

Havant Thicket Reservoir Project

Environmental Statement - Volume 1 **Revised** Non-Technical Summary

Portsmouth Water Ltd.

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Contents

Chapter	Page
1. Background	4
Scheme Overview	4
Need for the reservoir	5
Site and surrounding environment	5
2. Scheme description	6
Reservoir application	6
Pipeline application	7
3. Construction	9
Reservoir site	9
Pipeline corridor	9
4. Alternatives considered	10
Havant Thicket Reservoir and Pipeline	10
New Pipeline Scheme	10
5. Environmental assessment of significance and mitigation – approach	11
6. Assessment of likely significant effects	13
Air quality	13
Historic environment	14
Biodiversity	16
Ground conditions	19
Landscape and Visual	21
Noise and Vibration	23
Traffic and Transport	24
Material Resources and Waste	26
Water (including flows, quality and groundwater)	28
Effects on Climate	30
Climate vulnerability	31
Population and Human Health	32
Cumulative and In-combination Effects	34
7. Summary of significant effects	36
Appendix A. Plans	38

Tables

Table 3-1 - Indicative Construction Programme	9
Table 6-1 - Biodiversity resources and nature conservation value	16

Figures

Figure 5-1 - EIA Process	13
Figure 6-1 – Visualisation of The Avenue once reservoir construction is complete	22

1. Background

- 1.1. This Non-Technical Summary (NTS) is a revision to the original Havant Thicket Reservoir Environmental Statement NTS which accompanied the Havant Thicket Reservoir hybrid planning application approved by Havant Borough Council and East Hampshire District Council on 15th October 2021¹, and an outline planning application for the associated pipeline approved by Havant Borough Council on 15th October 2021² (Approved Scheme).
- 1.2. Following the planning approvals, Portsmouth Water and its appointed pipeline construction contractor (Ward & Burke Construction Ltd) have been investigating ways to improve the route of the pipeline, to further reduce its impact on local communities and the environment. This is in light of alternative innovative construction techniques, which would allow the pipeline scheme to be delivered more efficiently and effectively. This has resulted in a predominantly tunnelled construction methodology and a new route alignment.
- 1.3. There has also been a change in approach to delivering additional resilience to the water network, with a dual pipeline now proposed. The two pipelines would be used by Portsmouth Water to pump spring water to the reservoir and draw it out when needed. This would give them greater flexibility to respond to more frequent, longer droughts, allowing them to add and remove water from the reservoir at the same time. It would also mean the scheme could continue to operate if maintenance was required on one of the pipelines.
- 1.4. The change in approach, pipeline route and design needs a new planning approval. A new planning application has been prepared for this new pipeline scheme and design supported by a revised Environmental Statement (ES).
- 1.5. To make it easier for the reader, this NTS still includes the assessment of the reservoir and where required, a new or updated baseline, impact assessment and mitigations for the pipeline. The changes from the original NTS are shown in green text.

Changes to the Approved Scheme

- 1.6. Following planning permission in 2021, further design work and extensive ground investigations have been undertaken which has resulted in changes to the reservoir scheme including a reduction in the reservoir embankment slope angle and relocation of the valve tower from inside the main embankment into the reservoir. The height of the embankment crest level would not change from the 2020 ES, but the position of the embankment crest would move up to 100m to the north.
- 1.7. An application to amend the reservoir scheme was submitted in April 2024 under Section 73 (S73) of the Planning Act 1990. An ES Addendum was prepared to support the S73 application to present an assessment of any new or different significant effects that could result from these changes. The ES Addendum relating to these changes has been reviewed and the findings are incorporated within the revised ES. The ES Addendum concludes that there are no new or materially different significant effects to those identified in the 2020 ES.

Scheme Overview

- 1.8. This Non-Technical Summary of the Environmental Statement supports planning applications, submitted by Portsmouth Water, for a new reservoir at Havant Thicket and a pipeline between the reservoir and Bedhampton pumping station ('The Scheme'). The new reservoir will secure reliable drinking water supplies for decades to come, while maximising the community and environmental benefits of a new raw water reservoir.
- 1.9. The reservoir application includes the reservoir for raw water storage, control house, visitor centre and car park, recreational facilities for public amenity and a wetland along the northern shore of the reservoir.
- 1.10. The reservoir, when constructed, would be filled with surplus water drawn from the springs at the Bedhampton works when flows are at their highest in winter via a new pipeline. The creation of a reservoir will make better use of the excess water by capturing it and storing it in the reservoir until it

¹ Havant Borough Council ref. APP/20/00990 and East Hampshire District Council ref. 51680/001

² Havant Borough Council ref. APP/20/00991

is needed. Portsmouth Water can then use this water to supply their customers and share the surplus with Southern Water's customers in west Hampshire.

- 1.11. The Scheme would provide a new wetland habitat and associated area for nature conservation. The proximity of the reservoir to the internationally important Chichester and Langstone Harbour means that it can be used as a safe retreat for roosting birds when there is disturbance in the Harbour Special Protection Area and Special Area of Conservation. The construction of the reservoir will result in substantial reductions in nutrients loads to the harbour.
- 1.12. The Scheme would also offer further opportunities to improve the wider footpath, cycleway and bridleway networks in the area.
- 1.13. The **two new** pipelines would transfer water from Bedhampton Springs to fill the reservoir in the winter and draw water off for treatment and supply when needed in the summer. It would also be used for emergency drawdown should the reservoir levels need to be reduced in emergency conditions, in accordance with the Environment Agency safety guidance.
- 1.14. **The new pipeline scheme has been designed to reduce the overall length and minimise disruption and disturbance to local residents during construction.**
- 1.15. As indicated on the Scheme Setting Plan, which is included as Figure 1 in Appendix A of this Non-Technical Summary, the reservoir site lies within two local planning authorities, Havant Borough Council and East Hampshire District Council, within the county of Hampshire. The pipeline route is entirely within the Havant Borough Council.
- 1.16. The Scheme falls under the Environmental Impact Assessment Regulations 2017 and as such requires an Environmental Statement to support the planning application. The Environmental Statement comprises four volumes. This document, the Non-Technical Summary constitutes Volume 1 of the Environmental Statement. The main report is in Volume 2, with figures and appendices in Volumes 3 and 4 respectively.

Need for the reservoir

- 1.17. The increase in water supplies available to Portsmouth Water on completion of the Scheme will enable additional water to be supplied to Southern Water. Southern Water has a forecast deficit in water resources in the Hampshire area, which has been created by the reduction of its abstraction licences on the River Itchen imposed by the Environment Agency. Southern Water has an agreement under Section 20 of the Water Resources Act 1991 that requires them to use all best endeavours to remove this forecast deficit. Additional water made available by the Scheme will contribute towards the resources required to meet the forecast deficit.
- 1.18. The reservoir was included in Water Resources South East Group's regional strategy and Portsmouth Water and Southern Water's 25-year and 50-year Water Resources Management Plans, which gained approval from the Secretary of State for the Environment, and then Ofwat, in 2019. The Scheme will help meet supply need over the next 25 years and will help Portsmouth Water to free up existing supplies in the west of the catchment area to share with Southern Water's customers to meet the region's challenges in the future, in particular relating to abstraction licence changes, predicted population growth and climate change that will all place pressure on meeting future water supply demand.

Site and surrounding environment

Reservoir site

- 1.19. Portsmouth Water purchased approximately 160 hectares from the Forestry Commission (now Forestry England) in 1965 and Portsmouth City Council in 1966. This area of land that will accommodate the reservoir and visitor facilities, measures 1.6km in length from east to west and 0.8km from north to south. Since its purchase, the land has been improved for agricultural use through the removal of tree stumps, installation of drainage and soil improvement. The open grassland is managed by Hampshire County Council who use it for grazing. A large area of the reservoir site is also currently let to Staunton Country Park and area designated by Hampshire County Council for people to visit and enjoy recreation in a countryside environment. The Site is also used by the local community for walking, cycling, and horse riding.

- 1.20. The reservoir site lies within a shallow clay valley comprising predominantly open grassland with some woodland, hedgerows and ditches. At the centre of the reservoir site is an area classified as ancient woodland that runs from north to south that is known as The Avenue. Three other areas of ancient woodland, Middle Clearing, Round Wood and Corsican Pine Plantation, are located within the reservoir site. These woodland areas provide habitat for a range of bird, insect and bat species. A Public Right of Way (bridleway) extends across the reservoir site from east to west. Three unnamed small watercourses run from north to south across reservoir site, these converge into one stream to the west of The Avenue before flowing off site into Riders Lane Stream to the south-west.
- 1.21. The residential area of Warren Park is located adjacent to the western boundary of the reservoir site whilst Leigh Park is located approximately 480 m south-west of the reservoir. The settlement of Rowlands Castle is located 200 m east of the reservoir site with Redhill and Durrants located approximately 160 m from the reservoir on the eastern boundary.
- 1.22. The woodland of Havant Thicket directly north of the reservoir site is owned and managed by Forestry England for timber production. This woodland is also classified as ancient / ancient replanted woodland and is included within the red line boundary as it will accommodate proposed habitat mitigation measures. Directly to the west are open areas of grassland and woodland known as Bells Copse (ancient woodland) and Cabbagefield Row.
- 1.23. A large area of the reservoir site is part of Staunton Country Park a Grade II* Registered Park and Garden, and within the Sir George Staunton Conservation Area. The area of Staunton Country Park and the Conservation Area within the site is mainly open grasslands.

Pipeline corridor

- 1.24. The pipeline corridor extends from the Portsmouth Water's pumping station at Bedhampton, in the south and passes through the Leigh Park Estate **under local roads and open spaces** to the **centre of the reservoir site (see Figure 2 Site Location Plan in Appendix A)**.
- 1.25. The pipeline corridor runs **north from the Bedhampton Site up to and around the council playing fields next to Havant Rugby Club and then** north along the Hermitage Stream before turning northeast and broadly following the Riders Lane Stream towards the reservoir site. At the northern end of the corridor, before **entering the** reservoir site, the pipeline intersects the Sir George Staunton Conservation Area, and the Registered Park and Garden and species rich grassland within Staunton Country Park, designated Thicket Lawn and High Lawn Site of Importance for Nature Conservation.
- 1.26. The southernmost point of the pipeline corridor is located approximately 1 km north of three European / internationally designated sites: Chichester and Langstone Harbours Special Protection Area and Ramsar site and Solent Maritime Special Area for Conservation.

2. Scheme description

- 2.1. The Scheme comprises the following:
 - Reservoir site including vehicular and pedestrian access routes, an operational control house and visitor facilities including a visitor centre, bird hide, car park and recreational walking and cycling network **(now approved and under construction)**.
 - Pipeline corridor including **two pipes in two tunnels**, an emergency discharge structure **between the Hermitage Stream and Riders Lane Stream confluence, cross-connection infrastructure at the reservoir site**, upgrades to existing culverts and new plant and modifications to an existing building at Bedhampton Pumping Station **(the subject of the planning application for the new pipeline scheme)**.
- 2.2. Further details are provided below and in the Environmental Statement Volume 2.

Reservoir application

- 2.3. Planning permission **was secured in October 2021** for:
Development of a reservoir for raw water storage, with control house, visitor centre and car park, recreational facilities for public amenity and a wetland along the northern shore of the reservoir.
- 2.4. The components of the reservoir application include:

- A pumped storage reservoir, with the minimum required total storage capacity of 8,700 million litres (ML), to support the planned bulk supply transfer of at least 21 ML/d in extreme (currently defined as 1:200 year) drought conditions.
- Construction of an earth embankment;
- Construction of a control house partially incorporated within landscaped earth mounding adjacent to the south west embankment;
- Construction of an overflow discharge/spillway at the south-western side of the reservoir and associated works;
- Construction of a new junction on the B2149 Manor Lodge Road and a new junction on Swanmore Road and access routes from both junctions to the visitor car park;
- Provision of 193 car parking spaces and between 70 and 75 overflow spaces plus spaces for staff, coach/minibus and disabled drivers sited to the north west of the reservoir;
- Construction of tracks and a network of bridleways, cycle paths and footpaths;
- Construction of a visitor centre / café, with storage areas and welfare facilities to the northwest of the reservoir to be used for recreational and education purposes;
- Provision of picnic area(s) and children's play area(s);
- Creation of a permanent wetland on the northern side of the reservoir and construction of bird watching hide/screen(s);
- Construction of a slipway on the western bank of the reservoir for operational use only;
- Provision of viewing areas on the southern embankment and western edge of the reservoir; and
- A small section of the proposed pipeline (210 m) is included in the reservoir application.

Pipeline application

- 2.5. Outline Planning permission was secured for a pipeline Scheme in October 2021. Hybrid planning permission is now being sought for a new pipeline design for the same purpose:
Development of new pipelines to transfer water from Bedhampton Springs to fill the reservoir in the winter and draw it off to treat and supply when needed in the summer.
- 2.6. Under the original pipeline Scheme, much of the pipeline would have been installed using an open cut method of construction – where engineers would dig down from the road or land, lay the pipe and then fill in the ground above it. The new pipeline design involves the use of micro-tunnelling to put in the majority of the pipeline, building it section by section via eight access shafts. This trenchless method minimises the disruption and impacts associated with the open cut method. Two sections of the new pipeline design will be installed using the open cut method.
- 2.1. A hybrid application for the pipeline is being submitted with some details reserved for approval at a later stage. These will take the form of reserved matters applications.
- 2.2. The full components of the application for the new pipeline comprise:
- Construction of **two, predominantly underground, pipes in tunnels** linking the reservoir with the existing pumping station at Bedhampton (excludes outlet pipe at reservoir site which will be subject to a reserved matters application linked to the reservoir planning permission);
 - Emergency drawdown discharge structure/**shaft** and above ground kiosk at Hermitage Stream;
 - **Construction of a further eight access shafts;**
 - Upgrades to existing culverts close to shafts five, six and eight to manage flood risk;
 - Washout and air valve chambers (typically below ground);
 - **New plant at Bedhampton Pumping Station and modifications to Bedhampton 2 operational building; and**
 - **Permanent diversion of Footpath 34 at Bedhampton Pumping Station.**
- 2.3. The outline element comprises:

- An underground cross-connection chamber and above ground kiosk at the reservoir site with vehicular accesses for maintenance (one to access cross-connection infrastructure and one for flow metre chamber).
- 2.4. The outline elements are being designed in conjunction with the new reservoir infrastructure south of the embankment and a reserved matters application will be submitted for these elements. The landscape reinstatement at the reservoir site (south of the embankment) will be designed as part of the landscaping reserved matters application associated with the reservoir planning permission to ensure a comprehensive landscaping design and implementation approach to this area.
- 2.5. The pipeline would be 5.3km in length (the new scheme extends into the reservoir footprint). It will comprise two new water pipes typically installed inside two tunnels up to 2.5m wide formed by concrete pipe sections installed at a depth of between 3 and 10m underground. These depths are well below roads, footpaths, utilities, watercourses and tree roots. The pipeline route would also avoid going directly under houses.
- 2.6. A combination of open cut and micro-tunnelling techniques will be used for the construction of the pipeline. Open cut techniques will take place in two main locations, where ground level excavations would take place and the pipe would be laid before filling in the ground above it. The works account for 1.5km of the total 5.3km length of the pipeline and are located:
 - Around the council playing fields adjacent to Havant Rugby Club; and
 - At land to the west and southwest of Staunton Country Park (including within the reservoir site).
- 2.7. Micro-tunnelling will be used for the remainder of the pipeline construction. This technique involves concrete pipes being pushed, using hydraulic jacks, through the ground behind a micro-tunnel boring machine. The shafts will be used to facilitate the tunnelling and, following construction, will then be backfilled with manholes created inside the shaft to provide permanent access to valves as required.
- 2.8. An additional shaft just south of Corhampton Crescent in Leigh Park, where the Riders Lane Stream meets the Hermitage Stream, will be used as an emergency discharge chamber. This will allow some water from the reservoir to be released safely into the Hermitage Stream, via the pipeline in the highly unlikely event of the water level in the reservoir needing to be lowered quickly. The rest of the emergency discharge flows will be discharged into Riders Lane Stream. The culverts along the Riders Lane Stream, downstream of the new reservoir, will also be upgraded, so that flows from the reservoir can be safely accommodated. A new utilities kiosk (dimensions 7m x 5.3m x 3.2m high) will also be required adjacent to the emergency discharge chamber to house motor control centre panel and valve actuators.
- 2.9. As a result of the proposed works at Bedhampton Pumping Station permission is also sought for a permanent diversion of the public footpath 34 which currently runs through the operational site. For security reasons the new diversion will still need fencing on either side to prevent public access into the operational site. To avoid dividing the site, and ensure unhindered access to Portsmouth Water's assets for ongoing maintenance, the proposed diversion runs around the edge of the site. It will include a new footbridge over Lower Mill Pond and rejoin the footpath adjacent to the railway line, it will provide a more attractive route for walkers compared to the existing path. Tree and vegetation loss has been minimised as far as practicable and tree protection measures will protect remaining trees during construction.
- 2.10. The environmental constraints plan and outline masterplan are included in Appendix A of this Non-Technical Summary.
- 2.11. The new scheme has been informed by public and stakeholder engagement and extensive collaboration between the engineers and the environmental specialists to ensure that it avoids or minimises impacts on the environment and local community. Measures to avoid all Veteran and Category A trees and minimise impacts on hedgerows, terrestrial and aquatic habitats, public rights of way and open spaces and provide carbon savings, have been embedded into the final detailed design.
- 2.12. An outline Biodiversity Mitigation and Compensation Strategy was prepared to inform the environmental assessment and submitted with the original planning applications. A Detailed Mitigation and Compensation Strategy and Landscape including Landscape and Environmental Management Plan was subsequently approved on 24th August 2022. The planning application for the new pipeline scheme is supported by an Ecological Management and Monitoring Plan.

- 2.13. The amount of river habitat mitigation required has been agreed with the Environment Agency to offset the impacts of the Scheme on the watercourses on the main reservoir site.
- 2.14. To meet the 2024 Biodiversity Net Gain regulations, the new pipeline can achieve 10% 'net gain' by the creation or enhancement of affected area habitat type.
- 2.15. Mitigation measures required as part of the Record of Environmental Actions and Commitment in the Outline Environmental Management Plan in Appendix A2.1 of the Environmental Statement Volume 4 will be included by the appointed contractors in the Construction Environmental Management Plans (CEMP) for each phase of the reservoir development and alongside the planning application for the new pipeline scheme.

3. Construction

Reservoir site

- 3.1. The construction of the reservoir will be phased over approximately 10 years to take account of detailed design, environmental mitigation, preparatory operations, seasonal clay working limitations and time taken to fill the reservoir with water. The construction compound will be located within the reservoir site red line boundary in the area that will eventually accommodate the visitor centre and car park. Reservoir construction traffic will access the site via the northern access off the B2149. The reservoir and pipeline will be constructed in phases, to reduce the amount of traffic travelling to and from the reservoir site at any one time.

Pipeline corridor

- 3.2. The pipeline construction will be phased over approximately 2.5 years. The pipeline will be broken down into sections to allow multiple teams to operate at the same time.
- 3.3. Construction traffic comprising heavy goods vehicles will be required to use the northern access as the main access point, with the southern access only being used for construction of the top third of the pipeline. Construction traffic for the lower two thirds of the pipeline will access the pipeline corridor directly from Junctions 2 and 3 of the A3(M). The traffic impact is discussed in more detail in the Environmental Statement Volume 2 Chapter 13 Traffic and Transport.
- 3.4. Planning approval will be subject to detailed Traffic Management and Construction Environmental Management Plans that will include measures to reduce disruption from construction activities.
- 3.5. The main construction welfare support site for the pipeline construction will be at Bedhampton Pumping Station. The main laydown area for the pipeline will be at the reservoir and there will also be small construction compounds within the pipeline shaft construction areas.
- 3.6. The key elements of the proposed construction sequence are indicated in Table 3.1:

Table 3-1 - Indicative Construction Programme

Dates	Key activity / milestone
15 th October 2021	Planning approval secured for the reservoir application and original pipeline application
Spring 2021 – Winter 2023	Commencement of works for reservoir site: Species relocation, tree felling, preparatory work on habitats avoiding breeding / nesting seasons, enabling works including northern access road construction.
Autumn 2024	Planning permission for the new pipeline expected
2024 – 2028	Construction of reservoir embankment, control house, culverts and connections to the pipeline, southern access, wetland earthworks and structures, landscaping

Dates	Key activity / milestone
2025 –2027	Pipeline construction (apart from Shaft 1 which is being consented separately and will commence Summer 2024 under the original pipeline permission)
Autumn 2026 – Spring 2031	Construction of visitor facilities for the reservoir. Filling of reservoir in stages with pumped water from Bedhampton Springs. Testing and commissioning.

Community Liaison

- 3.7. An important element of the proactive approach to limiting the potential significance of effects is to ensure that the public and residents are kept fully informed over the scale and nature of the works, when they are to take place, and who to contact if disturbed by the construction activities. To ensure good community consultation for the project, a letter drop will take place in the locality advising residents of the programmed works and when they will take place.

4. Alternatives considered

Havant Thicket Reservoir and Pipeline

- 4.1. The Havant Thicket site has been identified as the preferred location for a reservoir following numerous studies undertaken over the past 53 years. Detailed ground investigations were commissioned by the Southern Water Authority in the 1960's and 1970's to identify potential reservoir sites with suitable geological conditions. The Site Alternatives Assessment (April 2020) in Appendix A4.1 Environmental Statement Volume 4 captures the site selection work that had been undertaken previously. The assessment methodology utilises a three-stage appraisal process in order to identify specifically the optimal location and design of a reservoir. Seventy two potential sites were assessed across the Portsmouth Water and south Hampshire area in stage one. Sixty seven of the 72 sites were rejected at this stage, primarily because the proposed source of abstraction was protected under an Abstraction Licensing Strategy (2013) and/or Habitat Directive. Only sites that could be supplied by the Havant and Bedhampton Springs were feasible. Five sites were taken forward to stage two and Havant Thicket was assessed as providing the best option as it has the largest capacity, allows for the development of areas for recreational activity that will benefit the local community, together with the potential for nature and biodiversity enhancement, the shortest pipeline and least impact on protected Chichester and Langstone Harbours.
- 4.2. At stage three, eight conceptual reservoir designs on the Havant Thicket site were developed and analysed and then discussed with stakeholders. This led to the development of two further refined options A and B, which contained a combination of the best features of the favoured appraised options. This was subject to public consultation in 2008 and refined further to form the 2009 Outline Masterplan. The Scheme, the subject of the current planning applications, is a refinement of the 2009 scheme: further reducing impacts on ancient woodland, Sir George Staunton Conservation Area and Leigh Park Registered Park and Garden; increasing the area of retained wetland; and enhancing landscaping and optimising opportunities for recreation and biodiversity.

New Pipeline Scheme

- 4.3. Following the approval of the Havant Thicket Reservoir hybrid planning application and original outline planning application for the associated pipeline in 2021, Portsmouth Water and its appointed pipeline construction contractor (Ward & Burke Construction Ltd) have been investigating ways to improve the route and design of the pipeline, to further reduce its impact on local communities and the environment. This is in light of alternative innovative construction techniques, which would allow the pipeline scheme to be delivered more efficiently and effectively.
- 4.4. Initial optimisation was to reduce the length of the pipeline by following Riders Lane stream and adopt a more efficient and less disruptive tunnelling technique. As described above, much of the original pipeline would have been installed using an open cut method – where engineers would dig down from the road or land, lay the pipe and then fill in the ground above it. The revised proposals

involve the use of micro-tunnelling to put in the majority of the pipeline, building it section by section via eight access shafts.

- 4.5. Initially the proposed shafts were located where they were best suited to tunnel alignments through reducing bends and providing the optimum space for access on all sides of shafts to accommodate preferred site layouts. The two areas for open cut construction are required to help manage and reduce programme length as they can be undertaken alongside tunnelling works. Areas which would have minimum disruption on the local community were chosen (i.e. open space rather than roads). In these sections overall costs are reduced due to the shallow cover and lack of services. Site constraints were then taken into account to further refine the route and design.
- 4.6. To address the need to deliver additional resilience to the water network, a dual pipeline is now being proposed. The two pipelines would be used by Portsmouth Water to pump spring water to the reservoir and draw it out when needed. This would give them greater flexibility to respond to more frequent, longer droughts, allowing them to add and remove water from the reservoir at the same time. It would also mean the scheme could continue to operate if maintenance was required on one of the pipelines.
- 4.7. This is a new dual pipeline scheme and the environmental impacts cannot be easily compared to the original approved single pipeline scheme. The dual pipeline scheme would result in significantly less disruption to local communities and a lower impact on the environment compared to installing two pipelines separately. It also means lower carbon emissions during construction, compared to installing two pipelines separately.
- 4.8. There would be no likely long-term (permanent) significant adverse effects predicted. However, four new temporary significant adverse effects have been identified relating to noise, dust, visual impacts and loss of open space during construction. The effects can be minimised with temporary acoustic screens, implementation of best practicable means and through good communication with local residents. This is discussed further in the summaries below.
- 4.9. The overall disruption from the construction of the pipeline scheme on local residents will be reduced and affect a smaller number of people than the original scheme. Fewer roads (and smaller sections within these roads) will be closed, the construction works will be focussed in smaller areas rather than a rolling road block throughout Leigh Park, and there will be less traffic generated due to a much smaller workforce. Figure 4 in Appendix A illustrates the approved and proposed pipeline schemes.
- 4.10. There has been a collaborative and iterative design and assessment process, which has been informed by more detail on construction plant and activities and has ensured that impacts on the environment are minimised as far as practicable.
- 4.11. The Scheme, the subject of the 2020 planning applications and 2024 new pipeline planning application, is a refinement of the 2009 scheme, further reducing impacts on, veteran trees, ancient woodland and the RPG, increasing the area of retained wetland, minimising potential traffic impacts, enhancing landscaping and optimising opportunities for recreation and biodiversity.

5. Environmental assessment of significance and mitigation – approach

- 5.1. The Environmental Impact Assessment has been undertaken by competent experts in line with best practice and the Institute of Environmental Management and Assessment guidelines³ and provides:
 - A thorough assessment of the likely effects of the Scheme on the environment;
 - Consideration of mitigation and compensation measures based on the potential environmental effects of the Scheme; and
 - Assessment of the cumulative effects of the Scheme.
- 5.2. The EIA considers both the indirect and direct effects of the Scheme. Direct effects are those caused by activities that are an integral part of the proposals resulting in a change in environmental

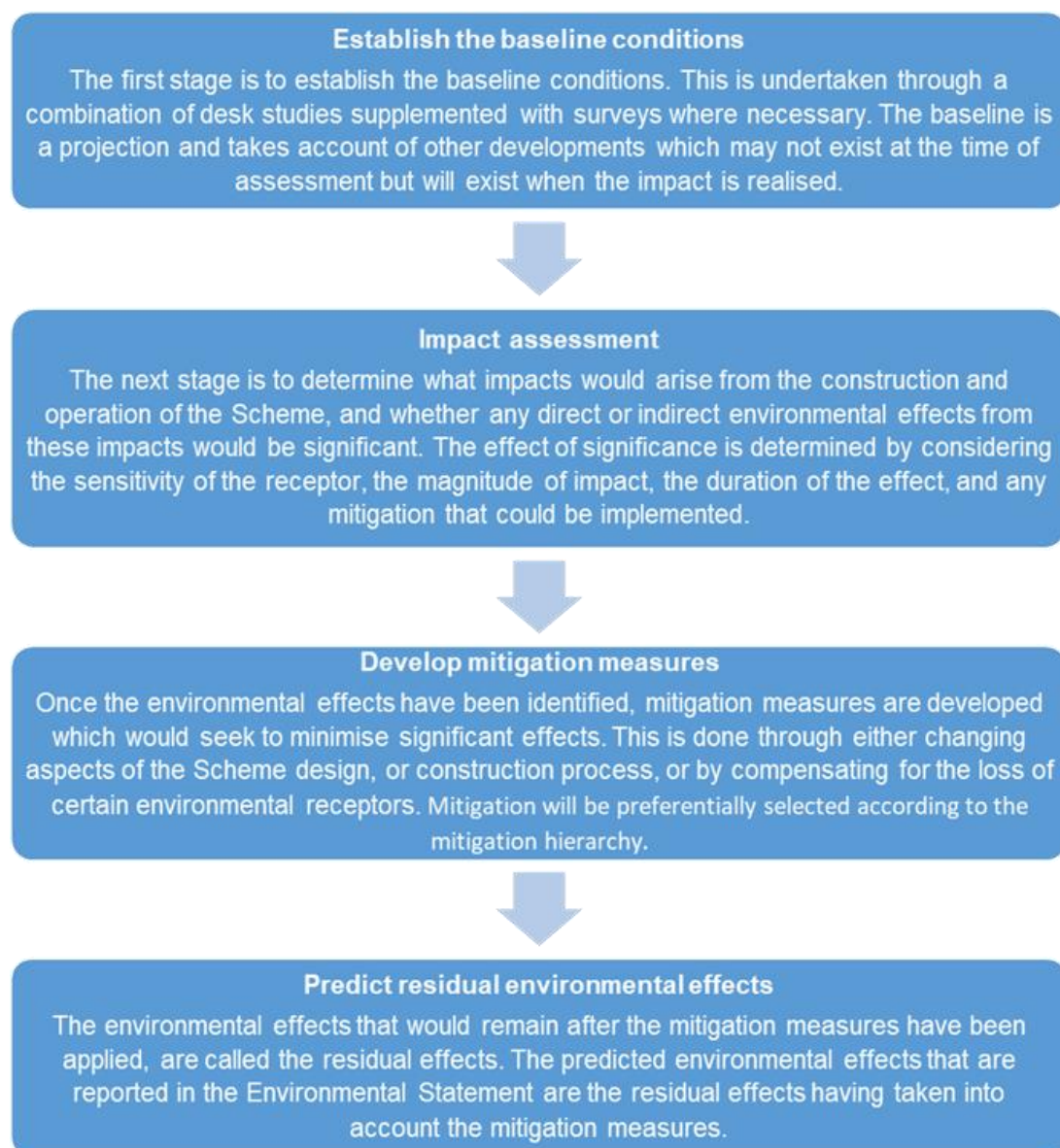
³ Environmental Impact Assessment Guide to Delivering Quality Development - <https://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf>

conditions, such as the removal of vegetation. Indirect effects are those due to activities that affect environmental conditions or the receptors, which in turn affects other aspects of the environment or receptors, such as increased noise from construction activities.

- 5.3. Best practice guidance including established criteria has been used to assess the significance of effects of the Scheme, which combines the magnitude of the impacts and the sensitivity of the receptors/resources. The significance criteria for environmental effects are defined in terms of the amount of change from the existing baseline environment i.e. the baseline. Effects can range from neutral to very large and it is noted that moderate, large or very large effects are considered significant. Environmental effects can be adverse or beneficial. Within this document the significance of effects is described as significant or not significant.
- 5.4. The EIA has been an iterative process, which has influenced project design from the start of baseline data gathering and scoping, through to submission of the ES. In adopting an iterative approach, the findings of the environmental and technical studies have been continually used to inform the design of the Scheme, and hence achieve a 'best fit' with the environment.
- 5.5. Where significant adverse effects were identified, the following principles of the mitigation hierarchy⁴ have been adopted in the outline design and included within the assessment:
 - Avoidance,
 - Mitigation, and
 - Compensation.
- 5.6. Opportunities for enhancement were also sought during the outline design.
- 5.7. The following environmental topics have been assessed as part of the EIA and are summarised below. The following chapters provide more information in the Environmental Statement Volume 2:
 - Chapter 7 Air quality.
 - Chapter 8 Historic environment.
 - Chapter 9 Biodiversity.
 - Chapter 10 Ground conditions.
 - Chapter 11 Landscape and visual.
 - Chapter 12 Noise and vibration
 - Chapter 13 Traffic and transport.
 - Chapter 14 Material resources and waste.
 - Chapter 15 Water (including flows, quality and groundwater).
 - Chapter 16 Effect on climate.
 - Chapter 17 Vulnerability to climate change.
 - Chapter 18 Population and human health.
 - Chapter 19 Cumulative and in-combination effects.
 - Chapter 20 Vulnerability to major accidents and disasters.
- 5.8. Volume 3 includes the Figure drawings and Volume 4 the Appendices.

⁴ Department of Communities and Local Development (2018). National Planning Policy Framework, Paragraph 118. <https://www.gov.uk/government/publications/national-planning-policy-framework—2>

Figure 5-1 - EIA Process



6. Assessment of likely significant effects

Air quality

What is the existing environment like?

- 6.1. Air quality in the area of the Scheme can be considered relatively good, with measured pollutant concentrations below relevant air quality criteria.
- 6.2. There are no Air Quality Management Areas⁵ within Hampshire Borough Council or East Hampshire District Council administrative boundaries.
- 6.3. The sensitive receptors included in the assessment comprise 20 locations representative existing human health receptors and ecological sites within 200 metres of the roads meeting the criteria for air quality assessment. These locations were chosen to represent the closest receptors to the

⁵Air Quality Management Areas are declared by the local authority where national air quality objectives are not likely to be achieved. Then the local authority will put together a plan to improve the air quality - a Local Air Quality Action Plan <https://uk-air.defra.gov.uk/aqma/>

roads to ensure the highest pollutant concentrations and/or the largest changes in pollutant concentrations would be estimated with and without the construction traffic.

What are the effects during construction?

- 6.4. Construction works associated with the Scheme (at both reservoir site and along the pipeline corridor) have the potential to generate dust.
- 6.5. With appropriate mitigation measures in place, any adverse impacts resulting from the construction works would be minimised such that there would not be any residual significant effect on receptors. Mitigation measures to control dust are included in the Record of Environmental Actions and Commitment in the Outline Environmental Management Plan in Appendix A2.1 of the Environmental Statement Volume 4. Any effect on air quality from construction traffic would be temporary, and would not be significant.

What are the effects during operation?

- 6.6. The effects on air quality once the Scheme is operational would not be significant.

Summary of assessment

- 6.7. There would be no adverse significant effects on receptors with the implementation of suitable mitigation measures during the construction and operation of the reservoir and pipeline.

Historic environment

What is the existing environment like?

Reservoir

- 6.8. The reservoir site and northern end of the pipeline corridor includes two designated heritage assets⁶ that mostly overlap. These comprise:
 - Leigh Park (Staunton Country Park), a Grade II* Registered Park and Garden (RPG), National Heritage List for England (NHLE) 1000112 of high value; and
 - The Sir George Staunton Conservation Area of medium value.
- 6.9. These designated areas include part of a 2km footpath called The Avenue created in the late 19th century by William Stone.
- 6.10. Two non-designated heritage assets are located within the reservoir site.
- 6.11. Outside of the Scheme the study area includes:
 - 42 designated heritage assets, six of which are high value, representing nationally significant heritage. The remaining 36 designated heritage assets are considered to be important in contributing to the character and understanding of local and regional heritage. Protected at a national level through their designations as listed buildings or conservation areas, their value primarily ranges from local to regional, and they are identified as medium value. These include three conservation areas:
 - Sir George Staunton Conservation Area (located within both East Hampshire and Havant Districts), and extending into the reservoir site;
 - Old Bedhampton Conservation Area (relevant to pipeline corridor only); and
 - Rowlands Castle Conservation Area.
 - Three Scheduled Monuments: Motte Castle at Motley's Copse (1019111); Ringwork and Bailey at Motley's Copse (1019110); and The Castle (1001923) - Rowlands Castle.

⁶ An asset is a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest.

- Two Grade II* Registered Park and Gardens (RPG): Stansted Park (NHLE 1000327); and, Leigh Park (Staunton Country Park) (NHLE 1000112), which also extends into the Reservoir Site.
- One Grade II* Listed Building, the Staunton Memorial (NHLE 1303476).
- 33 Grade II Listed Buildings with 13 of which are within the Grade II* Leigh Park (Staunton Country Park) Registered Park and Garden at Leigh Park and the Sir George Staunton Conservation Area.

6.12. There are four Grade II listed buildings within the pipeline study area outside of the reservoir site:

- The Gothic Library (1000112)
- Golden Lion Public House (1091646)
- Bedhampton Arts Centre (Former County First School) (1393209)
- Walled Garden at Leigh Park (1339958)

6.13. There are 68 non-designated heritage assets within the reservoir site and 17 non-designated heritage assets within the pipeline study area.

What are the effects during construction?

Construction of reservoir

6.14. Two of the 12 heritage assets identified within the study area would experience adverse effects that would be significant relating to the removal of part of The Avenue, a landscape element that contributes to the value of the Grade II* Leigh Park (Staunton Country Park) Registered Park and Garden (NHLE 1000112) and the Sir George Staunton Conservation Area. Whilst this effect would be adverse and significant it does not reach the level of substantial harm as the significance of the registered park and garden and conservation area would still be readily discernible and experienced.

6.15. There is the potential for as-yet unknown Mesolithic, Roman and post-medieval archaeology within the reservoir site. A programme of identification and recording of archaeological remains will be required as part of the Record of Environmental Actions and Commitment (REAC) in the Outline Environmental Management Plan (OEMP) in Appendix A2.1 of the Environmental Statement Volume 4.

Construction of pipeline

6.16. The construction of the pipeline would have adverse effects on the setting of three heritage assets: the Grade II* Leigh Park (Staunton Country Park) RPG (NHLE 1000112), the Sir George Staunton Conservation Area, the Old Bedhampton Conservation Area. However, these impacts are not considered significant.

What are the effects during operation?

Operation of reservoir

6.17. The permanent removal of part of The Avenue would result in adverse effects that would be significant on the Grade II* Leigh Park (Staunton Country Park) (NHLE 1000112) and the Sir George Staunton Conservation Area. These adverse effects would be offset to some degree through interpretation measures that will be incorporated into the design of the public realm and amenities to enhance the understanding of the significance of the registered park and garden and conservation area, and the features lost during construction once the reservoir is in operation as required as part of the REAC in the OEMP in Appendix A2.1 of the of the Environmental Statement Volume 4.

Operation of pipeline

6.18. The operation of the pipeline would not have an adverse effect on any heritage assets.

Summary of assessment

Reservoir

- 6.19. The reservoir construction and operation would result in an adverse effect that would be significant on two designated heritage assets: the high value Grade II* Leigh Park (Staunton Country Park) Registered Park and Garden (NHLE 1000112) and the medium value Sir George Staunton Conservation Area. This effect would be offset to some degree through interpretation and enhancement measures reflecting the significance of these designated assets.

Pipeline

- 6.20. There would be no adverse effects on heritage assets with the implementation of suitable mitigation measures during the construction of the pipeline.

Biodiversity

What is the existing environment like?

- 6.21. Table 6.1 presents the biodiversity resources identified within the study area and their nature conservation value.

Table 6-1 - Biodiversity resources and nature conservation value

Resource	Value
Internationally designated sites (Singleton and Cocking Tunnels Special Area of Conservation (SAC), Briddlesford Copses SAC, Ebernoe Common SAC, Chichester and Langstone Harbours Ramsar site, The Solent Maritime SAC, The Solent and Isle of Wight Lagoon SAC and Solent and Dorset Coast Special Protection Area (SPA))	International
Nationally designated sites (Langstone Harbour and Chichester Harbour Site of Special Scientific Interest)	National
Ancient woodlands and veteran trees that includes: The Avenue - semi-natural ancient woodland including a number of veteran trees; The Corsican Pine Plantation – planted ancient woodland (PAWS); Round Wood and Middle Clearing – young oak plantations on ancient woodland soils; Havant Thicket woodland – subject to commercial forestry; Bells Copse – both semi-natural ancient woodland and PAWS; Great Copse – ancient semi-natural woodlands; These ancient woodlands include lowland mixed deciduous woodland priority habitat; wet woodland priority habitat; other broadleaved woodland; and, coniferous woodland. Ten notable/veteran trees were recorded within 500m the pipeline corridor. A total of seven veteran trees are located within the new pipeline corridor.	Regional (and an irreplaceable habitat)
Sites of Importance for Nature Conservation (SINCs)/Local Wildlife Sites (61 within 2 km of the reservoir site and 65 within 2 km of the pipeline corridor of which eleven are at least partially within the Site). The SINCs within the Reservoir Footprint are also ancient woodland. Havant Thicket SINC has been designated as it retains significant remnants of heathland vegetation.	County
Local Nature Reserves (Hazelton Common, Dell Piece West and Farlington Marshes).	Local

Resource	Value
Priority Habitats listed in Section 41 of the Natural Environment and Rural Communities Act 2006: Lowland mixed deciduous woodland; Wet woodland; Purple moor-grass and rush pastures; Woodland pasture and parkland; Lowland dry acid grassland; Rivers and streams and aquatic marginal vegetation.	County
Other neutral grassland	County
Upper Lake (a pond)	County
Intermittent headwaters of Riders Lane Stream	County
Unnamed tributary of Riders Lane Stream (The Lake Stream)	County
Riders Lane Stream	Local
Hermitage Stream	County
Bats	National
Hazel dormice	County
Otters	Local
Water voles	Negligible
Badgers	Negligible
Breeding Birds	County
Wintering birds	Local
Reptiles	County
Great crested newt	Local
Invertebrates	Local

What are the effects during construction?

Construction of reservoir

- 6.22. Residual adverse effects of the Scheme that would be significant relate to the reservoir site, including the reservoir itself and the access roads, and other related development.
- 6.23. The Scheme would result in the loss of 12.45 ha of irreplaceable ancient woodland, including the loss of 17 veteran trees, resulting in an adverse effect that would be significant at the regional level. Compensation for this residual adverse effect would include a total of 110 ha of woodland / wood pasture habitat creation and enhancement, onsite and offsite. While suitable compensation would be undertaken, this would still constitute loss of irreplaceable habitat.
- 6.24. The Scheme would result in the loss of 13.55 ha within Sites of Importance for Nature Conservation (of which 12.45 ha is the ancient woodland), 7.18 ha priority lowland mixed deciduous woodland habitat, and 1.21 ha of purple moor-grass and rush pastures priority habitat. The Scheme will include suitable compensation for these losses.
- 6.25. The Scheme would result in the loss of 3.7 km of watercourses that are intermittent headwaters to Riders Lane Stream and a residual adverse effect that would be significant due to this loss of unique habitat and associated species with limited practical options for mitigation.
- 6.26. The reservoir would result in the creation of new habitats of ecological value, particularly the wetland along the northern edge of the reservoir. It is considered likely that habitats of at least

County value would establish. A number of reservoirs have been recognised for their national or even international ornithological interest so a future greater value is possible.

- 6.27. The residual adverse effects that would be significant include a loss of grassland, which would only be partially compensated for through habitat creation onsite. Grassland creation and enhancement would therefore be one of the targets of the Capital Grants scheme, as described in the outline Biodiversity Mitigation and Compensation Strategy that is included with the planning application.
- 6.28. For bats and dormouse, mitigation and compensation will be undertaken in accordance with an European Protected Species mitigation licence, which will ensure there are no residual adverse effects that would be significant. Habitat loss, including known and potential roosts for bats will be minimised and retained habitats protected. New suitable habitats will be created and existing habitats enhanced to compensate for the loss of habitat.
- 6.29. For other European Protected Species, badgers, birds, invertebrates and other priority animals, habitat loss will also be minimised and retained habitats will be protected and enhance ensuring that there would be potential benefits and no residual adverse effects that would be significant once new habitats established on the Site.
- 6.30. Reptile translocation will be undertaken to suitable enhanced habitat in land adjacent to and bordering the reservoir site, and site clearance undertaken in accordance with a precautionary method of work as required as part of the Record of Environmental Actions and Commitment (REAC) in the Outline Environmental Management Plan (OEMP) in Appendix A2.1 of the Environmental Statement Volume 4.
- 6.31. Potential indirect effects on internationally and nationally designated sites through pollution and changes in water flows and water levels will be avoided through mitigation.
- 6.32. A Detailed Mitigation and Compensation Strategy supported by a Landscape and Environmental Management Plan was subsequently approved on 24th August 2022. The amount of river habitat mitigation required has been agreed with the Environment Agency to offset the impacts of the Scheme on the watercourses from the main reservoir site.

Construction of pipeline

- 6.33. Impacts on biodiversity would not result in adverse effects that would be significant from the pipeline construction and culvert upgrades. Impacts would be largely temporary in nature, significant trees will be avoided and habitats will be re-instated in accordance with details in an Ecological Mitigation and Management Plan submitted with the planning application for the new pipeline scheme.
- 6.34. The permanent loss of priority habitat at the emergency discharge chamber will require woodland compensation however, once the woodland is established, no significant adverse impacts will occur.
- 6.35. Pollution risks to watercourses will be mitigated through the implementation of best practice pollution prevention and construction measures as outline in the Pipeline CEMPs.
- 6.36. The loss of habitat within the reservoir site (Section 10) was assessed, and impacts mitigated and compensated for, as part of the reservoir scheme.

What are the effects during operation?

Operation of reservoir

- 6.37. There would be potentially some beneficial effects on internationally and nationally designated sites resulting from reduced nutrient inputs, and the creation of alternative recreational facility for visitors that may otherwise have visited the internationally designated sites. As well as the creation of a wetland and open water habitat providing additional habitat for qualifying bird species.
- 6.38. The Scheme would potentially provide long term benefits as a result of:
 - Habitat creation of wetland and reservoir margins and enhancement or retained habits on site;
 - Enhancement of retained ancient woodland;
 - Enhancement of existing and establishment of new lowland woodland; and
 - Enhanced habitats for European Protected Species, badgers, birds, invertebrates and other priority animals.

Operation of pipeline

- 6.39. No adverse effects that would be significant during the operation phase are anticipated.

Summary of assessment

Reservoir

- 6.40. There would be residual adverse effects as a result of the Scheme that would be significant at a regional and county level as a result of the direct loss of ancient woodland, habitat within Sites of Importance for Nature Conservation, priority habitat and watercourse. While suitable compensation will be undertaken, this would still constitute loss of irreplaceable habitat for ancient woodland and veteran trees.

Pipeline

- 6.41. There would be no adverse effects on receptors with the implementation of suitable mitigation measures during the construction and operation of pipeline.

Ground conditions

What is the existing environment like?

- 6.42. The assessment considers the existing geology, and effects associated with ground conditions, mineral resources and waste soils.
- 6.43. The majority of the reservoir site is underlain by superficial Head deposits (silty clay, clayey silt and flint gravel). The bedrock underlying the Site is the London Clay Formation (clay, sand and silt) that gives way to the Harwich Formation (sand) and small areas of the Lambeth Group (Reading Formation) (clay, sand and silt) and the Bognor Member (sand). Superficial River Terrace Deposits (sand and gravel) and Head deposits (sand, gravel and clay) are present underlying the south of the pipeline corridor. The bedrock underlying the pipeline corridor is mainly the London Clay Formation (clay, sand and silt), with Chalk and the Lambeth Group (Reading Formation) (clay, sand and silt) present in the south of the Site. There is no evidence of sinkholes on the Site.
- 6.44. For the reservoir site, the British Geological Society has recorded eight mineral sites in the study area including two located on the reservoir site: Horsefoot Clay Pit and Long Wood Brick Works. The British Geological Society have recorded **one mineral site** within the study area of the pipeline corridor.
- 6.45. Two Minerals and Waste Consultation Areas are located within the central and eastern areas of the reservoir site, both for clay resources. These areas are also located adjacent to the north of the reservoir site and approximately 250 m east, again for clay resources. A Mineral Safeguarding Area for oil and gas is located adjacent to the north of the reservoir site. A Minerals and Waste Consultation Area for sharp sand and gravel resources is located approximately 120 m south of the pipeline corridor. A Mineral Safeguarding Area (MSA) (Harts Farm Way) is located approximately 230 m south **west of the Site and a Mineral Processing MSA (Bedhampton Aggregates Wharf) is present approximately 440 m south of the Site, within the study area.**
- 6.46. Principal, Secondary A and Secondary Undifferentiated aquifers ranging from medium to high vulnerability underlay the study areas for the reservoir site and pipeline corridor, **excluding one area where the aquifer is unproductive.** Source Protection Zones are associated with the aquifers. The north and north east of the reservoir site and the south of the pipeline corridor are located within groundwater drinking safeguard zones.
- 6.47. The groundwater system is dominated at depth by the Upper Chalk Formation that flows in a southerly direction to the sea.
- 6.48. Portsmouth Water has three existing groundwater abstraction licences at Bedhampton Pumping Station and Havant Pumping Station within the pipeline corridor. There is one surface water abstraction point for agricultural use 200 m north of the reservoir site. There are two discharge consents to watercourses located on the reservoir site and 12 within the pipeline corridor into Hermitage stream, other watercourses and the estuary.
- 6.49. A small number of streams and ditches drain the Site into shallow valleys to the south feeding into Riders Lane Stream and Hermitage Stream.

- 6.50. The majority of the reservoir site is located in a low probably flood risk area, Flood Zone 1, with the central watercourse flowing south from Deerslaughter Plain to Gammon's Hill and Thicket Lawn and the unnamed watercourse within Bells Copse designated as having a medium and high probability flood risk, Flood Zones 2 and 4. Within the pipeline corridor, areas close to Hermitage Stream and that cross Riders Lane Stream are high probability flood risk, Flood Zone 3.
- 6.51. The reservoir site and pipeline corridor are located within a Nitrate Vulnerable Zone.
- 6.52. From ground investigations undertaken to date and a review of historic land uses there is no evidence of Made Ground or contamination on the reservoir site. The ground investigation undertaken for the pipeline identified that **contaminants in site soils and groundwater samples are considered likely to present a low risk to the identified human receptors and controlled water receptors.**
- 6.53. Historic landfills relevant to the reservoir site include two inert waste landfills located at Dunsbury Hill Farm on the northwest boundary of the Site and Padnell Farm, 180 m to the west. There are no historic landfill areas within the study area for the pipeline corridor. Within the pipeline corridor there are two **authorised landfills** located on Site, **both relating to the Portsmouth Waterworks on-site.** and a further three sites located within the study area located up to **485 m** from the Site.
- 6.54. A petrol station is located 84 m east of the reservoir site and includes a pollution control. There are **four** petrol stations located within the study area for the pipeline corridor between 68 m and **425 m** from the Site. The pipeline corridor includes **three** pollution controls with several associated with the petrol stations.
- 6.55. There is a low to **medium** risk of encountering unexploded ordnance on the reservoir site and within the pipeline corridor.
- 6.56. Sensitive receptors identified for the reservoir site and pipeline corridor include human health receptors (site users and occupants of surrounding residential and commercial properties); Controlled Waters receptors (groundwater in Principal, Secondary A and Secondary Undifferentiated aquifers and surface watercourses); property receptors (on-site and off-site services and structures); ecological receptors (National Park and Ancient Woodland); geological receptors (underlying soils and geology) and mineral resources (Minerals and Waste Consultation and Mineral Safeguarding Areas).

What are the effects during construction?

- 6.57. Potential contamination impacts may occur during the construction of the Scheme. Construction activities could potentially introduce new sources of contamination, and disturb and mobilise existing sources of contamination, which may pose a risk to human health and controlled water receptors. The construction of the Scheme may also result in physical effects to soils and geological receptors, arising from changes in soil erosion, soil compaction and ground stability associated with the earthworks, stockpiling of material and movement of heavy plant. Waste soils may also be generated during construction through excavation works. The construction of the Scheme may result in the loss, damage or sterilisation of important mineral resources.
- 6.58. With the mitigation measures (outlined in the REAC in the OEMP in Appendix A2.1 of the Environmental Statement Volume 4) implemented during the reservoir and pipeline construction, including the adoption of working methods to appropriately manage soil erosion and compaction, waste soils, surface water runoff, dust generation, pollution incidents and re-use of mineral resources, the risks identified to human health, controlled waters, ecological, geological and property receptors and mineral resources would range from low to very low and would be classed as not significant.

What are the effects during operation?

- 6.59. The operation of the Scheme may potentially introduce new sources of contamination and below ground services could create additional potential pathways for the migration of potential contamination. Physical effects and effects on mineral resources and waste soils are considered to be mainly related to the construction phase.
- 6.60. The Scheme would be operated in accordance with the relevant regulations and best practice pollution prevention guidance, therefore risks identified to human health, controlled waters, ecological and property receptors during operation of the reservoir and pipeline are assessed as low to very low and would be classed as not significant.

Summary of assessment

- 6.61. There would be no adverse effects that would be significant on receptors with the implementation of suitable mitigation measures during the construction and operation of the reservoir and pipeline.

Landscape and Visual

What is the existing environment like?

- 6.62. The landscape of the reservoir site is characterised by woodland, forestry plantation and historic parkland associated with former country house estates. Fields and other open areas used for grazing and agriculture are present within the wooded landscape that have most likely been created through historic woodland clearance or forestry felling. The landform is low lying and undulating. Shallow valleys exist being formed by the streams that flow from the north to the south. The land rises higher and steeper in the south west where views over the area looking north are possible from Bells Copse, Warren Park Estate, High Lawn Way and from some locations within the Historic Parkland of Staunton Country Park. The land also rises up beyond Havant Thicket Woodland in the north and north east, forming the South Downs. Views looking south from this high ground within the South Downs National Park are screened by the large areas of woodland present.
- 6.63. The area is influenced by the presence of the urban edge of Havant, with both Leigh Park and Warren Park housing estates visible to the south and south west. Overhead electric power lines and pylons are visible along the skyline when looking west from within the area. The A3(M) is located fairly closely to the west, although not visible it makes its presence known through constant noise.
- 6.64. The area is characterised by many areas of woodland that lie within or surrounding the reservoir site, many of these are an ancient woodland remnant of the Forest of Bere. Some areas such as Havant Thicket and Stein Wood to the north are managed by Forestry England.
- 6.65. Smaller wooded areas, tree clumps, individual trees, scrub and hedgerows are all present, scattered over the area, following the course of streams or along the boundaries of Staunton Country Park. The Avenue forms a prominent landscape feature through the area, this is a wide footpath running in a north south alignment, and wooded on both sides. The Avenue divides the open grazing land in the north of the Country Park, forming two open grassland areas, one in the east and one to the west.
- 6.66. The historic parkland occupies the southern half of Staunton Country Park, and is part of the Sir George Staunton Conservation Area and a Grade II* Leigh Park Registered Park and Garden that includes Leigh Park House. It contains a number of listed buildings and follies that make up the historic parkland. The southern boundary of the South Downs National Park lies to the north of Havant Thicket Woodland on the north side of the B2149 Manor Lodge Road. The Staunton Country Park provides an important recreational feature in the area along with woodlands such as Havant Thicket, much of these are open access land for the public to enjoy. Further recreational features are provided in the area by public rights of way such as footpaths and bridleways that run through and around the reservoir site.
- 6.67. The pipeline corridor runs through an area of low lying and relatively flat landscape. Both Hermitage Stream and Riders Lane Stream make prominent features as they meander within this landscape. The area surrounding the pipeline route is mostly large-scale housing estates, built post second world war. These have associated schools, recreational grounds and small pockets of retail such as convenience stores. Many of these residential areas feature roads with wide tree lined grass verges and many other small pockets of green open space.
- 6.68. Large areas of public open space adjacent to Hermitage Stream and Riders Lane Stream form important green corridors cutting through the built-up areas, and include public footpaths with seating, play and informal sports areas. The open spaces include open grassland and extensive areas of mature tree and scrub that align the stream sides and edges to the residential areas. The residential areas include some areas of woodland, the most notable being The Great Copse, an ancient woodland located at the northern end of the pipeline corridor.

What are the effects during construction?

Construction of reservoir

- 6.69. There would be adverse effects that would be significant and permanent on the landscape character of the reservoir site. This is due to the scale of works required and the loss of existing landscape features such as the open grassland and woodland.
- 6.70. The construction and use of the two new access roads and road junctions on Swanmore Road and the B2149 Manor Lodge Road would result in very localised effects from construction traffic and would not be significant. Existing woodland and hedgerows provide a good level of containment and will screen the South Downs National Park from the reservoir site.
- 6.71. There would be adverse effects that would be significant on views from Sir George Staunton Conservation Area, Leigh Park Registered Park and Garden and associated listed buildings, from the public rights of way, and from residential areas adjacent to the Site, including Warren Park, Leigh Park and Durrants. This is also due to the scale of works required within a large construction site, including the removal of woodland and other vegetation as well as major earthworks, and existing landscape features in existing views being altered or lost.

Construction of pipeline

- 6.72. The construction of the pipeline will temporarily impact the landscape character of the area and change views from a number of receptors, due to the introduction of haul roads and fenced off working areas and compounds that will be established within public open spaces, which will see the loss of vegetation and other greenery.
- 6.73. There would be adverse effects on the landscape character areas that would not be significant. These areas would be minimised and the route of the pipeline would be designed and constructed to avoid any very large mature trees or any other prominent landscape features as required in the Pipeline CEMPs.
- 6.74. There would be short term significant adverse effects on views from users of three public rights of way and one public open space (Riders Lane Stream) along the pipeline route. Although the construction activities are only focussed on the shaft and culvert locations (and therefore affect smaller areas of landscape and number of views than the original scheme), they cover a slightly larger area in these locations and will be in situ for longer. However, once construction is complete there will be no impacts.



Figure 6-1 – Visualisation of The Avenue once reservoir construction is complete

What are the effects during operation?

Operation of reservoir

- 6.75. On completion, the reservoir site will be restored to the relatively tranquil rural character of the existing landscape. The extensive areas of woodland surrounding the reservoir site will remain resulting in the same background and skyline views to the reservoir. With The Avenue removed, longer distance views will be possible between the east and west. Physical connections will be maintained and improved as a result of new pedestrian and cycling routes implements as part of the access and recreation strategy as described in the Design and Access Statement included with the planning application. Two new road junctions will be operational on Swanmore Road and the B2149 Manor Lodge Road.
- 6.76. Views of the reservoir, reservoir earthworks and new access routes created through the construction works would remain for a time until proposed mitigation planting has matured, screening and filtering views into and over the Site from residential properties, local roads, public rights of way, and from Leigh Park Registered Park and Garden. Bare earth may also be visible on the embankment for a while until grassland has established.

Operation of pipeline corridor

- 6.77. Following completion of the construction of the pipeline, the landscape will take a while to recover in areas of open space and signs of excavation would still be visible for a number of years. However, all vegetation removed to allow excavation will be replaced, and, once it has established and matured will hide the traces of the areas of above ground construction works.

Summary of assessment

Reservoir

- 6.78. During construction there would be significant adverse effects on landscape and visual amenity on views from Sir George Staunton Conservation Area and Leigh Park Registered Park and Garden, from adjacent Public Rights of Way and from residential areas adjacent to the Site, including Warren Park, Leigh Park and Durrants. This is due to the removal of landscape features such as the open grassland and wooded features such as The Avenue and the large construction site and scale of earthworks required, and the loss or alteration of existing landscape features in existing views.
- 6.79. Following construction, likely adverse effects that would be significant on the landscape and visual amenity would reduce to 'not significant' once the open grassland areas, wetland and new planting have established.

Pipeline

- 6.80. During construction there would be some effects on landscape character and views from residential properties, from roads, from public rights of way and public open space close to the pipeline corridor. The majority of these effects are considered 'not significant', affecting only a very localised area and being temporary in nature. However, there would be short term significant effects on users of three public rights of way and Riders Lane Stream open space.
- 6.81. During operation there would be very little trace of construction works and any effects remaining would reduce and not be significant once the Site is restored and planting established.

Noise and Vibration

What is the existing environment like?

- 6.82. Existing noise levels in the area around the Scheme are within the range expected of a suburban environment.
- 6.83. The study area for noise and vibration included existing human health receptors within 300 m of the reservoir site and the pipeline corridor.

What are the effects during construction?

Construction of reservoir

- 6.84. Noise and vibration from construction works associated with the reservoir would not result in adverse effects that would be significant during daytime hours.
- 6.85. In exceptional circumstances, night time works may be required on the reservoir site, and such works would require mitigation as set out in the Record of Environmental Actions and Commitment (REAC) in the Outline Environmental Management Plan (OEMP) in Appendix A2.1 of the Environmental Statement Volume 4. Where impacts from noise and vibration cannot be effectively mitigated, night time works will not be carried out on the reservoir site. On this basis there would be no significant effects from any night time works on the reservoir site, should these be required.

Construction of pipeline

- 6.86. There would be adverse noise and vibration effects from construction works during the daytime associated with the pipeline corridor. **There are potential for vibration impacts due to tunnelling. However, given the moving nature of work, vibration impacts are expected to occur for not more than a few hours. Therefore, no significant vibration effects are predicted for tunnelling activity.**
- 6.87. Short-term significant noise effects are predicted at 69 receptors:
- For trenchless construction, 60 receptors are likely to experience a significant effect.
 - For open trench construction 2 receptors are likely to experience a significant effect.
 - For culvert construction 7 receptors are likely to experience a significant effect.
- 6.88. **This is a worst case assessment and impacts are likely to be lower. They will be minimised with temporary acoustic screens, implementation of best practicable means and through good communication.**
- 6.89. **The noise disruption from the original pipeline scheme would have affected a much larger number of residential receptors (1,100) than the revised scheme where temporary significant effects are predicted but limited to a small number of receptors (69).**
- 6.90. Mitigation measures to control noise and vibration are included in the **Pipeline CEMPs**.

What are the effects during operation?

Operation of reservoir

- 6.91. There are no adverse effects that would be significant from the operation of the reservoir. Additional traffic on the existing road network would not cause adverse effects that would be significant.
- 6.92. Traffic using the site access routes would impact nearby receptors, however when existing road noise sources in the area are considered, such as the A3(M), impacts from the access roads would not cause adverse effects that would be significant.

Operation of pipeline

- 6.93. There are no adverse effects from the operation of the pipeline.

Summary of assessment

- 6.94. During construction there would be short-term **significant** adverse noise effects on **69 receptors located adjacent to the pipeline shafts. Operation of plant within Bedhampton Compound is expected to have below adverse impact and is not considered to cause significant effects.**
- 6.95. During operation there would be no adverse effects on receptors.

Traffic and Transport

What is the existing environment like?

- 6.96. The study area has been established during consultation with the Local Highway Authority and includes roads and junctions that form the key highway links surrounding the Site, as indicated in the Transport Assessment, included in Appendix A13 of the Environmental Statement Volume 4.

- 6.97. The network of existing public rights of way within the study area includes the Havant 120 Bridleway which extends across the length of the Site, Staunton Way, and Staunton Country Park. There are also footpaths in both north eastern and south western corners of the site. The Havant 123 Bridleway also follows Park Lane under the A3(M) and links to the Havant 120 Bridleway at a point approximately 700 m west of the reservoir. There is an existing access and pedestrian crossing to the east of the Site on the B2149 north of its junction with Mallard Road. There is also a network of footways bordering the residential access and distributor roads within the vicinity of the Site.
- 6.98. Two National Cycle Network routes are near to the Site as well as shared use paths on Fitzwygram Way and Middle Park Way. On road cycle lanes are provided on both sides of Swanmore Road between Middle Park Way and its junction with Sandleford Road.
- 6.99. The closest existing bus stops to the Site include Pennerly Court bus stop on Swanmore Road and the Durrants Gardens bus stop on Durrants Road.
- 6.100. Havant Railway Station provides the closest rail connection to the Site, situated approximately 2.5km to the south of the southern access.
- 6.101. Collision data has been reviewed as part of the Traffic Assessment and is included in Appendix A13.2 in the Environmental Statement Volume 4. No material concern relating road safety has been identified as part of the review.
- 6.102. The study area contains a mix of A class distributor roads, local distributor roads and local access roads, with varying speed limits across the network. In terms of the potential key routes to and from the site, it is considered that there are a number of routes which would likely be used for either the northern or southern access.
- 6.103. The baseline traffic data for all assessed links, including Existing (2020), Construction (2023) and Operational (2029), is summarised in Chapter 13 Traffic and Transport in the Environmental Statement Volume 2.

What are the effects during construction?

Construction of reservoir

- 6.104. There are not expected to be any significant effects from traffic and transport, in relation to the construction of the reservoir and embankment when considering the magnitude of change in traffic.
- 6.105. However, some of the local roads do not typically accommodate Heavy Goods Vehicles (HGVs) and therefore the magnitude of change assessment cannot record a percentage change. Therefore, a qualitative review has been undertaken. Although it is acknowledged that any increase in HGVs may be perceptible to local residents in the setting where none are currently observed, the number of HGVs across the day, 15 HGVs in each direction, equates to one HGV every 30 minutes. This number is not considered significant.
- 6.106. As part of the construction of the reservoir, there will be a permanent severing of the Havant 120 Bridleway running east to west. The Bridleway will be temporarily diverted to the north of the location of the reservoir, before reconnecting back with the existing Havant 120 Bridleway. Whilst a potential increase in route length of 1.2 km could increase journey time to a level that leads to a significant effect for users seeking to use the full east to west route, due to the leisure nature of the route and the relatively low usage, it is considered that any adverse effect would not be significant.
- 6.107. In addition, there will be a permanent severing of part of the informal footpath running north – south along The Avenue to Upper Lake. Due to the low number of users of this informal footpath (less than 200) it is considered that any adverse effect as a result of this would not be significant.

Construction of pipeline

- 6.108. In addition to the cumulative change in traffic from both the pipeline and the reservoir site assessed above, consideration has been given to the potential temporary impacts associated with construction of the pipeline in relation to traffic management and / or temporary road closures. Full construction methodology will be the subject of on-going discussion with the relevant authorities and will be agreed through the Construction Environmental Management Plan prepared by the appointed contractor.
- 6.109. As part of the construction of the pipeline and culvert upgrade works, there **would need to be temporary road closures and temporary parking suspensions to facilitate construction. However, due to the length of the closures and the provision of diversion routes, none would result in any**

adverse effects that would be significant relating to traffic and transport. For the construction of the pipeline, there will be temporary diversions of **footpaths and public rights of ways**, however the diversions will not add a material distance onto the footpath and would not result in any adverse effects that would be significant. **Permanent diversion of Footpath 34, which currently runs through the Bedhampton Pumping Station site, along Hermitage Stream and over Lower Mill Pond would improve the amenity for walkers in his area.**

- 6.110. Construction activities would be focussed on smaller areas (shaft and open cut areas) so disruption would not be as widespread as for the original pipeline scheme. There would be less road closures and for short lengths and durations and short diversions where required.
- 6.111. The revised design allows the pipeline construction to be undertaken with a significantly smaller workforce, with up to 65 staff required at the peak as opposed to the 125 staff assessed as part of the 2020 ES. This will likely have a beneficial impact on the local road network during construction, with fewer worker trips being generated to / from the site each day.

What are the effects during operation?

Operation of reservoir

- 6.112. The assessment of visitor traffic indicates that there would be no adverse effects that would be significant in relation to traffic and transport, resulting from the operation of the reservoir.
- 6.113. As part of the construction of the reservoir, there will be a permanent severing of the Bridleway Havant 120 running east to west. During operation, the diversion will be retained as a permissive route, with a new permanent bridleway provided to the south of the reservoir, connecting to the permissive route to create a new circular path. It is considered that this will enhance the active travel route through and around the site, providing a beneficial effect for active travel and equestrian users.
- 6.114. In addition, the informal footpath running north – south along The Avenue to the Upper Lake, which will be partially severed during construction, will connect to the new avenue staircase leading to a viewing area on the crest of the reservoir. It is considered that this will enhance the active travel route through and around the site from the south, whilst providing a beneficial effect for active travel.

Operation of pipeline

- 6.115. There will be no traffic generated by the pipeline during operation.

Summary of assessment

- 6.116. The review of potential effects indicates that during construction of the reservoir site and access roads, and pipeline in combination, there would be adverse effects on some road links, due to either the increase in Heavy Goods Vehicles traffic (in the case of the reservoir site and access roads) or temporary closures of highway or public right of way (in the case of the reservoir site and access roads, and pipeline). However, these effects would be minor in nature and not significant, and for a temporary period only. The requirements in the REAC in the OEMP in Appendix A2.1 of the Environmental Statement Volume 4 will seek to minimise the effects of construction traffic as far as is reasonably practical.
- 6.117. During operation, the review of impacts indicates that there would be no adverse effects in relation to traffic and transport.

Material Resources and Waste

What is the existing environment like?

- 6.118. The material resources and waste assessment considered the following existing conditions:
- Sales of construction materials in the South East of England each year;
 - Proximity of the development to mineral resources that have been identified for future use, referred to as Mineral Safeguarding Areas; and,

- Construction, Demolition and Excavation (CDE) waste produced in Hampshire each year and the capacity of the existing waste management facilities to store, treat and dispose of CDE waste.
- 6.119. The material resources considered include aggregates, sand and gravel, rocks, asphalt, concrete, iron and steel. These materials would be required for construction of the reservoir and pipeline corridor. The regional sales of these materials were used to assess the construction of the reservoir and pipeline corridor.
- 6.120. In addition, no Mineral Safeguarding Areas or peat resources are expected to be sterilised by the pipeline corridor although the red line boundary overlaps a Mineral Safeguarding Consultation Area for Sharp Sand and Gravel Resource however, this area will only be used for temporary land take.
- 6.121. In terms of waste, the estimated CDE waste produced in Hampshire and CDE waste received at waste management facilities in Hampshire was used to assess waste produced during construction of the reservoir and pipeline corridor.

What are the effects during construction?

Construction of reservoir

- 6.122. The construction of the reservoir would require materials to construct the embankments, reservoir infrastructure and access road(s). The majority of the material required would be sourced from the site itself by excavating areas of clay and other natural materials that can be used in construction. This mitigates several environmental impacts associated with importing materials to the site. A Materials Management Strategy included in Appendix A14.1 in The Environmental Statement Volume 4 has been developed to identify the preferred approach for managing and reusing excavated materials. Other construction materials such as aggregate, asphalt, cement and iron/steel would be imported to the site. The effect would be to reduce the regional availability of construction materials on the market.
- 6.123. CDE wastes would also be generated during construction of the reservoir. These would consist of surplus or used construction materials or equipment, materials from demolition of any existing structures and excavated material that is contaminated or not suitable to use on the site. A Site Waste Management Plan will be produced by the appointed contractor as required in the REAC in the OEMP in Appendix A2.1 of the Environmental Statement Volume 4 to identify opportunities to prevent waste and prepare for unavoidable wastes by ensuring they are managed appropriately to mitigate environmental impacts. The effect of waste produced during construction would be to increase the quantity of waste produced in Hampshire and reduce existing waste management facilities' capacity to store, treat and dispose of CDE wastes in Hampshire.

Construction of pipeline

- 6.124. Construction of the pipeline would require materials for the pipe itself and reinstate the road infrastructure following installation of the pipeline however, this is expected to be a negligible effect. A Materials Management Strategy included in Appendix A14.1 in the Environmental Statement Volume 4 has been developed to identify the preferred approach for managing and reusing excavated materials. Other construction materials would need to be imported to the site which would reduce the regional availability of construction materials on the market.
- 6.125. CDE wastes would also be generated during construction of the pipeline corridor. These would consist of surplus or used construction materials or equipment, materials from demolition of any existing structures and excavated material that is contaminated or not suitable to use on the site. A Site Waste Management Plan would be produced by the appointed contractor as required in the REAC in the OEMP in Appendix A2.1 of the Environmental Statement Volume 4 (and the Pipeline CEMPs) to identify opportunities to prevent waste and prepare for unavoidable wastes by ensuring they are managed appropriately to mitigate environmental impacts. Waste produced during construction would increase the quantity of waste produced in Hampshire and reduce existing waste management facilities' capacity to store, treat and dispose of CDE wastes in Hampshire however, the effect would be negligible.

What are the effects during operation?

- 6.126. The quantity of materials required for routine and ad-hoc maintenance of the reservoir and pipeline corridor during operation are not expected to be significant and were not included within the assessment.

Summary of assessment

- 6.127. The assessment compared estimates of construction materials that would be required during construction of the reservoir and pipeline corridor to existing sales of construction materials in the region. The assessment found that the **effect would be negligible and not** significant on the availability of construction materials in the region.
- 6.128. The assessment also compared estimates of CDE waste that would be produced during construction of the reservoir and pipeline corridor to CDE waste produced in Hampshire and CDE waste received at waste management facilities in Hampshire. The assessment found that there would **be negligible effects that are not** significant from CDE waste produced during construction.

Water (including flows, quality and groundwater)

What is the existing environment like?

- 6.129. Water quality classifications under the Water Framework Directive (WFD) for both Ecological and Chemical status of the Hermitage Stream, River Lavant and Langstone Harbour were generally Moderate, Good or High. This status is supported by existing flow conditions informed by Environment Agency (EA) flow data and Portsmouth Water flow monitoring. There are localised areas of poorer water quality with a general trend of a reduction/deterioration in water quality, from upstream to downstream of the study area.
- 6.130. In the Hermitage Catchment, there is one surface water abstraction point at more than 820 m and 5 surface discharges more than 650 m from the reservoir's central point. In 2019 the EA considered the catchment to have 'water available for licencing'.
- 6.131. Flood risk information has been informed by EA data and Portsmouth Water modelling. The Hermitage Stream and Riders lane Stream flood in different storm types due to geology and landform. The large capacity of the watercourse as a result of the Hermitage Flood Alleviation Scheme, also contributes to the reduced frequency of flooding in the catchment since the early 1970's. There is limited property flooding despite the fact the watercourse flows through a highly urbanised area. There is a high risk in some areas of surface water flooding along local roads and ponding caused by local variations in landform.
- 6.132. Based on the geology there are three WFD status 'Good' groundwater bodies: East Hants Chalk groundwater body (a Principal Aquifer), and the two associated Lambeth Group groundwater bodies (Secondary A Aquifers) which are of high sensitivity. In terms of groundwater quality, in 2022 EA classified both South Hants Lambeth and East Hants Lambeth Group as 'Good' but East Hants Chalk was given a 'Poor' classification, due to poor nutrient management from agricultural land use.
- 6.133. At the southern end of the pipeline corridor - the Chalk groundwater comes to the surface at many locations as part of the Havant and Bedhampton springs.
- 6.134. The London Clay on the reservoir site is not considered to be productive strata, being predominantly clay and having generally low permeability and negligible significance for water supply or river baseflow. However, the London Clay Formation does contain sand beds within it, such as the Bognor Sand Member which is classed as a Secondary A Aquifer.
- 6.135. There are no groundwater discharge points abstraction points within **500** km of the reservoir central point. With the exception of the Portsmouth Water Havant and Bedhampton springs licence, the only other known groundwater abstraction is a spray irrigation licence located 1.2 km from the reservoir.
- 6.136. The study area lies within one large source protection zone (SPZ), designated to show the risk of contamination from activities that may cause pollution. The pipeline corridor and the reservoir site are within a high risk area SPZ1. SPZ1 is defined as the area where groundwater in the aquifer has a 50-day or less travel time to the source/abstraction.
- 6.137. There are international and nationally designated ecological areas considered in the Water assessment (see Table 6.1 in the Biodiversity Section of this document for details).

What are the effects during construction?

Construction of reservoir

- 6.138. Adverse residual effects of the Scheme that would be significant in relation to the construction of the reservoir site itself. The Scheme would result in the loss of 3.7 km of headwater stream habitats and a permanent adverse effect that would be significant on aquatic habitat connectivity and geomorphology in the river system, which would affect the downstream Riders Lane Stream. There would also a permanent change to the outline of superficial aquifers as a result of the presence of the reservoir resulting in adverse effects that would be significant.
- 6.139. Whilst compensation and mitigation will be undertaken, there remains the potential for deterioration for invertebrates, hydromorphology, macrophytes and phytobenthos for the Hermitage Stream WFD waterbody (GB107042016370). **An Article 4.7⁷ deterioration assessment was completed for the Hermitage Stream WFD waterbody (GB107042016370) in consultation with the Environment Agency. A derogation was agreed with the Environment Agency and a package of river habitat improvement measures known as 'Package 2' agreed.**
- 6.140. There are no deterioration risk for other surface water, transitional or groundwater WFD waterbodies.

Construction of pipeline

- 6.141. The pipeline impacts are largely temporary during the construction phase. With the successful implementation of mitigation measures identified in the **Pipeline CEMPs**, in particular **adhering to best practice techniques when constructing pipeline and shaft infrastructure within the vicinity of the Bedhampton springs, the works** would not result in adverse effects that would be significant on the water environment.

What are the effects during operation?

Operation of reservoir

- 6.142. The reservoir will result in the creation of new habitats of ecological value, particularly the wetland along the northern edge of the reservoir and a new Water Framework Directive (WFD) 'lake' waterbody as well as approximately 100 m additional stream length to the east of the reservoir.
- 6.143. The reservoir will have a compensation flow, which still needs to be established, but can offer additional benefits if this is improved over the current intermittent flow regime especially if other operational discharges are also timed appropriately. The reservoir will also have benefits to downstream flood risk by reducing the volume and frequency of peak flows.
- 6.144. Overall, water discharged from the reservoir into the Riders Lane Stream will be of a more consistent quality with improvements identified in nutrient levels notably a significant benefit in terms of nitrogen load to the downstream Langstone Harbour designated: a Special Area for Conservation; Special Protection Area; Site of Special Scientific Interest; and Ramsar. Water quality changes predicted for the Riders Lane Stream and Hermitage Stream are likely to result in an improvement in primary and secondary productivity (which is considered positive), with no negative effects on ecological functioning of watercourse or WFD status anticipated.

Operation of pipeline

- 6.145. There is a potential for impacts associated with **operational emergency discharges and washouts from the pipeline resulting in changes to water quality and pollution. However, sediment is anticipated to be negligible given the water draw-off from the reservoir is at high level and each washout valve will effectively be catch pit with flows weir over or being pumped at a high level.**
- 6.146. There are no other adverse effects that would be significant on the water environment.

Summary of assessment

- 6.147. Overall, there would be the potential for a deterioration of the Hermitage Stream WFD waterbody however, **an Article 4.7 derogation and package of river habitat improvement measures has now been agreed with the EA.**

⁷ 'Article 4.7' is now known as 'Regulation 19'

Reservoir

- 6.148. During construction upon successful implementation of mitigation measures identified in the REAC as part of the OEMP in Appendix 2.1 of the Environmental Statement Volume 2, there would be residual adverse effects that would be significant on aquatic habitats, habitat connectivity and geomorphology. These are associated with the loss of 3.7 km of headwater stream habitats being lost and permanent change to the outline of superficial aquifers.
- 6.149. There are benefits associated with the presence of a reservoir, including the provision of new wetland habitat and new open water habitat. Upon successful implementation of the detailed Outline Biodiversity Mitigation and Compensation Strategy, there will be further benefits to the flow regime and productivity in the downstream Riders Lane Stream and Hermitage Stream as a result of a more consistent flow regime and more consistent water quality inputs. There is also a major benefit to the downstream Langstone Harbour designated: a Special Area for Conservation; Special Protection Area; Site of Special Scientific Interest; and, Ramsar in terms of nitrogen load.
- 6.150. There is a potential for deterioration for Hermitage Stream WFD waterbody. There are no deterioration risks for other surface water, transitional or groundwater WFD waterbodies.

Pipeline

- 6.151. During construction and operation there would be no residual adverse effects that would be significant upon successful implementation of mitigation measures identified in the CEMPs submitted with the new pipeline application.

Effects on Climate

What is the existing environment like?

- 6.152. The UK is one of the world's largest emitters of greenhouse gases, although national emissions are reducing. In 2022, UK emissions amounted to 406.5 million tonnes of carbon dioxide equivalent (CO₂e). In 2021, emissions for Havant Borough were 400.8 ktCO₂e, a reduction of 46% against a 2005 baseline for the Borough. Emissions for East Hampshire over the same period reduced from 977.0 ktCO₂e to 596.5 ktCO₂e.
- 6.153. The UK has in place carbon 'budgets' for five-year periods up to 2037. The UK is currently in the fourth carbon budgetary period (2023-2027), the budget for which is 1,950 MtCO₂e (million tonnes of greenhouse gases, presented as their carbon dioxide equivalent of CO₂e). The UK cannot legally emit more greenhouse gases than this within the budgetary period. The carbon budget for the 2028-2032 budgetary period is 965 MtCO₂e.
- 6.154. There is a legal requirement for the UK to reach 0 MtCO₂e by 2050, an ambition which is echoed by both Hampshire County Council and East Hampshire District Council.
- 6.155. Greenhouse gas emissions from the site itself are currently likely to be negligible. The only activity currently undertaken at the site is management of Havant Thicket and Bells Copse by Forestry England. This would likely continue through construction and operation with no impact from the Scheme.

What are the effects during construction?

Construction of reservoir

- 6.156. The construction of the reservoir would generate approximately 170,000 tCO₂e (tonnes of greenhouse gases, presented as their carbon dioxide equivalent of CO₂e). Greenhouse gas emissions would be generated by raw material extraction and product manufacturing, transport of materials and workforce to site, energy and water use during construction, and waste management. Assuming construction emissions are spread evenly across the construction period, the construction of the Scheme would contribute 0.0015% of the third, 0.0049% of the fourth and 0.0022% of the fifth carbon budget.

Construction of pipeline

- 6.157. The construction of the pipeline corridor would generate approximately 27,154 tCO₂e (tonnes of greenhouse gases, presented as their carbon dioxide equivalent of CO₂e). Greenhouse gas emissions would be generated by raw material extraction and product manufacturing, transport of

materials and workforce to site, energy and water use during construction, and waste management. Assuming construction emissions are spread evenly across the construction period, the construction of the Scheme would contribute 0.00014% of the fourth, 0.00005% of the fifth.

What are the effects during operation?

Operation of reservoir

- 6.158. Operation of the reservoir would generate approximately 40,000 tCO₂e (tonnes of greenhouse gases, presented as their carbon dioxide equivalent of CO₂e) across its life. Greenhouse gas emissions would be generated by energy and water used to operate pumps and visitor facilities and other operational buildings. Emissions would also be generated by the management of operational wastes, and during maintenance activities. The Scheme will be operational for four years during the fifth carbon budgetary period. Operation during this five-year period would contribute 0.0002% of the UK budget.
- 6.159. Given the scale of operational emissions and growing opportunities to reduce these as technologies develop, it is considered that reductions in line with the UK's net zero carbon target would be achievable by Portsmouth Water.

Operation of pipeline

- 6.160. Emissions associated with the operation of the pipeline corridor are likely to be negligible.

Summary of assessment

Reservoir

- 6.161. Whilst the emission of greenhouses gases from the Scheme would lead to a long-term negative effect (global warming) on a highly sensitive international receptor (the atmosphere), the magnitude of emissions is considered to be minor. The Scheme is deemed to be unlikely to cause significant effects on climate, or significantly affect the UK's ability to meet its emissions reduction targets.

Pipeline

- 6.162. The Scheme is deemed to be unlikely to cause significant effects on climate, or significantly affect the UK's ability to meet its emissions reduction targets.

Climate vulnerability

What is the existing environment like?

- 6.163. For climate vulnerability the existing environment includes both the current climatological conditions as well as future projected changes to climate in the study area.
- 6.164. The current climate is one of relatively mild winters and warm summers. The long-term average monthly rainfall is lower than the UK average.
- 6.165. Going forward it is projected that, on average, the study area is likely to experience hotter and drier summers and warmer and wetter winters. Alongside these changes in the average conditions, climate change may increase the frequency and severity of extreme weather events, such as heavy rainfall, storms and heatwaves

What are the effects during construction?

- 6.166. This section summarises the potential construction related climate vulnerability impacts that have been assessed.

Construction of reservoir

- 6.167. Extreme weather events or climatic events that compromise the viability of the construction site, including access to it. For example, heavy rain resulting in closure of local roads and power cuts due to flooding or flood inundation of the construction site itself.

Construction of pipeline

- 6.168. Extreme weather events or climatic events that compromise the viability of the construction site, including access to it. For example, heavy rain resulting in closure of local roads and power cuts due to flooding or flood inundation of the construction site itself.

What are the effects during operation?

- 6.169. This section summarises the potential climate vulnerability impacts that have been assessed.

Operation of reservoir

- Impacts on the resilience of the regions water supply.
- Impacts on the source of the reservoirs water.
- Impacts on the quality of water in the reservoir and the associated impacts this could have on the treatment of that water.
- Impacts affecting structures (including the reservoir embankments).
- Impacts affecting drainage infrastructure and flood risk.
- Impacts affecting recreation, landscape and fire risk.
- Impacts on assets and equipment (mechanical and technological).
- Potential benefits such as reduced cold weather impacts like slips and freeze thaw damage to underground assets.

Operation of pipeline

- Impacts affecting structures associated with the pipeline and flood risk.

Summary of assessment

- 6.170. Without mitigation the reservoir and pipeline could be vulnerable to potential impacts linked to projected changes in the climate. Mitigation measures built into the design (i.e. embedded mitigation) that either avoids these impacts, minimises them or reduces their consequences to acceptable levels have been identified. After consideration of embedded mitigation none of the potential climate vulnerability impacts would have adverse effects that would be significant.

Population and Human Health

What is the existing environment like?

- 6.171. There are a number of open spaces close to or within the Site including Staunton Country Park, Stockheath Common and informal green spaces. The reservoir site is generally used for informal recreation, primarily walking, jogging, horse riding and cycling. The Site is accessible by a number of different forms of transport including car, public transport, walking, cycling and horse-riding. Woodland to the north of the reservoir site (Havant Thicket) has a recreational and commercial forestry use.
- 6.172. A bridleway runs through the Site from east to west. Staunton Way is a long-distance path which runs along and just inside the south eastern boundary of the Site. Further footpaths provide linkages between the reservoir site and the adjacent country park and woodland. Within the Havant Thicket woodland there are further tracks which the public can assess. More than 29,500 people live within a reasonable walking distance of the Site and 120,000 people live within a reasonable cycling distance of the Site.
- 6.173. Along the pipeline corridor or crossing it there are a number of non-vehicular routes including public rights of way and footpaths and cycleways on the eastern and western sides of Hermitage Stream.
- 6.174. There are several recreation and leisure facilities within 500 m of the Site and a range of local businesses and community facilities such as schools and places of worship.
- 6.175. Three out of the five wards that the Scheme falls within generally suffer from poorer health compared to the national average. Some of the wards in which the Scheme is located suffer from relatively high levels of deprivation.

What are the effects during construction?

Construction of reservoir

- 6.176. Whilst the reservoir is under construction, the local population would be expected to experience adverse effects that would be significant on physical activity and stress and wellbeing due to the temporary reduction in access to open space. This will be mitigated by maintaining safe access for the public where possible, clearly communicating proposals to close amenity spaces and access routes and managing construction traffic flows. A clear and concise traffic management plan will be designed to facilitate access to local facilities during construction of the Scheme.
- 6.177. Temporary restrictions on access to opportunities for recreation and leisure would have an adverse effect that would be significant on the local population. This will be mitigated by maintaining safe access for the public whenever possible and clearly communicating proposals to close amenity spaces and to close and divert access routes. Construction staff will be encouraged to travel to and from the site by public transport.
- 6.178. Significant beneficial effects on the local population during construction of the Scheme would be derived from support to the local supply chain and the creation of employment opportunities. This could provide financial security and contribute to self-esteem, particularly for low-income groups in the area. Construction traffic would negatively affect local businesses by changing amenity and accessibility which could influence trading conditions. This will be mitigated by various measures to be included in a traffic management plan including the clear communication of proposals to close roads and encouraging construction staff to travel to and from the site by public transport.

Construction of pipeline

- 6.179. Construction of the pipeline, including construction traffic, **construction dust** and road closures, would adversely affect access to open space **and air pollution** which could have an adverse effect on physical activity and wellbeing **and on human receptors**. Construction would also impact access to community facilities such as health centres and schools, on recreation and leisure facilities and on local businesses.
- 6.180. Different construction traffic routes are proposed for different sections of the pipeline to mitigate the impact of construction traffic. Traffic and road closures will also be mitigated by maintaining safe access for the public where possible, clearly communicating proposals to close amenity spaces and access routes and managing construction traffic flows. A clear and concise traffic management plan will be designed to facilitate access to local facilities during construction of the Scheme. **Although best practice construction to reduce dust and emissions will be undertaken by the appointed contractor, as identified in the Pipeline CEMPs, there will still be temporary significant effects on the elderly and disabled groups.**
- 6.181. **Construction of the pipeline will also result in increased noise which will result in significant adverse noise effects at 69 receptors during different periods of time for the duration of the works. Mitigation will include clear communication to residents and use of temporary noise barriers which will help to minimise these impacts.**
- 6.182. **The influx of construction workers and increased demand for construction plant and materials would potentially generate new employment opportunities which could provide financial security and contribute to self-esteem, particularly for low-income groups. Construction of the pipeline also has the potential to improve access to skills and training schemes which could bring longer term health benefits.**

What are the effects during operation?

Operation of reservoir

- 6.183. The improvement in open space provision in an area accessible to local users will support health and outdoor recreation, help instill a sense of place and enhance nature. All facilities proposed have been designed to engage families, schools and community groups in education. This is expected to result in significant beneficial effects for the local population and visitors from further afield. New recreational facilities for all ages, abilities and groups would be provided adjacent to a relatively deprived area. This will bring significant physical and mental health benefits by encouraging activity and connecting people to nature.

- 6.184. The Scheme comprises of a variety of terrain, landscapes and route lengths for walkers, cyclists and horse riders which will be well connected to existing routes beyond the site and will provide safe access into the site. This improved provision is expected to have significant beneficial effect physical activity and social connectivity.
- 6.185. The increase in visitors to the Site would benefit local businesses and potentially create jobs. This could positively affect mental and physical health, particularly for low-income groups in one of the more deprived areas of South East Hampshire.
- 6.186. The reservoir would be signposted from the north to discourage use of the southern access route and thereby limit the impact of visitor traffic on access to recreation and leisure, community facilities and residential areas to the south of the reservoir, particularly along Swanmore Road and Calshot Road.
- 6.187. A number of local businesses would benefit due to the increase of visitors to the reservoir. The Scheme would lead to the creation of new direct and indirect jobs, through supply chain benefits and new expenditure introduced to the local economy. Opportunities to provide work and training to local communities will be identified.
- 6.188. It is proposed to implement a travel plan for the Scheme. This will involve the implementation of various measures to encourage the use of sustainable travel modes and reduce traffic-related air pollution when travelling to the reservoir, including the management of coach operations.

Operation of pipeline

- 6.189. No impacts on population and human health during operation of the pipeline corridor have been identified and therefore no effects are anticipated. Permanent diversion of Footpath 34, which currently runs through the Bedhampton Pumping Station site, along Hermitage Stream and over Lower Mill Pond would improve the amenity for walkers in his area.

Summary of assessment

Reservoir

- 6.190. With the implementation of suitable mitigation measures, there would be no adverse effects that would be significant on receptors during the construction and operation of the reservoir.

Pipeline

- 6.191. With the implementation of suitable mitigation measures, there would be no adverse effects that would be significant on receptors during the construction of the pipeline except for a small number of receptors close to the works. These include receptors who will experience temporary significant noise effects, the elderly and disabled who will experience temporary significant air pollution effects from construction dust and traffic and children and low income groups who will experience temporary significant effects due to the temporary loss of open space affecting their wellbeing. Mitigation measures including clear communication during construction will be undertaken to ensure effects are reduced as far as possible.
- 6.192. The construction of the pipeline would bring beneficial effects (although not significant) by creating employment opportunities and improving access to skills and training.
- 6.193. No adverse effects on population and human health during operation of the pipeline corridor have been identified.

Cumulative and In-combination Effects

What is the existing environment like?

- 6.194. A list of 39 committed developments have been identified in proximity to the Scheme comprising of proposals for residential, commercial or mixed-use development which either have planning permission or are identified in development plans. These developments, in-combination with the Scheme have the potential to cause significant cumulative effects.

What are the effects during construction?

Cumulative effects

- 6.195. There is a potential for the Scheme, in combination with other committed development, to have a significant adverse effect on the conservation status of the Bechstein's bat population. To avoid and mitigate this effect Portsmouth Water has already begun to engage with Forestry England and promoters of other development to establish a strategic mitigation and compensation approach to maintain the conservation status of the Bechstein's bat population. In addition, Portsmouth Water has called for, and is supporting, the local authorities in developing the technical content of a Bechsteins Bat conservation policy for the area.
- 6.196. There could also be potentially significant cumulative impacts on designated sites and protected species through loss of habitat and the severing of important habitat links. Opportunities will be identified to maximise the benefits of off-site compensation measures and minimise the risks of adverse cumulative effects from habitat loss and fragmentation.
- 6.197. Significant cumulative effects on landscape character are likely during construction of the reservoir and the pipeline corridor in combination with other development proposals. Following the completion of construction and once mitigation planting has established, no adverse effects that would be significant are likely.
- 6.198. Significant cumulative visual effects are expected during construction. Following the completion of construction and once mitigation planting has established, no adverse effects that would be significant are likely.
- 6.199. The concurrent construction of the Scheme and nearby developments would result in cumulative effects through consumption of primary, recycled or secondary resources and generation of construction, demolition and excavation wastes.
- 6.200. Noise from construction plant and from construction traffic generated by other development in combination with the Scheme could have significant effects on human health receptors. However subject to mitigation no adverse effects that would be significant are likely.
- 6.201. Other development will generate construction employment opportunities and potentially generate income for local businesses. The cumulative health effects arising from the Scheme in combination with these committed developments would be significant in terms of improving financial security and self-esteem particularly among low-income groups.

In-combination effects

- 6.202. There is the potential for in-combination effects to arise during construction as a result of effects of the Scheme on residential receptors resulting from dust, visual intrusion, noise and vibration, temporary road closures, parking suspensions, temporary public rights of way diversions and potentially night time working. The appointed contractor will work closely with local communities potentially affected to ensure works are phased to reduce adverse effects as far as reasonably practicable, and to ensure residents are kept informed on timing and duration of works.
- 6.203. The effects of the permanent loss of areas of Leigh Park Registered Park and Garden and the Sir George Staunton Conservation Area on the setting of and views to, and from the assets when considered in combination with the effects of temporary construction compounds have been assessed as not significant.

What are the effects during operation?

Cumulative effects

- 6.204. Proposals to build over 1000 dwellings within 2 km of the reservoir site could increase the recreational pressure on retained areas of public open space such as the parts of the application site surrounding the proposed reservoir which could damage habitats and disturb animals. An access and recreation strategy to manage circulation on the reservoir site and connect to the wider network is in the Design and Access Statement that is included in the planning application.
- 6.205. Other developments alongside the Scheme are likely to have significant cumulative physical and mental health benefits by improving access to opportunities for recreation and leisure. The developments would encourage activity and connect people to nature, particularly benefitting children and adolescents.

- 6.206. Restoration of a length of Hermitage Stream and improvements to the headwater water bodies north of the reservoir could result in improvements to the appearance of Hermitage Stream and the public space through Warren Park. This is expected to have a significant positive cumulative benefit on the landscape and the water environment.
- 6.207. The operation of committed developments alongside the Scheme could have significant beneficial effects by increasing trade for local businesses and potentially creating jobs. This would positively influence mental and physical health particularly for low-income groups.

In-combination effects

- 6.208. To avoid and mitigate in-combination effects on bats, Portsmouth Water will engage with Forestry England and promoters of other developments to develop a strategic mitigation and compensation approach that ensures public areas within the reservoir site are appropriately managed to minimise disturbance and damage from recreational users.

Summary of assessment

Cumulative effects

- 6.209. Appropriate mitigation measures, as identified in the REAC in the OEMP in Appendix A2.1 in ES Volume 4 and secured through CEMPs and, if necessary, Traffic Management Plans for the Scheme and any committed development, will minimise adverse construction effects resulting from simultaneous construction noise and vibration activities from several committed developments and the Scheme. Nevertheless, trenchless construction of the pipeline, in combination with the construction of other committed development, has the potential to have significant residual daytime noise effects on human receptors.
- 6.210. A moderate cumulative effect on one visual receptor is expected during construction of the pipeline and other committed development. Following completion the potentially significant effect would reduce to be a slight cumulative effect. No significant cumulative effects on landscape character are expected during or post construction.
- 6.211. Construction and operation of the Scheme, in combination with committed developments, could have significant beneficial mental and physical health effects as well as benefits for the local economy through the generation of jobs and trade.

In-combination effects

- 6.212. There is a potential for the Scheme to give rise to significant in-combination effects during construction or operation. However, with mitigation measures outlined in the REAC in the OEMP in Appendix A2.1 in ES Volume 4 (and the pipeline CEMPs), these effects can be reduced to non-significant.

7. Summary of significant effects

Significant adverse effects

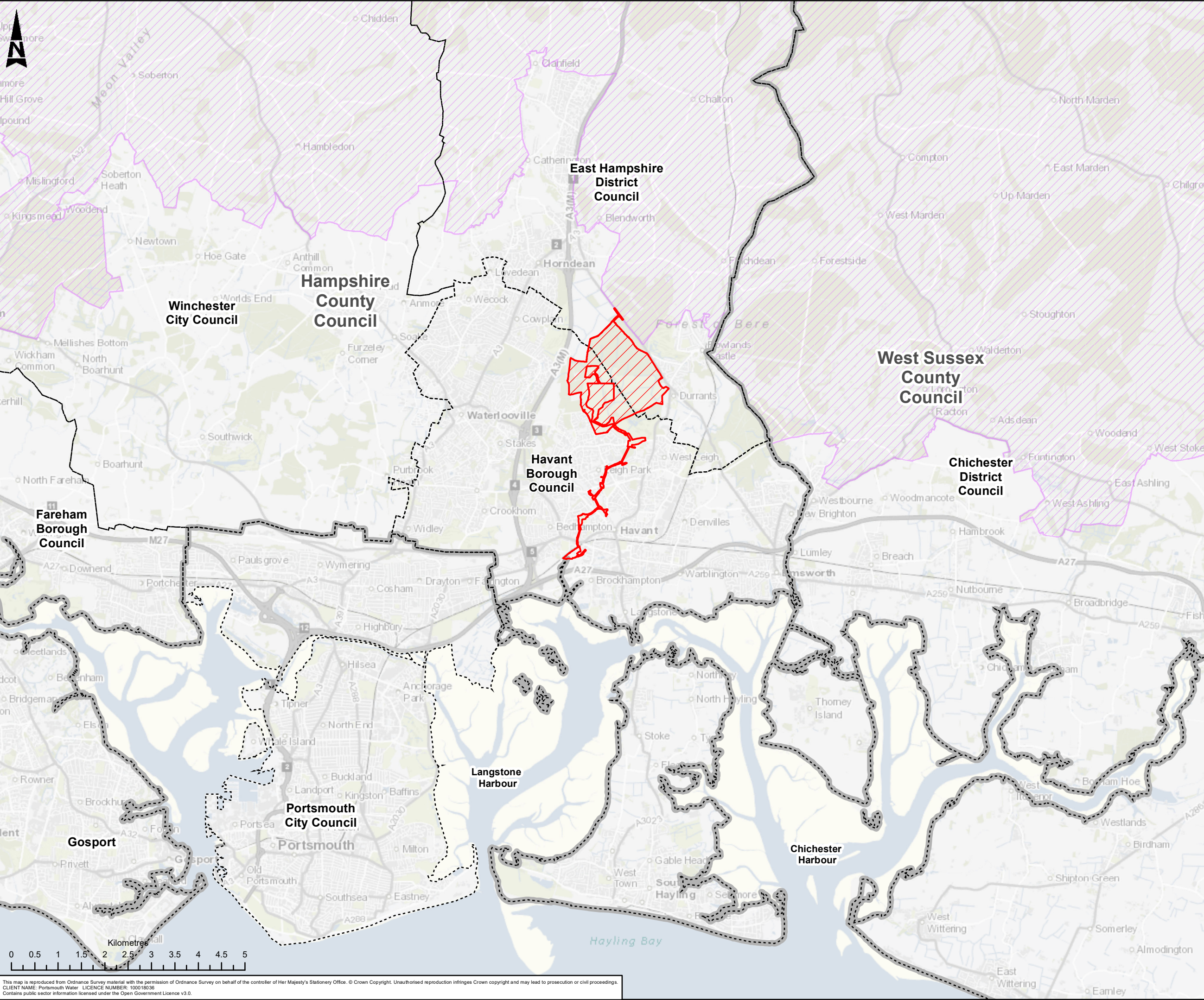
- 7.1. With the implementation of mitigation measures that are outlined within the topic chapters (and detailed in Appendix A2.1 Outline Environmental Management Plan (OEMP) of the ES (Volume 4) and the CEMPs submitted with the new pipeline application, the residual effects on the environment from the construction and operation of the reservoir and pipeline would be reduced and in most cases would not be significant.
- 7.2. The impacts of the new pipeline scheme are comparable to the approved pipeline scheme with no likely permanent significant adverse effects predicted. However, four new temporary significant adverse effects have been identified relating to noise, dust and visual impacts and loss of open space during construction.
- 7.3. The temporary noise effect can be minimised with temporary acoustic screens, implementation of best practicable means and through good communication with local residents. The noise disruption from the original pipeline scheme would have affected a much larger number of residential receptors (1,100) than the new scheme where temporary significant effects are predicted but limited to a small number of receptors (69).

- 7.4. The significant temporary visual impacts are on four open space and rights of way receptors, although the construction activities are only focussed on the shaft and culvert locations (and therefore affect smaller areas of landscape and number of views) they cover a slightly larger area in these locations and will be in situ for longer. However, once construction is complete there will be no impacts.
- 7.5. The Population and Human Health assessment identifies a temporary significant adverse effect on the 'elderly and the disabled' group from air pollution as a result of construction dust and construction traffic emissions. However, impacts will be minimised by the implementation of mitigation measures including best practice dust management measures and clear communication. There will also be a temporary significant adverse effect due to the temporary loss of open space, which could inhibit physical activity and adversely affect wellbeing on 'children and low income' groups. Clear communication on the timings of closures and alternative access routes will be undertaken by the contractor to keep local residents informed.
- 7.6. The overall disruption from the construction of the new pipeline scheme on local residents will be reduced and affect a smaller number of people than the original scheme. Fewer roads (and smaller sections within these roads) will be closed, the construction works will be focussed in smaller areas rather than a rolling road block throughout Leigh Park, there will be less traffic generated due to a much smaller workforce and less excavated material.
- 7.7. The collaborative and iterative design and assessment process, which has been informed by more detail on construction plant and activities, has ensured that impacts on the environment are minimised as far as practicable.

Significant beneficial effects

- 7.8. The primary purpose of the Havant Thicket Reservoir Scheme is to protect the nationally designated River Test and internationally designated River Itchen by providing an alternative, low impact, reliable and naturally maintained future water supply, which will ensure the continued viability of communities in West Sussex and Hampshire that already suffer from 'serious water stress'.
- 7.9. In addition, it would provide significant new green infrastructure and an accessible recreational facility and wildlife area next door to one of the more deprived areas in south east Hampshire, generating substantial health (physical and mental), educational, social and quality of life benefits by encouraging outdoor activity and connecting people to nature.
- 7.10. The reservoir would also result in the creation of a mosaic of new and high-quality habitats, including a new wetland, enhance land and environment management for biodiversity on the wider site through collaboration with Forestry England and Hampshire County Council, and restore and create off-site high biodiversity value habitats through partnership with the Hampshire and Isle of Wight Wildlife Trust, including landscape scale benefits for Bechstein's bat.

Appendix A. Plans



Pipeline Red Line Boundary

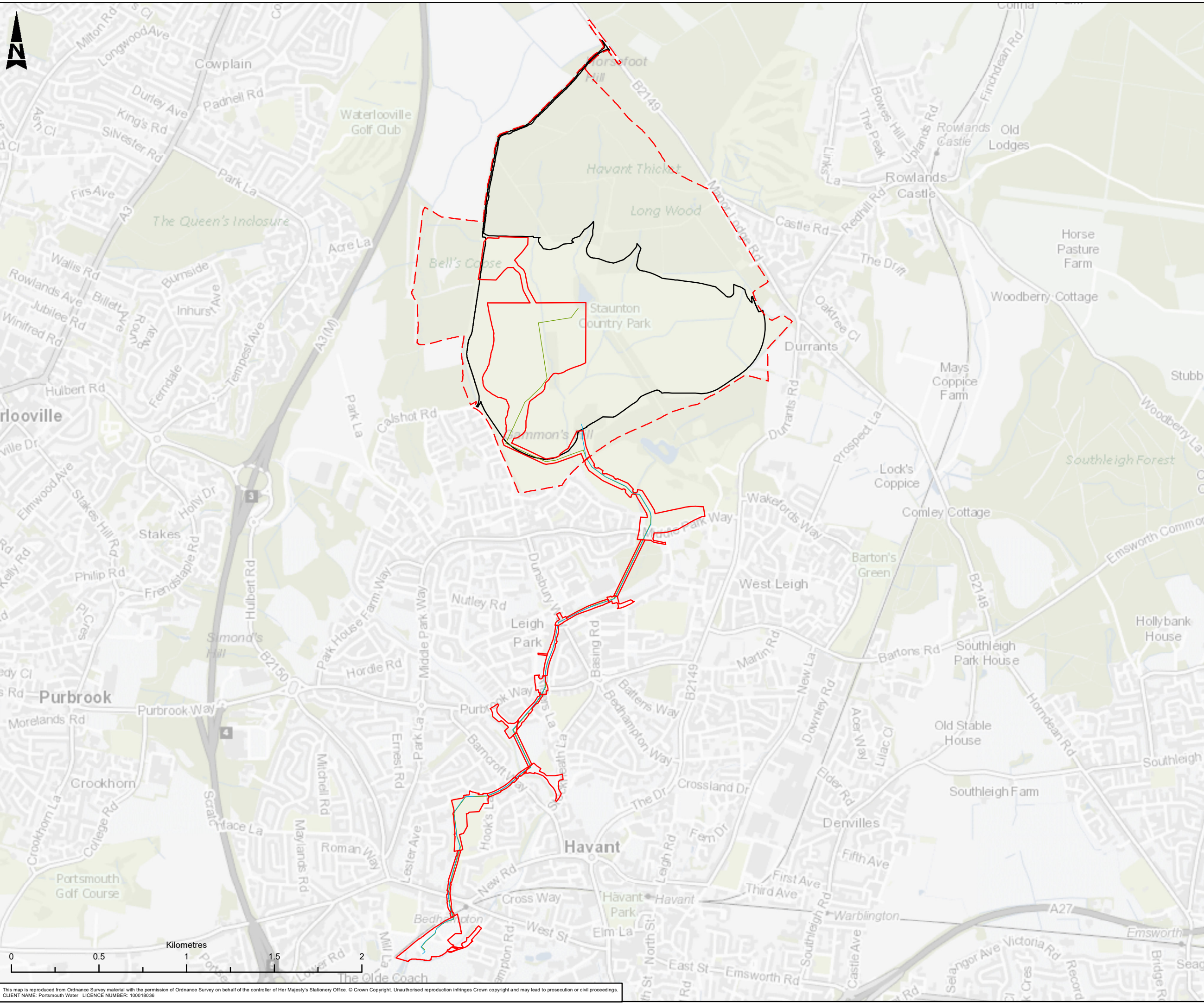
Reservoir Red Line Boundary

Local Authority District

County/Unitary Authority

South Downs National Park

C03	MMN	NW	AR	JF	PUBLISHED	03/04/2024
C02	NW	FD	AR	JF	PUBLISHED	26/06/2023
C01	FD	SW	JF	LB	PUBLISHED	19/08/2020
Rev.	Dm By	Cld By	Rev By	Auth By	Description	Date
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Drawing Suitability					Status	
PUBLISHED					A1	
Contractors Drawing Number:						
HTR - ATK - ZZ - ZZ - GS - Z - 0142						
Project Originator Volume Location Type Role Number						
Telephone: Havant (023) 9249 9888						
Fax: Havant (023) 9245 3632						
Website: www.portsmouthwater.co.uk						
Registered Office: PO Box 8 West Street						
Havant Hampshire PO9 1LG						
REGISTERED IN ENGLAND No. 2536455						
Project Ref. No		Sheet	Scale	Sheet Size		
5169117		1 of 1	1:75,000	A3		
Project Title						
HAVANT THICKET RESERVOIR						
Drawing Title						
FIGURE 1 SCHEME SETTING						
Portsmouth Water Drawing Number						Rev
						C03



Reservoir Red Line Boundary

Pipeline Red Line Boundary

Reservoir Footprint

Pipeline Alignment - Outlet

Pipeline Alignment - Inlet

C03	MMN	NW	AR	JF	PUBLISHED	03/04/2024
C02	NW	FD	AR	JF	PUBLISHED	26/06/2023
C01	FD	CB	LJB	JF	PUBLISHED	13/08/2020
Rev.	Dn By	Old By	Rev By	Auth By	Description	Date

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Project Ref. No	Sheet	Scale	Sheet Size
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Project Title

HAVANT THICKET RESERVOIR

Drawing Title

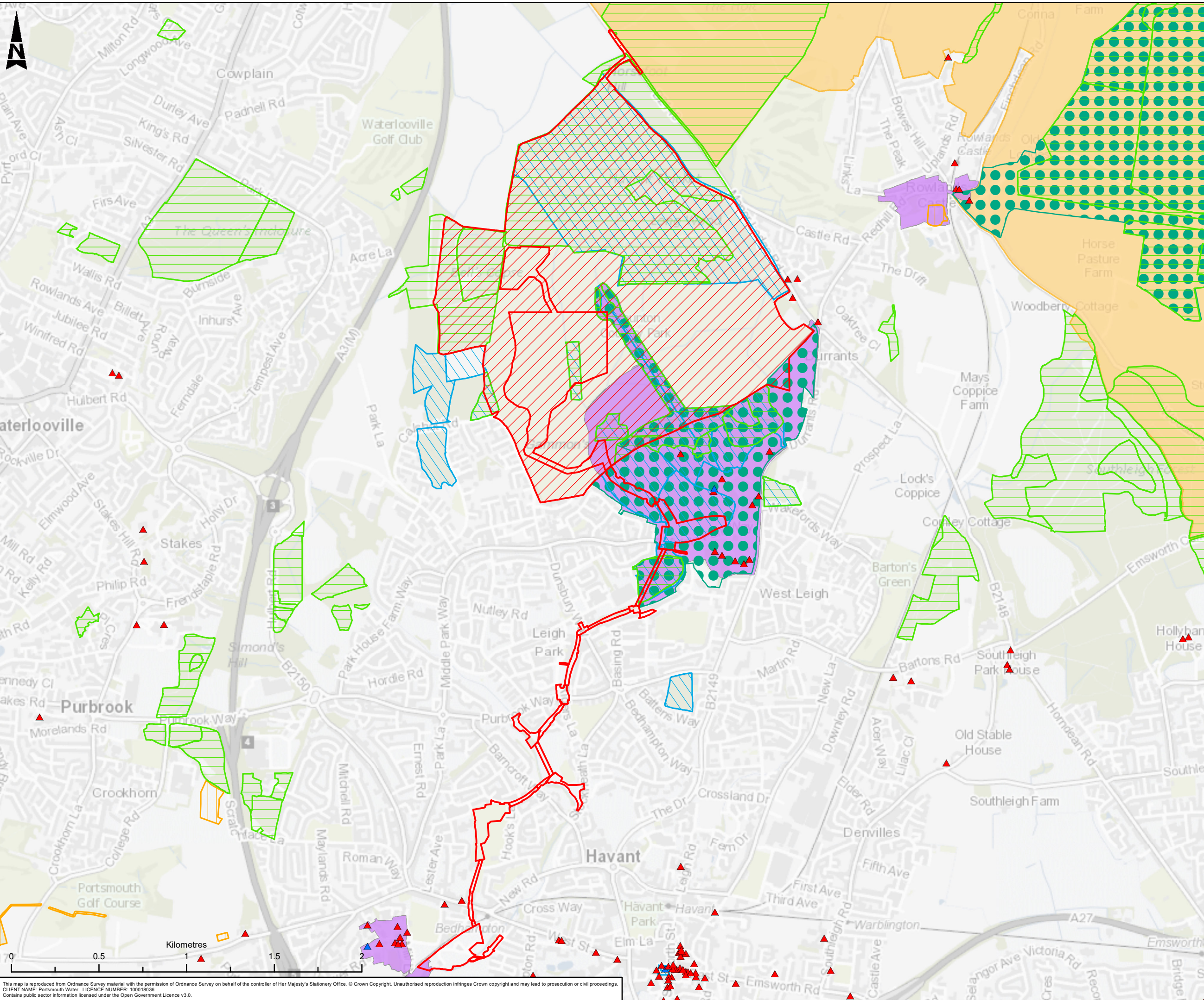
FIGURE 2
SITE LOCATION

Portsmouth Water Drawing Number

Rev

C03

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Red Line Boundary

Reservoir Red Line Boundary

Grade II Listed Building

Grade II* Listed Building

Ancient Woodland

Site of Importance for Nature Conservation

Scheduled Monuments

Registered Park and Garden

Conservation Area

South Downs National Park

C03	MMN	NW	AR	JF	PUBLISHED	03/04/2024
C02	NW	FD	AR	JF	PUBLISHED	26/06/2023
C01	FD	CB	LJB	JF	PUBLISHED	13/08/2020
Rev.	Dm By	Old By	Rev By	Auth By	Description	Date

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Portsmouth Water

Project Ref. No

5169117

Sheet

1 of 1

Scale

1:20,000

Sheet Size

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Project Title

HAVANT THICKET RESERVOIR

Drawing Title

FIGURE 3
ENVIRONMENTAL CONSTRAINTS

Portsmouth Water Drawing Number

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Rev

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LEGEND

RED LINE BOUNDARY

PERMISSIVE PATH - PEDESTRIAN USE (EXISTING)

PERMISSIVE PATH - PEDESTRIAN USE (PROPOSED)

BRIDLEWAY - PEDESTRIAN, CYCLE AND EQUESTRIAN USE (EXISTING)

BRIDLEWAY - PEDESTRIAN, CYCLE AND EQUESTRIAN USE (PROPOSED)

PATH - PEDESTRIAN AND CYCLE USE (PROPOSED)

EXISTING CYCLE PATH

LONG DISTANCE PATH

TEMPORARY BRIDLEWAY DIVERSION (WILL BE REINSTATED TO PERMISSIVE PATH ACCESS)

BIRD WATCHING

CHILDRENS' PLAYGROUND

PICNIC AREA

VIEWING POINT

CAR PARK

VEHICLE ACCESS POINT

ENTRANCE POINT

EXISTING WOODLAND *

NEW WOODLAND

PROPOSED WET WOODLAND

PROPOSED SCRUB REGENERATION

PROPOSED WET GRASSLAND

PROPOSED EMBANKMENT GRASSLAND

PROPOSED WETLANDS

PROPOSED RESERVOIR

* Proposed habitat enhancement areas within red line boundary

Rev	By	Rev	By	Rev	By	Rev	By	Rev	By	Description	Date
Rev 3	RJ	JM	WR	JF						FOR PLANNING	31/07/20
Rev 2	CMS	JM	WR	LB						FOR PLANNING	29/05/20
Rev 1	CMS	JM	WR	LB						FOR PLANNING	03/04/20

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Project Ref. No:	HTR	Sheet:	1 of 1
Project Title:	HAVANT THICKET RESERVOIR		
Drawing Title:	RESERVOIR OUTLINE MASTERPLAN		

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Sheet Size: A0





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