

Havant Thicket Reservoir Project

Environmental Statement Volume 2 – Main Report Chapters 1 to 6

Portsmouth Water Ltd.

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ES Volume 2 – Main Report Chapter 1-6 (This document)

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Foreword

by Bob Taylor, Chief Executive of Portsmouth Water

I feel extremely privileged to be the Chief Executive Officer at Portsmouth Water at this moment as we submit our planning application for the Havant Thicket Reservoir.

It has taken some years to reach this stage and as a Havant-based company we're delighted to be in a position to deliver this vital strategic water resource for the South East and create a unique leisure and wildlife environment for local communities.

Portsmouth Water has a long history since 1857 of supplying water to this area, and we've continually maintained a proud record of some of the highest service standards and the lowest water supply charges of all the water companies in England and Wales.

We believe in 'doing the right thing', a belief further embedded in our Community Pledge, launched earlier this year, and our Community Partnership, to be launched in the Spring which ensures society benefit is considered in all our decisions. Our aim is to make sure our objectives are in line with those of our communities.

Nowhere is this more important than in the development and delivery of a large infrastructure project like a reservoir, the first to be progressed in the South East since the 1970s.

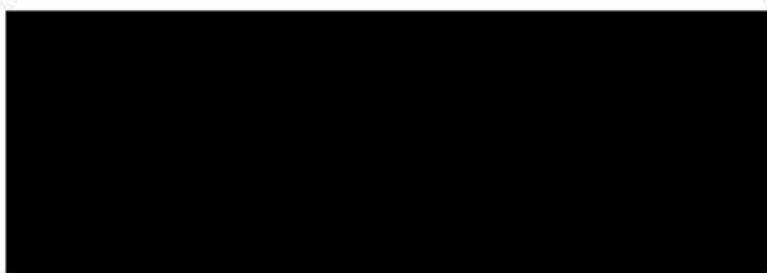
This project has always had the potential to provide many additional benefits, over and above its core purpose of securing vital water supplies for our customers and those of Southern Water – ensuring we're ready for housing growth, climate change and protecting two world-famous rare chalk streams in Hampshire.

We believe we've captured that potential in this application, not least through an environmental net gain, with the creation of a wetland for threatened bird species, extensive tree, hedgerow and wildflower planting, drought resilience and the educational, training and employment opportunities these also bring. Our plans also create a green leisure space with paths and play areas – offering priceless benefits for health and wellbeing – with a visitor centre aimed at bringing communities together.

And with our eye on future challenges, we've also considered the role we'll play in meeting our unique commitment as an industry to become carbon net zero by 2030.

We've listened carefully to the ideas and thoughts of our customers, communities, partners and regulators – held discussion groups, drop-in sessions, delivered talks, chatted on Facebook, spent time with young people and engaged tirelessly with our regulators, environmental organisations and the planning authorities. We believe this is part of the reason we have such strong support.

We think this application embodies not only our hopes and aspirations for the reservoir, but also those of the communities who will benefit and be part of its delivery, and we look forward to continuing to work in partnership with our neighbours over the months and years to come.



Bob Taylor, Chief Executive Officer, Portsmouth Water

List of contributors

Chapter	Topic	Organisation
Chapter 1	Introduction	Atkins/Portsmouth Water
Chapter 2	Description of the Development	Atkins/Portsmouth Water
Chapter 3	Need for the Reservoir	Atkins/Portsmouth Water
Chapter 4	Alternatives Considered	Atkins/Portsmouth Water
Chapter 5	EIA Process, Approach and Methodology	Atkins/Portsmouth Water
Chapter 6	Consultation	Atkins/Portsmouth Water
Chapter 7	Air quality	Atkins/Portsmouth Water
Chapter 8	Historic Environment	Atkins/Portsmouth Water
Chapter 9	Biodiversity	Atkins/Portsmouth Water
Chapter 10	Ground Conditions	Atkins/Portsmouth Water
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Chapter 14	Material Resources and Waste	Atkins/Portsmouth Water
Chapter 15	Water (including flows, quality and groundwater)	Atkins/Portsmouth Water
Chapter 16	Effect on Climate	Atkins/Portsmouth Water
Chapter 17	Vulnerability to Climate Change	Atkins/Portsmouth Water
Chapter 18	Population and Human Health	Atkins/Portsmouth Water
Chapter 19	Cumulative and In-combination Effects	Atkins/Portsmouth Water
Chapter 20	Vulnerability to Major Accidents and Disasters	Atkins/Portsmouth Water

1. Introduction

The Scheme

- 1.1. The 'Scheme' comprises the following:
 - Havant Thicket Reservoir Application – the 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.
 - Havant Thicket Pipeline Application – the pipeline corridor including the pipe, an emergency discharge structure on the Hermitage Stream and upgrades to existing culverts.
- 1.2. Further details are provided in Chapter 2 of the ES Volume 2.

Scheme Overview

- 1.3. The objective of the Scheme is to provide a new resource to supply drinking water in the water-stressed South East of England, while maximising the community and environmental benefits of a new raw water reservoir.
- 1.4. The reservoir, when constructed, will be filled with surplus water drawn from the Bedhampton Springs at the Bedhampton pumping station. This will be when flows are at their highest in winter via a new pipeline, and will provide water supplies to Portsmouth Water customers in the summer months as required. The Scheme will also enable additional water to be supplied to Southern Water. Southern Water has a forecast deficit in water resources in the Hampshire area, created by the reduction in abstraction from the internationally designated River Itchen and the nationally designated River Test, as agreed with the Environment Agency.
- 1.5. As well as augmenting water supplies and increasing the resilience of water resource management in the South East, the reservoir would provide a new recreational resource adjacent to one of the more deprived areas in south east Hampshire, in an location which the community can access on foot, by bike, or through existing bus routes. It also offers further opportunities to improve the wider footpath, cycleway and bridleway networks in the area. More than 29,500 people live within reasonable walking distance of the Site (1.5 km) and 120,000 people live within reasonable cycling distance (4.5 km). The setting of the Scheme is shown on Figure 1.1 of the ES Volume 3.
- 1.6. The Scheme would provide a new wetland habitat and associated area for nature conservation. The proximity of the reservoir to the internationally important Langstone and Chichester Harbour means that it can be used as a safe retreat for roosting birds when there is disturbance in the Harbour Special Protection Area (SPA) and Special Area of Conservation (SAC). The construction of the reservoir will result in substantial reductions in nutrients loads to the harbour.
- 1.7. The proposed pipeline would transfer water from Bedhampton Springs to fill the reservoir in the winter and draw water off for treatment treat 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 (EA) safety guidance.
- 1.8. The Scheme is allocated in the adopted and emerging Havant Borough Council (HBC) and East Hampshire District Council (EHDC) Local Plans. Further information and details can be found in the Planning Statement, which accompanies the planning applications.

Overseeing organisation

- 1.9. The organisation responsible for the project is Portsmouth Water. Portsmouth Water is an independent water company supplying clean drinking water to an area that covers 868 km².

The designer

- 1.10. Atkins Ltd is appointed to undertake the provision of design services for the Havant Thicket Reservoir Project. This includes responsibility for the Environmental Impact Assessment (EIA) and the preparation of the Environmental Statement (ES).

Purpose of the Environmental Impact Assessment and Environmental Statement

- 1.11. Environmental Impact Assessment (EIA) is a process for identifying the likely environmental effects, positive and negative, of proposed developments, and their significance.
- 1.12. The aim of EIA is to ensure that a thorough assessment of likely effects has been undertaken and mitigation and alternatives in light of these potential effects have been considered. Through this process, the development should include measures to prevent, reduce or offset any significant, adverse environmental effects of the proposals, and enhance the positive ones.
- 1.13. The findings of the assessment are presented in this Environmental Statement (ES). Further information on the ES structure, EIA process, approach and methodology is included in Chapter 5 of the ES Volume 2.
- 1.14. It is noted that a glossary has been included in Chapter 22 of the ES Volume 2.
- 1.15. The purpose of this ES is to support outline applications for the Havant Thicket Reservoir and Pipeline Applications submitted by Portsmouth Water. This is because the reservoir and the pipeline are a 'single project' (i.e. inextricably linked). One set of documents has therefore been provided to cover both elements of the Scheme. Both applications will be determined together.
- 1.16. Information is included in the ES that provides the decision maker, statutory consultees, the public and other stakeholders information with an understanding of the predicted effects of both the reservoir site, and the pipeline corridor, and the scope for reducing these effects, before a decision is made as to whether to permit development. The level of detail required for different elements of the Scheme has been discussed and agreed with the Havant Borough Council (HBC) and East Hampshire District Council (EHDC), the host Local Planning Authorities (LPA).
- 1.17. Following approval of the outline planning applications, reserved matters applications would be prepared and submitted for approval in relation to the areas that less detail is provided for at this stage. The level of detail provided within the outline applications has been agreed with the LPA. More detail is required in some areas to allow the LPA and other stakeholders to understand the impact of the Scheme on its sensitive ecological, landscape and heritage setting. This is set out in more detail in the Development Specification that accompanies the planning applications.

Need for Environmental Impact Assessment

- 1.18. The statutory requirement for Environmental Impact Assessment (EIA) is set out in Directive 85/337/EEC as amended by Directive 2014/52/EU. This is transposed into law in England by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (herewith referred to as EIA Regulations).
- 1.19. Within the EIA Regulations, Schedule 1 lists projects for which EIA is mandatory. Schedule 2 list projects for which an EIA must be carried out if the development is likely to have a significant effect on the environment by virtue of its nature, size or location. Dams and other installations designed to hold water or store it on a long-term basis fall within Schedule 2 and the proposed size of the development takes it above the indicative threshold of 1 ha identified within Schedule 2, Category 10 (i) of the EIA Regulations. In view of the scale, nature and location of the development it is considered likely to have significant environmental effects. A request for a screening opinion was therefore considered unnecessary as it was assumed that an EIA would be required to be provided in accordance with the EIA Regulations.
- 1.20. In accordance with good practice, an EIA Scoping Report (Arup 2009) was prepared for the Havant Thicket Reservoir Project to identify the likely significant effects that would require consideration in the ES. The EIA Scoping Report (2009) also set out the proposed approach to the assessment of these effects. An EIA Scoping Letter was sent to the LPA in 2018 and an EIA Scoping Report Addendum was issued in November 2019, due to the time elapsed since the initial EIA Scoping Report (2009) and to take into account updates in legislation. The Scoping Report Addendum (2019) was followed up with a meeting with the local authorities, the outcome of which agreed the scope, methodology and approach for the EIA.
- 1.21. Telecommunications and Microclimate were scoped out of the initial 2009 scoping report, this remained unchanged within the 2019 update. However, the Scoping report Addendum (2019), scoped material resources and waste back into the EIA to comply with the updated EIA Regulations. For this reason, the following additional chapters were scoped into the EIA during the

Scoping Report Addendum (2019): likely impacts on vulnerability to climate change; effects on climate; population and human health; material resources and waste; and, vulnerability to major accidents and disasters.

Legislative and policy framework

- 1.22. The Environmental Impact Assessment has been undertaken in accordance with the following:
- The statutory requirement for Environmental Impact Assessment (EIA) is set out in Directive 85/337/EEC as amended by Directive 2014/52/EU, which codifies all previous amendments including Article 3 of Directive 2003/35/EC;
 - Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations);
 - Environmental Impact Assessment Guidance (Ministry of Housing, Communities and Local Government) which explains the requirements of the EIA Regulations; and,
 - Policies and guidance relevant to the environmental topics being assessed.

Environmental Impact Assessment Regulations

- 1.23. The need for and approach to Environmental Impact Assessment (EIA) is set out in Directive 85/337/EEC as amended by Directive 2014/52/EU. This is transposed into law in England by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

National Planning Policy Framework

- 1.24. The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. It is also a material consideration in planning decisions.
- 1.25. NPPF (Paragraph 20 (b)) requires local authorities to make sufficient provision for water supply infrastructure and states that water supply and quality is a cross-boundary issue where there is a duty to cooperate.
- 1.26. Paragraph 175 provides guidance to Local Planning Authorities in determining applications which have impacts on habitats and biodiversity.
- 1.27. With regard to loss or deterioration of irreplaceable habitats including ancient woodland and Veteran Trees, applications for permission should be refused unless *'there are wholly exceptional reasons and a suitable compensation strategy exists'* (Paragraph 175 (c)). Exceptional reasons include *'infrastructure projects ... where the public benefit would clearly outweigh the loss or deterioration of habitat'*.
- 1.28. NPPF (Paragraph 194) advises that *'Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification'*. Paragraph 195 states that: *'where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use'*.
- 1.29. Chapter 3 Need for the Reservoir and Chapter 5 Alternatives Considered, of the ES Volume 2, provide a case for exceptional reasons based on the need for the Scheme and the lack of a suitable alternative site or design solutions within the preferred Havant Thicket site.
- 1.30. A suitable outline Biodiversity Mitigation and Compensation Strategy has been prepared in consultation with Natural England and the Environment Agency, and accompanies the planning applications. Chapter 2 Description of the Development (paragraphs 2.49-2.51) provide an overview and demonstrate that a suitable strategy exists.

Draft National Policy Statement for Water Resources Infrastructure

- 1.31. A draft National Policy Statement (NPS) for Water Resources Infrastructure has been published (November 2018). This draft document sets out policy for the development of nationally significant infrastructure projects (NSIPs) for water resources in England. The draft NPS is currently under parliamentary scrutiny following consultation. Whilst the Scheme is not currently deemed to be a

NSIP, the final NPS will be a material consideration informing decisions on planning applications relating to water resources.

Portsmouth Water Resource Management Plan (WRMP)

- 1.32. The development of the Scheme takes into consideration the Portsmouth Water Resource Management Plan (WRMP) for the period from April 2020 to March 2025, which informs the statement of need included in the ES and has been considered by the topic specialists in the environmental assessment.

Core Strategies and Local Plans

- 1.33. The reservoir site is split along a north-south alignment between the two local planning authorities of Havant Borough Council (HBC) and East Hampshire District Council (EHDC), both within Hampshire County Council (HCC). The pipeline corridor falls entirely within HBC. Consideration of the Scheme is therefore required in relation to environmental policy in the following:
- Havant Borough Council Local Plan, made up of the Core Strategy adopted in 2011 and the Site Allocations Plan adopted in 2014; and
 - Adopted Local Plan for East Hampshire District Council as Joint Core Strategy (JCS) adopted in 2014.
- 1.34. The Havant Thicket reservoir and pipeline corridor are safeguarded in the HBC Local Plan 2011 under Policy CS18 and in the EHDC Local Plan 2014 under Policy CP26, these policies provide support for the principle of the Scheme:
- HBC Adopted Policy CS18 Strategic Site Delivery, includes Havant Thicket reservoir as one of four strategic sites that are critical to achieving the Core Strategy vision.
 - HBC Adopted Policy CS19 Effective Provision of Infrastructure, protects the reservoir site for the use as a reservoir, and as such the principle of the development is accepted, subject to its details.
 - EHDC Adopted Policy CP26 Water Resources/Water Quality, requires development to protect the quality and quantity of water and make efficient use of water. Paragraph 7.50 recognises the reservoir at Havant Thicket will not only provide further water resources but will also provide a real opportunity to create a natural and sustainable recreational attraction.
- 1.35. The Scheme is also safeguarded in the emerging HBC and EHDC Local Plans:
- HBC Emerging Policy KP9 Havant Thicket Reservoir, states that planning permission will be granted at Havant Thicket for a winter storage reservoir comprising recreational provision including a visitor centre subject to certain criteria.
 - EHDC Emerging Policy S31 Havant Thicket Reservoir, states that planning will be granted at Havant Thicket for a winter storage reservoir comprising recreational provision including visitor centre and discusses the requirements for the delivery of the Scheme.
- 1.36. Further details on the above Local Plans, the replacement Local Plan 2036 for HBC and the draft Local Plan 2017- 2036 for EHDC, can be found in the Planning Statement, which accompanies the planning applications. Additional detail can also be found in the individual environmental topic chapter - Chapters 7-20 of the ES Volume 2.

Competent experts

- 1.37. In accordance with the EIA Regulations, the coordination of the environmental assessment process and specialist assessments have been undertaken by a team of competent and qualified consultants, who are registered with the relevant institutions and/or Chartered. Atkins is EIA Quality Mark registered through the Institute of Environmental Management and Assessment (IEMA). Accreditation is based around compliance with a series of EIA commitments, which IEMA regularly independently monitors through an annual review process. The EIA Quality Mark therefore provides registrants with a benchmark for their EIA activities and demonstrates a commitment to effective practice. Continued registration requires all of Atkins EIA coordinators and practitioners to be aware of the commitments and deliver EIA to a high standard. It also requires volunteers to write short articles, present at IEMA events or webinars and produce case studies as part of the commitment to improve EIA practice and share knowledge across the industry.

- 1.38. A list of all the contributors to this ES are found at the beginning of this document. Further evidence of specialist input can be found at the beginning of each environmental topic chapter - Chapters 7-20 of the ES Volume 2.

Consultation

- 1.39. An overview of consultation undertaken between 2004 and 2020 is provided in Chapter 6 of this report.

2. Description of the Development

Project objectives

- 2.1. Portsmouth Water's Project Drivers provide the high-level framework that is guiding the project. These drivers have informed the Design Principles that were developed to inform the reservoir design. Other drivers influencing the scheme design include the planning policy framework that sets out the criteria against which the planning applications will be determined, and the planning application strategy that identifies the level of detail required to inform the planning applications.

Project Drivers

- 2.2. Portsmouth Water's Project Drivers are:

Quality: Quality in procurement, design and deliver an exemplar project to serve Customers in the short, medium and long term.

Timeliness: In service and operating by 2029 to support a major bulk transfer to Southern Water. Deliver efficiency in procurement.

Innovation: Develop best practice in the largest new reservoir project in the South East for decades. Capture learning from companies working in partnership to deliver better value for customers.

Flexibility: Create a project that offers multiple uses and enables the Company to be a strategic water supplier for the south over the medium and long term.

Responsibility: Realise and build upon our health, safety and well-being goals.

Connectivity: Positive connection for all stakeholders – Customers, the local community, regulators, staff, contractors, shareholders, commercial partners, environment groups and individuals with a passion for the environment.

Environment: A positive contribution to local and internationally important habitats. Direct support for the Government's objective to reduce the damaging abstraction of water from rivers.

Design principles

- 2.3. As part of the design development, high level design principles were defined to inform development of Scheme components, ensuring that they reflected relevant legislation and policy, Portsmouth Water's Project Drivers, Portsmouth Water and stakeholder aspirations, and they took into consideration existing constraints and opportunities.
- 2.4. High-level environmental design principles have been embedded in the design of the Scheme. Further information on these design principles, and design guidance to inform the reserved matters applications, are described in the Design and Access Statement for the reservoir site and summarised in the Development Specification, which accompany the planning application(s).
- 2.5. The high-level environmental design principles are:
- Create a safe environment to work and play. Use creative and intelligent design to minimise any short and long-term health and safety issues.
 - Maintain and integrate with the rural landscape character and woodland setting, through the design layout and material selection process, and where possible develop soft engineering solutions, limiting structures and ancillary clutter.
 - Design to be sympathetic to and blend in with the historic park and gardens landscape. Specifically considering impact on setting and views to and from the designated sites including the Grade II* Leigh Park (Staunton Country Park) Registered Park and Gardens (RPG), Sir George Staunton Conservation Area and South Downs National Park.
 - Design to minimise whole life costs such as maintenance and need for replacement ensuring durability in a challenging public setting and flexibility in the design to manage future requirements.
 - Maintain and enhance public access to the site, optimise opportunities to link to existing walking, cycling and bridleway routes.

- Design of the site and all facilities to cater for all ages and abilities.
- Incorporate recreational facilities that are in keeping with the quiet enjoyment of the countryside setting, optimising health and wellbeing opportunities.
- Optimise educational opportunities in all design elements.
- Maximise opportunities for biodiversity within the design of the landscape and buildings, and minimise and mitigate any conflict with wildlife through forward planning.
- Where possible avoid ancient woodland, an irreplaceable habitat, and maintain a minimum 15m gap as buffer along the site boundary (apart from at boundary with Staunton Country Park).
- Incorporate public art into the design in an innovative and robust way.
- Incorporate interpretation of the wider historic landscape and connections to the Grade II* Leigh Park (Staunton Country Park) RPG and Sir George Staunton Conservation Area.
- Optimise opportunities for a sustainable design where practical to include:
 - Improving energy efficiency in base design, consider decentralised low carbon energy sources to achieve an overall improvement in operational energy efficiency.
 - Improving climate resilience of the reservoir, ensuring management of reservoir flows, considering whole life sustainability impacts.
 - Minimising material quantities as much as possible and select alternative low carbon materials in design wherever possible.
- Support the UK's Net Zero Carbon target by minimising where practical greenhouse gas emissions at all stages of the infrastructure lifecycle, and maximising opportunities for greenhouse gas removals through sequestration by vegetation and renewable energy generation.
- Design infrastructure which is resilient to expected climate change and extreme weather events.

Scheme environmental context

Scheme location

- 2.6. The 'Scheme' includes the reservoir at Havant Thicket and the pipeline connecting the reservoir to Bedhampton Springs at the Bedhampton pumping station.
- 2.7. The 'reservoir site' refers to the reservoir itself and the Forestry England land to the north that will accommodate the northern access, habitat mitigation and footpaths. The reservoir site is located to the north of the town of Havant in the county of Hampshire. It is split along a north-south alignment between the two local planning authorities of HBC and EHDC. The boundary of the South Downs National Park (SDNP) lies to the east of the reservoir site.
- 2.8. The pipeline component of the Scheme, 'pipeline corridor' lies to the south of the reservoir site within HBC.
- 2.9. The location of the Scheme and the surroundings described below are shown on Figure 2.1 Site Location and Figure 2.2 Environmental Constraints in the ES Volume 3.

Existing site

- 2.10. Portsmouth Water purchased approximately 160 ha from the Forestry Commission (now Forestry England) in 1965 and Portsmouth City Council in 1966. The area which will accommodate the reservoir and visitor facilities measures 1.6 km in length from east to west and 0.8 km 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. It is currently let to Staunton Country Park and managed by HCC who use it for grazing. The Site is also used by the local community for walking, horse riding and cycling. The Site was chosen as suitable for a reservoir because it sits in a valley on clay, which is naturally impermeable.

Existing site access

- 2.11. The site is easily accessible by pedestrians from all directions. There are several cycle routes around the Site and it is crossed by bridleways, which provide a right of way for equestrians.

- 2.12. Car parking, including two spaces for horse boxes, is available off Manor Lodge Road within land managed by Forestry England. The car park is informal and an estimated 16 spaces are available.
- 2.13. The nearest bus stops to the main entrance of the Site to the east are located on Redhill Road, close to the junction with Manor Lodge Road. There are also bus stops to the south close to the entrance of Staunton Country Park, Middle Park Way and on Swanmore Road, to the west. The nearest train station is Rowlands Castle Station, which is around a 25-minute walk to the east.

Scheme overview

Reservoir site

- 2.14. The reservoir site lies within a shallow valley located between the residential settlements of Leigh Park and Rowlands Castle. It comprises 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 the Riders Lane Stream. None of the watercourses within the reservoir site are designated as main river by the Environment Agency.
- 2.15. 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.
- 2.16. The woodland directly north of the reservoir site is owned and managed by Forestry England for timber production and is also classified as ancient / ancient replanted woodland. This woodland is included within the red line boundary as it will accommodate proposed habitat mitigation measures. The area is also occupied by land locally known as Havant Thicket, Long Wood and Furzy Plain.
- 2.17. Directly to the west of the Site are open areas of grassland and woodland known as Bells Copse and Cabbagefield Row. Some of the habitats here are classified as ancient woodland. South of these wooded areas lies the residential district of Leigh Park.
- 2.18. A large area of the reservoir site lies within Staunton Country Park, Grade II* Leigh Park RPG, and Sir George Staunton Conservation Area. The area of Staunton Country Park and the conservation area within the reservoir site is mainly open grassland with areas of ancient woodland (Refer paragraph 2.15 above).

Pipeline corridor

- 2.19. The pipeline corridor extends from the Bedhampton pumping station, northwards through the Leigh Park estate in Havant, to the proposed control house within the reservoir site.
- 2.20. 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) SPA and Ramsar site and Solent Maritime Special Area for Conservation (SAC).
- 2.21. Whilst most of the corridor passes through the Leigh Park Estate and passes along and crosses local roads, areas of hardstanding and amenity grassland of low ecological value typical of an urban setting, the corridor also runs north along the Hermitage Stream before turning north-east and broadly following the Riders Lane Stream towards the reservoir site.
- 2.22. At the northern end of the corridor, before entering the reservoir site, the pipeline intersects the Sir George Staunton Conservation Area, and Leigh Park Registered Park and Garden (RPG) and species rich grassland within Staunton Country Park, designated Thicket Lawn Site of Importance for Nature Conservation (SINC) and High Lawn SINC.

Scheme description

Havant Thicket Reservoir Application

- 2.23. Planning permission is being sought 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.

2.24. The components of the application for the reservoir site comprise:

- A pumped storage reservoir, with the minimum required storage capacity of 8,700 million litres (Ml), to support the planned bulk supply transfer of up to 21 Ml/d in extreme 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;
- Construction of perimeter tracks and a network of bridleways, cycle paths and footpaths;
- Construction of a visitor centre / café (sui generis and A3), 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.

2.25. An outline application is being submitted for the reservoir site with some details reserved for approval at a later stage. These will take the form of reserved matters applications. Detail which is covered within the outline application (and is not reserved for a later stage) includes:

- Appearance;
- Means of access;
- Layout;
- Scale;
- Strategic landscaping.

2.26. Following approval of this outline planning application, reserved matters applications would be prepared and submitted for approval in relation to the areas we are providing less detail on at this stage, notably:

- The buildings - reserved matters applications will address the detailed appearance of the visitor centre, bird hide and control house;
- Wetland retaining structure and islands - permission is sought within this application for the approximate alignment of the wetland retention structure, its form, functionality, size and extent. The alignment will be reviewed and updated once the location of the borrow pits have been confirmed by further site investigation. The exact positioning of the islands is subject to reserved matters;
- Viewing Area - permission is sought in this application for the approximate location and outline design;
- The land use layout for the corner to the north west of the reservoir (visitor centre, car park and bird hide) - an outline layout of these facilities is provided in this application to demonstrate how the uses could be accommodated within this area but this will be subject to detailed design;
- Embankment profile/toe (apart from interface with Staunton Country Park which is fixed);
- The children's play areas and operational boat slipway are shown in this application as indicative in location only.

2.27. The Design and Access Statement, which accompanies the outline application, provides more detail on the location, scale, accessibility, layout and appearance of the different elements of the Scheme at the reservoir site and illustrates how the Scheme has evolved since 2009 to reduce impacts on ancient woodland, the setting of the Grade II* RPG, the conservation area and the local highway network.

2.28. In addition, visualisations have been prepared from viewpoints agreed with the LPA and included on Figure 11.29 Viewpoint Location Plan and photo visualisation sheets on Figures 11.30-11.37 in the ES Volume 3.

Havant Thicket Pipeline Application

2.29. Planning permission is being sought for:

Development of a new pipeline 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.

2.30. The components of the application for the pipeline comprise:

- Construction of an underground, bi-directional pipeline linking the reservoir with the existing pumping station at Bedhampton;
- Emergency drawdown discharge structure at Hermitage Stream;
- Upgrades to existing culverts;
- Washout and air valve chambers (typically below ground).

2.31. The new inlet / outlet pipeline will typically be installed in an open trench, typically 3.5 m deep depending on location. The pipe will have a varying diameter (1.2 m to 0.7 m) depending on location. The crossing of the pipeline under the railway line will be installed using trenchless techniques.

2.32. The length of the pipeline is approximately 4.8 km of which 210 m is within the reservoir site (and included in that application).

2.33. Detail that is covered in the pipeline planning application includes general location, appearance and scale of the pipe and associated structures. Details that will be reserved for approval at a later stage include confirmation of the pipeline route (within the red line boundary) and detailed design of the associated structures. Detailed traffic and construction management will be the subject of planning conditions.

Application Scheme Parameters

2.36. Table 2.1 below identifies the parameters that have informed the environmental and traffic assessment work. These parameters identified in the Development Specification that accompanies the planning applications, indicate which are outline, which will be the subject of applications for future reserved matters, and those which are fixed/full may be subject to planning conditions.

Table 2-1 - Scheme Parameters

Element	Parameter	Level of detail
Reservoir capacity	Minimum required total capacity: 8,700 million litres Maximum capacity: at least 9,600 million litres, up to a Top Water Level (TWL) of 39.5 m AOD.	Fixed
Supply rate	Output capacity: at least 21 Ml/d in extreme (currently defined as 1:200 year) drought conditions.	Fixed
Embankment	Max 20 m high. Crest level 40.5 m AOD. Length 2,770 m. Inside slope: to range from 1:5 to 1:7. Outside slope: majority 1:7 with local variations to 1:5 at Round Wood and the Avenue woodland (see below). Outer toe (edge): +/- 2 m horizontal range (north to south). Crest line position: 0 – 37 m horizontal range (to north) to accommodate any potential future need for reducing the outer face slope from 1:5 to 1:7.	Outline
Embankment adjacent to Staunton Country Park	Toe (edge) of the embankment is fixed at a minimum of 25 m from the edge of woodland along the southern boundary of the Site (known as Hammond's Lands Copse). Length of embankment at 1:5 is approximately 185 m along this stretch and 390 m of embankment with slope varying from 1:5 to 1:7. Staircase detail along alignment of The Avenue joining pedestrian access from Staunton Country Park with viewing area at the crest.	Fixed
Top Water Level (TWL)	39.5 m AOD. 1.0 m freeboard (height from TWL to embankment crest) to prevent/limit overtopping.	Fixed
Spillway / overflow	3 m long weir/ 700 mm diameter pipe.	Fixed
Slope protection material	Range of up to 450 mm thick layer of protection. Rip-rap (rock armour). Rock mattresses would be brushed with topsoil allowing planting with aquatic / marginal species such as reeds and sedge grasses.	Fixed
Lowest operating level	27.5 m AOD. Lowest 20% to be considered dead storage, minimum level before reservoir operationally fails.	Fixed
Emergency drawdown facility	Discharge capacity of 10.9 m ³ /s Reservoir can be lowered by 1/3 of water depth in 6 days. 1.4 m diameter scour pipe and submerged discharge valve discharging into Riders Lane Stream at the proposed control house. 1.2 m diameter inlet /outlet pipe discharging into the Hermitage Stream 3 km downstream.	Fixed

Element	Parameter	Level of detail
Wetland retaining structure	A retained wetland extending for approximately 1.3 km along the northern shoreline. 4No. retained wetland compartments, plus provision of an area for wet grassland habitat creation to the east of the retained wetland. Retention of wetland during drought levels in main reservoir. Minimum area of retained wetland provided ~10 ha.	Outline (commitment to minimum area)
Control house	Maximum width of building frontage: 33 m. Maximum height of building wall above external ground level: 6m (excluding security fence). Schedule of accommodation: total area approximately 430 m² (excluding courtyard). Reinforced concrete outer structure with cladding, composite roof slab with green roof, steel frame /blockwork internal walls.	Outline
Visitor Centre	Maximum envelope of 35 m x 55 m and maximum height of 10 m.	Outline
Bird Hide	Maximum envelope of 9 m x 20 m and maximum height of 5 m.	Outline
Viewing Area	Location along the western boundary and outline design.	Outline
Vehicle Access	New junctions off B2149 (to the north) and Swanmore Road (to the south).	Fixed
Northern Access Route from junction with B2149 and car park	Single lane single, 3.65 m wide carriageway with passing bays and 0.5 m verges with 0.9 m embankment slopes and a 6.45 m wide footprint.	Outline
Pipeline	Maximum diameter of pipeline: 1.2 m Maximum length: 4.85 km (of which 210 m within reservoir site and application) Maximum envelope for above ground kiosk (associated with discharge structure): H3 m x W6.5 m x L10.5 m is the size of above ground kiosk at Hermitage Stream (excluding slab H0.5 m x W6.5 m x L11.6 m). Overall height: 3.5 m above ground level.	Outline

Construction, operation and long term management

- 2.37. The construction of the reservoir will be spread over several phases 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 north west corner of the reservoir site. Further details of the compound area and construction phasing will be available from the appointed contractor.
- 2.38. The key elements of the proposed construction sequence are indicated in Table 2-2.

Table 2-2 - Indicative construction programme

Table	Key activity / milestone
Spring 2021	Planning permission expected
Spring 2021 – November 2022	Commencement of works. Species relocation, tree felling, preparatory work on habitats avoiding breeding / nesting seasons, enabling works including access road construction.
March 2023 – September 2026	Construction of culvert structure, embankment and reservoir control house
Autumn 2026 – Spring 2029	Construction of visitor facilities. Filling of reservoir in stages with pumped water from Bedhampton Springs. Testing and commissioning.

- 2.39. 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. It is likely that the pipeline will be broken down into sections to allow multiple teams to operate at the same time.
- 2.40. As the pipeline will be routed through residential areas, there is insufficient space for a dedicated construction compound and laydown area to support these activities. Therefore, the main construction support site and laydown areas at the reservoir site will be used throughout the construction of the pipeline.
- 2.41. Whilst it is expected that both the northern and southern access points will be available, HGV construction traffic 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). School term times will be avoided where the pipeline runs close to schools. The traffic impact is discussed in more detail in Chapter 13 Traffic and Transport in ES Volume 2, and the Transport Assessment in Appendix A13.1 in ES Volume 4.
- 2.42. Small scale, portable welfare facilities will be provided for the pipeline workforce along the pipeline corridor at appropriate locations.
- 2.43. Each section of the pipeline that is being worked on will require fencing to secure the site and protect the public.
- 2.44. Land incorporated in the pipeline corridor for the temporary works of the pipe installation will be returned to its pre-existing condition and use on completion.
- 2.45. The Outline Environmental Management Plan (OEMP) in Appendix A2.1 in ES Volume 4 provides a Record of Environmental Actions and Commitments (REAC) that details all mitigation that will be implemented during construction for both the reservoir site and the pipeline (plus aspects for pre-construction and operation).
- 2.46. The outline planning approval will be subject to detailed Traffic Management and Construction Environmental Management Plans which will include measures to reduce disruption from construction activities.
- 2.47. The Construction Environmental Management Plan prepared by the appointed contractor will be based upon commitments made in the REAC as part of the OEMP (Appendix A2.1 in Volume 4 of the ES).

Planning Obligations

- 2.48. An agreement under Section 106 of the Town and Country Planning Act 1990, also known as a planning obligation, between the applicant and HBC/EHDC will be used (one for both applications) to secure the following.

Outline Biodiversity Mitigation and Compensation Strategy

- 2.49. Portsmouth Water is committed to the delivery of both on and off-site mitigation and compensation measures to minimise the likely ecological and visual impacts associated with the construction of the reservoir. Habitat and biodiversity enhancements will be delivered as part of the Scheme including the provision of wetland habitats along the northern shoreline of the reservoir as outlined in the ES.
- 2.50. The planning applications are accompanied by an outline Mitigation and Compensation Strategy, any permission will be subject to the requirement to submit a detailed Mitigation and Compensation Strategy including proposals for the Capital Grant Scheme.
- 2.51. The amount of river habitat mitigation required remains to be finally resolved with the Environment Agency. Portsmouth Water commits to delivering the necessary level of aquatic habitat mitigation reasonably required to offset the impacts of the development on the Hermitage Stream waterbody. The outline Biodiversity Mitigation and Compensation Strategy is intended by the Environment Agency and Natural England to be an adaptable document in relation to the ways in which these commitments are discharged, and will therefore be amended and updated through the delivery process with their input and agreement.

Bridleway diversion

- 2.52. A section 257 order will be applied for to divert the bridleway to the agreed final diversionary path, accompanied by section 106 obligations requiring a permissive path(s) to be in place at a sufficient time during the construction phase and the diversionary route to be constructed and useable by a certain point in the development. Upon the diverted bridleway becoming available for use, the Permissive Paths obligations would cease to apply. The diverted route would need to be constructed and made available as soon as possible during the construction phase. Relevant landowners would need to be a party to this agreement.

Site Management

- 2.53. A standard obligation in the S106 will require the reservoir site and pipeline management arrangements and maintenance, which would be incorporated into a Management Plan, to be submitted at a relevant point prior to 'occupation'.

3. Need for the reservoir

Water resource planning

- 3.1. The case for increased investment to build resilience to drought across the UK was made in Water UK's Water Resources Long -Term Planning Framework, published in 2016, and the 2018 National Infrastructure Commission report - Preparing for a Drier Future. The reports identified that new water supply infrastructure is likely to be required to ensure water security, including provision of reservoirs.
- 3.2. Within the draft National Policy Statement for Water Resources Infrastructure (2018), the government recognises the immediate need to increase resilience in the water sector to address pressure on water supplies. This pressure is increasing due to population growth, the impacts of climate change and the need to maintain sufficient water in our watercourses, lakes and wetlands to protect the environment. To achieve this vision, a twin track approach to securing resilient supplies is required which includes both demand management, for example leakage reduction and increased water efficiency measures and new water supplies, such as reservoirs and water transfers.
- 3.3. All water companies are required to prepare Water Resources Management Plans (WRMPs) which show how they will secure resilient water supplies for their customers over a period of 25 years. Resilience is the ability to cope with and recover from extreme weather, such as droughts and floods, with as little impact as possible on customers, the environment and wildlife. In developing WRMPs, water companies consider how much water is available today, how much is needed to supply in the future and then develop options to make up any difference in supply. These plans are updated every five years. The Portsmouth Water and Southern Water WRMPs were published in 2019.
- 3.4. When preparing a WRMP water companies typically forecast the following:
 - How many new houses will be built during the plan period;
 - How the population will grow during the plan period;
 - How climate change could increase demand for water and reduce the amount of water available; and
 - How much water we need to leave in rivers and the ground to support the environment and wildlife.
- 3.5. Portsmouth Water and Southern Water are part of the Water Resources in the South East (WRSE) Group, along with four other water companies (Affinity Water, South East Water, SES Water, and Thames Water) the Environment Agency, Ofwat, Defra, the Consumer Council for Water and Natural England. Together this Group has developed a joined-up water strategy for the whole of the South East. The aim of WRSE Group is to identify how best to share the water resources at a regional level. It looks at opportunities of working with neighbouring regions of the UK and water companies to explore inter-regional water transfers. It focuses on exploring opportunities across the region for existing and new water resources to be shared in the most efficient and effective way, to provide reliable, sustainable supplies at best value to customers while also protecting the environment. This is because there is an expected pressure on water supplies in South East England which is set to increase in the future due climate change, population growth and the need to further protect the environment.
- 3.6. The reservoir was included in WRSE's most recent 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 in 2019. Its modelling work for the region in 2017-18 identified the development of Havant Thicket reservoir as a 'prevalent' strategic option to help meet future demand from population growth and as such, housing growth. It was then included in both water companies' five-year investment plans for 2020-25, and approved by Ofwat in late 2019. Portsmouth Water already provides up to 30 million litres of water every day to Southern Water. By 2029, this will double to 60 million litres per day - through an additional 9 million litres per day (Ml/d) from existing sources and up to at least 21 million litres per day (Ml/d) enabled by the reservoir, in extreme 1:200 year drought conditions.

Water resource deficits

- 3.7. The majority of the South East, apart from the Portsmouth Water area, is classed as 'seriously water-stressed' by the Environment Agency with Portsmouth Water currently sharing supplies with Southern Water in West Sussex and Hampshire of up to 30 million litres of water each day. On an average day, Portsmouth Water supplies 174 million litres of water, enough to fill 70 Olympic size swimming pools, for approximately 726,000 people, although in the summer supply is increased due to the many tourists who visit the coast, cities and the South Downs National Park. By 2045 it is expected to supply a similar amount of water, but to more people, 833,000 people in 382,000 homes and businesses due to the predicted growth in population.
- 3.8. Southern Water supplies water to an area that is officially identified as an area of significant population and economic growth. Forecasts outlined in their WRMP, indicate that population within the Southern Water supply area is expected to grow to over 3 million people by 2045, representing a 22% increase and a 27% increase in new water supply connections. Southern Water identifies strategies to balance the demand for water with the supply of water over the period of 2020 to 2070.
- 3.9. In response to the restriction the EA has imposed on abstraction from the internationally designated River Itchen and nationally designated River Test, Southern Water has taken steps to improve water efficiency, reduce leakage and invest in new water sources to maintain secure water supplies for its customers. Southern Water forecasts that 190 million litres will be needed daily over the next 10 years in its Hampshire catchment, where the deficit is the most prominent and need for new water resource is critical. Southern Water predicts a further 56 million litres of water will be needed each day to meet future population growth and accommodate the effects of climate change.

Options to meet the deficit

- 3.10. Portsmouth Water benefits from having a modest water resource surplus and has been working collaboratively with Southern Water to increase water transfers across the south east catchment areas in accordance with the objectives of the WRSE Group. Portsmouth Water has proposals to adopt supply-side and demand-side solutions to increase the amount of surplus water that it can provide to Southern Water, including proposals to build the reservoir to generate an additional 21 MI/d of available water to be transferred to Southern Water. Overall, Portsmouth Water intends to increase its water transfers to 60 MI/d, which will make a significant contribution to Southern Water meeting the water needs for its region in the future.

Portsmouth Water

- 3.11. When Portsmouth Water forecast how much water may be needed, it considered the different ways of making better use of the existing water supply and also identified when new sources of water would be required. To inform its WRMP, Portsmouth Water started off with a list of 183 options ranging from new reservoirs, to compulsory metering, desalination plants (creating drinking water from seawater) and recycling cleaned wastewater. For each of these options Portsmouth Water considered:
- How much water it could supply, even in an extreme drought;
 - How reliable it would be;
 - How difficult it would be to build and operate successfully;
 - How much it would cost to build and run;
 - The impact on the environment and society; and
 - Its carbon footprint.
- 3.12. By doing this Portsmouth Water reduced the list to 25 options, from which six options were chosen to meet the water supply need over the next 25 years:
- Reduce leakage 7 MI/d by 2025;
 - Water efficiency (metering) 3 MI/d by 2025;
 - Havant Thicket Reservoir (the Scheme) 21 MI/d by 2029;
 - Groundwater improvements 7.8 MI/d by 2025;
 - Enhanced groundwater source 12.5 MI/d by 2025;
 - Drought permit (only in severe droughts) 8.5 MI/d by 2025.

3.13. The Scheme is the most significant option to secure water, equating to over 35% of the water supply, and will help Portsmouth Water to free up existing supplies in the west of the catchment area to share with Southern Water's customers. This is fundamental in enabling Southern Water to meet future water supply needs following the restriction imposed on abstraction from the River Itchen and River Test.

3.14. The reservoir will be able to hold approximately 8,700 million litres of water when full and supply an average of 21 million litres of water each day, enough to supply approximately 160,000 people during an average year across the catchment areas of Portsmouth Water and Southern Water.

Southern Water

3.15. Southern Water, in planning to provide resilient supplies for customers, is facing a number of challenges and opportunities; the greatest challenge is the sustainability reductions to the abstraction licences on the Rivers Test and Itchen to protect and improve the environment.

3.16. Southern Water also need to plan for future climate change uncertainty and increasing levels of households and population within their area. Southern Water has set a robust plan to meet the challenges using complex models to help in planning for a series of potential futures, based on different assumptions about the future, in particular relating to abstraction licence changes, growth and climate change.

3.17. Southern Water's WRMP identifies a broad range of interventions including leakage reductions, significant demand management and new resource developments, and water trading across its eastern, central and western areas of supply.

3.18. In its western catchment area, Southern Water's preferred strategy to meet the water supply need over the next 25 years includes the following schemes:

- Work with customers to save more water and undertake extension of the universal metering programme;
- Continue catchment management schemes to protect against nitrates and pesticides at six water sources in Hampshire and the Isle of Wight;
- Build a desalination plant to clean seawater for drinking water;
- Receive an extra 21 million litres of water each day from Portsmouth Water through a new pipeline from 2029 (relying on the development of a new reservoir at Havant Thicket);
- Apply for drought permits and orders on the Rivers Test and Itchen and a Candover groundwater source to continue abstracting water in dry weather;
- Recycle water from wastewater treatment works at Sandown to increase flows in the Eastern Yar river, to then abstract and clean for drinking water;
- Reduce leakage by 50% by 2050; and
- Receive an extra 20 million litres of water each day from South West Water through a new pipeline by 2027.

3.19. Southern Water aims to work with Portsmouth Water to secure additional bulk supplies in a phased manner – 9 MI/d by 2024 and a further 21 MI/d by 2029 via an existing pipeline, through the development of Havant Thicket reservoir. The increased transfer of water facilitated by the reservoir, is a key component of the options Southern Water put forward in their WRMP to meet the demand for water in the future. Additional water made available by the Scheme will form at least 14% of the resources required to meet the forecast deficit.

4. Alternatives Considered

Alternatives options

- 4.1. In order to demonstrate that the Scheme is the optimal solution to the water supply challenges of the South East of England, the costs and benefits of the Scheme have been assessed as part of a mix of potential options identified within Portsmouth Water and Southern Water's Water Resource Management Plans, and the WRSE group strategy.
- 4.2. The Havant Thicket Reservoir Project was chosen as part of a preferred strategy for managing water supply in the south east when considering all factors - construction, operating costs, customer preferences, environmental and social impact and deliverability (as discussed above in Chapter 3 Need for the Reservoir in ES Volume 2).

Alternative sites

- 4.3. The Havant Thicket site has been identified as the preferred location for a new reservoir within the Portsmouth Water supply area following numerous studies undertaken over the past 50 years. Detailed investigations were commissioned by the Southern Water Authority in the 1960's and 1970's to identify potential reservoir sites. At the time, the criteria for identifying sites focused predominantly around engineering concerns such as suitable geological conditions including ground investigations at potentially feasible sites. It is considered that these conditions will not have materially changed over a timescale of around 50 years. In addition to this, the region was less developed and environmental concerns will have played a less prominent role and therefore the site identification process will have been broader than if such an investigation was commissioned in the present.
- 4.4. A comprehensive assessment of the alternative sites considered was undertaken by Portsmouth Water (Havant Thicket Reservoir, Site Alternatives Assessment, April 2020) to summarise the site selection work that had been undertaken and to summarise the development scenarios considered for the preferred Havant Thicket site (Appendix A4.1 in ES Volume 4).

Assessment methodology

- 4.5. The assessment methodology utilised a three-stage appraisal process in order to identify the optimal location and design of a reservoir within the Portsmouth Water area.
- Stage One identified all potential reservoir sites and assessed these sites against pass/fail criteria to identify which sites would be feasible locations for a reservoir.
 - Stage Two assessed these feasible sites against more detailed criteria in order to identify the preferred location for a reservoir.
 - Stage Three assessed potential alternative designs for a reservoir at the preferred location in order to identify the optimal design for the reservoir.

Stage One

- 4.6. The aim of Stage One was to reduce the number of potential sites by analysing each one against key constraints. If a site failed on any of these constraints then it was rejected, only sites that passed all criteria were taken forward to assessment in stage two. The aim was to screen out unfeasible options allowing more detailed analysis of potential sites to be undertaken.
- 4.7. The following key constraints were applied to the long list of reservoir options at Stage One:
1. Land development - sites that have been heavily developed with infrastructure such as airports, roads and towns would fail.
 2. Permeability of the ground surface - sites that were not underlain by an impermeable geology such as clays would fail.
 3. Feasibility of abstraction from water source - sites reliant on abstraction from sources that have little to no headroom for additional abstraction, such as the Rivers Test, Itchen, Meon, Hamble, Wallington and their tributaries, would be discounted. Impounding reservoirs were also rejected at this stage.

- 4.8. It is acknowledged that there are other potential pass/fail criteria that could have been applied to the Stage One process. However, for the purposes of Stage One screening, the criterion chosen were deemed to be appropriate as they were related to the fundamental considerations of availability of land upon which to locate a reservoir, suitable geology to ensure that it would be safe and practicable to construct and a water source with sufficient available volume to provide a reliable yield.
- 4.9. 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 due to the fact that the proposed source of abstraction was protected under an Abstraction Licensing Strategy (2013) under the Water Framework Directive (formerly the Catchment Abstraction Management Strategy (CAMS)) and/or Habitat Directive which did not allow for additional abstraction beyond that currently undertaken. Only sites that could be supplied by the Havant and Bedhampton Springs were considered to be feasible. In other cases, previously identified sites had been developed or designated as a protection area and therefore were not available.

Stage Two

- 4.10. Following from the Stage One assessment, five sites were taken forward to Stage Two namely:
- Site 57: Lumley Farm;
 - Site 58: Havant Thicket;
 - Site 59: Southleigh Forest;
 - Site 60: Southleigh Farm; and
 - Site 61: Loveders Farm.

- 4.11. These sites are illustrated in Figure 4-1 and

4.12.

4.13.

- 4.14. Figure 4-2 below.

Figure 4-1 - Five shortlisted sites

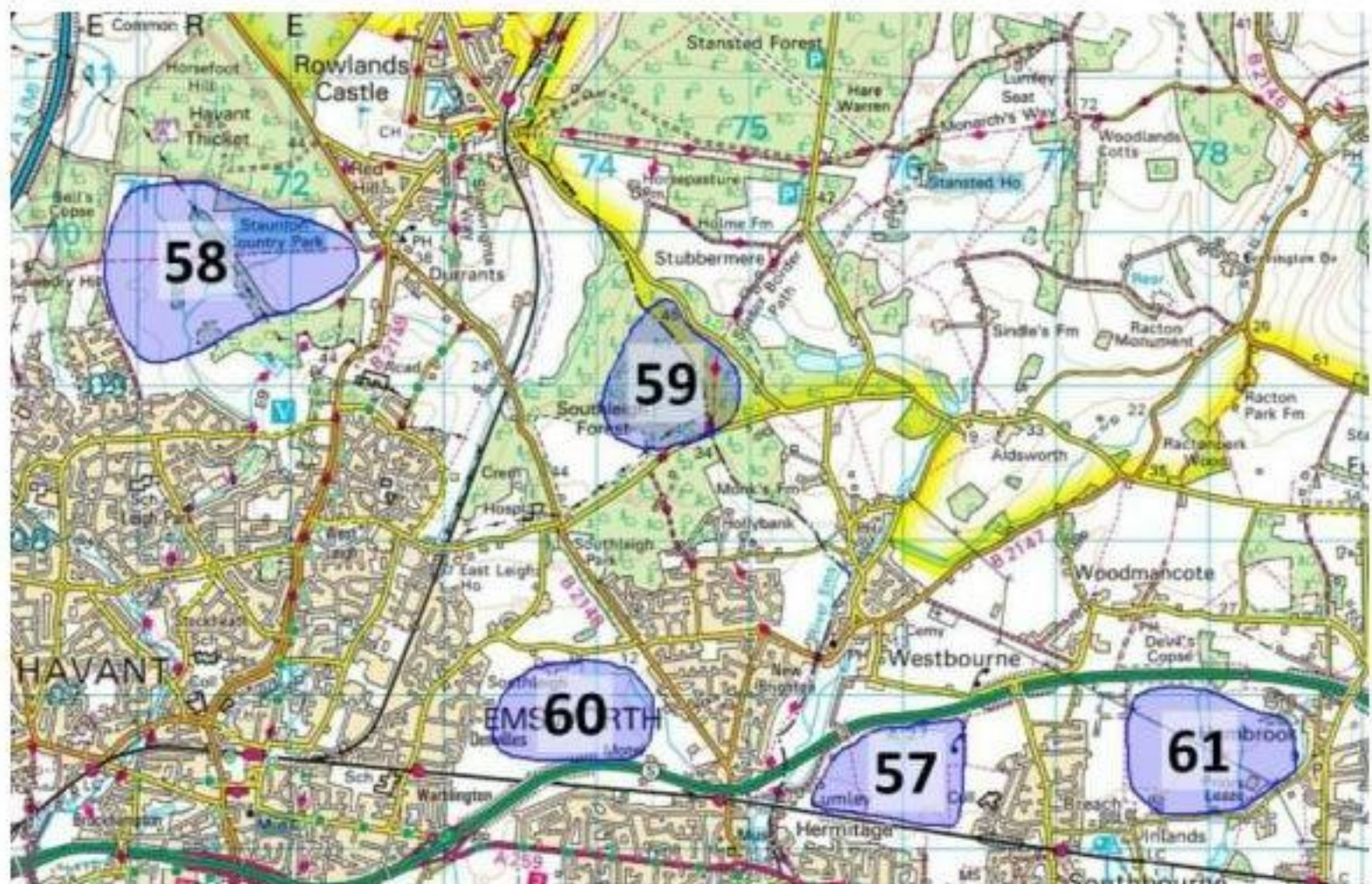


Figure 4-2 - Aerial view of five shortlisted sites



- 4.15. The sites were assessed against a variety of criteria including:
- Potential reservoir capacity for water;
 - Land use and site allocations;
 - Impact on environmental assets including biodiversity and ancient woodland;
 - Archaeological and historic environment;
 - Recreational impact and benefits; and,
 - Construction and operational criterion, including the potential impact of construction traffic, length required for the discharge pipeline and discharge measures.
- 4.16. There were no sites that had no significant environmental and social impacts and the process was therefore focused on selecting the site that had the least impact overall, whilst also providing the most potential positive benefits to stakeholders and the environment.
- 4.17. The impacts of developing the preferred site were also considered against the do-nothing scenario where if nothing was done, there would be a negative impact upon stakeholders and the environment in the wider region, as well as an inability to meet the water supply demand in the south east and objectives set out in the various WRMPs.
- 4.18. The Sites Alternatives Assessment (April 2020) in Appendix A4.1 in ES Volume 4, includes detailed assessment tables for each site using a Red, Amber, Green (RAG) assessment rating for comparison: Green = 1, Amber = 2 and Red = 3. The criteria used to undertake the Stage Two assessment and a summary of the key issues pertaining to each site are set out in Table 4.1.
- 4.19. As a result of the scoring system used, it was evident that Havant Thicket had the lowest score by far and consequently it provided the best option from the feasible reservoir sites with the largest capacity.

Table 4-1 - Summary of Stage Two assessment of the five sites

Criteria	Site 57 Lumley Farm	Site 58 Havant Thicket	Site 59 Southleigh Forest	Site 60 Southleigh Farm	Site 61 Loveders Farm
Land ownership and purchase cost	Privately owned arable land and adjacent farm buildings. Site construction would result in the loss of employment on the site.	Land owned by Portsmouth Water.	Land owned by Portsmouth Water.	Privately owned arable land and adjacent farm buildings and industrial units. Site construction would result in the loss of employment on the site.	Privately owned arable land and adjacent farm buildings. Site construction would result in the loss of employment on the site.
Site area	64 ha	160 ha	60 ha	60 ha	65 ha
Potential reservoir capacity	7,800 MI capacity. The volume of water available unlikely to be sufficient to support the need in the wider region.	8,700 MI capacity. The volume of water available is able to support the need in the wider region.	2,800 MI capacity. The volume of water available will not be sufficient to support the need in the wider region.	8,100 MI capacity. The volume of water available is able to support the need in the wider region.	7,500 MI capacity. The volume of water available unlikely to be sufficient to support the need in the wider region.
Land use, quality & planning policy	The majority of the site is greenfield land used for the growing of arable crops. Land provisionally characterised as Grade 1 or 2 under ALC. There is no proposal in the local plan for a change of use.	Land entirely greenfield site, low quality farmland used for grazing. Site allocated in the Local Plan for the construction of a reservoir (HBC Policy CS18, HBC emerging policy KP9, EHDC S31).	The site is mainly a greenfield site, however there are two landfill sites located in the southwest corner of the site. Assessment and planning to ensure the reservoir was protected from any leachate would be needed. The rest of the site is woodland and is not utilised for any agricultural purposes. There is no proposal in the Local Plan for a change in land use.	The majority of the site is greenfield land used for the growing of arable crops. Land provisionally characterised as Grade 1 or 2 under ALC. The site has been allocated for the development of 2100 dwellings as part of Havant Borough Council's 2036 Local Plan making difficult to acquire. <i>Note: The allocation for housing has been confirmed in the Local Plan. This would result in the site being screened out as no longer available.</i>	The majority of the site is greenfield land used for the growing of arable crops. Land provisionally characterised as Grade 1 or 2 under ALC. There is no proposal in the Local Plan for a change in land use.
Flood plain encroachment	The site is Flood Zone 1. No floodplain encroachment on site.	Limited Flood Zone 3 floodplain encroachment in south west corner where	The site is Flood Zone 1. No floodplain encroachment on site.	Significant areas (~25%) designated as Flood Zone 3 within site boundary.	The site is Flood Zone 1. No floodplain encroachment on site.

Criteria	Site 57 Lumley Farm	Site 58 Havant Thicket	Site 59 Southleigh Forest	Site 60 Southleigh Farm	Site 61 Loveders Farm
	There is a Flood Zone 3 area to the west of the site along River Ems channel.	stream is present (~2% of site).			
Landscape	Land designated as part of the Southbourne Coastal Plain (SC5).	The land is part of the South Hampshire Lowlands National Character Area (NCA). To the north and east of the site is the boundary of the SDNP.	The site is located within the South Hampshire Lowlands NCA. 30% of the site is within the SDNP.	Land designated as part of the South Coast Plain NCA.	Land designated as part of the Southbourne Coastal Plain (SC5).
Views	Site not visible from the A27 to the North, however the railway line and residential housing to the South, as well as Bourne Community College to the East have clear views of site. Due to the flat topography and size of the site which has been reduced by 27% due to the A27 construction (64 ha remaining), steep embankments would be required to achieve a comparative volume to other sites resulting in adverse visual impacts.	Residential housing adjacent to the site to the Southwest and East. Due to southward sloping nature of the land, the embankments that would be required to the South will be visible from the housing to the South. Due to the space to landscape, the view should remain as existing - a grassy slope. To the east and west existing treeline greatly restricts site visibility. Views from the South Downs National Park (SDNP) would be distant and unlikely to be significant.	Minimal residential or commercial property surrounding the site. Part of the site is within the SDNP and on the route of a National Trail.	High visibility from residential housing to the east and west of site. A27 and railway line form a boundary to the south of the site and is mostly shielded by a tree line. Limited protection from the site to block views and noise associated with construction.	High visibility from residential housing to the east and west of site. A27 and railway line form a boundary to the north and south of the site respectively and are mostly shielded by tree lines along the routes.
Nature conservation and biodiversity	Designated as a Secondary Support Area under the Brent Goose Strategy. No known European Protected Species (EPS) present, may be some bat use of the site.	The site has no national or international designations. The four small woodland areas are designated as a Site of Importance for Nature Conservation (SINC) and classified as ancient woodland.	EPS Bechstein's Bats are known to be present within the woodland. There is potential for dormice and badgers which are also protected species. Around 65% of the proposed site is designated as a SINC.	No local or national environmental designations on site. Tree Preservation Orders (TPOs) are in place surrounding site. A small area of land to the West of the Emsworth recreation ground adjacent to	No local or national environmental designations on the site. No known European Protected Species (EPS) present, may be some bat use of the site.

Criteria	Site 57 Lumley Farm	Site 58 Havant Thicket	Site 59 Southleigh Forest	Site 60 Southleigh Farm	Site 61 Loveders Farm
		EPS are known to be present (Bechstein's Bats, Dormice). Great Crested Newts have been recorded on the FE land within 500m of the site.		the site is designated as a SINC. There are no known EPS at the site, there may be some bat activity.	
Ancient woodland	No areas of Ancient Woodland located on the site.	Four small blocks of Ancient Woodland (irreplaceable habitat) at the site will be lost totalling 13.22 ha (8.3% of the total site) including: The Avenue Ancient Semi-Natural Woodland (ASNW) (6.87 ha), the oak plantations know as Middle Clearing (ASNW) (2.17 ha), Round Wood (ASNW) (1.99 ha) and Corsican Pine Planted Ancient Woodland site (PAWS) (2.19 ha).	All of the site is woodland. The majority of the site (87%, 52 ha) is Ancient Woodland (an irreplaceable habitat) and is designated as ASNW or PAWS.	No areas designated as Ancient Woodland on site.	Small copse of Ancient Woodland (~2 ha) is located to the north of the site.
Archaeology and historic development	Lumley Mill is a Grade II* listed building and the surrounding cottages are Grade II listed and would be in close proximity.	Part of the site (7 ha, 4.4%) is included in the boundary of Leigh Park (Staunton Country Park), which is Grade II* listed in the Register of Parks and Gardens of Special Historic Interest in England by English Heritage. An area of grassland to the south west of The Avenue is designated as a historic Conservation Area.	No heritage sites on the site.	No heritage sites on the site.	Loveders Farmhouse and Newell House are Grade II listed buildings located on the edges of site.
Impact on recreation	Multiple public rights of way footpaths pass through the site.	A public bridleway crosses the site. Staunton Way and E9 European Long Distance footpaths pass around the south east and east of the site.	The Sussex Border Path National Trail and a public bridleway pass through the site.	No public rights of way footpaths pass through the site.	Two public rights of way footpaths pass through the site.

Criteria	Site 57 Lumley Farm	Site 58 Havant Thicket	Site 59 Southleigh Forest	Site 60 Southleigh Farm	Site 61 Loveders Farm
Recreational benefits	Estimated more than 14,500 people live within 1.5 km, 45,000 people within 4.5 km. This is the third lowest within 1.5 km of the five sites and may limit its recreational and educational use, opportunities will be limited by constrained site (bounded by A27 road and railway line) and need for steep embankments on all sides.	Estimated 29,500 people live within 1.5 km and 119,000 people within 4.5 km. This is the largest population within both 1.5 and 4.5 km of the five sites maximising the potential recreational and educational use.	Site size will impede creation of areas for recreational activities as well as limit biodiversity opportunities, as steep embankments are needed on all sides and the site is enclosed by roads to the south and east, as well as the landfill site in the southwest. Only an estimated 7,300 people within 1.5 km and more than 64,000 people within 4.5 km. This is the second smallest population within 1.5 km of the five sites which may limit its recreational and educational use.	Estimated 20,700 people live within 1.5 km and 68,600 people within 4.5 km. This is the second largest population within 1.5 km and 4.5 km of the five sites which could have maximised its potential recreational and educational use. However, the constrained size of the site, restricted by roads and a railway line, along with the need for steep embankments will significantly reduce the opportunity to provide recreational activities or biodiversity enhancements as the slopes would have to be armoured. There are no opportunities for direct links to long distance footpaths.	Estimated 5,500 people within 1.5 km and 24,800 people within 4.5 km. This is the smallest population within both 1.5 and 4.5 km of the five sites which will limit its recreational and educational use. The constrained size of the site, constricted by roads, along with the need for steep embankments will significantly reduce the opportunity to provide recreational activities or biodiversity enhancements as the slopes would have to be armoured.
Construction impact (excl. traffic)	Housing to south and east within 350 m of the site boundary. Bourne college in close proximity to the east of the site. Housing and college overlook the site.	Onsite construction may impact housing to southwest and east which are within 350 m of the site boundary. Housing to the south also directly overlooks site. The majority of housing to the east is protected by a relatively dense treeline or new tree planting scheme. Housing to the west protected by a belt of woodland.	Major housing estate located to the south (~1 km), separated by a dense area of woodland. Two cottages are located adjacent to the southeast site boundary.	Significant number of houses to the east and west of the site with very little protection from the site to block views and noise associated with construction.	Significant number of houses to the east and west of the site with very little protection from the site to block views and noise associated with construction. Loveders Nursery is located at the southwest corner of the site.
Impact of construction traffic	Currently no access to the site directly from the A27. Currently most viable access from the A27 would be via	The proposed access route is from the B2149 to the north of the site, skirting around the western edge of Havant	Excavated material may need to be removed from site (see topography below).	Motel and petrol station on westbound side of A27, where the slip road could be converted for access.	Existing access for the A27 at the northeast of the site via Priors Leaze Lane would allow one-way enter and exit

Criteria	Site 57 Lumley Farm	Site 58 Havant Thicket	Site 59 Southleigh Forest	Site 60 Southleigh Farm	Site 61 Loveders Farm
	A259 then Stein Road. Whilst this avoids small country and residential lanes, it still involves passing through residential areas.	Thicket utilising an existing track. The B2149 can already be accessed from the A3(M) at Junction 2 from both directions. This route avoids passing through residential areas with a minimal impact on local traffic flows.	The site is located 3 km from the Havant to Horndean main road and to gain access to this route construction traffic would have to pass through built up residential areas.	However, this would currently only allow one-way access and construction of two-way access could be costly. This route is also adjacent to the SINC on site. Other routes would have to pass through heavily built up areas.	from Chichester and to Havant respectively and minimises disruption in residential areas.
Impact on residential dwellings	Site construction would most likely see the removal of a handful of residential dwellings and farm buildings to the west of the site.	No residential dwellings located on proposed site.	No residential dwellings located on proposed site.	Site construction would see the removal of the farmhouse and a handful of industrial units to the north of the site.	Site construction would most likely see the removal of a handful of farm buildings to the southeast of the site. Transmission lines run across the site and would need to be rerouted.
Length of pipeline	The site is located ~5 km from Bedhampton pumping station (3 m height difference). Water would need to be pumped to and from the reservoir. Proposed pipeline route would be ~7 km pipe route which would pass in close proximity to Warblington Conservation Area (Warblington Cemetery, Castle (Grade II* listed building and historical monument) and St Thomas a Becket's Church (likely archaeological site)). This option requires the second longest pipeline of the five sites assessed.	The site is located ~3 km from Bedhampton pumping station (16 m incline). Water would be pumped to the site and gravity fed on return for public water supply. Proposed pipeline route would be ~5 km in length. This is the shortest distance of all options assessed. The route will follow the course of the Hermitage Stream where possible to minimise disruption to residents.	The site is located 4 km from the pumping station at Bedhampton (16 m height difference). Proposed pipeline route would be ~5 km crossing two streams and the railway line twice. Water would need to be pumped to the site and gravity fed back down when required.	Site is located 3 km from pumping station at Bedhampton (6 m height difference). Water would be pumped to the site and gravity fed on return for public water supply. Proposed pipeline route would be longer to provide an emergency discharge to the harbour and to minimise disruption (~5 km), passing through 5 streams and once across the railway line. Route would be in relatively close proximity to Warblington Conservation Area (Warblington Cemetery, Castle (Grade II* listed building and historical monument) and St Thomas a Becket's Church (likely archaeological site)).	Site is located ~7 km from pumping station at Bedhampton (3 m height difference). Water would need to be pumped to and from the reservoir. Proposed pipeline route would be longer to provide an emergency discharge and minimise disruption (~10 km), passing through 6 streams and once across the railway line. Route would be in relatively close proximity to Warblington Conservation Area (Warblington Cemetery, Castle (Grade II* listed building and historical monument) and St Thomas a Becket's Church (likely archaeological site)) as well as Chichester Harbour which

Criteria	Site 57 Lumley Farm	Site 58 Havant Thicket	Site 59 Southleigh Forest	Site 60 Southleigh Farm	Site 61 Loveders Farm
				archaeological site)) as well as Chichester Harbour which is an EU protected SAC, SPA and Ramsar site as well as a SSSI.	is an EU protected SSSI, SAC, SPA, Ramsar and SSSI site. This is the longest pipeline of all options assessed.
Discharge measures	Surrounding streams would be unable to cope with emergency discharge. As such, this would require the construction of an emergency drawdown pipe which would discharge into Chichester and Langstone Harbour which is an EU protected SPA, SAC and Ramsar site. There would be a high risk of flooding and damage to property / infrastructure in the event of embankment failure.	Emergency discharge water can be directed into the Riders Lane and Hermitage stream, which then flows naturally into Langstone Harbour area, replicating a storm event without the risk of flooding dwellings. The harbour is designated a SAC, SPA, Ramsar and SSSI. In the event of an embankment breach the natural drainage would be towards the existing streams reducing the risk. <i>Note: Water quality modelling has indicated that there will be some benefit in reducing nitrate concentrations entering Chichester and Langstone Harbour (SAC, SPA, Ramsar). Overall there will be a benefit to stream water quality, including moderating peaks in iron and manganese that are currently experienced.</i> <i>Downstream of the reservoir the Riders Lane Stream is ephemeral. There is the opportunity to provide a regular compensation discharge from the reservoir</i>	Surrounding streams would be unable to cope with emergency discharge. This would require construction of an emergency drawdown pipe which would discharge into Chichester Harbour which is an EU protected SSSI, SPA, SAC and Ramsar site as well as a SSSI. In the event of embankment failure properties downhill to the south are likely to be at risk from flooding.	Mill Pond which surrounding streams run into would be unable to cope with emergency discharge. This would require construction of an emergency drawdown pipe which would discharge into Chichester Harbour which is an EU protected SSSI, SAC, SPA and Ramsar site and SSSI. There is a significant flood risk to housing and infrastructure from embankment failure.	Surrounding streams would be unable to cope with emergency discharge. This would require construction of an emergency drawdown pipe which would discharge into Chichester Harbour which is an EU protected SAC, SPA, Ramsar and SSSI site. There is a significant flood risk to surrounding property and infrastructure in the event of embankment failure.

Criteria	Site 57 Lumley Farm	Site 58 Havant Thicket	Site 59 Southleigh Forest	Site 60 Southleigh Farm	Site 61 Loveders Farm
		<i>(if supported by the EA) which could improve flows and water quality in the Riders Lane Stream and the Hermitage Stream.</i>			
Topography & re-use of excavated material	The site almost completely flat, embankments required on all sides, all material excavated on site should be usable.	An existing bowl-shaped topography removes the need for embankments on all sides, all excavated material should be usable on site. The lack of an embankment in the north provides opportunities for recreational activities and the creation of wetland habitats.	Large variation in topographical levels with part of the site residing on a hill. May require the removal of excess material as well as Plateau Gravel from the site making this as comparatively expensive option. Careful engineering will be required to protect the reservoir from landfill leachate / gas migration. Extensive use of grouting or impermeable fill blankets would be required due to the geology.	Site almost completely flat, steep embankments required on all sides, all material on site should be usable.	Site almost completely flat, steep embankments required on all sides, all excavated material on site should be usable.
Visitor access	Located close (~0.8 km) to Emsworth and Southbourne rail stations. Regular local bus route to the west of the site, however stops are on the wrong side of either the A27 or railway line making access to the site difficult by public transport most likely at a distance greater than 1 km.	Located close to Rowlands Castle railway station (~1.2 km) with regular local bus routes on the roads bordering the site to the east, south and west.	There are poor public transport links to the site. Located ~2 km from Rowlands Castle railway station with no regular local bus services in close proximity to the site.	Good public transport links. Site is located close to Emsworth (~1.4 km) and Warblington (~1.2 km) railway stations with a local bus route passing along roads to the west and north of the site.	Good public transport links. Located close (~750 m) to Southbourne and Nutbourne rail stations. Local bus service to the south would be within 1 km if site can be accessed from the south. However, as proposed access is from the northeast this would result in a distance greater than 1 km to the nearest bus stop to the likely position of any facilities.

Summary of the key issues

- 4.20. The minimum required storage capacity for a reservoir is 8,700MI, to support the planned bulk supply transfer of up to 21 MI/d in extreme 1:200 year drought conditions to Southern Water in 2029.
- 4.21. Out of the five sites assessed, Havant Thicket is the largest site (160 ha) with the largest potential reservoir capacity of c9,000 MI. Due to the size and topography (bowl shape) of the site, it is possible to construct the reservoir without the need for steep embankments on all sides. Only one large embankment is needed to contain the required volume resulting in limited visual impact on the surrounding area. The scheme would result in the loss of 4 blocks of ancient woodland (approximately 12 ha), also designated as Sites of Nature Conservation Importance (SINC), one of which is within the boundary of Leigh Park (Staunton Country Park), Grade II* listed in the Register of Parks and Gardens. A small area of the scheme would also be within a conservation area.
- 4.22. Due to the flat topography to create a reservoir (7,800 MI capacity) on the 64 ha of land at Lumley Farm (Site 57), a fully bunded reservoir with steep embankments would be required. This would result in significant visual impact on the surrounding areas. Whilst the site is not visible from the A27 to the north, the railway line and residential housing to the south, as well as Bourne Community College to the East, would have clear view of the site.
- 4.23. Southleigh Forest (Site 59) is a 60 ha site which is predominantly covered in woodland, with 87% (52 ha) classified as ancient woodland. It is also partly (a third) within South Downs National Park and around two thirds of the site is designated as a SINC. The smaller available area at this site means a fully bunded reservoir with steep embankments would be required resulting in undesirable views from the South Downs National Park and a national trail, which would have to be re-routed. The location and need for bunding also limits access and opportunities for recreation and biodiversity enhancement. Even with steep embankments the maximum potential capacity would only be 2,800 MI. In addition, Site 59 has a large variation in topographical levels with part of the site residing on a hill which is likely to require the removal of significant excess material which would increase construction traffic.
- 4.24. Site 60, Southleigh Farm (60 ha area and 8,100 MI capacity) would not have the space for the minimum required volume of water available to support the need in the wider region. To create a reservoir to support 8,100 MI capacity would require steep and armoured embankments which would have significant visual impact on residential housing to the east and west of site. The constrained size of the site, restricted by the A27 and a railway line to the south, along with the need for steep embankments would also significantly reduce the opportunity to provide recreational activities or biodiversity enhancements as the slopes would have to be armoured.
- 4.25. The volume of water available at Site 61, Loveders Farm (65 ha and 7,500 MI capacity), is unlikely to be sufficient to support the need in the wider region. The smaller area available and flat topography means the steep embankments required would result in undesirable views from surrounding areas. This is a working farm with Grade II listed buildings which would be impacted visually or may need to be demolished. There are no other designations although a small area of ancient woodland to the north is likely to be affected by any development.
- 4.26. All sites, apart from Havant Thicket, would fail to meet the minimum volume required to support the planned 21 MI/d drought yield in 1:200 bulk supply transfer to Southern Water from 2029.
- 4.27. In addition, Southleigh Farm has been allocated for the development of 2,100 dwellings as part of HBC's 2036 Local Plan (Policy KP5) which would make it difficult to acquire and also would result in a shortfall of housing planned for the future. The emerging local plan paragraph 3.100 identifies Southleigh Farm as the most significant site allocated in the Local Plan 2036. It states that in terms of delivery, HBC *'is committed to the delivery of a comprehensive sustainable development on this key site.....The Council will use all powers available to achieve a comprehensive development of this strategic site, including Compulsory Purchase if necessary'*.
- 4.28. Havant Thicket (Site 58) has been allocated in the adopted and emerging local plans for both HBC and EHDC and therefore the principle of a reservoir on this site to meet the water infrastructure demands for the wider region has been established.
- 4.29. Another development requirement considered within the assessment was emergency discharge. At Havant Thicket (Site 58), emergency discharge water can be directed into the Riders Lane Stream

and Hermitage Stream, which then flows naturally into Langstone Harbour area, replicating a storm event without the risk of flooding dwellings. Water quality monitoring has indicated that there will be substantial reductions in nutrients loads entering Chichester and Langstone Harbour (SAC, SPA, Ramsar) and overall there will be a benefit to stream water quality, including moderating peaks in iron and manganese that are currently experienced. There is also the opportunity to provide a regular compensation discharge from the reservoir (if supported by the EA) which could improve flows and water quality in the Riders Lane Stream and the Hermitage Stream. In the event of an embankment breach, the natural drainage would be towards the existing streams reducing the risk.

- 4.30. For all four other sites (57, 59, 60 and 61), the surrounding streams would be unable to cope with emergency discharge and would require the construction of an emergency drawdown pipe which would discharge into Chichester and Langstone Harbour which is an EU protected SPA, SAC, Ramsar site.
- 4.31. Havant Thicket (Site 58) was identified as the preferred site for a new reservoir as it would meet the required minimum volume of water to meet the needs of the wider south east region and would not require an emergency drawdown pipe into the internationally designated Chichester and Langstone Harbour. Areas of ancient woodland would need to be removed, however, the natural topography of land will allow for a reservoir which will sit within the landscape with limited visual impact and allow for the development of areas for recreational activities and a wetland habitat that will benefit the wider local community and wildlife. Water quality monitoring at this site has also indicated that there will be some benefit in reducing nitrate concentrations entering Chichester and Langstone Harbour.
- 4.32. The Site Alternatives Assessment (April 2020) in Appendix A4.1 in ES Volume 4, also identified that the Havant Thicket site would need the shortest pipeline route to Bedhampton pumping station., minimising impact on residential amenity from construction. In addition, this site has the largest population within both 1.5 and 4.5 km of the five sites maximising the potential recreational and educational use. It also has good transport links and there are opportunities to enhance bridleway and footpath links in the area.
- 4.33. It is considered there has been a comprehensive assessment of alternative sites undertaken by Portsmouth Water to identify a site for the new reservoir.

Stage Three

- 4.34. Stage Three assessed eight potential conceptual design options for a reservoir at the reservoir site, the preferred option from Stage Two. A shortlist of conceptual design options were considered to inform the final design of the reservoir.
- 4.35. These options varied in size and scope from large designs maximising yield, wetland creation and recreational opportunities to smaller separated reservoirs that attempted to preserve areas of ancient woodland, in particular, the Avenue.
- 4.36. The detailed appraisal of these eight design options is provided in the Site Alternatives Assessment (April 2020) in Appendix A4.1 in ES Volume 4. All the Options 1 to 8 were assumed to have the same support facilities such as car parking, access routes and recreational facilities, including a visitor centre.
- 4.37. Retention of The Avenue was a key consideration in the process as it is a feature of the Grade II* Leigh Park (Staunton Country Park) RPG and Sir George Staunton Conservation Area; it is also classified as ancient woodland. The Avenue is mature woodland of higher ecological value than the other three plantation woodland blocks present on the Site.
- 4.38. One of the reasons why the Havant Thicket site was originally identified as a potential reservoir site in 1960's was because it formed a natural bowl underlain by clay which could be used to construct the embankments reducing the costs and environmental impact of construction as material could be sourced and retained on site. In 2006/07, Entec completed an assessment of material availability, based on a review of the site investigation data available and engineering requirements of the options. This concluded that there was insufficient material available on site for a number of the options.
- 4.39. Key operational considerations included the potential capacity of the reservoir and availability of suitable material to construct the embankment. Selecting smaller reservoir options would adversely affect the options that Southern Water have to reduce abstraction from the internationally designated River Itchen and nationally designated River Test. Investigations identified an area of

suitable clay which extends below The Avenue woodland. If The Avenue was retained, this would sterilise significant quantities of the clay needed for the construction of the embankments.

- 4.40. Following an appraisal against environmental and operational criteria, two options were set out in a report sent to stakeholders in June 2006 for discussion at a stakeholder workshop on 30 June 2006. The meeting was attended by councillors and officers from EHDC, HBC, Hampshire County Council (including the manager of Staunton Country Park), Forestry England, Environment Agency, Hampshire and Isle of Wight Wildlife Trust and Consumer Council for Water.
- 4.41. Following feedback from stakeholders, a refinement of the options was undertaken to maximise the storage volume of the reservoir, while minimising the environmental impact, including the visual impact on the historic landscape, as well as impacts on residential amenity and overall costs. Refined Options A and B were developed comprising a combination of the preferred features of the appraised options.
- 4.42. Options A and B both have embankment slopes of 1:7, thus ensuring both engineering stability and to reflect the existing natural slopes of the site and would help the reservoir blend into the historic landscape. Both options have comparable construction costs.
- 4.43. In 2008 Portsmouth Water undertook a comprehensive public consultation exercise, which asked for feedback on a number of aspects of the reservoir design, including whether the public preferred Option A or B, and sought feedback on various access and pipeline routes.
- 4.44. Results of the public consultation showed that people were marginally in favour of Option B (58%), which lessens the impact on wildlife in the neighbouring woodland but has a reduced volume. As there wasn't a clear preference from the public consultation on the distance of the embankment toe from the existing woodland to the south, Portsmouth Water commissioned consultants to review the potential ecological benefits of a larger distance. Their assessment indicated that a 15 m 'buffer zone' was adequate to protect the woodland and associated tree roots from construction, and that a 25 m buffer would ensure that the southern embankment was not in the shadow zone of the existing woodland. This would maximise the potential wildlife value of the slope by creating a sunny, well drained environment which gave the best opportunity to create a wildflower meadow and maximise the habitat for use by reptiles.
- 4.45. On the basis of this evaluation it was agreed that the toe of the southern embankment would be located 25 m north of the existing woodland to optimise the biodiversity opportunities for creation of good quality grassland, reptile and invertebrate habitat.
- 4.46. The design has since been refined, further reducing impacts on ancient woodland and the RPG, increasing the area of retained wetland, enhancing landscaping and optimising opportunities for recreation and biodiversity to produce the Scheme, which is the subject of the current outline planning applications.

Conclusion

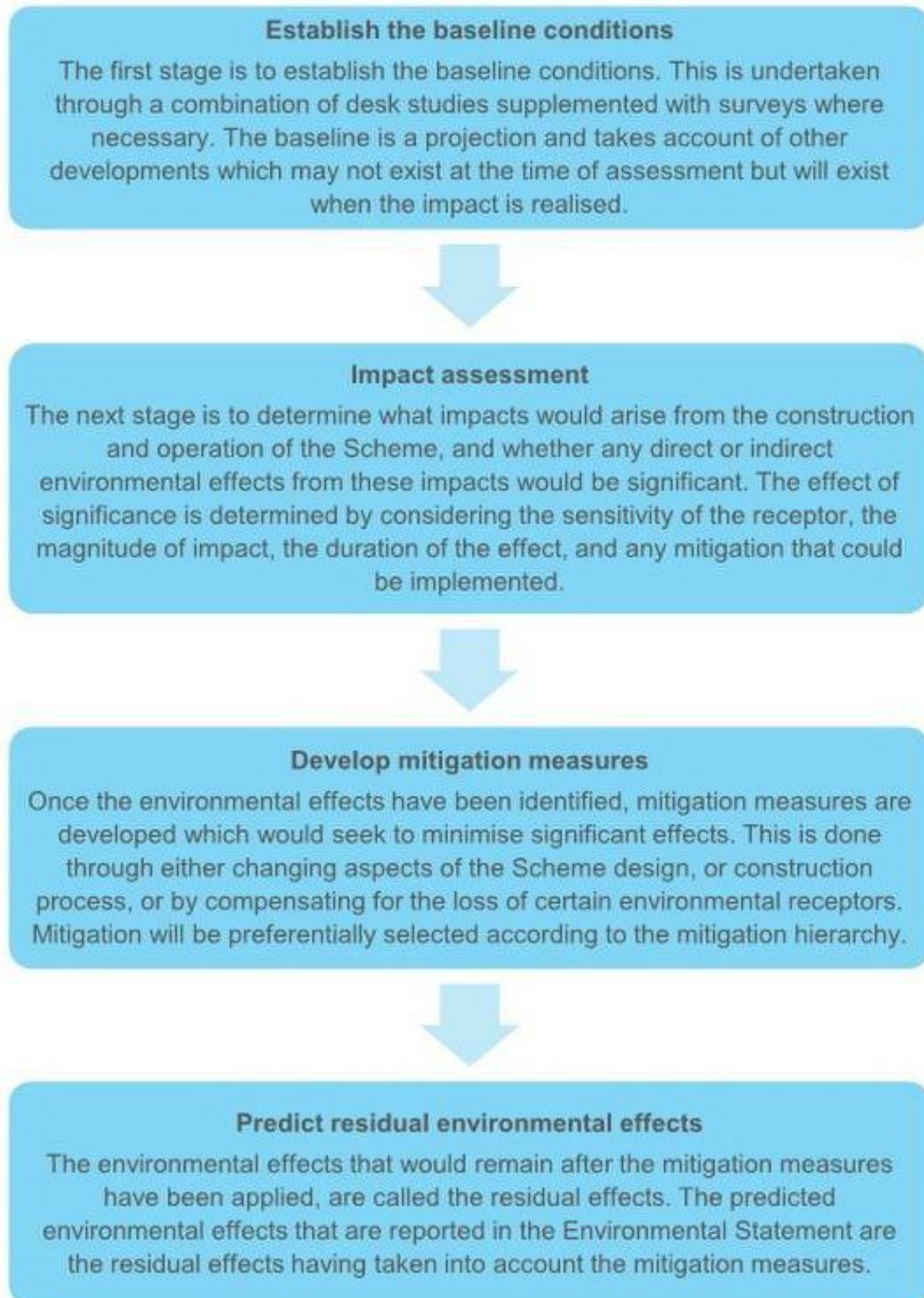
- 4.47. The Havant Thicket site has been identified as the preferred location for a reservoir following numerous studies undertaken over the past 53 years. Detailed ground investigations were commissioned by the Southern Water Authority in the 1960's and 1970's to identify potential reservoir sites with suitable geological conditions. The Havant Thicket Site Alternatives Assessment (April 2020), summarises 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 and/or the 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, requires the shortest pipeline and would result in the least impact on the protected Langstone and Chichester Harbour.
- 4.48. At Stage Three, eight conceptual reservoir designs on the Havant Thicket site were developed, assessed and discussed with stakeholders. This led to the development of two further refined options which contained a combination of the best features of the favoured appraised options. These were 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 and the RPG, increasing the area of retained wetland, minimising potential traffic impacts, enhancing landscaping and optimising opportunities for recreation and biodiversity.

5. EIA Process, Approach and Methodology

Environmental Impact Assessment Process

- 5.1. The Environmental Impact Assessment (EIA) has been undertaken by competent experts in line with best practice and the Institute of Environmental Management and Assessment (IEMA) guidelines¹. EIA activities are summarised below:



¹ Environmental Impact Assessment Guide to Delivering Quality Development - <https://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf>, accessed July 2020

- 5.2. The EIA 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.

- 5.3. The EIA informs the design development of the Scheme ensuring that mitigation measures minimise potential significant effects as part of an iterative process to develop the optimum design solution.

Environmental Statement Structure

- 5.4. The structure of the Environmental Statement (ES) is provided below:

Volume 1: Non-Technical Summary

Volume 2: Main Report

- Chapter 1 - Introduction
- Chapter 2 - Description of the development
- Chapter 3 - Need for the reservoir
- Chapter 4 - Alternatives considered
- Chapter 5 - EIA Process, approach and methodology
- Chapter 6 - Consultation
- 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 - 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
- Chapter 21 - Conclusion
- Chapter 22 - Glossary

Volume 3: Figures

Volume 4: Appendices.

- 5.5. Chapters 7-18 of the main report in ES Volume 2 are structured as follows:
- Competent expert evidence
 - Legislative and policy framework
 - Study area
 - Assessment methodology
 - Assessment assumptions and limitations
 - Baseline conditions including value/sensitivity of resources and receptors
 - Potential impacts

- Design, mitigation and enhancement measures
- Assessment of effects
- Monitoring
- Summary.

5.6. A list of figures and appendices included in ES Volume 3 and Volume 4 respectively are listed in ES Volume 2 at the front of this document, as part of the entire contents of the Environmental Statement. It is noted that where possible different appendices for an environmental topic have been combined as one document as part of ES Volume 4 but some appendices have been kept separate due to the size and topic considered in the documents.

Approach to Environmental Statement chapters

5.7. The following sections provide some high-level explanation as to what information will be detailed in each of the chapter headings as listed above in paragraph 5.5.

Competent expert evidence

5.8. To meet the requirements of the EIA Regulations (as described in paragraph 1.33, Chapter 1 Introduction of the ES Volume 2), this section of each chapter provides evidence on the competence of the individuals responsible for undertaking the assessment, including their experience in their field, qualifications and membership of professional institutes.

Legislative and policy framework

5.9. This section sets out the key legislation and policy that are relevant to the topic and which the Scheme may be subject to or the assessment guided by.

Study area

5.10. Study areas are defined individually for each environmental topic, according to the geographic scope of the potential impacts relevant to that topic or of the information required to assess those impacts.

Assessment methodology

5.11. The assessment methodology describes the guidance followed and approach taken for the assessment of each environmental topic, together with the criteria to determine the magnitude of effects and the sensitivity of receptors.

Assessment assumptions and limitations

5.12. Assumptions and limitations that have been identified in undertaking the EIA are listed. These can include limits on available design information at the time of writing the ES and assumptions on the type and methods of construction.

Defining baseline conditions

5.13. The existing baseline environmental conditions are defined to enable the assessment of changes or impacts that would be caused by the Scheme on the existing scenario. The identification of the baseline requires the description of the existing situation and then a prediction of how it is likely to evolve in the absence of the Scheme, i.e. 'future baseline scenario' based on available environmental information and scientific knowledge.

5.14. The description of the baseline conditions clearly identifies receptors that may be affected by the Scheme and their 'value' or 'sensitivity' to potential changes.

Identification of potential impacts

5.15. A range of environmental topics may be affected by the Scheme. Impacts may be negative or positive, temporary or permanent. They may also be described as:

- Direct or Primary: caused by activities which are an integral part of the proposals resulting in a change in environmental conditions, such as construction works causing an increase in dust concentrations in the air;
- Indirect or Secondary: due to activities that affect environmental conditions or the receptors, which in turn affects other aspects of the environment or receptors;
- Cumulative: comprising multiple effects from different sources within the proposals (synergistic or interrelationships), or cumulatively with other developments (additive), on the same receptors; and
- Residual: effects that remain after the positive influence of mitigation measures are taken into account.

5.16. Each of these impacts can persist over a period of time and can be considered as:

- Temporary (e.g. demolition and construction phase);
- Short term (< 5 years);
- Medium term (5-10 years); or
- Long term (> 10 years); and
- Permanent (e.g. once the proposed works are completed and operational).

Design, mitigation and enhancement measures

5.17. The EIA Regulations 'require a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements. That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases'.

5.18. Proposals for mitigation follow the mitigation hierarchy of avoid, reduce, remedy and compensate. Where possible, mitigation and compensation measures have been identified to avoid or reduce adverse environmental impacts.

5.19. The mitigation measures have been informed by baseline data (including survey data where relevant) and have been developed in consultation with statutory bodies. These measures will be developed further during the detail design development.

5.20. The EIA considers the embedded mitigation included in the Scheme as part of the design development, and additional mitigation and compensation, that include the best practicable measures, and construction environmental management procedures. These are described in the ES topic chapters and the Outline Environmental Management Plan (OEMP). A record of Environmental Actions and Commitments (REAC) identifying the environmental commitments to address potential environmental effects of the Scheme is included in the OEMP in Appendix A2.1 in ES.

5.21. During construction, the responsibility for environmental mitigation and the adherence to environmentally responsible working practices will fall to the appointed contractor. The OEMP prepared by the designer during the outline design stage will be refined as the Scheme progresses through detail design, to construction and handover. The OEMP details practices that the Principal Contractor is to apply onsite that will demonstrate commitments to environmental management. It details both generic and specifically targeted practices to enable construction to be undertaken with minimal impact on the environment and will also enable monitoring requirements to be implemented.

Residual effects

5.22. Residual effects refer to those environmental effects predicted to remain after the application of mitigation and enhancement measures outlined in each environmental topic chapter. The predicted residual effects of the Scheme are assessed and the level of significance determined for each residual adverse effect, with no significance rating established for positive residual effects.

Assessment of effects

5.23. The significance of an environmental effect is typically a function of the 'value' or 'sensitivity' of the receptor and the 'magnitude' or 'scale' of the impact. Combining the environmental value of the

resource or receptor with the magnitude of change produces a significance of effect category. In arriving at the significance of effect, the assessor also considers whether the effect is direct, indirect, secondary, cumulative, short, medium or long-term, permanent or temporary, positive or negative.

- 5.24. Assessment methodologies, requirements and criteria (where relevant) specific to each assessment topic are set out in the relevant topic chapters (Chapters 7 to 19 of ES Volume 2), however, the general approach adopted is in accordance with relevant guidance and best practice as set out below.

Sensitivity

- 5.25. The sensitivity of the environmental receptor is defined by considering the receptor's importance and sensitivity to change arising from the construction or operation of the Scheme. Typical criteria descriptions for sensitive of receptors are provided in Table 5-1.

Table 5-1 - Typical criteria descriptions for sensitive receptors

Value (sensitivity) of receptor / resource	Typical criteria description
Very High	Very high importance and rarity, international scale and very limited potential for substitution
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

Magnitude

- 5.26. With the receptors identified and their sensitivity classified, the potential impacts of the Scheme during construction and operation (where appropriate), will be identified and the magnitude of the impact determined. Typical criteria descriptions for assessing the magnitude of impact are provided in Table 5-2.

Table 5-2 - Magnitude of impact and typical descriptions

Magnitude of Impact	Typical criteria description
Major	Adverse Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements
	Beneficial Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.

Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Overall Significance of effects

5.27. Once the sensitivity of receptors and magnitude of impacts have been established, the overall significance of effects is determined using the matrix shown in Table 5-3.

5.28. The assessment of significance assesses the magnitude of the impacts and the sensitivity of the resources/receptors that could be affected in order to classify the effect to establish their significance (from very large to neutral). General descriptors for the significance of effect are provided in Table 5-3.

Whilst the criteria derived vary between disciplines (from a very formal set of criteria based on nationally recognised standards for air quality, to more qualitative criteria derived to assess landscape impact or heritage) each specialist will have used the common terminology set out above alongside their topic-specific guidance and their professional judgement to assess the significance of effects. Effects that are moderate, large or very large are generally deemed to be significant; slight or neutral effects are not significant. However, where this deviates, and an alternative basis of assessment applies, this is explained in the appropriate chapter.

Table 5-3 – Significance of effects matrix

		Magnitude of impact (degree of change)				
		No change	Negligible	Minor	Moderate	Major
Environmental value (sensitivity)	Very high	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

Monitoring

5.29. In accordance with the EIA Regulations, monitoring requirements and procedures for the construction and operation of the Scheme are recommended, based on the requirement to maintain the current standard of the surrounding environment and to ensure the Scheme does not contribute to the degradation of the surrounding environment. The objectives of carrying out monitoring include:

- Providing a database against which any short or long term environmental impacts of the Scheme can be determined;
- Providing an early indication should any of the environmental control measures or practices fail to achieve acceptable standards;

Summary

- 5.30. A summary is included at the end of each topic chapter which provides an overview of the likely significant construction and operation effects for both the reservoir site and the pipeline corridor.

Cumulative and in-combination effects

- 5.31. EIA Regulations require an ES to identify and assess the likely significant cumulative effects of a development, either cumulatively with other developments or the in-combination environmental effects on receptors. The regulations state that the EIA must identify, describe and assess in an appropriate manner, the direct and indirect significant effects of the proposed development arising from the interaction between the following factors: population and human health; biodiversity; land, soil, water, air and climate; material assets, cultural heritage and the landscape.
- 5.32. The assessment methodology for in-combination effects requires the identification of impact interactions associated with the Scheme on key environmental receptors. This ensures that the ES is not a series of separate assessments collated into one document, but rather a comprehensive assessment drawing together all the environmental effects of the proposals.
- 5.33. The effects identified within the technical topic chapters of the ES are assessed to identify potential in-combination effects using professional judgement and a qualitative assessment approach
- 5.34. Cumulative and in-combination effects are assessed in Chapter 19 of the ES Volume 2.

Vulnerability to major accidents and disasters

- 5.35. The EIA Regulations introduced a requirement to identify, describe, and assess expected significant effects arising from the vulnerability of the Scheme to major accidents and disasters that are relevant to the Scheme.
- 5.36. In order to meet this requirement, this assessment has evaluated the exposure and vulnerability of the Scheme and identifies:
- Any significant adverse environmental effects arising as a consequence of the identified major events; and
 - Measures to prevent or mitigate the significant adverse environmental effects of those major events, and details the preparedness for and response to such major events.
- 5.37. Vulnerability to major accidents and disasters is assessed in Chapter 20 of the ES Volume 2.

Dealing with uncertainty

- 5.38. EIA is an iterative process and at this stage in the process the Scheme is likely to include elements of uncertainty. At the time that the ES is submitted, it is proposed that no aspects of design would vary so much as to represent effectively different schemes. The EIA addresses the potential for a range of impacts resulting from any undecided parameters, and assumptions and limitations are set out in each topic-specific chapter as appropriate.
- 5.39. The Rochdale Envelope principle has been applied in accordance with the Planning Inspectorate's Advice Note 9: Using the Rochdale Envelope (Planning Inspectorate, 2012). Where there is uncertainty the EIA has assumed a reasonable 'worst case'. The ES confirms the maximum and other dimensions of the Scheme, and any changes to the development within such parameters would not be considered to result in significant effects not previously identified and assessed. The Planning Statement and **Development** Specification, which accompany the outline planning applications, set out these parameters and assumptions.

Transboundary impact screening

- 5.40. The Scheme is approximately 159 km from France, the closest EEA State.
- 5.41. The study areas for the various environmental topics define the extent of effects anticipated for both the reservoir site and pipeline corridor, and are described fully in Chapters 7 to 19 of the ES Volume 2, and are summarised below as follows:
- Air Quality: within 350 m of the Scheme boundary (construction dust assessment); and, study area for assessment of traffic emissions during both the construction and operational phases is determined in accordance with traffic change criteria set out in guidance published by

Environmental Protection UK (EPUK) and the IAQM entitled Land-Use Planning and development control: Planning for air quality 12 (IAQM Planning Guidance).

- Historic environment: 2 km from the boundary of the Scheme;
- Biodiversity: 5 km for statutory designated sites (Special Areas of Conservation (SACs and cSACs), Special Protected Areas (SPAs and pSPAs), Wetlands of International Importance (Ramsar sites) and potential Ramsar sites); 2 km for statutory designated sites (Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs)); 2 km for non-statutory designated sites and ancient woodland; 30 km for SACs where bats are a qualifying species; 10 km for bat records; 2 km legally protected species (excl. bats); 1 km for priority habitats and species and invasive non-native plant species; 50 m for veteran and notable trees; and, 2 km for Aquatic habitats and species;
- Ground Conditions: within the red line boundary and up to 500 m from the boundary of the Scheme;
- Landscape and Visual: 2 km from the boundary of the Scheme;
- Noise and Vibration: the assessment of construction impacts uses a study area of 300 m around construction works. Assessment of operational impacts uses a study area of 50 m from the roads considered in the traffic model;
- Traffic and Transport: established during consultation with the Local Highway Authority (LHA) and includes roads and junctions that form the key highway links surrounding the site
- Materials and Waste: the region of South East England (for sources of materials), and the Hampshire Waste Planning Authority (WPA) area (waste arisings);
- Water Environment: 1 km from the boundary of the Scheme;
- Effects on Climate: within the boundary of the Scheme plus the supply chain area; and
- Vulnerability to Climate: Study area includes the red line boundary of the reservoir site (approximately 395 ha), and the red line boundary of the pipeline corridor (approximately 21 ha). In both construction and operation the study area also incorporates the area of the environmental receptors examined by the other topics in this report, where associated impacts could be intensified by climate change;
- Population and human health: 500 m from the Scheme boundary; and
- Cumulative and in-combination effects: reflect the study areas of topic chapters, although relevant development within 5 km of the Scheme has been identified.

5.42. The study areas will cover the area where direct effects of the Scheme will be experienced as well as the area where indirect effects would be experienced, for example the setting of a listed building where the surroundings contribute to its historic value.

5.43. For some topics the effects of the Scheme would extend beyond the immediate area of the works. For example, the noise and air quality effects would be experienced in the surrounding area where there would be changes in traffic flows as a result of the Scheme. The method for establishing the extent of study areas in this situation is set out in the topic chapters.

5.44. As none of these distances reach other EEA Member States, no transboundary effects are anticipated for the Scheme and therefore have not been considered further.

Habitats Regulations Assessment

5.45. A Habitats Regulations Assessment (HRA) has been undertaken to inform the Stage 1 Screening and Stage 2 Appropriate Assessment of likely significant effects on European Sites associated with the proposed Havant Thicket Reservoir (the reservoir site).

5.46. In 2009, Arup produced a Habitats Regulations, Stage 1 Screening Report for the Havant Thicket Reservoir Scheme (then named the Havant Thicket Winter Storage Reservoir)¹. That report is now out of date to support a planning submission. In addition, potential changes to the design of the Scheme need to be re-assessed to determine whether the Havant Thicket reservoir and associated water supply pipeline proposed by Portsmouth Water (the Scheme) are likely to have a significant effect on a European site.

5.47. An updated Habitat Regulations Assessment accompanies the Environmental Statement that assesses the effects of the Scheme on biodiversity resources to support the outline planning

applications by Portsmouth Water for the Havant Thicket Reservoir Scheme and is in accordance with the EIA Regulations. This assessment is Appendix 9.14 in the ES Volume 4.

- 5.48. The purpose of this report is to present an assessment as to whether the Scheme is likely to have a significant effect (screening) and then an adverse impact on integrity (Appropriate Assessment) on a European designated site.
- 5.49. presents the results of the HRA Stage 1 screening assessment (Section 6). Following the results of the screening assessment, Stage 2 Appropriate Assessment (Section 9) was undertaken for the following sites:
- Chichester and Langstone Harbour SPA;
 - Chichester and Langstone Harbour Ramsar Site;
 - Solent Maritime SAC; and,
 - Sussex bat SACs: Singleton and Cocking Tunnels SAC and Ebernoe Common SAC.
- 5.50. Pre-application consultation was undertaken with Natural England on the updated Habitat Regulations Assessment.

Sustainability

- 5.51. Sustainability is a multi-faceted topic that relates to the environmental, social and economic well-being of a project and has central importance to all aspects of the Havant Thicket Reservoir Scheme.
- 5.52. The reservoir's primary sustainability objectives are to ensure:
- Protection of the Rivers Test and Itchen (protected chalk streams) by providing alternative supplies and enabling reduction in the amount of water taken from these rivers for domestic and business use;
 - Continued viability of communities in West Sussex and Hampshire that already suffer from 'serious water stress' by providing secure reliable drinking water for the future; and
 - Low-impact, water resilience across the whole south east region by creating a naturally maintained, new bulk supply.
 - Additional to these primary purposes, the aim of this project is to achieve high sustainability performance by delivering project design solutions developed through good integration with all stakeholders and their requirements.
- 5.53. The Sustainability Statement (Chapter 9 Design and Access Statement that accompanies the planning applications) provides further details of the sustainability requirements and objectives of the Scheme.

6. Consultation

Community Engagement

- 6.1. Extensive community engagement has been carried out since 2004. The work undertaken to prepare the Outline Plan in 2009 was informed by a series of public exhibitions in 2008.
- 6.2. The Statement of Community Involvement (SCI) that accompanies the planning applications details the community engagement and consultation activity undertaken by Portsmouth Water in relation to the Havant Thicket Reservoir Scheme between 2004 and 2020. The Spring Consultation Report is appended to the SCI.
- 6.3. It has been Portsmouth Water's aim to have a public consultation framework which will enable the local community, local businesses and other stakeholders to understand the need for the Scheme, to consider the options and raise any issues they may have, and to put forward their ideas and suggestions for the Scheme.
- 6.4. Portsmouth water has given over 60 presentations to local groups, set up a key stakeholder group comprising local community and environmental group representatives, and run a school engagement programme in 2008 and 2020.
- 6.5. In 2008, and again in 2019, dedicated websites were set up and several newsletters have been sent out, along with regular updates via email, post, media and social media.
- 6.6. In 2009 the reservoir plans were put on hold for reasons of cost and need, but in 2019 the Government approved the need for the Scheme. To continue to maintain awareness throughout the period 2009 to 2018 several presentations were given to interested groups, including schools, as well as other activities. Portsmouth Water renewed engagement on the Scheme in 2018 with a formal consultation on its draft Water Resources Management Plan and Business Plan for 2020 to 2025, the results of which showed that 87% of more than 2,000 respondents supported the plans for the reservoir.
- 6.7. There have been two formal consultation periods, one in 2008 and the other in 2020, as well as drop-in public exhibitions in November 2019.
- 6.8. The consultation in 2008 included 11 public exhibitions. Feedback demonstrated a high level of support for the reservoir proposals and, where concerns were expressed, people accepted that some impacts were an inevitable consequence of a project of this scale and nature.
- 6.9. In Spring 2020, due to the Covid-19 situation, it wasn't possible to have face-to-face engagement, so Portsmouth Water ran a series of public webinars that included interviews with the project team as well as a live Q&A, which was very well received. A large promotional campaign was launched to reach as many people as possible, including posting 50,000 leaflets to local households with details on how to get involved and find out more. Both consultations included on and offline materials and methods to reach as wide an audience as possible. The consultation was a great success, with good levels of feedback received and majority support for the approach and the proposals.
- 6.10. As well as the formal consultation periods and ongoing engagement activities, Portsmouth Water carried out both qualitative and quantitative customer insight research to understand the attitudes and views of customers in the vicinity of the reservoir as well as further afield. In May 2019 they undertook qualitative research, specifically focus groups, and this was followed by 100 quantitative telephone interviews carried out in January 2020. A quantitative online survey for young people aged 12-18 was also carried out during June/July 2020 which received 40 responses.
- 6.11. Feedback received since 2004 has demonstrated a high level of support for the reservoir proposals, most recently with 80 per cent of people completing the consultation feedback forms during the 2020 public consultation period either strongly agreeing or agreeing with the proposals, and 90 per cent support from young people.
- 6.12. Alongside the data extracted from the 2020 consultation feedback form, there was a large number of comments which came in from the various channels used, which has been analysed. Portsmouth Water has responded to each theme and a Spring Consultation Report was published in August 2020 which included a 'you said, we did' section (appended to the SCI).
- 6.13. The most frequent concerns with the Scheme relate to the loss of ancient woodland and traffic impacts. A Woodland Trust Campaign was set up and 1,375 template emails were received

objecting to the location of the reservoir and urging an alternative site to be found if the Scheme couldn't be redesigned to avoid the loss of ancient woodland.

- 6.14. The design work in 2019 and 2020 took on board many of the stakeholder and community concerns and included measures to reduce impacts on ancient woodland and Staunton Country Park, including realignment of the embankment, relocating the visitor car park, retaining an area of woodland within the wetland and redesigning the pipeline route to avoid Great Copse. In response to the 2020 consultation, a new approach to access has been developed which combines both the north and south access options. This will 'dilute' the construction and visitor traffic that will use either route, and reduce the loss of ancient woodland there by 45 per cent by halving the width of the proposed northern access route into the Site.

Engagement with relevant key stakeholders

- 6.15. Consultation has been held with relevant key stakeholders between 2004 and 2020 on the Scheme design development and on environmental topics covered in the ES to inform the scope of assessment and approach, and baseline conditions including the scope of survey work informing the assessment.
- 6.16. This consultation has been ongoing during the assessment and will continue during the detail design to develop mitigation, compensation and enhancement measures identified in the REAC as part of the OEMP in Appendix A2.1 in ES Volume 4 for relevant topics. consultation undertaken to date is summarised in each individual environmental topic chapter where relevant in ES Volume 2.