HRA) Report (**application document 6.5**).
EU Habitats Directive (92/43/EEC)	Thursley, Ash, Pirbright & Chobham Special Areas of Conservation (SAC)	Blackwater (Aldershot to Cove Brook confluence at Hawley) Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham)	No likely significant effects (see HRA (**application document 6.5**).

WFD Compliance

1.7.5 Table 36 and Table 37 provide a summary of the likely compliance outcomes for each WFD water body against the WFD objectives outlined in Section 1.1., taking into consideration the good practice measures described in Section 1.5. In summary, it is considered that at a WFD water body scale the project would be compliant with WFD legislation.

1.7.6 At this stage no exemption, i.e. Article 4.7, is required. The detailed design is not anticipated to significantly change the impacts of the project from those evaluated in this assessment.

Table 36: Surface WFD Water Body Project Compliance

WFD Water Body	Compliance Criteria			
	Deterioration in Water Body Status/Potential	Ability to Achieve Good Ecological Potential/ Status	Comply with Objectives and Standards for Protected Areas	Reduce pollution from priority substances
Horton Heath Stream	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Potential of the WFD water body (Good) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Potential in the future.		Hamble Estuary Eutrophic NVZ is the only protected area present within the WFD water body. The project would be unlikely to compromise the standards of this NVZ.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Upper Hamble	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Moderate) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		Three NVZs (Upper Hamble, Hampshire Chalk and Hamble Estuary Eutrophic) are present within the WFD water body. The project would be unlikely to compromise the standards of these NVZs.	The project does not generate priority pollutants and would be unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Caker Stream	Impacts of the project components would be localised and likely to be negligible or low. As a result, it would be unlikely that the current Overall Status of the WFD water body (Moderate) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		Two NVZs (North Wey (Alton to Tilford) and Hampshire Chalk) are present within the WFD water body. No components of the project would be likely to compromise the standards of these NVZs.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
North Wey (Alton to Tilford)	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Moderate) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		Two NVZs (North Wey (Alton to Tilford) and Kingsclere and Greywell) are present within the WFD water body, whilst the River Wey must comply with the standards of the UWWT Directive. The project would be unlikely to compromise the standards of the NVZs or those imposed on the River Wey by the UWWT directive.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Hart (Crondall to Elvetham)	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water		Two NVZs (Hart (Elvetham to Hartley Wintney) and Kingsclere and Greywell) are present within the WFD	The project would not generate priority pollutants and is unlikely to

WFD Water Body	Compliance Criteria			
	Deterioration in Water Body Status/Potential	Ability to Achieve Good Ecological Potential/ Status	Comply with Objectives and Standards for Protected Areas	Reduce pollution from priority substances
	body (Poor) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		water body. The project would be unlikely compromise the standards of these NVZs.	interfere with efforts to reduce existing sources
	COMPLIANT			
Fleet Brook	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Moderate) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		Hart (Elvetham to Hartley Wintney) NVZ and Thames Basin Heaths SPA are present within the WFD water body. No components of the project would be likely to compromise the standards of either protected area. The HRA (**application document 6.5**) assesses the impact of the project on SPAs in greater detail.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Cove Brook	Impacts of the project components are localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Bad) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		Hart (Elvetham to Hartley Wintney) NVZ and Thames Basin Heaths SPA are present within the WFD water body. No components of the project would be likely to compromise the standards of either protected area. The HRA (**application document 6.5**) assesses the impact of the project on SPAs in greater detail.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Blackwater (Aldershot to Cove Brook confluence at Hawley)	The majority of the impacts associated with the project would be localised and likely to be negligible or low. However, the crossing of the River Blackwater has not been finalised at the time of conducting this assessment. The design available at the time of assessment would be unlikely to compromise the current Overall Status of the WFD water body (Poor). The project would be unlikely to compromise the ability of the WFD water body to achieve Good Overall Status in the future.		Thames Basin Heaths SPA and Thursley, Ash, Pirbright & Chobham SAC are present within the WFD water body, whilst the River Blackwater falls under the UWWT Directive. The project would be unlikely to compromise the standards of any of these protected areas or the River Blackwater.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			

WFD Water Body	Compliance Criteria			
	Deterioration in Water Body Status/Potential	Ability to Achieve Good Ecological Potential/ Status	Comply with Objectives and Standards for Protected Areas	Reduce pollution from priority substances
Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Cobham)	Impacts of the project components are localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Moderate) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		Chertsey Bourne (Chertsey to River Thames confluence) NVZ, Thames Basin Heaths SPA and Thursley, Ash, Pirbright & Chobham SAC are all present within the WFD water body. No components of the project would be likely to compromise the standards of these protected areas. A HRA (**application document 6.5**) (stages 1-2) has been produced, which assesses the impact of the project on SACs and SPAs in greater detail.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Chertsey Bourne (Virginia Water to Chertsey)	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Moderate) would be compromised by the project. The same is true of the ability to achieve Good Overall Potential in the future.		Chertsey Bourne (Chertsey to River Thames confluence) NVZ is the only protected area present within the WFD water body. The project would be unlikely to compromise the standards of this NVZ.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Chertsey Bourne (Chertsey to River Thames confluence)	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Poor) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		Chertsey Bourne (Chertsey to River Thames confluence) NVZ is the only protected area present within the WFD water body. The project would be unlikely to compromise the standards of this NVZ.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Thames (Egham to Teddington)	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Poor) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Potential in the future.		The WFD water body is protected under the Drinking Water Directive (surface water), whilst the River Thames must comply with the standards of the UWWT Directive. The project would be unlikely to breach the standards of either directive.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Surrey Ash	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the		The Queen Mary Reservoir, located within the WFD water body, is protected	The project would not generate priority pollutants

WFD Water Body	Compliance Criteria			
	Deterioration in Water Body Status/Potential	Ability to Achieve Good Ecological Potential/ Status	Comply with Objectives and Standards for Protected Areas	Reduce pollution from priority substances
	current Overall Status of the WFD water body (Moderate) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Potential in the future.		under the Drinking Water Directive (surface water). The project would be unlikely to breach the standards of the directive.	and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
Basingstoke Canal	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Moderate) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		See compliance assessment of Fleet Brook WFD water body for more information regarding the protected areas that could interact with this WFD water body.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			
King George VI Reservoir Water Transfer	Impacts of the project components would be localised and likely to be negligible or low. As a result, it is unlikely that the current Overall Status of the WFD water body (Moderate) would be compromised by the project. The project would also not compromise the ability of the WFD water body to achieve Good Overall Status in the future.		See compliance assessment of Surrey Ash WFD water body for more information regarding the protected areas that could interact with this WFD water body.	The project would not generate priority pollutants and is unlikely to interfere with efforts to reduce existing sources.
	COMPLIANT			

Table 37: Groundwater WFD Body Project Compliance

Water Body	Compliance Criteria			
	Deterioration in Water Body Status/ Potential	Ability to Achieve Good Groundwater Status	Comply with Objectives and Standards for Protected Areas	Reversal of Upward Trends in Pollutant Concentrations
South East Hants Bracklesham Group	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Poor). The project would also not compromise the ability to achieve Good groundwater status in the future.		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			
East Hants Lambeth Group	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Poor). The project		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the	It is unlikely that the project would generate any significant pollution or interfere with efforts

Water Body	Compliance Criteria			
	Deterioration in Water Body Status/ Potential	Ability to Achieve Good Groundwater Status	Comply with Objectives and Standards for Protected Areas	Reversal of Upward Trends in Pollutant Concentrations
	would also not compromise the ability to achieve Good groundwater status in the future.		standards of the directive.	to reduce any existing sources of pollution.
	COMPLIANT			
East Hants Chalk	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Poor). The project would also not compromise the ability to achieve Good groundwater status in the future.		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			
River Itchen Chalk	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Poor). The project would also not compromise the ability to achieve Good groundwater status in the future.		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			
Alton Chalk	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Good).		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			
Basingstoke Chalk	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Poor). The project would also not compromise the ability to achieve Good groundwater status in the future.		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			
Old Basing Tertiaries	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Poor). The project would also not compromise the ability to achieve Good groundwater status in the future.		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			

Water Body	Compliance Criteria			
	Deterioration in Water Body Status/ Potential	**Ability to Achieve Good Groundwater Status**	**Comply with Objectives and Standards for Protected Areas**	**Reversal of Upward Trends in Pollutant Concentrations**
Farnborough Bagshot Beds	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Good).		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			
Chobham Bagshot Beds	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Good).		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			
Lower Thames Gravels	Impacts of the project components would be localised and likely to be negligible or none. As a result, there would be no deterioration in current Overall Status of the WFD water body (Good).		The Drinking Water Directive (groundwater) protects this WFD water body. The project would be unlikely to breach the standards of the directive.	It is unlikely that the project would generate any significant pollution or interfere with efforts to reduce any existing sources of pollution.
	COMPLIANT			

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Annex A – Watercourses Surveyed

A1.1.1 The following Table A1 provides a summary of the surveys undertaken during the period from 24–26 July 2018. These are defined as:

- full survey: walkover 500m up- and downstream of proposed crossing location (1km total);
- short survey: walkover 150m up- and downstream of proposed crossing location (300m total); and
- spot check: visit to the proposed crossing location.

Table A1: Receptor Surveys

Receptor Name	Survey type
Ford Lake	Full survey
Unnamed Watercourse 5	Full survey
Unnamed Watercourse 6	Spot check
Unnamed Watercourse 9	Spot check
Caker Stream	Full survey
Unnamed Watercourse 11	Short survey
Water Lane	Short survey
Unnamed Watercourse 12	Spot check
Unnamed Watercourse 14	Spot check
Unnamed Watercourse 15	Short survey
River Wey	Spot check (planned as full survey, but unable to gain necessary land access)
Unnamed Watercourse 16	Short survey
Ryebridge Stream	Short survey
Unnamed Watercourse 20	Spot check
Unnamed Watercourse 24	Spot check
Unnamed Watercourse 25	Spot check
Unnamed Watercourse 26	Spot check
Unnamed Watercourse 27	Spot check
Unnamed Watercourse 31	Spot check
Unnamed Watercourse 32	Spot check
Gelvert Stream	Full survey
Basingstoke Canal	Spot check
Ively Brook	Short survey
Cove Brook	Full survey
River Blackwater	Full survey
Unnamed Watercourse 44	Spot check
Hale Bourne	Full survey
Clappers Brook	Short survey
Unnamed Watercourse 56	Spot check
Unnamed Watercourse 57	Short survey

Receptor Name	Survey type
Unnamed Watercourse 61	Spot check
Unnamed Watercourse 62	Spot check
Unnamed Watercourse 63	Spot check
Unnamed Watercourse 64	Spot check
Unnamed Watercourse 65	Spot check
Chertsey Bourne	Full survey
River Thames	Short survey
River Ash	Full survey
Queen Mary Reservoir Intake Channel	Spot check
King George VI Reservoir Water Transfer (formerly Staines Reservoir Aqueduct)	Spot check
Unnamed Watercourse 86	Spot check

Annex B – Watercourse Sensitivity Assessment

B1.1.1 Each watercourse has been assessed for ecological, hydro-morphological and water quality sensitivity. The criteria for sensitivity are identified in Table B1.

Table B1: Receptor Sensitivity Criteria

Receptor	Sensitivity	Criteria
Ecology	High	Containing a diverse range of habitat types and macrophyte cover. These sites provided optimal ecological habitat and were likely to have high levels of invertebrate diversity.
	Moderate	Free flowing watercourses with limited macrophyte cover and areas of fine sediment cover. These sites were often characterised by a reduced number of habitat types, leading to sub-optimal fish habitat and moderate invertebrate diversity.
	Low	Heavily modified watercourses in which macrophytes were absent, with little or sub-optimal invertebrate or fish habitat. These had often been subjected to extensive anthropogenic influences and exhibited a single habitat type.
Hydro-morphology	High	A watercourse that appears to be in complete natural equilibrium and exhibits a natural range of morphological features (such as pools and riffles). There is a diverse range of fluvial processes present, free from any modification or anthropogenic influence.
	Moderate	A watercourse that appears to be in natural equilibrium and exhibits a natural range of morphological features (such as pools and riffles). There is a diverse range of fluvial processes present, with very limited signs of modification or other anthropogenic influences.
	Low	A watercourse showing signs of modification, recovering to a natural equilibrium, and exhibiting a limited range of morphological features (such as pools and riffles). The watercourse is one with a limited range of fluvial processes and is affected by modification or other anthropogenic influences.
	Negligible	A highly modified watercourse that has been changed by channel modification or other anthropogenic pressures. The watercourse exhibits no morphological diversity and has a uniform channel, showing no evidence of active fluvial processes and not likely to be affected by modification. Highly likely to be affected by anthropogenic factors. Could dry up during summer months.
Water Quality	High	Water feeding highly or moderately Surface Water Dependent Ecosystem (SWDE) with a high environmental importance and international or national value, such as Ramsar sites, SACs, SPAs and SSSIs. Supports licensed large-scale abstraction for potable supply. WFD physico-chemical and chemical quality status of good or better.
	Moderate	Water feeding low SWDE sites with a high environmental importance and international or national value, such as Ramsar sites, SACs, SPAs and SSSIs; or water feeding highly or moderately SWDE with a national non-statutory UK Biodiversity Action Plan (BAP) priority. Supports licensed small scale substitutable abstraction for potable supply or extensive non-licensed private water abstractions (i.e. feeding ten or more properties or supplying large farming/animal estates). WFD physico-chemical status of moderate and chemical status of good.
	Low	Water feeding low SWDE with a national non-statutory UK BAP priority; or water feeding highly or moderately SWDE sites with no conservation designation. Supports limited non-licensed abstraction for non-potable supply. WFD physico-chemical status of poor or chemical status of fail.
	Negligible	Surface water that supports a wetland not classified as a SWDE, although may receive some minor contribution from surface water. No surface water abstractions. WFD physico-chemical status of bad and chemical status of fail.

Table B2: Watercourse Sensitivity

Surface WFD Water Body	Watercourse ID	Watercourse Name	Ecological Sensitivity	Hydro-morphological Sensitivity	Water Quality Sensitivity
Horton Heath Stream	W002	Ford Lake	High	High	High
	W003	Unnamed Watercourse 2	Not assessed	Negligible	Low
	W004	Unnamed Watercourse 3	Not assessed	Negligible	Low
Upper Hamble	W005	Unnamed Watercourse 4	Not assessed	Low	Low
	W006	Unnamed Watercourse 5	Moderate	Low	Low
	W007	Unnamed Watercourse 6	Dry ditch	Low	Low
Caker Stream	W008	Unnamed Watercourse 7	Not assessed	Negligible	Low
	W010	Unnamed Watercourse 9	Dry ditch	Negligible	Low
	W011	Unnamed Watercourse 10	Not assessed	Negligible	Low
	W012	Caker Stream	Dry ditch	Medium	Low
	W013	Unnamed Watercourse 11	Dry ditch	Negligible	Low
	W014	Water Lane	Dry ditch	Negligible	Low
	W015	Unnamed Watercourse 12	Dry ditch	Negligible	Low
	W016	Unnamed Watercourse 13	Not assessed	Negligible	Low
	W017	Unnamed Watercourse 14	Dry ditch	Negligible	Low
	W114	Unnamed Watercourse 90	Not assessed	Negligible	Low
North Wey (Alton to Tilford)	W018	Unnamed Watercourse 15	Dry ditch	Low	Low
	W019	River Wey	High	High	High
	W020	Unnamed Watercourse 16	Low	Negligible	Low
	W021	Ryebridge Stream	Low	Low	Low
	W023	Unnamed Watercourse 17	Not assessed	Negligible	Low
	W111	Unnamed Watercourse 87	Not assessed	Negligible	Low
Hart (Crondall to Elvetham)	W025	Unnamed Watercourse 18	Not assessed	Negligible	Low
	W026	Unnamed Watercourse 19	Not assessed	Negligible	Low

Surface WFD Water Body	Watercourse ID	Watercourse Name	Ecological Sensitivity	Hydro-morphological Sensitivity	Water Quality Sensitivity
	W027	Unnamed Watercourse 20	Dry ditch	Negligible	Low
	W029	Unnamed Watercourse 22	Not assessed	Low	Low
	W030	Unnamed Watercourse 23	Not assessed	Low	Low
	W031	Unnamed Watercourse 24	Low	Low	Low
	W032	Unnamed Watercourse 25	Dry ditch	Negligible	Low
	W033	Unnamed Watercourse 26	Dry ditch	Negligible	Low
	W034	Unnamed Watercourse 27	Dry ditch	Negligible	Low
Fleet Brook	W035	Unnamed Watercourse 28	Not assessed	Negligible	Low
	W036	Unnamed Watercourse 29	Not assessed	Low	Low
	W038	Unnamed Watercourse 31	Low	Low	Low
	W039	Unnamed Watercourse 32	Low	Low	Low
	W040	Gelvert Stream	Dry ditch	Medium	Low
	W044	Unnamed Watercourse 35	Not assessed	Negligible	Low
Basingstoke Canal	W041	Basingstoke Canal	Low	Negligible	Low
Cove Brook	W043	Unnamed Watercourse 34	Not assessed	Negligible	Low
	W045	Unnamed Watercourse 36	Not assessed	Negligible	Low
	W047	Ively Brook	Low	Negligible	Low
	W048	Cove Brook	Medium	Low	Medium
	W049	Unnamed Watercourse 38	Not assessed	Negligible	Low
Blackwater (Aldershot to Cove Brook confluence at Hawley)	W051	River Blackwater	Medium	High	Medium
	W055	Blackwater Valley	Not assessed	Low	Low
	W058	Unnamed Watercourse 44	Dry ditch	Low	Low
	W060	Unnamed Watercourse 46	Not assessed	Negligible	Low
Hale/Mill Bourne (Bagshot to Addlestone Bourne	W062	Unnamed Watercourse 48	Not assessed	Negligible	Low
	W063	Unnamed Watercourse 49	Not assessed	Negligible	Low
	W064	Unnamed Watercourse 50	Not assessed	Negligible	Low

Surface WFD Water Body	Watercourse ID	Watercourse Name	Ecological Sensitivity	Hydro-morphological Sensitivity	Water Quality Sensitivity
confluence near Chobham)	W065	Unnamed Watercourse 51	Not assessed	Negligible	Low
	W066	Hale Bourne	High	High	High
	W067	Unnamed Watercourse 52	Not assessed	Low	Low
	W068	Unnamed Watercourse 53	Not assessed	Low	Low
	W070	Clappers Brook	Low	Low	Low
	W073	Unnamed Watercourse 57	Low	Low	Low
	W076	Unnamed Watercourse 59	Not assessed	Negligible	Low
	W112	Unnamed Watercourse 88	Not assessed	Negligible	Low
Chertsey Bourne (Virginia Water to Chertsey)	W077	Unnamed Watercourse 60	Not assessed	Negligible	Low
	W079	Unnamed Watercourse 62	Dry ditch	Negligible	Low
	W080	Unnamed Watercourse 63	Dry ditch	Negligible	Low
	W115	Unnamed Watercourse 91	Dry ditch	Negligible	Low
Chertsey Bourne (Chertsey to River Thames confluence)	W081	Unnamed Watercourse 64	Dry ditch	Negligible	Low
	W082	Unnamed Watercourse 65	Not assessed	Negligible	Low
	W083	Unnamed Watercourse 66	Not assessed	Negligible	Low
	W085	Unnamed Watercourse 68	Not assessed	Negligible	Low
	W087	Unnamed Watercourse 70	Not assessed	Negligible	Low
	W092	Unnamed Watercourse 75	Not assessed	Negligible	Low
	W093	Unnamed Watercourse 76	Not assessed	Negligible	Low
	W094	Unnamed Watercourse 77	Not assessed	Low	Low
	W095	The Bourne	Medium	Medium	Medium
	W107	Unnamed Watercourse 82	Not assessed	Negligible	Low
	W108	Unnamed Watercourse 83	Not assessed	Negligible	Low
	W116	Unnamed Watercourse 92	Not assessed	Negligible	Low
Thames (Egham to Teddington)	W096	River Thames	High	High	High
	W098	Unnamed Watercourse 78	Not assessed	Negligible	Low

Surface WFD Water Body	Watercourse ID	Watercourse Name	Ecological Sensitivity	Hydro-morphological Sensitivity	Water Quality Sensitivity
	W113	Unnamed Watercourse 89	Not assessed	Negligible	Low
Surrey Ash	W100	River Ash	High	Medium	High
	W102	Queen Mary Reservoir Intake Channel	Medium	Negligible	Medium
	W105	Unnamed Watercourse 81	Not assessed	Negligible	Low
	W106	Unnamed Watercourse 85	Not assessed	Negligible	Low
King George VI Reservoir Water Transfer	W104	King George VI Reservoir Water Transfer	Low	Negligible	Low

Annex C – Surface WFD Water Body Baselines

C1.1.1 The locations where the photographs displayed in this Annex were taken are shown in Figure A8.6.3.

Horton Heath Stream

Table C1: Horton Heath Stream

Water body ID	GB107042016270
Catchment size (km²)	15.9
Hydromorphological designation	Heavily modified water body (HMWB)
Overall Status/Potential	Good
Biological quality elements	
Fish	Good
Macroinvertebrates	Good
Macrophytes and phytobenthos (combined)	Good
Physico-chemical quality elements	
pH	High
Ammonia (total as N)	High
Phosphate	Good
Dissolved oxygen	High
Specific pollutants	-
Hydromorphological quality elements	
Hydrological Regime	Supports Good
Morphology	No information recorded
Site visit assessments	
Ford Lake Stream	The watercourse exhibited a sinuous planform of tight meanders with a naturally asymmetrical cross section. Low flow width was estimated as being 1.5m to 2.5m, with a low flow depth of 0.2m to 0.3m. Bankfull dimensions were estimated at 2m (deep) and 6m (wide). Flow dynamics were varied, with riffle-pool sequences observed and in-channel woody material further diversifying flow types. Bed substrate consisted of either silt or gravels (fine and medium), with varying degrees of consolidation. In-channel features such as side and point bars were also observed. Riparian vegetation coverage was extensive along both banks, and consisted of a mixture of mature trees, large shrubs and wild grasses. Hogweed was identified on site, which appears to be managed by burning. The watercourse was assessed as being of high ecological sensitivity. Photograph 8.6.1 and Photograph 8.6.2 show typical examples of the reach surveyed.
Unnamed Watercourse 2	Crossed by project, but not visited. Considered to be a field drain with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 3	

Photograph 8.6.1:Mid-channel bar causing bifurcation of flow, with some undercutting of both banks also evident. Ford Lake (facing downstream), 24/07/18, standard lens.

Photograph 8.6.2: A debris dam causing slowing of flow. Steep, well vegetated banks also evident typical of reach. Ford Lake (facing upstream), 24/07/18, standard lens.

Upper Hamble

Table C2: Upper Hamble

Water body ID	GB107042016280
Catchment size (km²)	38.1
Hydromorphological designation	Not designated an Artificial or Heavily Modified Water Body (A/HMWB)
Overall Status/Potential	Moderate
Biological quality elements	
Fish	Moderate
Macroinvertebrates	Moderate
Macrophytes and phytobenthos (combined)	Good
Physico-chemical quality elements	
pH	High
Ammonia (total as N)	High
Phosphate	Poor
Dissolved oxygen	Good
Specific pollutants	-
Hydromorphological quality elements	
Hydrological Regime	No information recorded
Morphology	No information recorded
Site visit assessments	
Upper Hamble	Not visited – not crossed by the project.
Unnamed Watercourse 4	Crossed by project, but not visited. Considered to be a field drain with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 5	Straight planform with a modified, trapezoidal cross-section. Low flow width was estimated at 0.5m to 0.8m, with low flow depth of 0.1m. Estimated bankfull dimensions were 0.5m (deep) and 2m (wide). Both banks have been reinforced. Channel continuity is impacted by two culverts; one for land access, the other to convey flow beneath Winters Hill. A pipe also conveys flow from a fishing pond into a small artificial basin. Bed substrate was observed to be primarily silts and sands, encouraging little flow diversity with flow being rippled or smooth. Riparian vegetation coverage is narrow, comprised mainly of wild grasses and semi-continuous coverage of mature trees. The watercourse was assessed as being of high ecological sensitivity. Photograph 8.6.3 shows a typical section of the reach surveyed.
Unnamed Watercourse 6	Straight planform, which appears to have been re-sectioned in places to increase capacity. Low flow width was estimated at 0.4m, with a depth of less than 0.05m. Estimated bankfull dimensions were 0.3m (deep) and 0.8m (wide). Bed substrate was observed to be consolidated gravels and sands, resulting in some rippling of flow where gravels were present. No in-channel features were identified, and the vegetated riparian zone consisted primarily of mature trees with extensive ground coverage of ivy. The watercourse was assessed as being of moderate ecological sensitivity. Photograph 8.6.4 shows a typical section of the reach surveyed.

Photograph 8.6.3: Typical channel cross-section riparian vegetation cover. Unnamed Watercourse 5 (facing upstream), 24/07/18, standard lens.

Photograph 8.6.4: Typical riparian vegetation cover and bank profiles. Watercourse at low flow, with some gravels just visible. Unnamed Watercourse 6 (facing from left to right bank), 24/07/18, standard lens.

Caker Stream

Table C3: Caker Stream

Water body ID	GB106039017730
Catchment size (km²)	86.2
Hydromorphological designation	Not designated an A/HMWB
Overall Status/Potential	Moderate
Biological quality elements	
Fish	Good
Macroinvertebrates	Good
Macrophytes and phytobenthos (combined)	Moderate
Physico-chemical quality elements	
Ph	High
Ammonia (total as N)	High
Phosphate	Moderate
Dissolved oxygen	Good
Specific pollutants	High (triclosan)
Hydromorphological quality elements	
Hydrological Regime	No information recorded
Morphology	No information recorded
Site visit assessments	
Caker Stream	The watercourse exhibited two distinctly different reaches, located approximately upstream and downstream of the confluence with Lavant Stream. Upstream of the confluence, the channel exhibited a straight planform with a largely uniform cross-section. Low flow width was estimated at 1m to 1.5m, with a low flow depth of 0.1m. Estimated bankfull dimensions were 1.5m (deep) and 3m (wide). The channel appeared to be overdeep, suggesting that dredging had been carried out in the past. No flow was observed, with the bed substrate present probably earth and silts. The riparian zone was fully vegetated along both banks and comprised of wild grasses and small bushes. Downstream of the confluence with Lavant Stream, the channel appears to have been modified, with several structures present in the channel (an outfall and three footbridges), as well as evidence of dredging (straight and overwide channel). The dimensions of the channel were approximately 1.5m wide and 0.1m deep at low flow. Bankfull dimensions are likely to be 3m (width) and 1m (depth). Where flow was observed it was largely slow and smooth. However, a number of morphological features (riffles and bars) were present which likely to encourage flow diversity during periods of greater flow, demonstrating that the reach is morphologically active. Bed substrate consisted of fine sediments and partially consolidated gravels and pebbles, whilst the riparian zone was well managed for much of the reach, with vegetation taking the form of maintained grasses and occasional trees, with a road running along the left bank of the watercourse. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.5 shows a typical section of the downstream reach surveyed.

Water Lane	An unusual watercourse that occupies the same space as an old road, with no formal channel but some evidence of some fluvial features. The cutting in which the road/watercourse runs is wide (6m) and deep (5m), with a trapezoidal cross section and steep sides. These have likely been artificially formed and were composed primarily of soil with extensive vegetation coverage. Flow was observed along Water Lane was low and took up approximately 30-50% of the channel bed (the cobbled road present in Photograph 8.6.7) and depth of less than 5cm. Flow was very slow, with pooling and ponding of water observed. The bed comprised a mixture of exposed bedrock, cobbles and larger gravels. In places the bed appeared to be artificial, with regularly sized and placed cobbles evident, whilst some bank support/reinforcement was also visible. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.7 shows a typical section of the reach surveyed.
Unnamed Watercourse 7	Crossed by project, but not visited. Considered to be a field drain with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 9	A land drain with a straight planform and trapezoidal cross-section. Low flow width was estimated at 0.5m, with a low flow depth of 0.1m. Estimated bankfull dimensions were 0.5m (deep) and 1.5m (wide). The watercourse was dry during the site visit, so it was not possible to determine flow dynamic. Based on a bed substrate of fine sediments and lack of morphological features, it is likely to be smooth and uniform. Riparian vegetation cover of wild grasses and mature trees is continuous and occupies a narrow strip (approximately 0.5m wide) along both banks. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period.
Unnamed Watercourse 10	Crossed by project, but not visited. Considered to be a field drain with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 11	A land drain with a straight planform and trapezoidal cross-section, with the banks being steep and artificially high. Low flow width was estimated at 0.5m, with estimated bankfull dimensions of 1.5m (wide) and 2m (deep). The channel was dry during the site visit and given the overgrown nature of the channel it was not possible to ascertain likely flow dynamics, or the structure of the bed substrate. Several structures were observed along the watercourse, noticeably a double culvert 100m from the confluence with Caker Stream and a single culvert carrying an access track by Truncheaunts Farm House. Riparian vegetation cover comprises mainly wild grasses and crops, although some sections of the left bank were covered by strips of mature trees 3m-5m wide. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.6 shows a typical section of the reach surveyed.
Unnamed Watercourse 12	Deeply incised watercourse, approximately 3m wide with vertical banks approximately 2.5m high, giving a rectangular cross-section. The channel was dry during the survey, so it was not possible to determine the nature of flow; however, during wetter weather flow dynamics are likely to be varied because of the diverse nature of the bed. The bed substrate was a mixture of unconsolidated pebbles and gravels, with some areas of vegetation debris suggesting pool formation/slack flow. Riparian vegetation cover was continuous, occupying a buffer of approximately 2m wide along either bank. Vegetation consisted of a mixture of shrubs and trees.

	No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period.
Unnamed Watercourse 13	Crossed by project, but not visited. Considered to be a field drain with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 14	A land drain with a straight planform and uniform cross-section. The channel appears to be overdeep (bank top heights of approximately 0.8m), with channel width of 0.3m. Bankfull width was estimated as being 1.5m. The channel was dry during the survey, so it was not possible to determine the nature of flow, however, it is likely to be uniform and smooth based on the channel bedform and a substrate consisting entirely of fine sediment. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period.
Unnamed Watercourse 90	Crossed by project, but not visited. Considered to be a field drain with limited ecological and hydromorphological features based on desk study assessment.

Photograph 8.6.5: Footbridge with a side bar starting to mature in the foreground. Caker Stream (facing downstream), 24/07/18, standard lens

Photograph 8.6.6: Overgrown channel. Unnamed Watercourse 11 (facing upstream), 24/07/18, standard lens

Photograph 8.6.7: Channel bed comprising unconsolidated pebbles and cobbles. Water Lane (facing upstream) 24/07/18, standard lens

North Wey (Alton to Tilford)

Table C4: North Wey (Alton to Tilford)

Water body ID	GB106039017830
Catchment size (km²)	82.5
Hydromorphological designation	Not designated an A/HMWB
Overall Status/Potential	Moderate
Biological quality elements	
Fish	Moderate
Macroinvertebrates	High
Macrophytes and phytobenthos (combined)	Good
Physico-chemical quality elements	
Ph	High
Ammonia (total as N)	High
Phosphate	Poor
Dissolved oxygen	Moderate
Specific pollutants	High (copper, iron, manganese, triclosan and zinc)
Hydromorphological quality elements	
Hydrological Regime	Supports Good
Morphology	Supports Good
Site visit assessments	
River Wey	Minimal access was gained to the River Wey, however spot visits at two locations were possible. The channel presented a sinuous planform with a non-uniform cross-section of gently sloping banks approximately 1.5m high. Low flow width was estimated at 3m, although this widened considerably downstream to 7m. Approximate bankfull width varied between 5m (upstream) and 8m (downstream). Several structures were observed during the survey; two road bridges and a weir. The bridge piers were at the bankside. The weir was located approximately 20m upstream of the downstream bridge and has caused the watercourse to become wider and shallower. Flow was observed to be varied, with several flow types observed due to the presence of pools, riffles and extensive stands of macrophytes. The channel bed appeared to be armoured, with the substrate comprising a combination of partially sorted pebbles, and coarse and fine gravels. Some silt deposits were observed downstream of the weir. The vegetated riparian zone was continuous along both banks, consisting of grasses, shrubs and trees and occupying a buffer of between 2m and 5m. The watercourse was assessed as being of high ecological sensitivity. Photograph 8.6.8 and 8.6.9 show typical sections of the reaches surveyed.

Ryebridge Stream	Straight planform with a uniform cross section. The banks were steep and less than 0.5m tall, some of which have been reinforced, presumably to protect an outfall. Low flow width was estimated at 0.2m, with a bankfull width of 1m. The channel was dry during the site visit; however, it is likely that flow is smooth and homogenous based on lack of in-channel features and fine sediments present. The bed substrate was loose silt. Riparian vegetation cover was continuous, occupying a buffer of approximately 2m to 5m wide along either bank. Vegetation consisted of a mixture of shrubs, grasses and trees which often obscured the channel. The watercourse was assessed as being of low ecological sensitivity. Photograph 8.6.10 shows a typical section of the reach surveyed.
Unnamed Watercourse 15	Straight planform with a trapezoidal, uniform cross section draining from a pond. Low flow width was estimated at 0.3m, whilst the banks were less than 0.5m tall. Bankfull width is approximately 1.5m. The channel appeared to have been modified based on its overdeep cross section and historical map evidence, with significant realignment evident since 1949. The channel was dry during the site visit; however, it is likely that flow is smooth and homogenous based on lack of in-channel features and fine sediments present. The bed substrate was loose silt, whilst the bed was also overgrown with reeds and grasses. Riparian vegetation cover was continuous, occupying a buffer of approximately 5m along both banks. Vegetation consisted solely of unimproved grasses. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period.
Unnamed Watercourse 16	Straight planform with a trapezoidal, uniform cross section draining from a pond. Low flow width was estimated at 0.3m, whilst the banks were less than 0.5m tall. Bankfull width is approximately 0.5m. The channel was dry during the site visit; however, it is likely that flow is smooth and homogenous based on lack of in-channel features and fine sediments present. The bed substrate was loose silt. Riparian vegetation cover was continuous, occupying a buffer of approximately 5m to 10m wide along both banks. Vegetation consisted of a mixture of shrubs, grasses and trees which often obscured the channel. The watercourse was assessed as being of low ecological sensitivity.
Unnamed Watercourse 17	Crossed by project, but not visited. Considered to be a field drain with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 87	Crossed by project but not visited as the watercourse was scoped in at a later stage of the design, after the site visits had been completed. Considered to be a field drain of limited ecological and hydromorphological features based on desk study assessment.

Photograph 8.6.8: Sinuous channel, with cattle access, gravels and aquatic vegetation all visible. River Wey (facing upstream), 24/07/18, standard lens.

Photograph 8.6.9: Extensive stands of macrophytes in the foreground, with well managed riparian vegetation along the right bank. Weir visible in the background. River Wey (facing upstream), 24/07/18, standard lens.

Photograph 8.6.10: Typical reach, with bank reinforcement evident along the left bank. Ryebridge Stream (facing upstream), 24/07/18, standard lens.

Hart (Crondall to Elvetham)

Table C5: Hart (Crondall to Elvetham)

Water body ID	GB106039017090
Catchment size (km²)	45
Hydromorphological designation	Not designated an A/HMWB
Overall Status/Potential	Poor
Biological quality elements	
Fish	Poor
Macroinvertebrates	Good
Macrophytes and phytobenthos (combined)	Moderate
Physico-chemical quality elements	
Ph	High
Ammonia (total as N)	High
Phosphate	Moderate
Dissolved oxygen	Good
Specific pollutants	High (copper)
Hydromorphological quality elements	
Hydrological Regime	Does not support Good
Morphology	Supports Good
Site visit assessments	
River Hart	Not visited – not crossed by the project.
Unnamed Watercourse 18 Unnamed Watercourse 19	Crossed by project, but not visited. Considered to be a field drain with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 20	A drainage ditch with straight planform and overdeep, re-sectioned cross-section. Low flow width was estimated at 0.3m, with a bankfull depth of approximately 0.6m. The channel was dry during the site visit; however, it is likely that flow is smooth and homogenous based on lack of in-channel features and fine sediments present. The bed substrate was loose silt. Riparian vegetation cover was continuous and consisted of a mixture of shrubs and grasses, with some trees also present. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.11 shows a typical section of the reach surveyed.
Unnamed Watercourse 22 Unnamed Watercourse 23	Crossed by project, but not visited. Considered small watercourses with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 24	A drainage ditch with straight planform and uniform cross-section. Low flow dimensions were estimated 0.5m (wide) and 0.05 (deep), whilst no bankfull dimensions were recorded. Flow was smooth and homogenous, with the channel lacking any notable morphological features. The bed substrate was silt. Riparian vegetation cover was continuous along the right bank and occupied a buffer of approximately 3m, whilst cover along the left bank was semi-continuous and occupied a buffer of approximately 2m. Vegetation consisted of shrubs, nettles and trees. The watercourse was assessed as being of low ecological sensitivity.

Unnamed Watercourse 25	A drainage ditch with straight planform and trapezoidal cross-section, suggesting that the channel has been artificially modified. Low flow width was estimated at 0.3m, with bankfull dimensions of approximately 0.2m (depth) and 0.5m (width). The channel was dry during the site visit, so no assessment of flow types could be made. A number of culverts were observed which restrict lateral connectivity and modify local flow dynamics. The bed substrate consisted of a mixture of well sorted silts and gravels. Riparian vegetation cover consisted of a mix of shrubs and deciduous trees. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.12 shows a typical section of the reach surveyed.
Unnamed Watercourse 26	A drainage ditch with a slightly sinuous planform and overdeep cross-section. Banks were estimated as 0.3m high, with an estimated low flow width of 0.3m. The channel was dry during the site visit; however, it is likely that flow is smooth and homogenous based on lack of in-channel features and fine sediments present. The bed substrate was loose silt, although some gravels from an adjacent footpath also appeared in the channel. Riparian vegetation consisted of mature broadleaf trees and some grasses. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period.
Unnamed Watercourse 27	A poorly defined channel with an open and shallow cross-section. Flow along the channel likely to spill out, creating an area of wetter land. The channel was dry during the site visit, so no assessment of flow types could be made. No substrate was identified as the channel was well covered by grasses and other vegetation, which also populated the riparian zone. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.13 shows where the watercourse likely to flow.

Photograph 8.6.11: Typical riparian vegetation cover, obscuring dry channel. Unnamed Watercourse 20 (facing upstream), 25/07/18, standard lens.

Photograph 8.6.12: Dry channel, with typical riparian vegetation cover. Unnamed Watercourse 25 (facing upstream), 25/07/18, standard lens.

Photograph 8.6.13: The topographic depression through which the watercourse is likely to flow. Unnamed Watercourse 27 (facing upstream), 25/07/18, standard lens.

Fleet Brook

Table C6: Fleet Brook

Water body ID	GB106039017120
Catchment size (km²)	33.1
Hydromorphological designation	Heavily Modified Water Body
Overall Status/Potential	Moderate
Biological quality elements	
Fish	Poor
Macroinvertebrates	Good
Macrophytes and phytobenthos (combined)	No information recorded
Physico-chemical quality elements	
pH	High
Ammonia (total as N)	High
Phosphate	Moderate
Dissolved oxygen	Poor
Specific pollutants	High (copper, Iron, triclosan)
Hydromorphological quality elements	
Hydrological Regime	Supports Good
Morphology	No information recorded
Site visit assessments	
Fleet Brook	Not visited – not crossed by the project.
Gelvert Stream	Straight planform with a modified, trapezoidal cross-section. The channel was assessed as overdeep and overwide. The banks were estimated as being 0.8m to 1m tall with steep faces. Low flow width was estimated at 0.3m, with bankfull width estimated as 1.5m to 2m. Two culverts were observed, one carrying Aldershot Road the other carrying an access track. The bed reinforcement downstream of the culvert beneath Aldershot Road had been undermined, leaving the structure perched above the channel bed. The flow dynamics of Gelvert Stream were observed to be mixed, with rippled and smooth flow observed along the reach until the confluence with Unnamed Watercourse 32, at which point flows appear to have been diverted from Gelvert Stream, leaving the channel dry. The bed substrate was predominantly silt, however some gravels were also observed with riffle-pool sequences also forming. One depositional feature was identified (a gravel side bar). Bank scour observed at several locations and the channel appeared to be incising, suggesting a morphologically active watercourse. The riparian zone was well vegetated by numerous large trees observed, along with shrubs and grasses, which were likely to be the source of woody debris found within the channel. The watercourse was assessed as being of low ecological sensitivity. Photograph 8.6.15 and 8.6.16 show typical sections of the reach surveyed.
Unnamed Watercourse 28	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.

Unnamed Watercourse 29	Crossed by project, but not visited. Considered to be a small watercourse with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 31	Straight planform with a re-sectioned cross-section, which has led to an over-widening of the channel and deposition of fine sediments at the margins. Low flow width was estimated at 0.4m, with a depth of approximately 0.1m. Flow was observed as being smooth, with an ochrous colour. The colour of the water did not allow for the bed substrate to be observed, however the nature of the watercourse would suggest that it was predominantly silt. Riparian vegetation cover was continuous and consisted of a mixture of small trees, shrubs and grasses. The channel margins have been colonised by grasses. The watercourse was assessed as being of low ecological sensitivity. Photograph 8.6.14 shows a typical section of the reach surveyed.
Unnamed Watercourse 32	The watercourse was found to be hydraulically linked with Gelvert Stream and poses many of the same hydromorphological features and channel dimensions. Evidence of channel modification in the form of a row of wooden piles located along the left bank was observed upstream of the confluence with Unnamed Watercourse 31. The watercourse was assessed as being of low ecological sensitivity.
Unnamed Watercourse 35	Crossed by project, but not visited. Considered to be a small watercourse with limited ecological and hydromorphological features based on desk study assessment.

Photograph 8.6.14: Ochrous water with extensive marginal vegetation. Unnamed Watercourse 31 (facing downstream), 25/07/18, standard lens.

Photograph 8.6.15: The culvert beneath Aldershot Road, with undercutting of the downstream apron visible between the branch in the tree in the foreground. Gelvert Stream (facing upstream), 25/07/18, standard lens.

Photograph 8.6.16: Typical riparian vegetation cover and bank form. Gelvert Stream (facing from left bank to right bank), 25/07/18, standard lens.

Cove Brook

Table C7: Cove Brook

Water body ID	GB106039017130
Catchment size (km²)	22.8
Hydromorphological designation	Not designated as Artificial or Heavily Modified Water Body
Overall Status/Potential	Bad
Biological quality elements	
Fish	Moderate
Macroinvertebrates	Bad
Macrophytes and phytobenthos (combined)	No information recorded
Physico-chemical quality elements	
pH	High
Ammonia (total as N)	High
Phosphate	Good
Dissolved oxygen	Poor
Specific pollutants	None recorded
Hydromorphological quality elements	
Hydrological Regime	Supports Good
Morphology	No information recorded
Site visit assessments	
Cove Brook	A 1.3km length of Cove Brook was surveyed on account of multiple proposed crossing locations. Two distinct reaches were observed, up- and downstream of London and South Western Railway (LSWR) line. The planform was predominantly straight, particularly upstream where the banks were found to be artificial (concrete). Bank heights along this reach were estimated at between 0.6m and 2m, with low flow width estimated at 2m and bankfull width at 2.5m. Further downstream the channel dimensions altered, with banks increasing in height to approximately 4m, and an estimated width of between 1.5m (low flow) and 10m (bankfull) The watercourse has been extensively modified, crossed by multiple foot and road bridges, LSWR railway line (the watercourse passed through five culverts approximately 2m in diameter), outfalls and a stage board. Pollution (physical and water quality) was observed along much of the upstream reach. Flow was observed as being smooth and homogenous, with occasional rippling of flow where depositional features were encountered. Bed substrate was predominantly fine sediment, with some gravels noted downstream. The vegetated riparian zone was narrow, usually occupying a buffer of 0.5m to 2m. Vegetation varied from mature trees, shrubs and grasses to maintained, amenity grasslands. The watercourse was assessed as being of moderate ecological sensitivity. Photograph 8.6.18 and 8.6.19 show typical sections of the reach surveyed.

Ively Brook	Straight planform with a re-sectioned, trapezoidal cross-section. The channel was deemed to have been over-widened as narrowing of the channel is evident. Bank heights were estimated as being 0.8m to 1m tall, with steep faces. Low flow width was estimated at 0.5m, with a low flow depth of 0.1m to 0.2m. Estimated bankfull dimensions were 0.5m (deep) and 4m (wide). Modifications to the watercourse included culverts for road and footpath crossings, as well as artificial bank reinforcement along a short (5m reach). Flow was observed to be smooth, and in some places slack. The bed substrate was predominantly silt. Partially vegetated, marginal deposits suggest readjustment of the watercourse from its overwide state and has led to the formation of a low flow channel. The riparian zone consisted of managed grasslands and bushes. The watercourse was assessed as being of low ecological sensitivity. Photograph 8.6.17 shows a typical section of the reach surveyed.
Unnamed Watercourse 34	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 36	
Unnamed Watercourse 38	

Photograph 8.6.17: Typical riparian and marginal vegetation coverage, with shallow, slow-flowing water. Ively Brook (facing downstream), 26/07/18, standard lens.

Photograph 8.6.18: Typical upstream reach, with footbridge and reinforcement evident along both banks. Cove Brook (facing downstream), 25/07/18, standard lens.

Photograph 8.6.19: Slow flowing, turbid watercourse, with heavily vegetated banks and footbridge crossing. Cove Brook (facing upstream), 25/08/18, standard lens.

Blackwater (Aldershot to Cove Brook confluence at Hawley)

Table C8: Blackwater

Water body ID	GB106039017180
Catchment size (km²)	63
Hydromorphological designation	Not designated as Artificial or Heavily Modified Water Body
Overall Status/Potential	Poor
Biological quality elements	
Fish	Poor
Macroinvertebrates	Moderate
Macrophytes and phytobenthos (combined)	Moderate
Physico-chemical quality elements	
pH	High
Ammonia (total as N)	Moderate
Phosphate	Poor
Dissolved oxygen	Bad
Specific pollutants	High (copper, iron, manganese, triclosan, zinc)
Hydromorphological quality elements	
Hydrological Regime	Supports Good
Morphology	No information recorded
Site visit assessments	
River Blackwater	A sinuous planform with trapezoidal cross section, which has likely been dredged causing the channel to be overdeep. Low flow dimensions were estimated as between 4m and 5m (width), and 1m (depth). Bankfull dimensions were estimated as between 6m and 10m (width) and 2m to 3m (depth). Modifications observed included a footbridge, road bridge, four outfalls with associated wing walls and some bank reinforcement. An attempt had also been made to install a woody debris flow deflector. Flow was observed as being smooth and homogenous along much of the reach, with occasional rippling of flow where macrophytes, woody debris and depositional features were encountered. Bed substrate was predominantly fine sediment, although well-sorted and consolidated coarse gravels were observed further downstream. Multiple berms were observed along the reach. Some are likely to have formed as a result of bank failure, however most appeared to have formed from fine sediment deposits. Some of the berms were well vegetated, suggesting permanence. Riparian vegetation was largely semi-continuous, especially along the left bank where vegetation cover had been managed and occupied a narrow (2m to 3m) buffer adjacent to the A331. Vegetation consisted of a mixture of grasses, shrubs and trees of various ages. The watercourse was assessed as being of moderate ecological sensitivity. Photograph 8.6.21 and 8.6.22 show typical sections of the reach surveyed.
Blackwater Valley	Crossed by project, but not surveyed because of access issues. From what could be seen whilst surveying the River Blackwater, Blackwater Valley consists of artificially formed lakes, with steep banks and fragmented vegetation cover around the shoreline.

Unnamed Watercourse 44	Artificially formed channel with straight planform and uniform cross-section. Banks were steep and approximately 0.3m tall, with estimated width of 0.2m (low flow) and 1.5m (bankfull). The channel passes through a culvert which was the only modification to the channel seen during the visit. The channel was dry during the site visit; however, it is likely that flow is smooth and homogenous based on lack of in-channel features and fine sediments present. The bed substrate was loose silt. Riparian vegetation cover was continuous, occupying a buffer of approximately 3m to 5m wide along the left bank. Cover was constrained to a 1m buffer along the right bank by a footpath. Vegetation consisted of a mixture of brambles, trees and ivy, with ivy encroaching on the channel in a number of locations. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.20 shows a typical section of the reach surveyed.
Unnamed Watercourse 46	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.

Photograph 8.6.20:Dry channel, with typical riparian vegetation cover and footpath along right bank. Unnamed Watercourse 44 (facing downstream), 25/07/18, standard lens.

Photograph 8.6.21: Typical reach, with well vegetated riparian zone and some aquatic vegetation. River Blackwater (facing upstream), 25/07/18, standard lens.

Photograph 8.6.22: Depositional feature showing signs of vegetation. Left bank is showing signs of undercutting. River Blackwater (right bank to left bank), 25/07/18, standard lens.

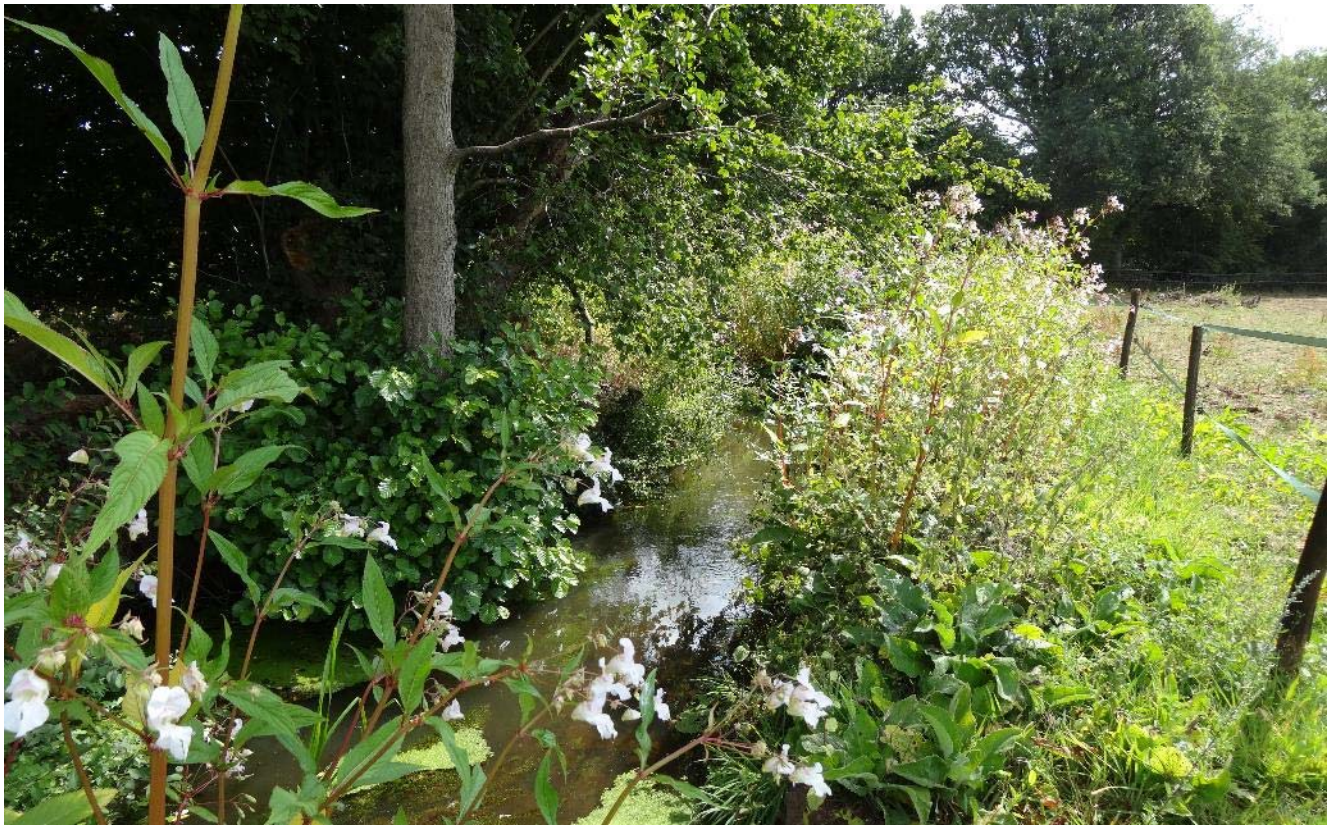
Hale/Mill Bourne (Bagshot to Addlestone Bourne confluence near Chobham)

Table C9: Hale/Mill Bourne

Water body ID	GB106039017930
Catchment size (km²)	45.3
Hydromorphological designation	Not designated as Artificial or Heavily Modified Water Body
Overall Status/Potential	Moderate
Biological quality elements	
Fish	Moderate
Macroinvertebrates	Good
Macrophytes and phytobenthos (combined)	Good
Physico-chemical quality elements	
pH	High
Ammonia (total as N)	Poor
Phosphate	Poor
Dissolved oxygen	Good
Specific pollutants	High (iron)
Hydromorphological quality elements	
Hydrological Regime	Supports Good
Morphology	Supports Good
Site visit assessments	
Hale Bourne	Initially the watercourse exhibited a sinuous planform with non-uniform cross-section, however some modification was observed along the downstream survey reach where the channel had been straightened and cross-section modified, most likely as a result of dredging. Low flow dimensions were estimated as between 1m and 2m (width), and 0.1m to 0.3m (depth). Bankfull dimensions were estimated as between 2m and 2.5m (width) and 0.5m (depth). Some evidence of bank reinforcement using wooden planks was also observed. Flow was predominantly smooth, with little variation in flow dynamics. Bed substrate was extensively silt, likely entering the watercourse from land runoff, with some small areas of gravel. Some modifications have been made to the watercourse, including bank reinforcement and an embankment and an artificial secondary channel. Riparian vegetation was largely absent from the upstream reach, consisting mainly of wild and cut grasses. Further downstream, the extent of the riparian vegetated zone increased to 1m to 2m wide and included shrubs and mature trees. The watercourse was assessed as being of high ecological sensitivity. Photograph 8.6.23 and 8.6.24 show typical sections of the reach surveyed.

Clappers Brook	A channel with a straight planform and a re-sectioned, overwide cross-section. Low flow dimensions were estimated as 0.4m (width) and 0.1m (depth). Bankfull width was estimated at 1.5m, with bank height estimated at 0.5m. Flow was smooth, slow and ochrous in colour throughout the reach, with debris dams impounding flow at several locations. Thick ochrous deposits had formed on the surface of the channel at its margins, with clearer, faster flowing water occupying the centre of the channel. Riparian vegetation cover was extensive along both banks comprising shrubs and mature woodland. Hogweed was also observed. The watercourse was assessed as being of low ecological sensitivity. Photograph 8.6.25 shows a typical section of the reach surveyed.
Unnamed Watercourse 49	Crossed by project, but not visited. Considered to be drainage ditches with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 50	
Unnamed Watercourse 51	
Unnamed Watercourse 52	
Unnamed Watercourse 53	Crossed by project, but not visited. Considered to be a small watercourse with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 57	A channel with a straight planform and trapezoidal cross section, although the planform became increasingly sinuous further downstream. The banks were steep and the channel low flow dimensions were estimated as 0.3m (width) and 0.1m (depth). Bankfull dimensions were estimated as 3m (width) and 1m (depth). Flow was smooth and uniform where observed and exhibited an ochrous colour. Two ponds were observed which may influence longitudinal connectivity and flow dynamics, particularly the most upstream pond, downstream of which no flow was observed. The bed substrate was predominantly silt. Evidence of deposition was recorded, particularly where woodland occupied the riparian zone, whilst a scour pool was also observed immediately downstream of an outfall from a pond. Riparian vegetation varied, comprising grasses and isolated trees which gave way to dense, broadleaved woodland further downstream. The watercourse was assessed as being of low ecological sensitivity. Photograph 8.6.26 shows a typical section of the reach surveyed.
Unnamed Watercourse 59	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 88	Crossed by project but not visited as the watercourse was scoped in at a later stage of the design, after the site visits had been completed. Considered to be a field drain of limited ecological and hydromorphological features based on desk study assessment.

Photograph 8.6.23: Typical upstream reach, with minimal riparian vegetation and sinuous channel. Hale Bourne (facing downstream), 25/07/18, standard lens.



Photograph 8.6.24: Typical downstream reach, with established riparian vegetation and straight channel. Hale Bourne (facing downstream), 25/07/18, standard lens.

Photograph 8.6.25: Well established riparian vegetation and straight channel, with ochrous coloured water. Clappers Brook (facing upstream), 26/07/18, standard lens.

Photograph 8.6.26: Straight channel with discoloured water. Unnamed Watercourse 57 (facing upstream), 26/07/18, standard lens.

Chertsey Bourne (Virginia Water to Chertsey)

Table C10: Chertsey Bourne (Virginia Water to Chertsey)

Water body ID	GB106039017070
Catchment size (km²)	34.4
Hydromorphological designation	Heavily Modified Water Body
Overall Status/Potential	Moderate
Biological quality elements	
Fish	Bad
Macroinvertebrates	Good
Macrophytes and phytobenthos (combined)	No information recorded
Physico-chemical quality elements	
pH	High
Ammonia (total as N)	High
Phosphate	Good
Dissolved oxygen	Moderate
Specific pollutants	High (iron, triclosan)
Hydromorphological quality elements	
Hydrological Regime	Supports Good
Morphology	No information recorded
Site visit assessments	
Chertsey Bourne	Not visited – not crossed by the project in this surface water body.
Unnamed Watercourse 60	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 62	A series of watercourses crossing a golf course all of which exhibit very similar characteristics, with straight planforms and uniform cross sections. The banks were gently sloping, well vegetated with grass and approximately 0.2m to 0.3m tall. Estimated widths were 0.4m (low flow) and 2m (bankfull). Various modifications have been made to Unnamed Watercourse 63 which include crossing by footbridges, land drainage outfalls, bank reinforcement and a weir. The channel was dry during the site visit; however, it is likely that flow is smooth and homogenous based on lack of in-channel features and fine sediments present. Unnamed Watercourse 63 showed some signs of morphological activity, with the channel showing some evidence of bank scour and vertical incision. Riparian vegetation was largely absent, with the cut grasses of the golf course present up to the edges of the watercourses. Some small, isolated stands of trees were also observed. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.27 and 8.6.28 show typical sections of the watercourses surveyed.
Unnamed Watercourse 63	
Unnamed Watercourse 91	Crossed by project but not visited as the watercourse was scoped in at a later stage of the design, after the site visits had been completed. Considered to be a field drain of limited ecological and hydromorphological features based on desk study assessment.

Photograph 8.6.27: Dry channel. Unnamed Watercourse 62 (facing upstream), 25/07/18, standard lens.

Photograph 8.6.28: Dry channel. Unnamed Watercourse 63 (facing upstream), 25/07/18, standard lens.

Chertsey Bourne (Chertsey to River Thames confluence)

Table C11: Chertsey Bourne (Chertsey to River Thames confluence)

Water body ID	GB106039017030
Catchment size (km²)	12.2
Hydromorphological designation	Not designated as Artificial or Heavily Modified Water Body
Overall Status/Potential	Poor
Biological quality elements	
Fish	Poor
Macroinvertebrates	High
Macrophytes and phytobenthos (combined)	Moderate
Physico-chemical quality elements	
Ph	High
Ammonia (total as N)	High
Phosphate	Poor
Dissolved oxygen	Moderate
Specific pollutants	High (iron, triclosan)
Hydrological Regime	Supports Good
Morphology	No information recorded
Site visit assessments	
The Bourne	The watercourse exhibited a predominantly sinuous planform, with an approximately 250m stretch of noticeably straighter channel. Bank heights varied between 1m to 2m where the channel was sinuous but increased up to 5m where the channel was straightened, suggesting historical modification. Low flow width was estimated at between 4m and 5m, narrowing to 1.5m where the channel was straightest, largely on account of marginal deposition and aquatic vegetation. Bankfull widths were approximately 7m (sinuous channel) and 3m (straight channel). Modifications to the watercourse included several outfalls along the right bank, a footbridge with bank reinforcement and an online pond. Flow was observed as being smooth and homogenous. Bed substrate was predominantly fine sediment with some fine gravels also observed. Depositional features were limited to a single, narrow berm 10m long where the channel was sinuous. Where the channel was straighter, marginal deposition was extensive and likely to form a two-stage channel at higher flows. The vegetated riparian zone was continuous, with the left bank being wider (approximately 4m) than the right (approximately 2m to 3m) as a footpath and developments constrained the right bank riparian zone. Vegetation consisted of a mixture of grasses, nettles and shrubs with large stands of mature trees. The watercourse was assessed as being of moderate ecological sensitivity. Photograph 8.6.29 and 8.6.30 show typical sections of the reaches surveyed.

Unnamed Watercourse 64	Part of the same network of land drains as Unnamed Watercourses 61-63. See Chertsey Bourne (Virginia Water to Chertsey) baseline for more detail. No ecological assessment was made as the watercourse was dry at the proposed crossing point during the survey period. Photograph 8.6.31 shows a typical section of the reach surveyed.
Unnamed Watercourse 65 Unnamed Watercourse 66	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 68 Unnamed Watercourse 70 Unnamed Watercourse 75	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 76 Unnamed Watercourse 77	Crossed by project, but not visited. Considered to be a small watercourse with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 82 Unnamed Watercourse 83 Unnamed Watercourse 92	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.

Photograph 8.6.29: Meander bend, with overgrown banks and macrophytes present mid-channel. Chertsey Bourne (facing upstream), 26/07/18, standard lens.

Photograph 8.6.30: Marginal and bankside vegetation encroaching on the channel. Chertsey Bourne (facing downstream), 26/07/18, standard lens.

Photograph 8.6.31: Dry channel. Unnamed Watercourse 64 (facing upstream), 25/07/18, standard lens.

Thames (Egham to Teddington)

Table C12: Thames (Egham to Teddington)

Water body ID	GB106039023232
Catchment size (km²)	44.8
Hydromorphological designation	Heavily Modified Water Body
Overall Status/Potential	Poor
Biological quality elements	
Fish	No information recorded
Macroinvertebrates	Good
Macrophytes and phytobenthos (combined)	Poor
Physico-chemical quality elements	
Ph	High
Ammonia (total as N)	High
Phosphate	Moderate
Dissolved oxygen	Good
Specific pollutants	High (arsenic, copper, iron, manganese, permethrin and zinc)
Hydromorphological quality elements	
Hydrological Regime	No information recorded
Morphology	No information recorded
Site visit assessments	
River Thames	The watercourse exhibited a planform of large, stable meanders. Low flow width was estimated at approximately 20m with a bankfull width of approximately 25m. Due to the size of the watercourse it was not possible to ascertain a low flow or bankfull depth. The banks are predominantly composed of earth and have been modified, with lengths of gabion baskets visible along the right bank. Flow was observed as being smooth and homogenous. Bed substrate was predominantly loose, poorly sorted fine sediment (sand and silt) with some coarser gravels also observed. Localised poaching was evident where there was access to the watercourse, but there was little evidence of distinctive morphological features or processes. The vegetated riparian zone was semi-continuous and narrow, limited to approximately 1m buffer of trees along both banks. The watercourse was assessed as being of high ecological sensitivity. Photograph 8.6.32 and 8.6.33 show a typical section of the reach surveyed.
Unnamed Watercourse 78 Unnamed Watercourse 89	Crossed by project but not visited as the watercourses were scoped in at a later stage of the design, after the site visits had been completed. Considered to be a field drains with limited ecological and hydromorphological features based on desk study assessment.

Photograph 8.6.32: View of left bank, with semi-continuous riparian vegetation visible. Boats are also present along the right bank. River Thames (facing left bank), 26/07/18, standard lens.

Photograph 8.6.33: View of left bank from river beach. River Thames (facing left bank), 26/07/18, standard lens.

Surrey Ash

Table C13: Surrey Ash

Water body ID	GB106039023480
Catchment size (km²)	19
Hydromorphological designation	Heavily Modified Water Body
Overall Status/Potential	Moderate
Biological quality elements	
Fish	Good
Macroinvertebrates	Good
Macrophytes and phytobenthos (combined)	No information recorded
Physico-chemical quality elements	
Ph	High
Ammonia (total as N)	High
Phosphate	Moderate
Dissolved oxygen	Good
Specific pollutants	High (iron, triclosan)
Hydromorphological quality elements	
Hydrological Regime	Supports Good
Morphology	No information recorded
Site visit assessments	
River Ash	Much of the survey was undertaken where the watercourse follows the toe of Queen Mary Reservoir. A spot check was also done upstream of the reservoir. Where the watercourse passed by Queen Mary Reservoir it exhibited a largely straight planform with uniform cross section. The watercourse appeared to have been reprofiled and straightened, whilst pipe crossings, a footbridge, security fencing, a road bridge, culverting and bank reinforcement were also observed. Low flow dimensions at Queen Mary Reservoir were estimated as 4m (width), and 0.3m (depth). Bankfull dimensions were estimated as 7m (width) and 1.5m (depth). Flow was barely perceptible for much of the reach, whilst the bed substrate was predominantly silt. Riparian vegetation was continuous along both banks, with trees and brambles occupying a buffer approximately 3m wide and obscuring much of the watercourse from view. Fencing was present along much of the left bank, whilst a large aggregate firm occupied the land along much of the right bank immediately outside of the vegetated riparian zone. Where the watercourse passed through Round Copse the size of the riparian zone increased to cover more than 10m of regularly spaced, mature trees. Where wood had fallen into the watercourse, localised flow diversity was increased, with backwaters also having formed at several locations. Upstream of the reservoir, the watercourse was narrower, between 2m (low flow) and 5m (bankfull). Low flow depth was approximately 0.3m, whilst bankfull depth was approximately 0.6m. The bed substrate was a mixture of coarse, poorly sorted gravels and some finer sediments. Riparian vegetation cover was observed along both banks and appeared to be continuous, consisting of a mixture of mature trees and shrubs. There was some evidence of woody debris, whilst vegetated berms had also formed on alternate banks, which along with areas of coarser substrate, promoted a diversification of flow regime. The watercourse was assessed as being of high ecological sensitivity.

	Photograph 8.6.34 and 8.6.35 show typical sections of the reaches surveyed.
Queen Mary Reservoir intake channel	An artificial channel with reinforced banks. Low flow width was approximately 12m with bankfull depth estimated at 14m, with a depth of approximately 1m. Flow was barely perceptible, with the surface of the water being smooth. Bed substrate was silt. No riparian vegetation was present, with the area adjacent to the channel consisting of mown grass. The watercourse was assessed as being of moderate ecological sensitivity. Photograph 8.6.36 shows a typical section of the reach surveyed.
Unnamed Watercourse 81	Crossed by project, but not visited. Considered to be a drainage ditch with limited ecological and hydromorphological features based on desk study assessment.
Unnamed Watercourse 85	Crossed by project but not visited as it is culverted beneath much of West Bedfont so was not accessible.

Photograph 8.6.34: Typical section of watercourse as it passed Queen Mary Reservoir. River Ash (facing right bank), 04/10/18, standard lens.

Photograph 8.6.35: Location of spot check, upstream of Queen Mary Reservoir. Bank reinforcement present on the right bank, with some flow diversity and fine gravels visible. River Ash (facing upstream), 04/10/18, standard lens.

Photograph 8.6.36: Typical reach, with maintained riparian zone. Queen Mary Reservoir intake channel (facing downstream), 26/07/18, standard lens.

Basingstoke Canal

Table C14: Basingstoke Canal

Water body ID	GB70610019
Length	52km
Hydromorphological designation	Artificial
Overall Status/Potential	Moderate
Physico-chemical quality elements	
pH	High
Ammonia (total as N)	High
Phosphate	High
Dissolved oxygen	Good
Specific pollutants	None recorded
Supporting elements (Surface Water)	
Mitigation measures assessment	Moderate or less
Site visit assessment	
Basingstoke Canal	The water body exhibited the characteristics typical of a canal. It was approximately 15m wide, however depth could not be ascertained. A tow path ran along the left bank. Riparian vegetation is extensive along the right bank, consisting of mature trees whilst along the left bank grasses and bushes were present along a narrow (less than 0.5m) buffer between the canal and tow path. The watercourse was assessed as being of low ecological sensitivity. Photograph 8.6.37 shows a typical section of the reach surveyed.

Photograph 8.6.37: Extensive vegetation cover, with tow path visible along the left bank. Basingstoke Canal (facing downstream), 26/08/18, standard lens.

King George VI Reservoir Water Transfer

Table C15: King George VI Reservoir Water Transfer

Water body ID	GB806100096
Length	8.2km
Hydromorphological designation	Artificial
Overall Status/Potential	Moderate
Ecological	
Expert judgment	Good
Mitigation measures assessment	Moderate or less
Site visit assessment	
King George VI Reservoir Water Transfer	An artificial channel with rectangular cross section of reinforced banks. Width was estimated at 5m, but it was not possible to ascertain a water depth. The channel was concrete lined. Flow was barely perceptible, with the surface of the water being smooth. Bed substrate was silt. No riparian vegetation was present, with the area adjacent to the channel consisting of mown grass. The watercourse was assessed as being of low ecological sensitivity. Photograph 8.6.38 shows a typical section of the reach surveyed.

Photograph 8.6.38: Typical reach, with maintained riparian zone. King George VI Reservoir Water Transfer (facing upstream), 26/07/18, standard lens.

Annex D – Groundwater WFD Water Body Baselines

Table D1: South East Hants Bracklesham Group

Water body ID	GB40702G503000
Catchment size	146.2km^2
Overall Status/Potential	Poor
Quantitative status	
Quantitative dependent surface water body status	Good
Quantitative GWDTEs test	Good
Quantitative saline intrusion	Good
Quantitative water balance	Good
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Poor
Chemical drinking water protected area	Good
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Good
Additional observations	
	Poor chemical status due to landfill leachate point source

Table D2: East Hants Lambeth Group

Water body ID	GB40702G500800
Catchment size	24.9 km^2
Overall Status/Potential	Poor
Quantitative status	
Quantitative dependent surface water body status	Poor
Quantitative GWDTEs test	Good
Quantitative saline intrusion	Good
Quantitative water balance	Good
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Good
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Good
Additional observations	
	Poor quantitative status due to “suspect data”

Table D3 East Hants Chalk

Water body ID	GB40701G502700
Catchment size	265.6km^2
Overall Status/Potential	Poor
Quantitative status	
Quantitative dependent surface water body status	Poor
Quantitative GWDTEs test	Good
Quantitative saline intrusion	Good
Quantitative water balance	Poor
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Poor
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Poor
Additional observations	
	Poor quantitative status due to groundwater abstraction (water industry). Poor chemical status due to diffuse source nutrient management (agricultural and rural land management)

Table D4: River Itchen Chalk

Water body ID	GB40701G505000
Catchment size	453.4km^2
Overall Status/Potential	Poor
Quantitative status	
Quantitative dependent surface water body status	Poor
Quantitative GWDTEs test	Good
Quantitative saline intrusion	Good
Quantitative water balance	Poor
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Poor
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Poor
Additional observations	
	Poor quantitative status due to groundwater abstraction (water industry). Poor chemical status due to diffuse source nutrient management (agricultural and rural land management)

Table D5: Alton Chalk

Water body ID	GB40601G604400
Catchment size	93.6km^2
Overall Status/Potential	Good
Quantitative status	
Quantitative dependent surface water body status	Good
Quantitative GWDTEs test	Good
Quantitative saline intrusion	Good
Quantitative water balance	Good
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Good
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Good

Table D6: Basingstoke Chalk

Water body ID	GB40601G501300
Catchment size	159.4km^2
Overall Status/Potential	Poor
Quantitative status	
Quantitative dependent surface water body status	Poor
Quantitative GWDTEs test	Poor
Quantitative saline intrusion	Good
Quantitative water balance	Poor
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Poor
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Poor
Additional observations	
	Poor quantitative status due to groundwater abstraction (water industry). Poor chemical status due to diffuse source nutrient management and other (agricultural and rural land management)

Table D7: Old Basing Tertiaries

Water body ID	GB40602G601700
Catchment size	11.8km^2
Overall Status/Potential	Poor
Quantitative status	
Quantitative dependent surface water body status	Good
Quantitative GWDTEs test	Poor
Quantitative saline intrusion	Good
Quantitative water balance	Good
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Good
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Good
Additional observations	
	Poor quantitative status due to “suspect data”

Table D8: Farnborough Bagshot Beds

Water body ID	GB40602G601300
Catchment size	233.0km^2
Overall Status/Potential	Good
Quantitative status	
Quantitative dependent surface water body status	Good
Quantitative GWDTEs test	Good
Quantitative saline intrusion	Good
Quantitative water balance	Good
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Good
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Good

Table D9: Chobham Bagshot Beds

Water body ID	GB40602G601400
Catchment size	355.6km^2
Overall Status/Potential	Good
Quantitative status	
Quantitative dependent surface water body status	Good
Quantitative GWDTEs test	Good
Quantitative saline intrusion	Good
Quantitative water balance	Good
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Good
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Good

Table D10: Lower Thames Gravels

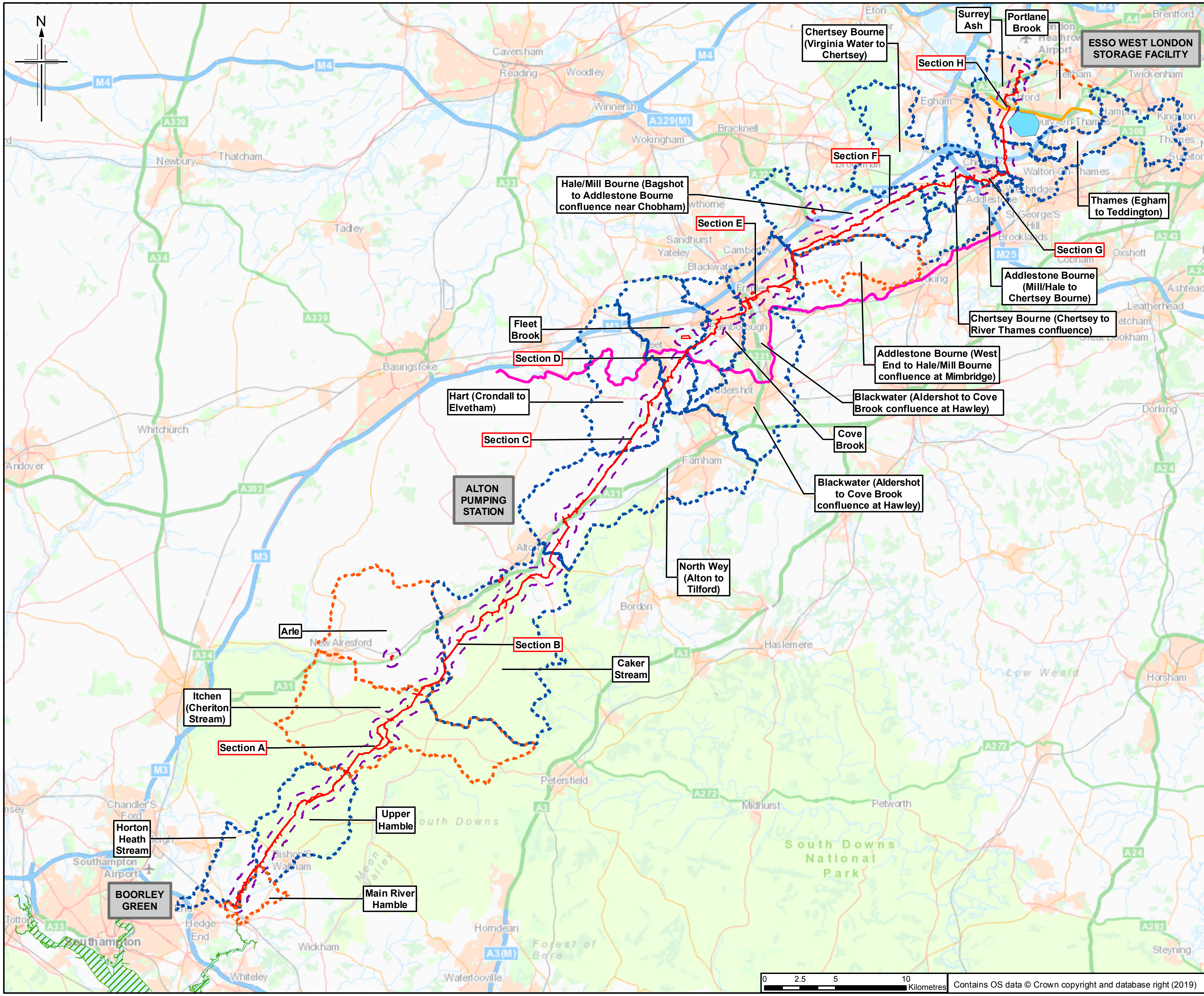
Water body ID	GB40603G000300
Catchment size	269.9km^2
Overall Status/Potential	Good
Quantitative status	
Quantitative dependent surface water body status	Good
Quantitative GWDTEs test	Good
Quantitative saline intrusion	Good
Quantitative water balance	Good
Chemical (GW) status (qualitative)	
Chemical dependent surface water body status	Good
Chemical drinking water protected area	Good
Chemical GWDTEs test	Good
Chemical saline intrusion	Good
General chemical test	Good

Figures

Figure A8.6.1 Water Framework Directive surface water bodies

Figure A8.6.2 Water Framework Directive groundwater bodies and GWDTEs

Figure A8.6.3 Water Framework Directive photographic record



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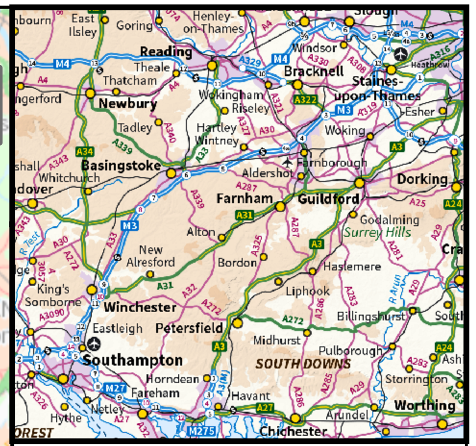

Legend

- Order Limits
- Order Limits 500m buffer
- Basingstoke Canal
- King George VI Reservoir Water Transfer
- Queen Mary Reservoir
- Southampton Transitional Water Body

WFD Surface Water Bodies

- Scoped In
- Scoped Out

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SURFACE WATER BODIES
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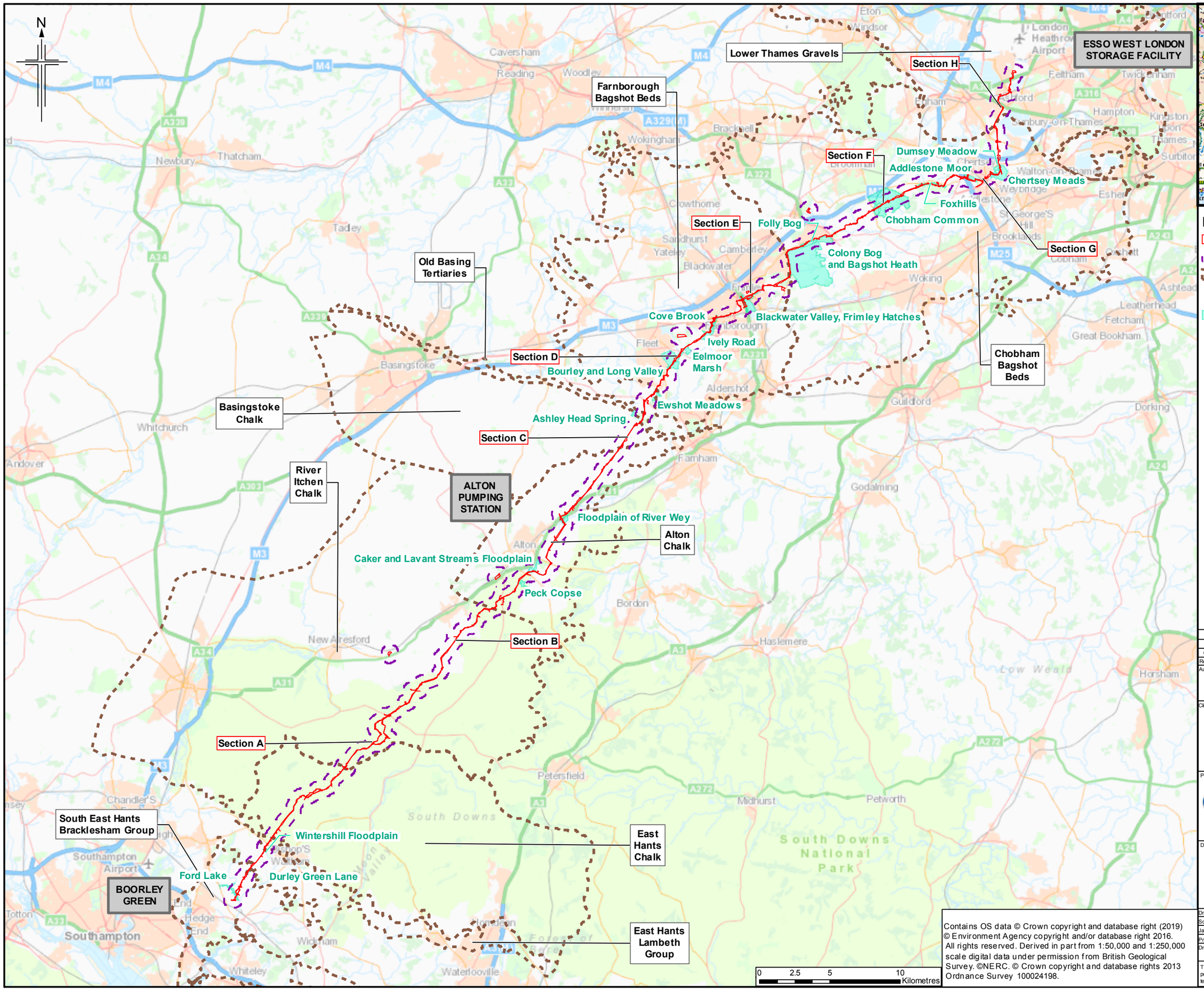

Legend

- Order Limits
- Order Limits 500m buffer
- WFD groundwater body
- Groundwater Dependent Terrestrial Ecosystems (GWDTES) scoping report sites

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ALTON PUMPING STATION

BOORLEY GREEN

Section A

Section B

Section C

Section D

Section E

Section F

Section G

Section H

0 2.5 5 10 Kilometres

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

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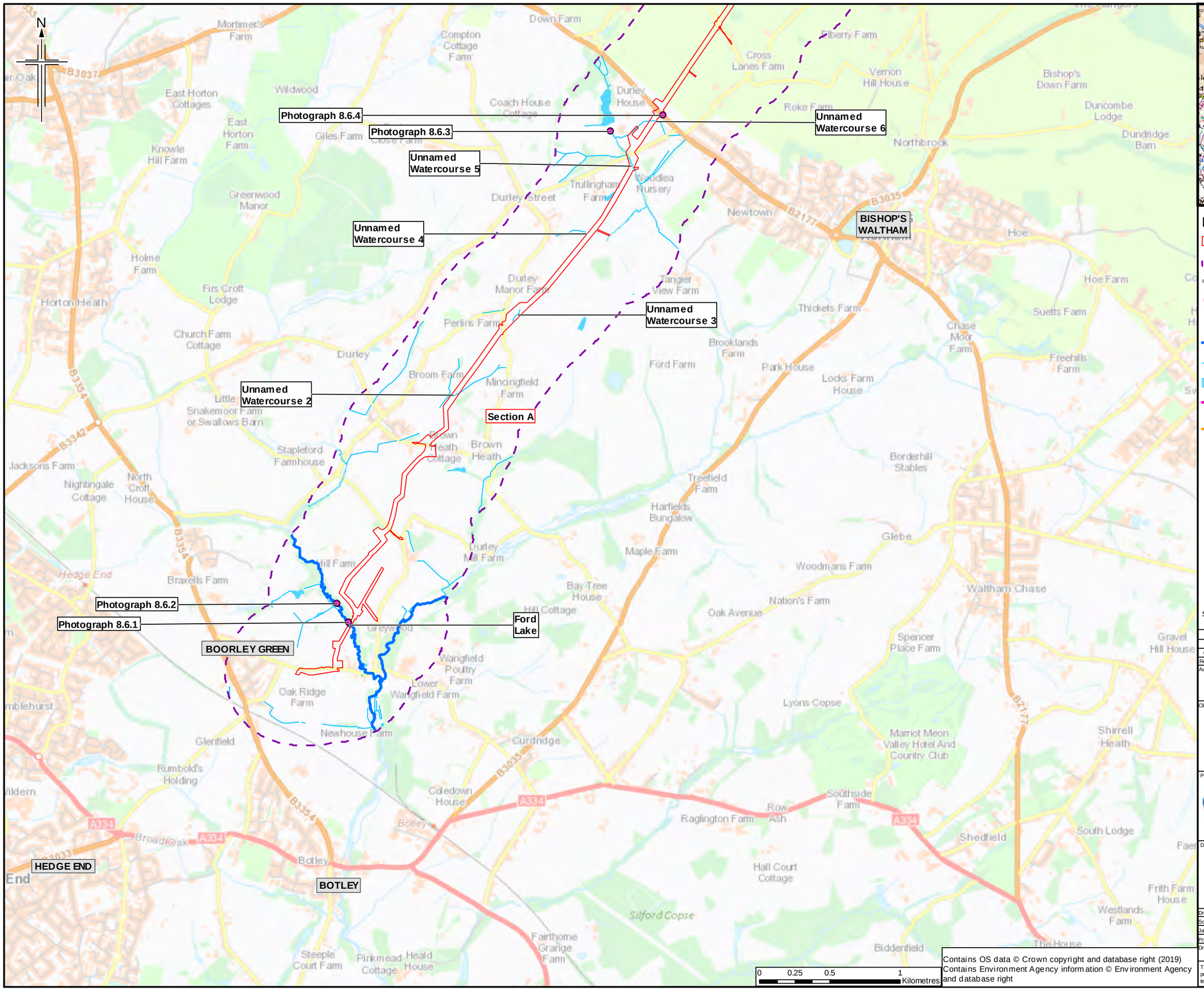

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

Sheet displays part of Section A

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Section A

UPHAM

0 0.25 0.5 1 Kilometres

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

Sheet displays part of Section A

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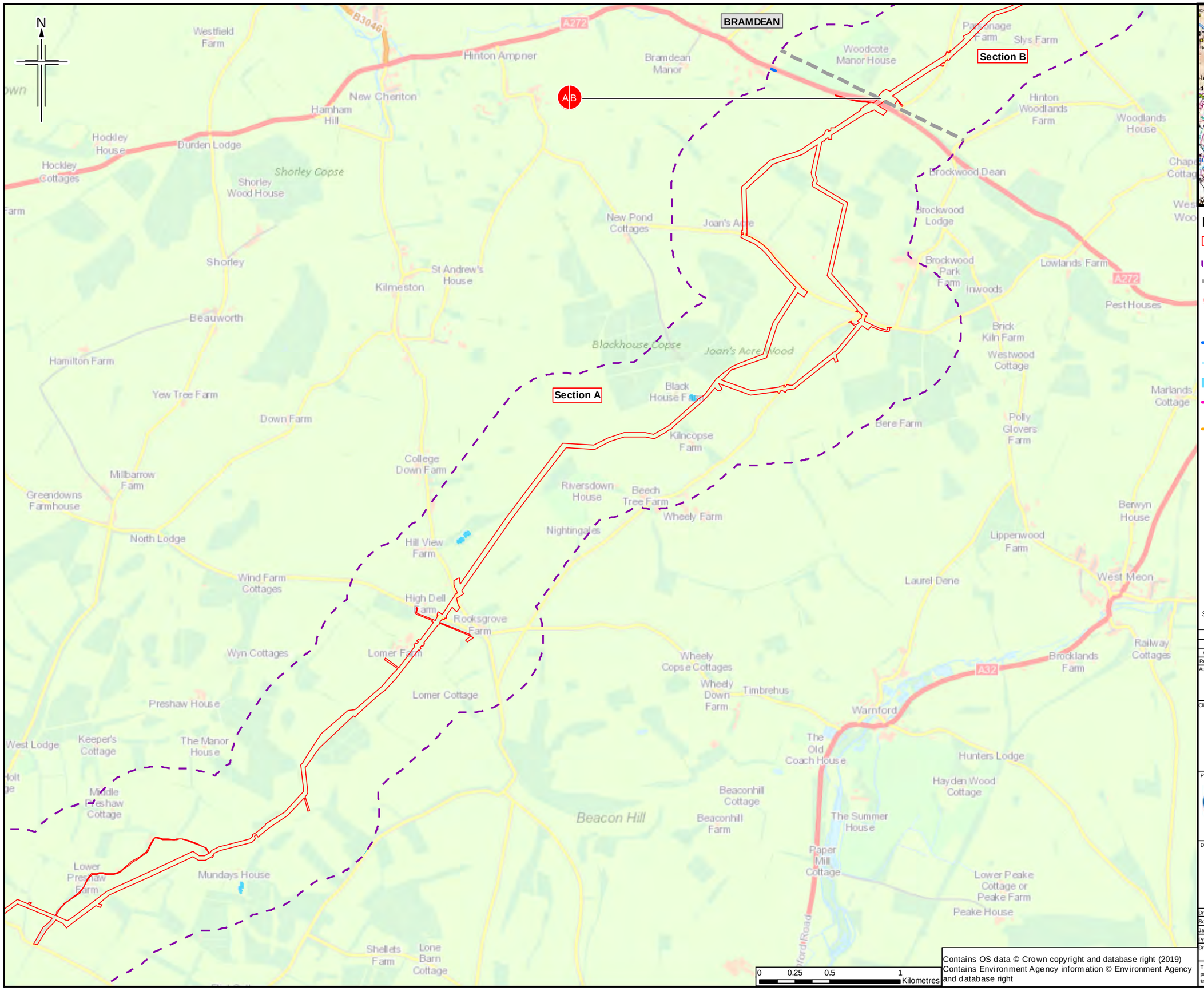

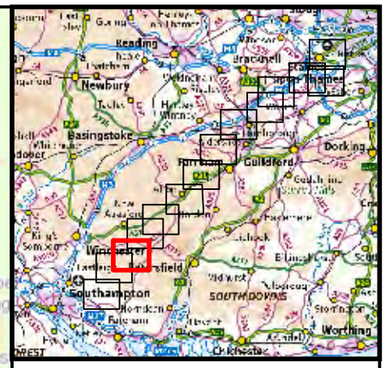

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

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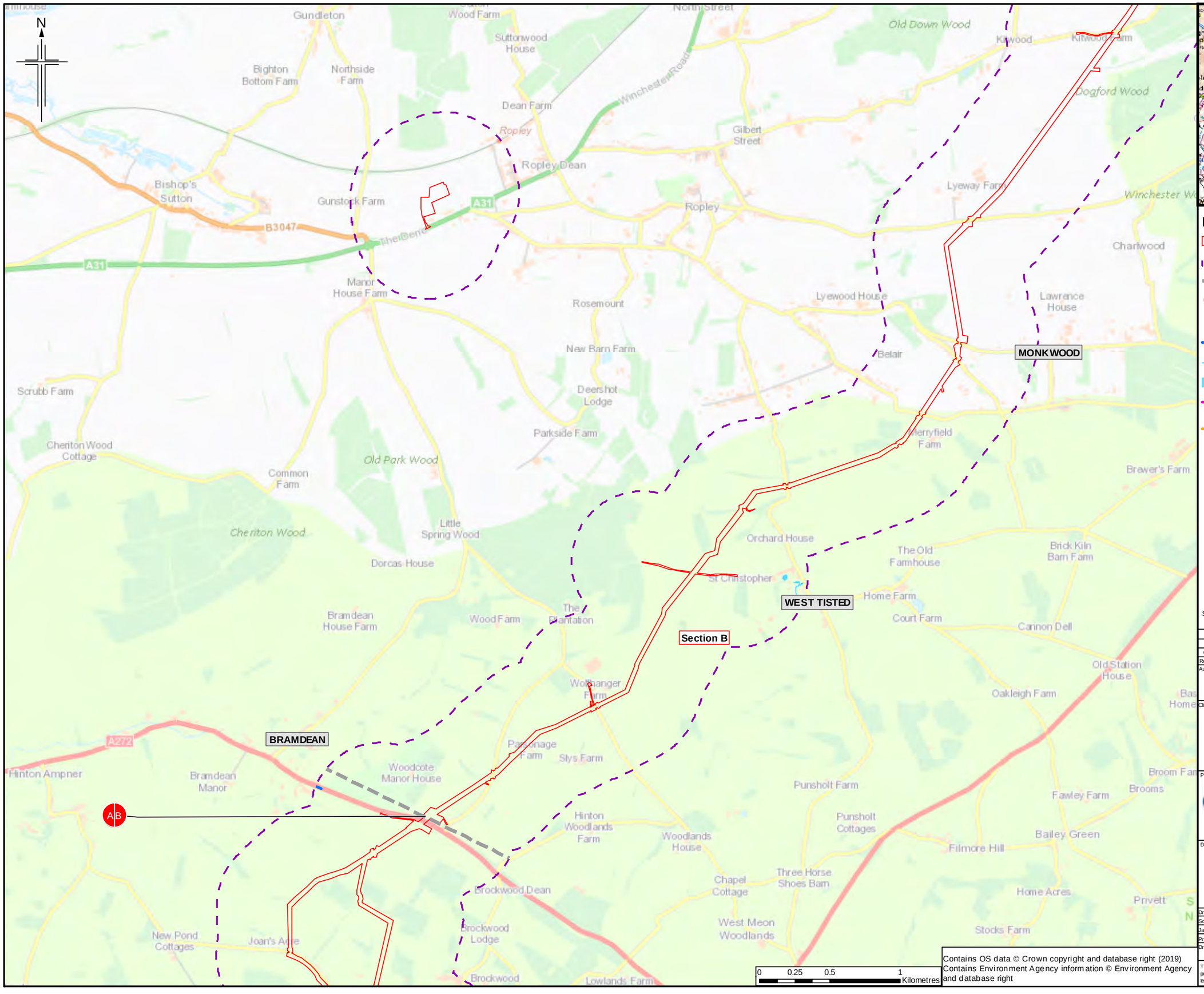

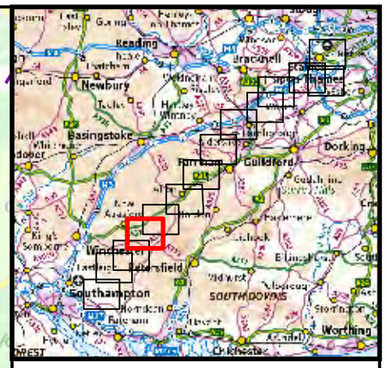

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

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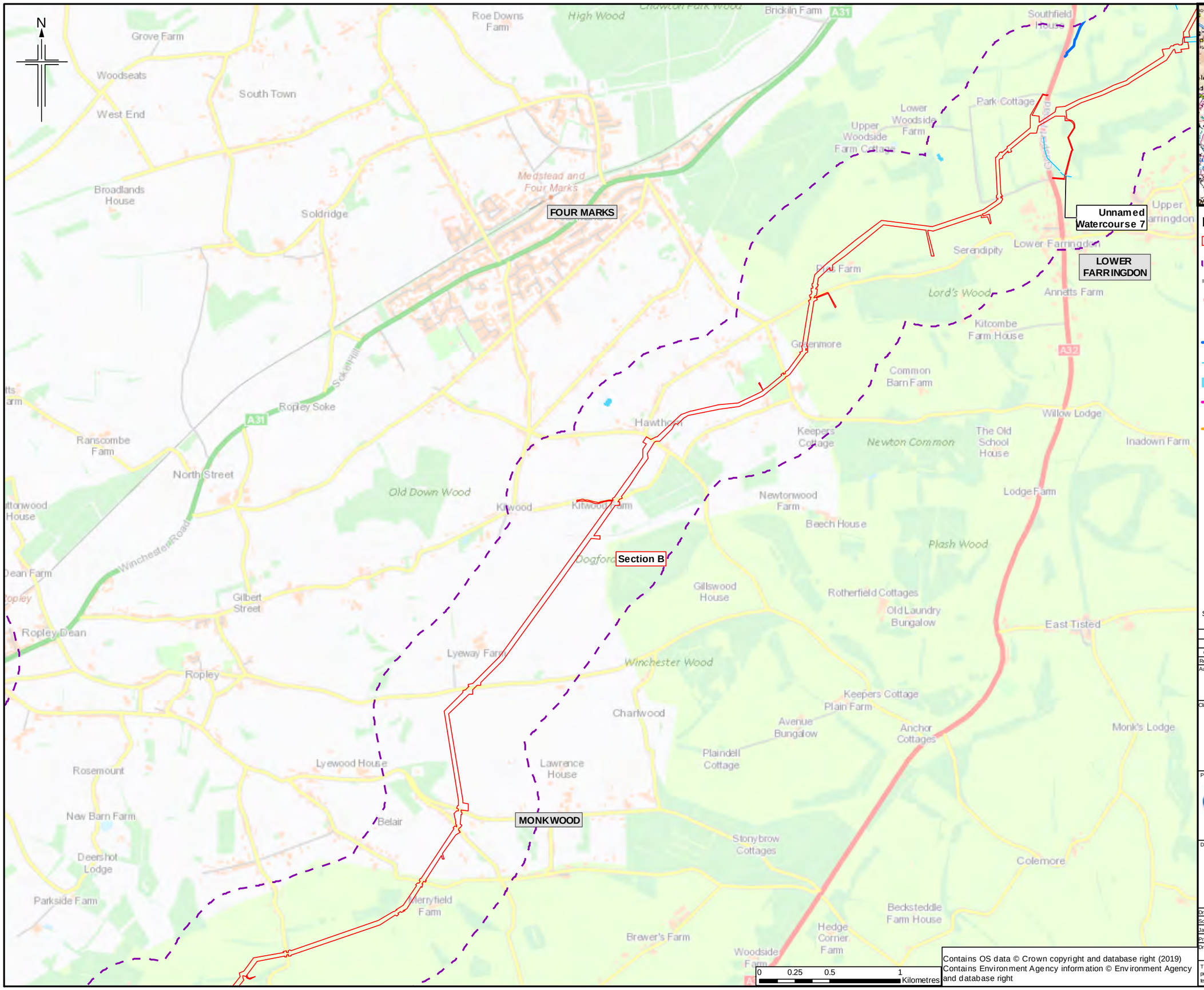

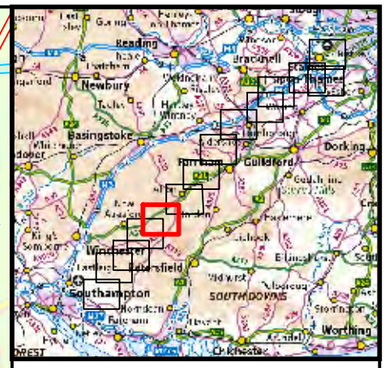

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

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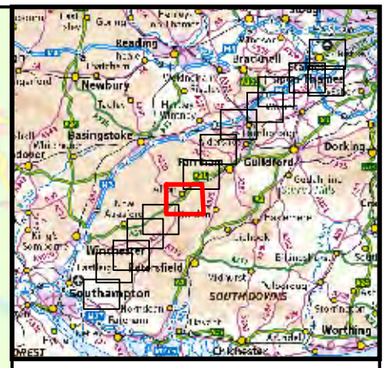
N

Photograph 8.6.8
River Wey
HOLYBOURNE
Unnamed Watercourse 15
Photograph 8.6.7
Photograph 8.6.6
ALTON
Unnamed Watercourse 11
Photograph 8.6.5
Caker Stream
Unnamed Watercourse 10
Unnamed Watercourse 9
Section C
Unnamed Watercourse 14
Unnamed Watercourse 13
Unnamed Watercourse 12
CHAWTON
Water Lane
Unnamed Watercourse 8
Unnamed Watercourse 90
Section B
Unnamed Watercourse 7
LOWER FARRINGDON

Parks
Southwood Farm
Glenville Farm
Highmead House
The Lodge
Warren Farm
Greenmount Farm
Anstey
Thedden Copse
Tollens
Beechview
Golden Chair Farm
River Wey
Mount Pleasant
Newtown
Beech
The Butts
Neatham
Hawbridge Farm
Sclhe Farm
Fox Kiln House
Malms House
Wyck
Neatham Down
Home Farm
Clay's Farm
Hurdles
Bushy Leaze Wood
Truncheaunts Farm House
Farm Cottages
East Worldham
Tilling Cottages
Oakland Farm
Christmas Cottage
Park Farm Cottage
Chalk Dell Cottages
Chawton Park Farm
Eastfield Farm
The Oast House
Southfield House
Little Wood Cottage
West Worldham
Pagletts Green Cottages
Binswood
Binswood Cottage
Binswood Farm
Barleywood Farm
Hartley Wood
Woodmans Cottage
Candovers House
Aerial Farm
Bayleaf Farm
Park Cottage
Upper Woodside Farm Cottage
Lower Woodside Farm
Hartley Park Farm
Windmill Cottages
Lower Wick Hill Farm
Wick Hill Farmhouse
Upper Farringdon
Lower Farringdon
Serendipity
Norton Farm
Ivy Cottage
Fielder's Farm
Sunny View
Annetts Farm
Lord's Wood
Pine Farm

A31
A339
B3349
B3004
A32

0 0.25 0.5 1 Kilometres



Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

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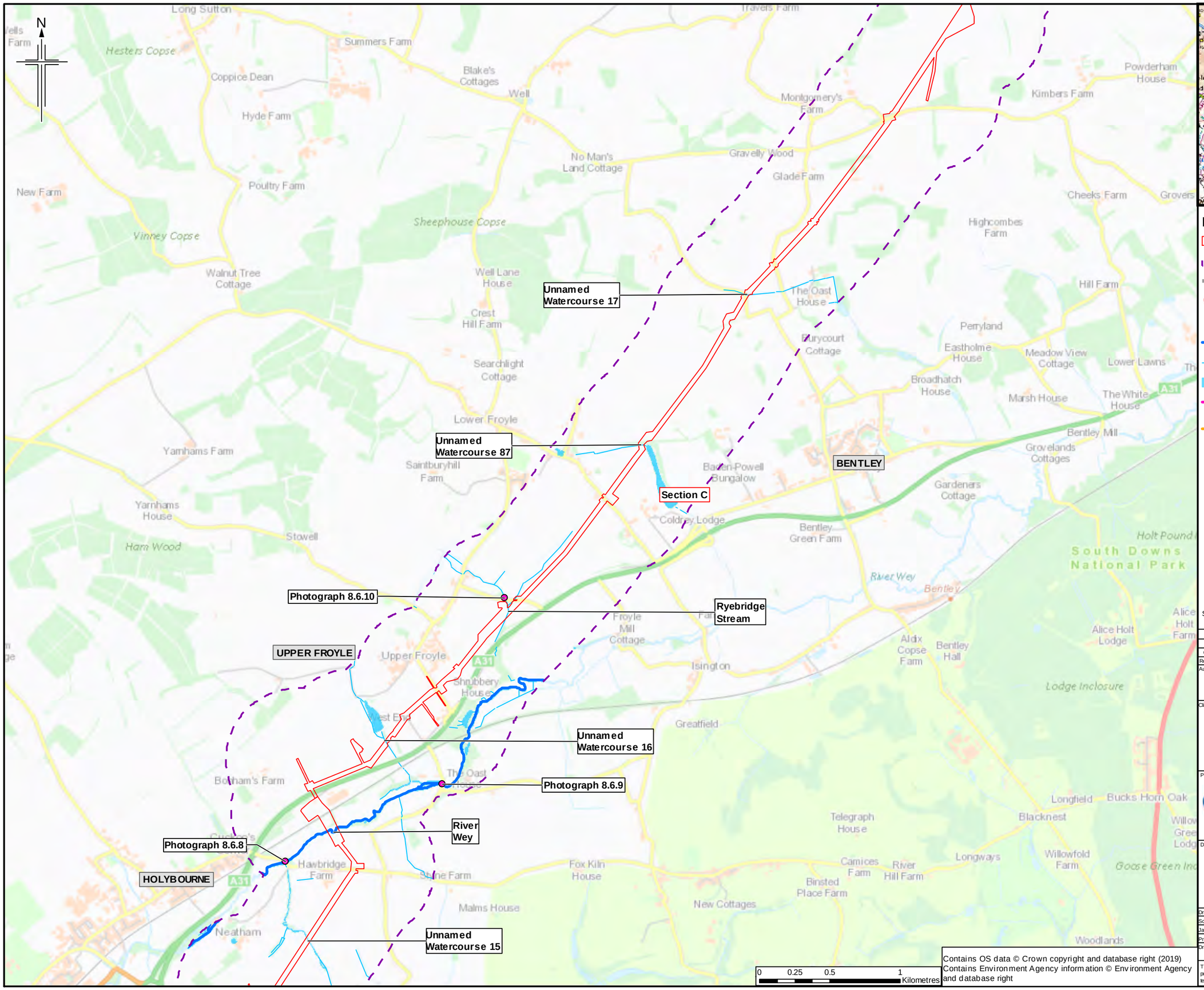

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- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

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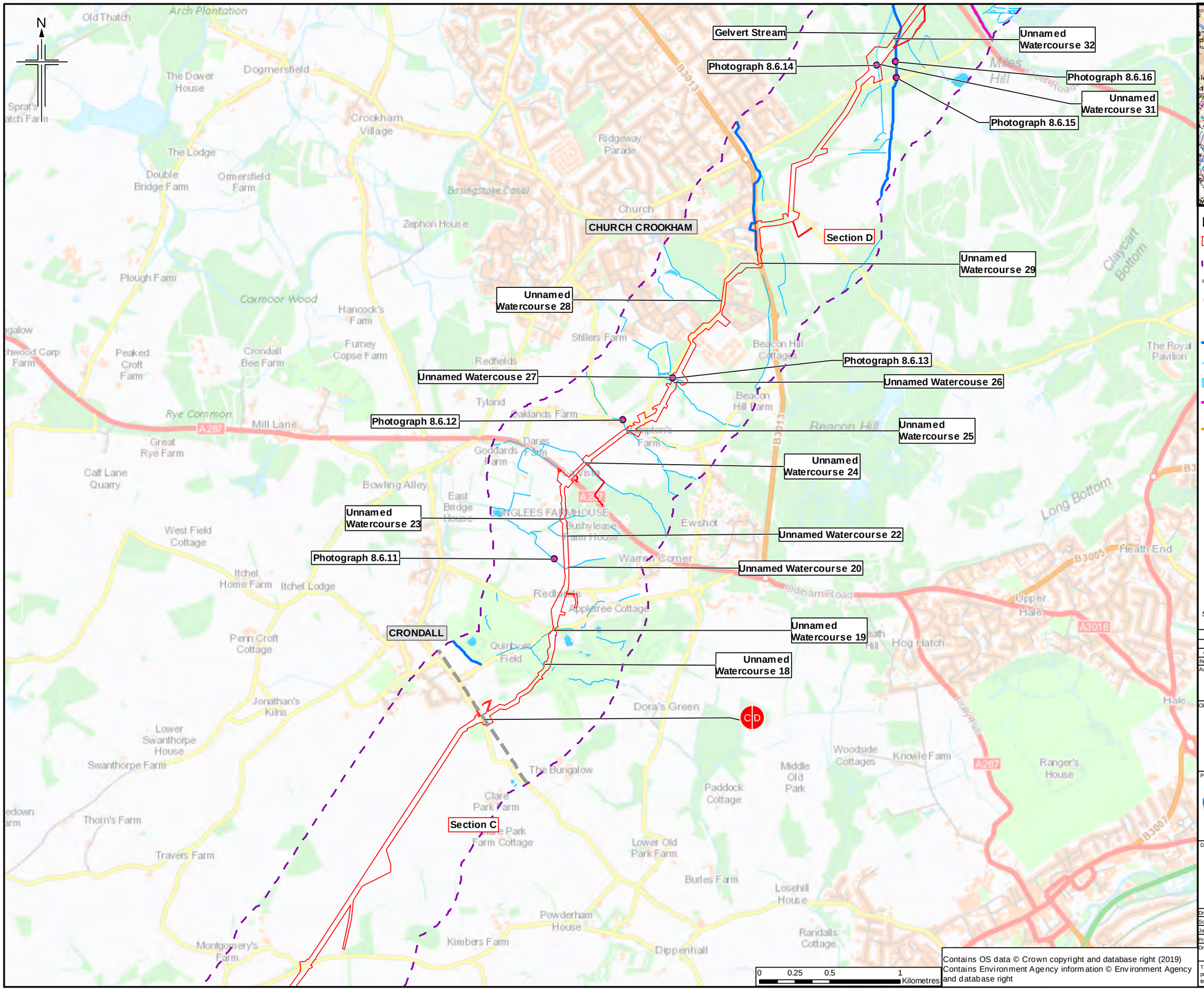

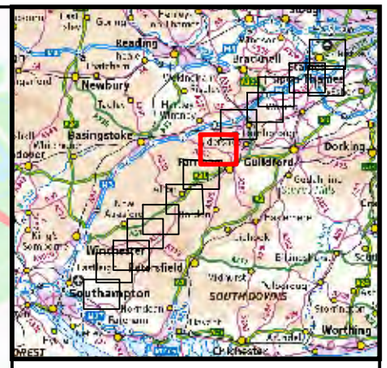

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

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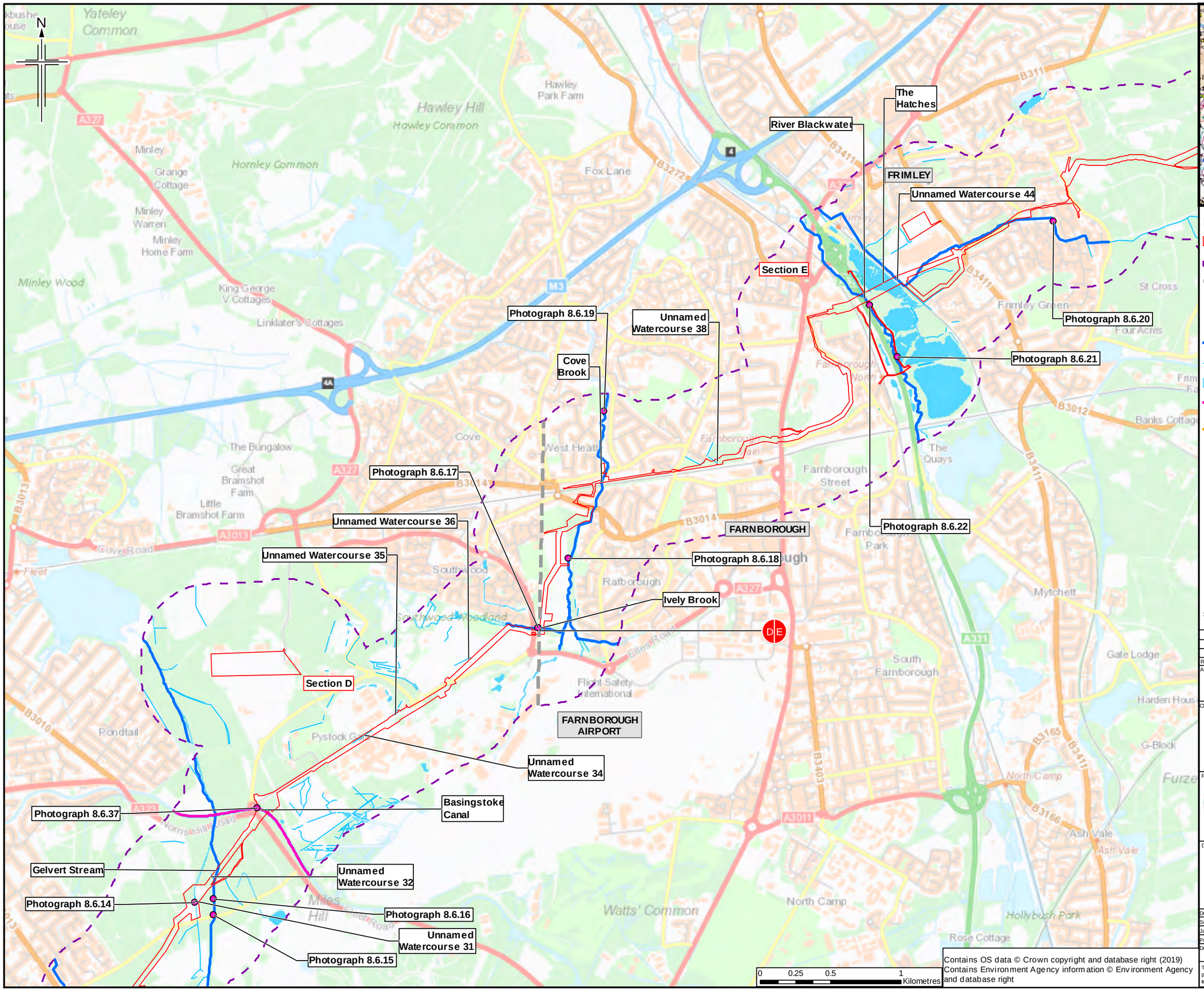

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- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

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Drawing number	Figure A8.6.3 Sheet 9 of 14	Rev 0

N

Unnamed Watercourse 53
Hale Bourne
Photograph 8.6.23
Unnamed Watercourse 51
Photograph 8.6.25
LIGHTWATER
Unnamed Watercourse 48
Section F
Clappers Brook
Unnamed Watercourse 88
Unnamed Watercourse 50
Photograph 8.6.24
Unnamed Watercourse 52
Unnamed Watercourse 49
E F
Section E
The Hatches
Unnamed Watercourse 46
FRIMLEY
Unnamed Watercourse 44
Photograph 8.6.20
Photograph 8.6.21

0 0.25 0.5 1 Kilometres

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
- Basingstoke Canal
- King George VI Reservoir Water Transfer

Sheet displays parts of Section E and Section F

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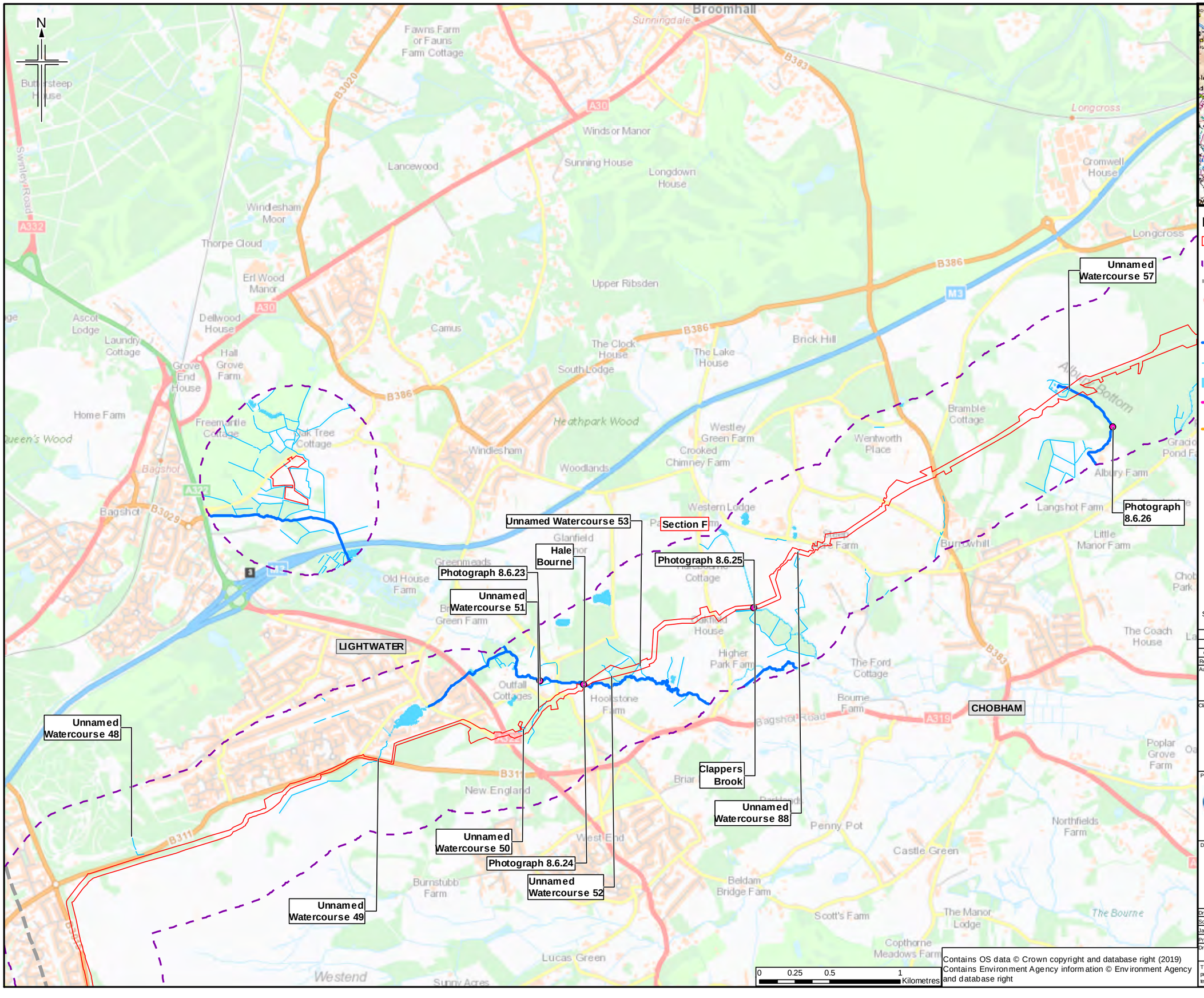
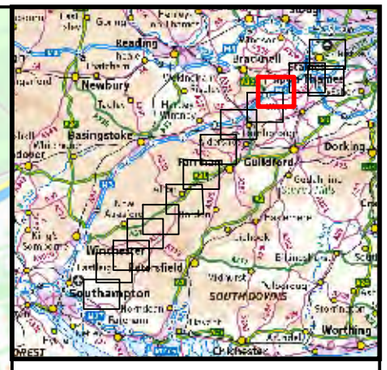
Drawing number	Figure A8.6.3 Sheet 10 of 14	Rev 0





Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
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Sheet displays part of Section F

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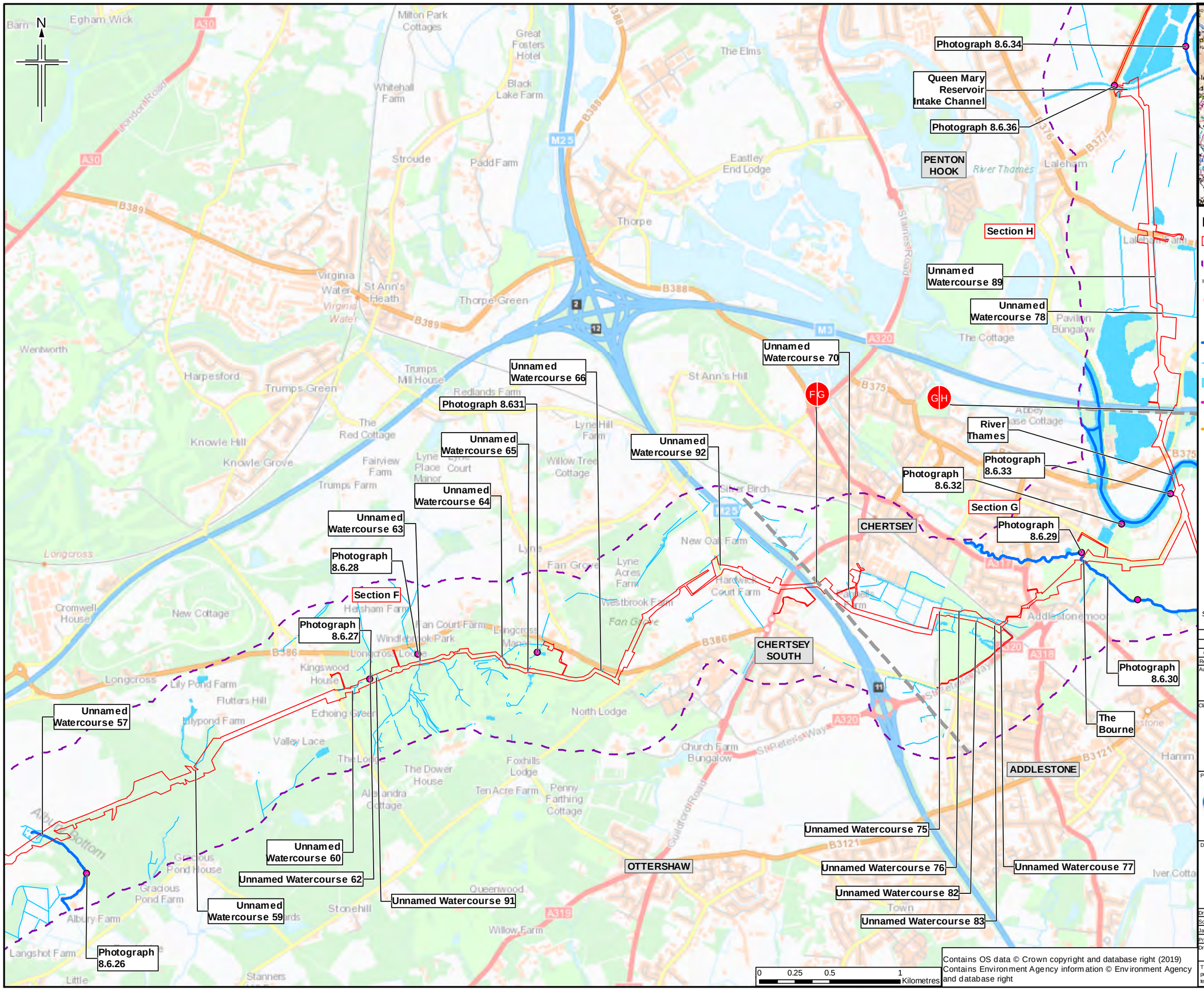
Drawing number	Figure A8.6.3 Sheet 11 of 14	Rev 0



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Drawing number	Figure A8.6.3 Sheet 12 of 14	Rev 0

N

Queen Mary Reservoir Intake Channel

Photograph 8.6.36

PENTON HOOK

LITTLETON

Section H

Unnamed Watercourse 89

Unnamed Watercourse 78

Unnamed Watercourse 70

FG

GH

River Thames

Unnamed Watercourse 92

Photograph 8.6.33

Photograph 8.6.32

Photograph 8.6.29

Section F

CHERTSEY

Section G

CHERTSEY SOUTH

Photograph 8.6.30

The Bourne

ADDLESTONE

Unnamed Watercourse 75

Unnamed Watercourse 76

Unnamed Watercouse 77

Unnamed Watercourse 82

Unnamed Watercourse 83

OTTERSHAW

Weybridge

Sheet displays parts of Section F, Section G and Section H

0 0.25 0.5 1 Kilometres

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
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- Water feature
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Drawing number	Figure A8.6.3 Sheet 13 of 14	Rev	0

N

WEST BEDFONT

Section H

ASHFORD

Unnamed Watercourse 85

River Ash

Photograph 8.6.35

Unnamed Watercourse 81

King George VI Reservoir Water Transfer

Photograph 8.6.38

Photograph 8.6.34

Queen Mary Reservoir Intake Channel

Photograph 8.6.36

PENTON HOOK

Airport

Hatton

Balancing Reservoir

Great South West Road

Wraysbury Reservoir

Lower Mill Farm

King George VI Reservoir

Runnymede Farm

Staines Reservoirs

River Colne

Staines Bypass

Church Lammas

Birch Green

Staines-Upon-Thames

Staines

Egham Hythe

Stanwell

East Bedfont

Chattern Hill

Ashford

Lower Feltham

Felthamhill

Ashford Common

Littleton Common

Sunbury Common

Sunbury-On-Thames

Sunbury

Queen Mary Reservoir

Upper Halliford

Charlton

The Elms

Eastley End Lodge

River Thames

Laleham

Scrubbing Mill

0 0.25 0.5 1 Kilometres

Legend

- Order Limits
- Order Limits 500m buffer
- Section break
- Section break
- Photographic record
- Main River
- Ordinary Watercourse
- Water feature
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