

# Hampshire Water Transfer and Water Recycling Project

## Consultation Report

### Appendix C – Non- Statutory Summer 2022 Consultation 1 of 3 Documents

**VOLUME NUMBER: 5**

**PLANNING INSPECTORATE SCHEME NUMBER: WA010002**

**APPLICATION DOCUMENT REFERENCE: 5.1**

**APFP REGULATION: 5(2)(q)**

May 2026

Version 0



from  
**Southern  
Water** 



## Contents

- C.1 Stakeholder list..... 1
- C.2 Brochure ..... 9
- C.3 2022 Scheme Development Summary..... 62
- C.4 Book of Maps ..... 166

## C.1 Stakeholder list

**Table C1-1 List of consultees**

| Summer 2022 Consultation consultees                         |   |
|---|---|
| Marine Management Organisation                              | NHS England                                 |
| The Health and Safety Executive                             | Associated British Ports                    |
| The Maritime and Coastguard Agency                          | Ministry of Defence                         |
| Association of Inshore Fisheries and Conservation Authority | The Office for Nuclear Regulation (the ONR) |
| The Forestry Commission<br>London and South East            | The Environment Agency                      |
| Department for Transport                                    | Historic England                            |
| Office of Rail and Road                                     | Natural England                             |
| National Highways   | Homes England                               |
| National Highways - South East                              | The Crown Estate                            |
| National Highways Historical Railways Estate                | Canal and River Trust                       |
| Network Rail Infrastructure Limited                         | The Coal Authority                          |
| Portsmouth International Port                               | UK Health Security Agency (HSA)             |
| Winchester City Council                                     | Langstone Harbour Board                     |
| Wiltshire County Council                                    | Indigo Power Limited                        |
| West Sussex County Council                                  | Indigo Pipelines Limited                    |
| Hampshire County Council                                    | Northern Gas Networks Limited               |
| Gosport Borough Council                                     | Eastern Power Networks Plc                  |
| Fareham Borough Council                                     | South Eastern Power Networks Plc            |
| Eastleigh Borough Council                                   | London Power Networks Plc                   |
| East Hampshire District Council                             | Vattenfall Networks Ltd                     |
| Dorset County Council                                       | Utility Assets Limited                      |
| Chichester District Council                                 | UK Power Distribution Limited               |
| Bournemouth, Christchurch and Poole Council                 | Leep Electricity Networks Limited           |
| Basingstoke and Dean District Council                       | Energy Assets Power Networks Limited        |
| Waverley Borough Council                                    | Energy Assets Networks Limited              |
| Test Valley Borough Council                                 | Eclipse Power Network Limited               |

| <b>Summer 2022 Consultation consultees</b>               |  |
|--|--|
| Surrey County Council                                    | Southern Gas Networks Plc                      |
| Southampton City Council                                 | Scotland Gas Networks Plc                      |
| South Downs National Park Authority                      | National Grid Gas Plc                          |
| Portsmouth City Council                                  | National Grid Electricity Transmission Plc     |
| New Forest National Park Authority                       | Mua Electricity Limited                        |
| New Forest District Council                              | Mua Gas Limited                                |
| Isle of Wight Council                                    | Murphy Power Distribution Limited              |
| Havant Borough Council                                   | GTC Pipelines Limited                          |
| West Berkshire Council                                   | Independent Pipelines Limited                  |
| Wokingham Borough Council                                | Quadrant Pipelines Limited                     |
| Bracknell Forest Council                                 | Independent Power Networks Limited             |
| Hart District Council                                    | The Electricity Network Company Limited        |
| Wickham Parish Council                                   | Harlaxton Gas Networks Limited                 |
| Upham Parish Council                                     | Harlaxton Energy Networks Limited              |
| Southwick and Widley Parish Council                      | Fulcrum Pipelines Limited                      |
| Soberton Parish Council                                  | Fulcrum Electricity Assets Limited             |
| Shedfield Parish Council                                 | ES Pipelines Ltd                               |
| Rowlands Castle Parish Council                           | ESP Networks Ltd                               |
| Owlesbury Parish Council                                 | ESP Pipelines Ltd                              |
| Otterbourne Parish Council                               | ESP Connections Ltd                            |
| Fair Oak and Horton Heath Parish Council                 | ESP Electricity Limited                        |
| Durley Parish Council                                    | Last Mile Gas Limited                          |
| Denmead Parish Council                                   | Last Mile Electricity Limited                  |
| Curdridge Parish Council                                 | Cadent Gas Limited                             |
| Colden Common Parish Council                             | Scottish Hydro Electric Transmission Plc       |
| Bishopstoke Parish Council                               | Scottish Hydro Electric Power Distribution Plc |
| Bishops Waltham Parish Council                           | SSE Plc  |
| NHS South Eastern Hampshire Clinical Commissioning Group | Western Power Distribution (South West) Plc    |

| Summer 2022 Consultation consultees                                       |   |
|---|---|
| NHS Hampshire, Southampton and Isle of Wight Clinical Commissioning Group | Western Power Distribution (South Wales) Plc      |
| NHS Portsmouth Clinical Commissioning Group                               | Western Power Distribution (West Midlands) Plc    |
| NHS Fareham and Gosport Clinical Commissioning Group                      | Western Power Distribution (East Midlands) Plc    |
| NHS West Hampshire Clinical Commissioning Group                           | Wales and West Utilities Limited                  |
| University Hospital Southampton NHS Foundation Trust                      | Squire Energy Limited                             |
| Southern Health NHS Foundation Trust                                      | SP Manweb PLC                                     |
| Hampshire Hospitals NHS Foundation Trust                                  | SP Distribution PLC                               |
| Solent NHS Trust  | Northern Powergrid (Yorkshire) Plc                |
| South Central Ambulance Service NHS Foundation Trust                      | Northern Powergrid (North East) PLC               |
| Hampshire Police and Crime Commissioner                                   | Electricity North West Limited                    |
| Hampshire and Isle of Wight Fire and Rescue Service                       | Optimal Power Networks Limited                    |
| Royal Mail Group  | Southern Electric Power Distribution Plc          |
| CityFibre Ltd   | COLT Technology Services                          |
| Century Link Ltd  | British Telecommunications Public Limited Company |
| Portsmouth Water  | Virgin Media Limited                              |
| Hampshire Constabulary  | OFGEM   |
| Hampshire Chamber of Commerce   | Southern Water                                    |
| Whiteley Town Council   | Mobile UK   |
| Newlands Parish Council   | Bournemouth University                            |
| Droxford Parish Council   | University of Chichester                          |
| Horndean Parish Council   | University of Portsmouth                          |
| Swanmore Parish Council   | University of Southampton                         |
| Fareham Wheelers Cycling Club   | Riverside Community Special School                |
| Bespoke Biking  | Purbrook Park School                              |
| Friends of the Earth  | Denmead Junior School                             |

| <b>Summer 2022 Consultation consultees</b>    |   |
|---|---|
| Isle of Wight Clinical Commissioning Group    | Queen's Inclosure Primary School                |
| NHS West Sussex Clinical Commissioning Group  | Mill Hill Primary School                        |
| Southampton City Clinical Commissioning Group | Berewood Primary School                         |
| Isle of Wight AoNB                            | The Waterloo School                             |
| Chichester Harbour Conservancy (AoNB)         | Jubilee School                                  |
| The Vitacress Conservation Trust              | Oaklands Catholic School and Sixth form College |
| Hampshire and Isle of Wight Wildlife Trust    | Purbrook Junior School                          |
| The Woodland Trust                            | St Peter's Catholic Primary School              |
| Joint Nature Conservation Committee           | Morelands Primary School                        |
| National Trust                                | Crookhorn College                               |
| National Trust - Hampshire and Isle of Wight  | Springwood Infant & Junior School               |
| National Farmers' Union                       | Hart Plain Junior School                        |
| National Farmers' Union - South East Region   | Padnell Junior School                           |
| Eastleigh and District Angling Club           | Cowplain Community School                       |
| Angling Trust                                 | Horndean C of E Junior School                   |
| Salmon and Trout Conservation                 | Horndean Technology College                     |
| Wild Trout Trust                              | Cornerstone C of E Primary School               |
| Test and Itchen Association                   | Wickham C of E Primary School                   |
| The Rivers Trust                              | Wickham Montessori School                       |
| Wessex Chalk Stream and Rivers Trust          | Uplands Primary School                          |
| The Piscatorial Society                       | Boundary Oak School                             |
| the River Restoration Centre                  | The Henry Cort Community College                |
| Game & Wildlife Conservation Trust            | St Columba C of E Primary School                |
| The Riverfly Partnership                      | Orchard Lea Junior School                       |
| The Fly Fishers Club                          | Kingsgate School                                |
| Campaign to Protect Rural England (CPRE)      | Harrison Primary School                         |
| Hampshire Countryside Access Forum (HCAF)     | Cams Hill School                                |

| Summer 2022 Consultation consultees              |   |
|--|---|
| The British Horse Society                        | Wicor Primary School                          |
| British Driving Society                          | Northern Junior School                        |
| Riding for the Disabled Association              | Portchester Community School                  |
| Ramblers Association                             | Castle Primary School                         |
| Friends of the South Downs                       | Otterbourne C Of E Primary School             |
| RSPB - Langstone Harbour                         | Swanmore College                              |
| RSPB   | Boorely Park Primary School                   |
| Hampshire Ornithological Society                 | St John The Baptist C Of E Primary School     |
| Open Spaces Society                              | Kings Copse Primary School                    |
| The Gardens Trust                                | Freegrounds Junior School                     |
| Sustrans   | Wildern School                                |
| Trail Riders Fellowship                          | Shamblehurst Primary School                   |
| The Trails Trust                                 | Saint James' Church Of England Primary School |
| Surfers Against Sewage                           | Wellstead Primary School                      |
| English Heritage                                 | Botley C Of E Primary School                  |
| Hampshire Parent Carer Network                   | Berrywood Primary School                      |
| Partnership for Urban South Hampshire (PUSH)     | Deer Park Secondary School                    |
| Solent Local Enterprise Partnership (LEP)        | Droxford Montessori School                    |
| Enterprise M3 LEP                                | Droxford Junior School                        |
| Hampshire & Isle of Wight Local Resilience Forum | Swanmore C of E Primary School                |
| Hampshire Search and Rescue                      | Bishop's Waltham Montessori School            |
| Action Hampshire                                 | Bishop's Waltham Junior School                |
| Solent Transport Partnership                     | Upham C Of E Primary School                   |
| Transport Action Network                         | Durley C Of E Primary School                  |
| Solent Forum                                     | Curdrige Primary School                       |
| Cycling UK                                       | Nightingale Primary School                    |
| Cycling Time Trials                              | Crestwood Community School                    |

| Summer 2022 Consultation consultees                            |  |
|--|--|
| Cycle Campaign Network   | Shakespeare Junior School                |
| British Cycling  | The Crescent Primary School              |
| Auto Cycle Union   | Noorwood Primary School                  |
| Go-Ahead Group   | Stoneham Park Primary Academy            |
| Go-Ahead Group - South Coast Ltd                               | Cherbourg Primary School                 |
| Transport Focus  | Colden Common Primary School             |
| Disabled Motoring UK   | Stoke Park Junior School                 |
| Disabled Person's Transport Advisory Committee                 | The King's School                        |
| Road Haulage Association                                       | Fair Oak Junior School                   |
| Lakeside School Chandler's Ford                                | Wyvern College                           |
| Southampton International Airport Ltd                          | Knightwood Primary School                |
| South Western Railway  | St Francis C of E Primary School         |
| Royal National Lifeboat Institution                            | Hiltingbury Junior School                |
| DPD Group UK Ltd   | Thornden School                          |
| Logistics UK   | Sherborne House School                   |
| Joint Committee of the National Amenity Societies              | Merdon Junior School                     |
| Country Land and Business Association                          | Scantabout Primary School                |
| Campaign for National Parks                                    | Fryern Junior School                     |
| Butterfly Conservation Society                                 | St Swithun Wells Catholic Primary School |
| Sport England  | The Toynbee School                       |
| National Infrastructure Commission                             | Eastleigh College                        |
| Department for Environment, Food & Rural Affairs (DEFRA)       | Barton Peveril College                   |
| Department for Business, Energy and Industrial Strategy (BEIS) | Whiteley Primary School                  |
| The Equality and Human Rights Commission                       | The Victory Primary School               |
| John Muir Trust  | Beacon View Primary Academy              |
| The Church of England  | Castle View Academy                      |

| Summer 2022 Consultation consultees           |  |
|---|--|
| The Muslim Council of Britain                 | Portsdown Primary School                                   |
| The University of the Third Age               | Court Lane Junior Academy                                  |
| Her Majesty's Prison & Probation Service      | Solent Junior School                                       |
| Stonewall                                     | Springfield School   |
| The Fawcett Society                           | Highbury College   |
| Age UK  | Glenwood School  |
| The Royal National Institute for the Blind    | St James' Church of England                                |
| The Royal National Institute for Deaf People  | Emsworth Primary School                                    |
| Parity: For People with Multiple Disabilities | Rowlands Castle St John's C of E Controlled Primary School |
| Disability Rights UK                          | Trosnant Junior School                                     |
| Living Streets                                | Barncroft Primary School                                   |
| Consumer Council for Water                    | Bidbury Junior School                                      |
| Water UK                                      | Bosmere Junior School                                      |
| Ofwat   | St Alban's C of E Aided Primary School                     |
| Wessex Water Limited                          | Park Community School                                      |
| Bournemouth Water Limited                     | Riders Junior School                                       |
| Thames Water Limited                          | Front Lawn Primary Academy                                 |
| Sutton and East Surrey Water Limited          | Sharps Copse Primary School                                |
| Prospect School                               | HSDC South Downs Campus                                    |
| Havant Academy                                | St Thomas More's Catholic Primary School & Nursery         |
| Twyford School                                | Warblington School   |
| Woodcroft Primary School                      | Warren Park Primary School                                 |

## C.2 Brochure

# Hampshire Water Transfer and Water Recycling Project

Consultation Brochure  
Public consultation 2022

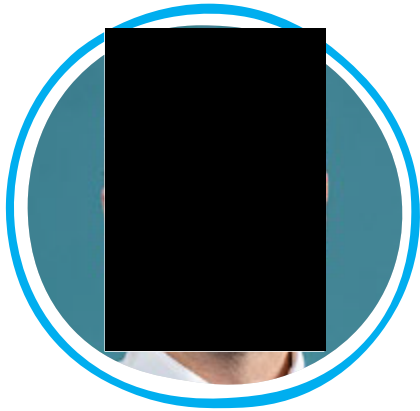


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Water** 

# Contents

|  |           |
|--|-----------|
| <b>Foreword from Lawrence Gosden, our CEO</b>                  | <b>3</b>  |
| <b>Working together to manage the region's water resources</b> | <b>5</b>  |
| <b>1. Introduction</b>   | <b>6</b>  |
| About the Project  | 6         |
| Purpose of this consultation                                   | 7         |
| What we are consulting on                                      | 7         |
| What we are not consulting on                                  | 7         |
| Navigating this brochure                                       | 7         |
| <b>2. The story so far</b>                                     | <b>8</b>  |
| The water resources challenge in Hampshire                     | 8         |
| Our previous consultation in 2021                              | 8         |
| Options appraisal process                                      | 12        |
| The longer term water supply needs of the wider region         | 13        |
| <b>3. The Project in detail</b>                                | <b>14</b> |
| Overview   | 15        |
| Water recycling plant  | 18        |
| The pipeline network   | 20        |
| Pipeline corridor development                                  | 24        |
| Corridor sections  | 26        |
| Above ground plant   | 41        |
| <b>4. Seeking permission to deliver our Project</b>            | <b>44</b> |
| National Policy Statements                                     | 44        |
| Applying for a Development Consent Order                       | 44        |
| Approach to Environmental Impact Assessment                    | 46        |
| Engagement and consultation                                    | 47        |
| <b>5. Next steps</b>   | <b>50</b> |

# Foreword from Lawrence Gosden, our CEO



Welcome to the latest stage in our Water for Life - Hampshire programme: a consultation on our Hampshire Water Transfer and Water Recycling Project.

This exciting programme will ensure we have plenty of sustainable water sources for customers and businesses in Hampshire. Importantly, it will also protect the county's iconic chalk streams that we value so highly.

We have always relied on the environment for water. In Hampshire we have taken that water from underground aquifers and from our major rivers the Test and Itchen. As our climate changes and our population grows, we have to find different ways of supplying water to customers and, critically, in ways that also protect the environment.

We do not operate alone in Hampshire and our strong partnership with Portsmouth Water underpins our Water for Life - Hampshire programme. The new reservoir at Havant Thicket will provide a major new source of water and we've been working with Portsmouth Water to develop new approaches that enable us to top up the new reservoir so even more water is available during a drought.

By reducing our reliance on rivers, we'll be able to take less from the environment during a drought, when nature needs it most. This ethos of added value is central to the vision and commitment we've outlined in Water for Life - Hampshire and our mission to always act responsibly and safeguard the environment now and for the future.

Being a responsible guardian of the environment also means using water wisely – we're working hard to reduce leakage by 15% by 2025, 40% by 2040 and 50% by 2050. We also want to enable our customers to use less water too – our Target 100 water efficiency programme is our commitment to help customers reduce their personal consumption to an average of 100 litres each day.

Listening to our customers and our stakeholders is really important to us. By understanding your feedback we can ensure that our plans, whether they be local or region-wide, develop in ways that are sensitive and supportive of the communities we serve.

This is your opportunity to help us design a water supply network that's fit for the future – we look forward to hearing from you.

**Lawrence Gosden, CEO, Southern Water**

# What we do

## About Southern Water

We supply water and wastewater services to over four million customers in the South East. Our operations cover Hampshire, Kent, Isle of Wight and East and West Sussex, traversing over 700 miles of coastline, national parks, forests and Areas of Outstanding Natural Beauty.



# Working together to manage the region's water resources

**Southern Water and Portsmouth Water have a long history of sharing water resources across our networks and this innovative project is the latest development in an enduring partnership.**

The enhanced use of the Havant Thicket Reservoir outlined in this document is separate to the previously approved plans based on using surplus water from the Bedhampton springs. It represents a step-change in the resilience that the reservoir could provide to the county of Hampshire through the use of recycled water.

Whilst the technology we will use is relatively new to the UK, it is common in other parts of the world such as Singapore and California so it is tried and tested elsewhere.

It's essential that we all use water wisely, as customers, businesses and water companies, to ensure we protect and enhance the environment. The reservoir in its current configuration will help protect Hampshire's world-renowned chalk streams and provide an exciting, green leisure facility but it's important that you have your say on these enhanced plans that have the potential to go much further than this.

**Bob Taylor, CEO, Portsmouth Water**

# 1. Introduction

The South East of England is designated by the Environment Agency as an area of 'serious water stress'. This means that demand for water can outstrip supply – especially during a drought. In Hampshire in particular, a growing population, changing climate and sensitive environment means there is not enough water for people and nature when the weather is dry. We need to find a new sustainable water resource for the region or face the looming threat of severe water restrictions in times of drought.

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Much of the county's water comes from the River Test and the River Itchen – world famous chalk stream rivers that are home to an abundance of wildlife. These habitats are ecologically important and rare - often described as "England's rainforests". To protect them, the amount of water we can take from them during a drought has been significantly reduced. This means we need to find new sources of water to maintain our supplies for customers while protecting these sensitive habitats.

Our Water for Life - Hampshire programme sets out a range of measures that are needed to make up this shortfall in water. We are, of course, working hard to reduce leakage and improve water efficiency. However, the shortfall of 192 million litres of water a day is so significant that a large new source of water is also needed. We've looked to the sea as a potential answer but our 2021 consultation on the proposal for a desalination plant to turn seawater into drinking water at Fawley, in the New Forest, coupled with our own investigations, showed it was not the right solution for this area.

When we consulted on the desalination plans last year, we also introduced alternatives. One of these was to use an innovative treatment process called water recycling. This advanced treatment technique is already widely used around the world to turn treated wastewater into purified water that can be used as source water to be treated for drinking water – reducing the amount needed to be taken from the environment.

As desalination fell away as a viable option, we continued to work closely with Portsmouth Water to develop one of the alternatives - a proposal to use recycled water to top up the Havant Thicket Reservoir which has recently received planning permission. The reservoir is being funded by Southern Water and developed together with Portsmouth Water. Maintaining the levels in the spring-fed reservoir with recycled water would allow us to take more water from the reservoir during a drought and, along with the other measures we are pursuing, continue to supply Hampshire's growing population without adversely impacting its precious chalk stream rivers.

This proposal is separate to the current agreed plans for Havant Thicket Reservoir. We have named it the Hampshire Water Transfer and Water Recycling Project (the Project) and it is the subject of this consultation.

## About the Project

Our Project would use a full-advanced treatment process to turn treated wastewater into purified recycled water at a new water recycling plant south of Havant. The recycled water would then be transferred via a new pipeline to supplement the spring-fed water that will be stored in the planned Havant Thicket Reservoir. Another new pipeline would be constructed to transfer water from the reservoir to our Otterbourne Water Supply Works, some 40 kilometres to the northwest, to be treated to strict drinking water standards ready for supply to homes and businesses.

The Project is a drought resilience scheme – it will ensure that we can maintain essential water supplies when the weather is dry. It could provide some 90 million litres of water a day into our Hampshire supply network during a drought, which we must plan for.

The Project will only therefore be fully utilised in a drought – the rest of the time it will operate at a minimal 'sweetening flow' of approximately 7.5 million litres of water a day to maintain water flows through the plant and flows through the pipelines. During drought conditions, when river levels are low and we cannot rely on them for our water supply, the operation of the Project would be increased to draw more water out of the reservoir, whilst topping up the reservoir with recycled water. Throughout a drought, the Project would play a major role in making up any shortfall in water supply across our Hampshire supply area.

The Project has the potential to recycle more water for the benefit of the wider area should the amount of water that can be taken from the environment be reduced further. We are planning for this possibility.

You can read more detail about the Project in Section 3 of this brochure.

## Purpose of this consultation

We will be applying for a Development Consent Order for the Project, which is a type of consent given by the Secretary of State for projects of national significance.

As part of the process of applying for a Development Consent Order, we want to consult with a wide variety of people such as landowners, local residents and businesses, environmental organisations, parish councils, local authorities and other statutory bodies who might be affected by or interested in the Project.

This is why we are seeking your views on our emerging proposals at this early stage by undertaking an initial consultation. Our consultation starts on **5 July** and ends on **16 August 2022**. We will consult again in 2023 when our proposals become more developed and detailed.

You can find out more on the process, including how you can get involved at Section 4 of this brochure.

## What we are consulting on

We want to know what you think about:

- water recycling as a new sustainable water resource for the Hampshire area and the process we went through to select it;
- the location for the proposed water recycling plant in Havant and the process we went through to select it;
- the preferred corridor we have identified for the pipelines needed to transfer water between Budds Farm Wastewater Treatment Works, the water recycling plant, Havant Thicket Reservoir and our Otterbourne Water Supply Works, including the process we went through to select it and the sites and zones for the above ground plant.

We will be asking you questions throughout this brochure - look out for the coloured circles. You can use the feedback form available online or in print version to give us your views or email us at [HampshireWTWRP@SouthernWater.co.uk](mailto:HampshireWTWRP@SouthernWater.co.uk)

## What we are not consulting on

### Havant Thicket Reservoir Scheme

Portsmouth Water obtained planning approval for Havant Thicket Reservoir from both East Hampshire District Council and Havant Borough Council in October 2021. Although funded by Southern Water, the reservoir will be delivered by Portsmouth Water and is due to be operational in 2029. We are not consulting on the development of Havant Thicket Reservoir itself as part of this consultation – that is a separate project to our proposals.

We are working closely with Portsmouth Water to consider how the reservoir can incorporate, at an early stage, the minor works needed to safeguard a connection to our Project if and when we receive the necessary approvals from the Secretary of State. This will ensure the development and operation of the reservoir is not delayed by having to retrofit the minor connection works at a much later stage. We are not consulting on these minor connection works as part of this consultation.

### Draft Water Resources Management Plan 2024

Like all water companies, we must prepare and update a Water Resources Management Plan, which is renewed every five years and sets out how we will meet our water supply duties for at least the next 25 years. Consultation on our draft Water Resources Management Plan 2024 is also planned for July 2022 and will focus on the wider water resources proposals for Southern Water's supply areas. Our Project is a key part of the draft plan, however, the wider water resources proposals in the draft plan do not form part of this consultation.

You can find out more about our other consultations by visiting [www.southernwater.co.uk/futureplans](http://www.southernwater.co.uk/futureplans)

## Navigating this brochure

This brochure is arranged in the following sections:

**Section 1** - foreword, what we do and this introduction

**Section 2** - background to the water resources challenge in Hampshire and how the Project has evolved since 2021

**Section 3** - the different components of the Project

**Section 4** - seeking permission to deliver our Project

**Section 5** - what will happen next

### Useful materials

We have put together a number of consultation documents to help you understand our proposals at this early stage of the Project and how these will be developed and consulted on further. Our consultation documents consist of:

- This consultation brochure;
- A document which summarises how we have developed the Project to date, known as the Scheme Development Summary;
- A book of maps showing all of the corridor sections and zones of the above ground plant;
- Frequently Asked Questions; and
- A feedback form, so you can provide us with your views.

## 2. The story so far

This section highlights the water resources challenge in Hampshire and how we're planning for it. It also sets out our response to feedback from our Spring 2021 public consultation and the subsequent work we carried out to inform our decision to progress water transfer and water recycling as an alternative to desalination.

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### The water resources challenge in Hampshire

Hampshire's water shortfall is huge. Finding an additional 192 million litres of water a day from a source that is not a river or aquifer is a significant challenge but one we are tackling head-on. The shortfall is so large that a range of measures are needed to address it. The Hampshire Water Transfer and Water Recycling Project is the largest component of these measures – providing 90 million litres of the water needed.

It is our duty as a water company to maintain supplies for our customers and it is imperative that, as custodians of the environment, we protect the county's precious chalk streams too. If we do not take action now, we face the increasing threat of severe water restrictions in a drought. Our plan is ambitious but practical. It will transform the way we source, treat and supply water across our Hampshire supply area for generations to come.

Our current Water Resources Management Plan 2019 sets out the water supply deficit in our Hampshire supply area. The plan highlighted the need for an additional 192 million litres of water per day, equivalent to 75 Olympic swimming pools. We signed an agreement with the Environment Agency, made under Section 20 of the Water Resources Act 1991, that commits us to addressing this deficit at the earliest opportunity. The primary objective of this agreement is to protect our precious chalk streams in Hampshire by reducing the amount of water we are allowed to take from them in a drought.

### Our previous consultation in 2021

In our current Water Resources Management Plan 2019 we identified desalination, the process used to turn seawater into drinking water, as the preferred solution to addressing a large proportion of Hampshire's water shortfall.

Our previous public consultation in early 2021 consulted on a proposal to build a desalination plant on the Solent, located at Fawley in the New Forest. The plant would turn seawater into drinking water before transferring it via a 25 kilometre long pipeline to our Testwood Water Supply Works. This proposal could have provided up to 75 million litres of water per day in a drought. We also introduced alternative water transfer and water recycling options alongside other measures including reducing leakage and improving water efficiency.

We asked people for their views on the proposed desalination plant at Fawley and its associated pipelines. We also asked for their views on the alternative options including the use of water recycling to use recycled treated wastewater as a new water source combined with a new pipeline to transfer more water from the planned Havant Thicket Reservoir for supply to the Hampshire area.

We received 180 responses to the consultation. Desalination was not well supported by those who responded, with only 27% agreeing it was an acceptable solution to the water resources challenge in Hampshire, while 60% of respondents considered that water recycling would be an acceptable solution in the event that desalination was not deliverable. The main issue raised was around the potential environmental impact of releasing the desalination byproduct of hypersaline water back into the Solent, with a total of 24% of respondents raising this concern.

Key issues raised about desalination:

- The location of the plant within the New Forest National Park and proximity to environmentally sensitive locations
- The impact on the marine environment around the Solent from hypersaline water (water with a salt content higher than seawater being released as part of the desalination process and the potential impacts on ecology, bathing water quality and recreational activity)
- The high energy input required to desalinate and treat the water, which could lead to a greater carbon footprint
- The drinking water quality produced as a result of the desalination process

Respondents were generally supportive of water transfer and water recycling as alternatives to desalination. These alternatives were perceived to have fewer significant environmental impacts, to be more efficient and reduce energy usage. Respondents were clear though that more details on the environmental impacts and how water recycling works is needed to better inform their views.

We set out in pages 10 and 11 a summary of the key feedback received and our response to that feedback.

Further information on the feedback raised in the consultation can be found in our 2021 Consultation Feedback Report available on our Water for Life - Hampshire website. (link to <https://www.southernwater.co.uk/our-story/water-for-life-hampshire>)

## Your feedback to our 2021 consultation and our response

### Feedback relevant to desalination option

| ● Theme   | ● Feedback   | ● Our response to the feedback  |
|---|--|---|
| <b>Desalination – environment impacts</b>                                   | Objection to location of the desalination plant due to potential impact on the environment and the New Forest National Park in particular. | <p>Following the 2021 consultation the options still under consideration were assessed as part of the options appraisal process, which included assessment of a range of environmental criteria. This is described in more detail in Section 2 of this brochure.</p> <p>Desalination at Fawley was identified as the least preferable of these options as it was not considered to be deliverable in the proposed location. We therefore decided to not progress any further work on this option or any other desalination options as the solution for this programme.</p> <p>As our preferred solution is no longer desalination, the concerns raised around the impacts of the desalination plant, whilst acknowledged, are no longer relevant to the development of the Project.</p> |
| <b>Desalination – environment</b>   | More information was requested to better understand any impacts the proposals would have on the environment.                               | The information and details presented at the 2021 consultation reflected the level of information available on the desalination options at that point in the scheme development process. Part of the aim of the consultation was to gather feedback from stakeholders, landowners, communities and customers on the elements of the proposals at an early point in the process to help inform the development and design of the desalination proposals. As our preferred solution is no longer desalination, the concerns raised around availability of environmental information for this option are no longer relevant to the development of the Project going forward.   |
| <b>Desalination – impact of abstraction and desalination level release</b>  | Concerns relating to the impact on water bodies where abstraction and release would take place.  | <p>Our preferred solution is no longer desalination so the potential impact of abstraction and release is not relevant. Therefore, whilst acknowledged, concerns raised around the potential impacts on water bodies, marine wildlife and habitats that relate to desalination, are no longer relevant to the development of the Project going forward.</p> <p>As part of our scheme development, Environmental Impact Assessment and other environmental assessments for the Project, we will be undertaking detailed modelling to determine the potential impacts of the Project's release on the marine environment, including water quality and habitats and species. More detail on this will be available at our statutory consultation, planned for 2023.</p>                    |
| <b>Desalination: impact on properties, businesses and local communities</b> | Concern that local businesses would be affected by the proposals.  | The options appraisal process following the 2021 consultation considered the socio-economic impacts of desalination. This included the potential for impact on marine recreation, commercial fisheries and marine licensing areas. As stated above, we are no longer progressing any further work on desalination options for this Project. Therefore, the concerns raised around the impacts of the desalination plant, whilst acknowledged, are no longer relevant to the development of the Project going forward.   |
| <b>Desalination: cost</b>   | Queries raised in relation to how much the desalination plant would cost and where the money would come from.                              | Now that desalination is not being progressed, concerns raised around the costs of the desalination plant, whilst acknowledged, are no longer relevant to the development of the Project. However, once the design of the Project, subject to this consultation, is further progressed, we will be able to fully assess the likely costs of the Project. Like all Southern Water costs, funding for the Project will be subject to approval by the water services regulation authority, Ofwat.  |

### Feedback relevant to water transfer and water recycling

| ● Theme                             | ● Feedback   | ● Our response to the feedback   |
|-------------------------------------|--|--|
| <b>Need for new water resources</b> | Queries regarding whether additional water resources are necessary as other measures such as fixing leaks could be used. | We are one of the best performing water companies for leakage, however, due to the scale of the identified long term deficit, and the timescales in which we need to resolve it, we need to deliver a large new water source for the area capable of delivering at the earliest opportunity in addition to a range of other measures including improved leakage targets. |

|  |   |   |
|--|---|---|
| <p><b>Water recycling:<br/>Environmental impacts</b></p>         | <p>Requests further details on potential environmental impacts.</p>   | <p>The 2021 consultation materials did not include any assessment work to confirm potential environmental impacts of the alternative water recycling options at that stage.</p> <p>Since the consultation, we have been gathering more information through surveys and engagement with landowners as well as statutory and non-statutory bodies to identify the potential environmental and other impacts of the Project. A number of ecology surveys are already underway and our survey programme will continue through 2022 and 2023. As part of our statutory consultation, planned for 2023, we will publish a Preliminary Environmental Information Report which will report preliminary information about the environmental impacts of the Project.</p> <p>We will then submit an Environmental Statement to report on the findings of the Environmental Impact Assessment as part of our Development Consent Order application.</p> <p>See Section 4 of the brochure for further information on the environmental assessment process.</p> |
| <p><b>Water recycling: impact of abstraction and release</b></p> | <p>Concerns about Option B.1 to release recycled water into the Lower Itchen and impact of abstraction on chalk rivers.</p>         | <p>Option B.1 proposed a water recycling plant producing recycled water for release into the Lower Itchen. This was the alternative option to the desalination plant in Fawley that was included in our Water Resources Management Plan 2019. However, we stopped progressing it as a potential alternative to the desalination plant, due to environmental concerns about the impact of the recycled water release on the integrity of the River Itchen Special Area of Conservation and the scheme's ability to meet the water resource deficit.</p>  |
| <p><b>Water transfer: principle</b></p>                          | <p>Concerns about whether water transfer offered a long-term solution during a drought.</p>   | <p>The options appraisal process undertaken following the 2021 consultation included an assessment of the resilience of our proposals to meet long-term future needs. Water transfer alternatives were considered, in relative terms, less capable on their own of meeting the water supply deficit than other options under consideration so are not being progressed at this stage (other than in combination with water recycling).</p>  |
| <p><b>Water transfer: environment</b></p>                        | <p>Concerns in relation to the long-term sustainability of local rivers which supply the River Ems.</p>                             | <p>The options appraisal process undertaken following the 2021 consultation ensured that all the options were evaluated against criteria that included consideration of impacts to biodiversity and nature conservation and impacts to watercourses. As part of our scheme development, we will continue to assess environmental impacts on watercourses in the area, as appropriate, as our plans progress.</p>  |
| <p><b>Construction</b></p>                                       | <p>Concerns related to construction and operation of all proposals.</p>   | <p>We considered through the options appraisal process potential impacts on communities. This included impacts on the road network, community facilities, public rights of way, noise, vibration and air quality. Further work to understand, assess and mitigate these impacts will be undertaken as part of the ongoing scheme development and environmental assessment processes. As part of our Development Consent Order application, we will include relevant management plans to manage and mitigate construction impacts and secure environmental controls.</p>   |
| <p><b>Climate change</b></p>                                     | <p>Concerns that all proposals would impact on carbon emissions and not align with national / regional targets.</p>                 | <p>Careful consideration of energy requirements and carbon emissions during the design and planning stages of the Project will help us manage, avoid and reduce emissions, where feasible (having regard to technical, environmental and other factors), during the construction and operational phases. These include consideration of emissions arising from energy and transport required to construct the project, as well as emissions arising from the treatment of recycled water (termed process emissions). We, and other water companies in the UK, have also committed to become carbon neutral by 2030. This promise was made under the industry body Water UK's Net Zero commitment and is part of our planning and solution development for Water for Life - Hampshire.</p>   |
| <p><b>Water Quality</b></p>                                      | <p>Queries around whether water produced by desalination (as well as the alternatives) would be up to drinking water standards.</p> | <p>All statutory water undertakers are regulated to ensure that water from their supply works meets the required drinking water standards, and therefore, the Project will need to meet these standards.</p>  |

## Options appraisal process

Following our 2021 public consultation, we carried out an extensive options appraisal process to confirm whether our desalination proposal was the right solution to develop further in the context of the other options available. Our options appraisal process included a thorough evaluation of the various options against a number of planning, environmental, socio-economic and cost criteria, as well as legal and policy obligations and wider strategic objectives.

The options appraisal helped us better understand the benefits and impacts of the various options. For the desalination proposal, it confirmed some of the concerns raised from the public consultation that the proposal would likely have adverse impacts on the marine environment and on the New Forest National Park, both from its construction and operation.

Out of all of the options considered, desalination at Fawley emerged from the options appraisal process as the least preferable option. The likely impacts of the plant and its associated pipelines meant that the proposal was not considered to be deliverable in this location, particularly in light of the better alternatives that were available.

At the same time, the options appraisal process confirmed a combined option involving both water transfer and water recycling solutions, previously known as Option B.4 (i.e. the Project), as the most preferable option. This option performed well across the range of criteria considered and the addition of water recycling provided important adaptability to address a larger proportion of the water supply deficit than the water transfer option could achieve on its own.

A similar combined solution, previously known as Option B.5, utilising a new lake for water storage rather than the Havant Thicket Reservoir, and involving a larger water recycling plant, emerged as the second most preferable solution. This option provides a 'back-up' option in case our preferred solution cannot be delivered. This is not currently being progressed through the consent process.

We engaged with our regulators and other statutory bodies as part of the process and wrote to them in September 2021 confirming that we would not be progressing our plans for desalination any further in this location. We then wrote to them again in December 2021 confirming that the combined water transfer and water recycling option had been selected as our new preferred solution and that this would now be developed and progressed through the consent process.

More information on the detail of our options appraisal process, including the criteria used for the evaluation and why the desalination proposal was not progressed, can be found in Section 3 of the Scheme Development Summary document.

Information on the water recycling technology can be found on pages 16 and 17.

*Do you support water transfer and water recycling as the proposed solution to the challenge of securing water supplies for the future in Hampshire?*

*What do you think about the options appraisal process we went through to select water transfer and water recycling as the proposed solution?*

### **Helpful information about the Scheme Development Summary document**

The Scheme Development Summary document provides a detailed overview of the process we went through to identify a preferred strategic solution to address the water supply challenges in Hampshire, known as the options appraisal process. The options appraisal process considered the desalination, water transfer and water recycling options we presented at the 2021 consultation, with the aim of selecting a proposed option for delivery and a back-up option.

The options appraisal process involved an evaluation of a wide range of factors, including:

- A planning and consenting evaluation which assessed the options against criteria developed from the relevant national planning and environmental policy.
- A multi-criteria decision analysis which considered the options against a number of economic and social factors.

- An assessment against legal and strategic objectives defined by Southern Water.

Section 3 of the Scheme Development Summary provides more information on each stage of the options appraisal process and its outcomes and conclusions.

The Scheme Development Summary also details the process we went through to identify the following for each option:

- Sites for key infrastructure, including the desalination plant or the water recycling plant
- Pipeline routes to transfer water between these sites.

## The longer term water supply needs of the wider region

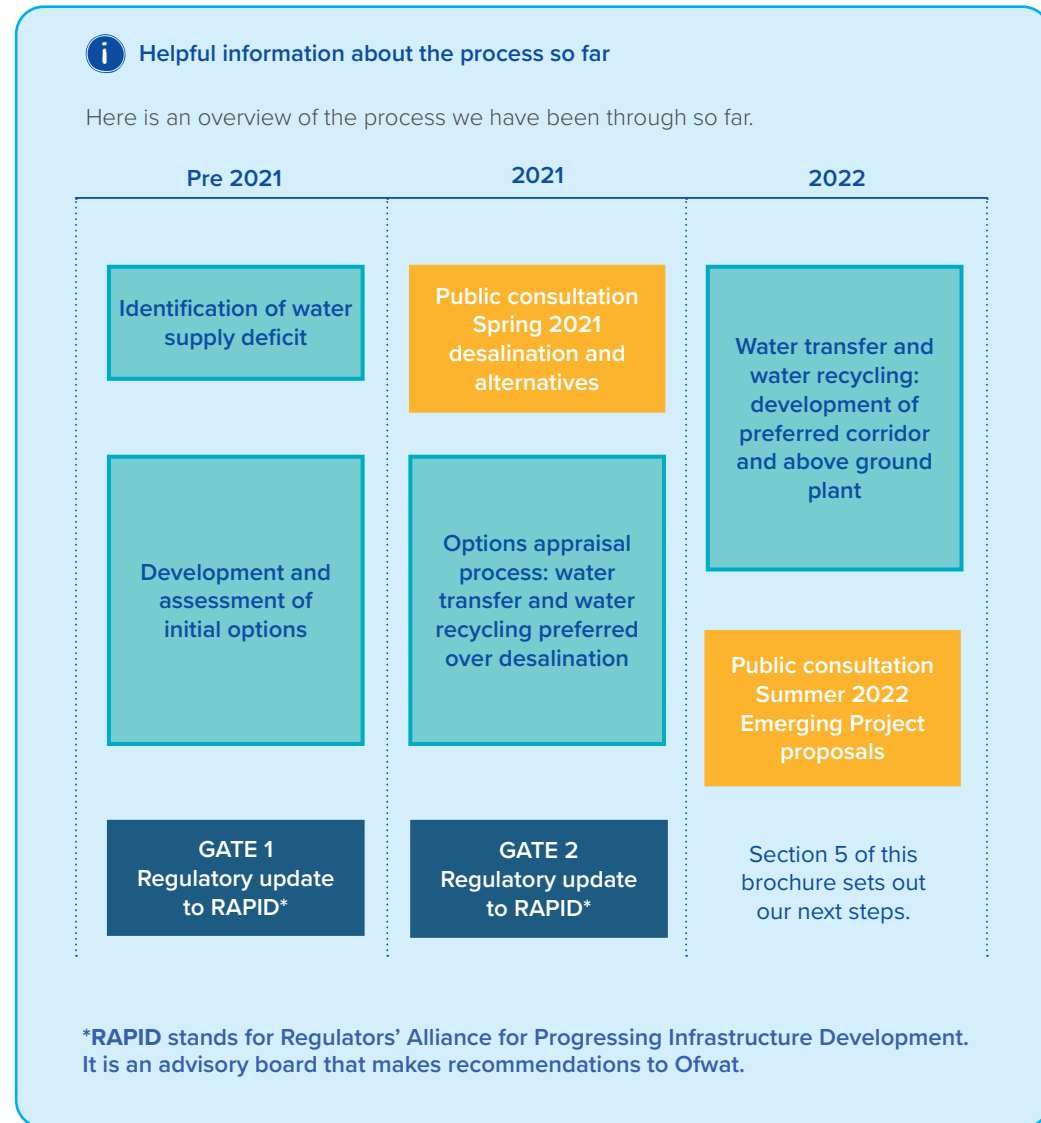
In parallel with the work to develop this Project, we have also been working with stakeholders to consider the water supply issues for the next water resources planning period. This work will inform the preparation of our next Water Resources Management Plan 2024. It is important that we take into account the wider regional strategy as set out in the draft Water Resources South East emerging regional plan published in January 2022. This confirms the need for this Project as a sustainable and resilient water supply solution in Hampshire.

We know there is an urgent need to tackle the water supply shortfall in our Hampshire area from our Water Resources Management Plan 2019. However, the emerging regional plan and emerging Water Resource Management Plans for both Southern Water and Portsmouth Water could indicate a greater deficit, particularly given the need to plan for more extreme droughts, further reductions in the amount of water being taken from the environment and a growing population.

This is why we are building in flexibility for a larger water recycling plant that can adapt to meet these evolving future needs, in particular, if Portsmouth Water faces similar abstraction reductions in the amount of water it can take from the environment. Putting more recycled water into the reservoir could ensure more water is also available to Portsmouth Water’s supply area in times of drought too.

More technical work is underway to inform all of these emerging plans, with the draft regional plan expected in autumn 2022. The urgency to address the water supply challenge in our Hampshire supply area requires the Project to be delivered at the earliest opportunity. This is why we have started the consent process in advance of publication of the final regional plan and our own Water Resources Management Plan 2024, both expected in 2023.

We will continue to work with our regulators and stakeholders to ensure consistency between our proposals for the Hampshire area and the longer-term strategy for the South East. We fully expect these plans to be published ahead of us submitting our application for development consent.





### 3. The Project in detail

This section provides information on the different components of the Project for which we will seek development consent.

We are at an early stage of the process in developing our proposals. Your views on this consultation will help influence the next stages of that process.

from  
**Southern  
Water** 

## Overview

Components of the Project we are developing are:

- The development of a new water recycling plant, capable of producing, at the peak of a drought, at least 15 million litres per day of recycled water, on land close to Budds Farm Wastewater Treatment Works in Havant;
- A network of pipelines including:
  - Two underground pipelines approximately 0.5 kilometres long to connect Budds Farm Wastewater Treatment Works and the water recycling plant. The first will transfer a minimum of 19 million litres per day of treated wastewater from the wastewater treatment works to the water recycling plant. The second will transfer at least four million litres per day of reject water from the water recycling process back to the wastewater treatment works prior to release to sea via the existing long-sea outfall at Eastney
  - An underground pipeline approximately 3.5 kilometres long to transfer at least 15 million litres per day of recycled water at the peak of a drought, from the water recycling plant to Havant Thicket Reservoir
  - An underground pipeline approximately 40 kilometres long to transfer approximately 90 million litres of water per day at the peak of a drought, from Havant Thicket Reservoir to Otterbourne Water Supply Works via a high lift pumping station located at the water recycling plant
- Other associated above ground infrastructure comprising the high lift pumping station, intermediate pumping stations and break pressure tanks located along the pipeline route.

At this stage, we know that a water recycling plant capable of producing at least 15 million litres per day of recycled water is needed, but up to 60 million litres per day could potentially be required. If our longer term planning work indicates that a larger water recycling plant is needed, we will share more details of this at our next public consultation.



*Not to scale, for indicative purposes only*



Here we explain how the water recycling technology works and the terminology that is used

### Helpful information about water recycling

## What is water recycling?

Currently, the water that comes out of your taps is taken from the environment and treated to a high standard so that it is safe for you to drink. After you've used it, we collect and treat the wastewater and return it to the environment once more. The cycle then repeats.

When water is in the environment, natural processes such as filtration through soil and dilution with other water sources reduce impurities. We then continue treatment to produce water that is safe to drink. Water recycling technology speeds this up and improves the natural process.

Water recycling plants use advanced treatment techniques to convert treated wastewater into highly purified source water. Special membranes are used to remove salts and a range of other impurities. In fact, so much is removed from the water that some essential minerals such as calcium and magnesium have to be added back in to achieve the water quality customers are used to.

## Water terminology

**Source water:** water that is used as a source for drinking water.

**Drinking water:** water that has been treated to strict regulatory standards, ready for supply to domestic and non-domestic customers.

**Wastewater:** a combination of water from kitchens, bathrooms, sinks and taps (in domestic and non-domestic properties) and rainwater from roads and roofs, that is transported to, and cleaned at, a wastewater treatment works.

**Treated wastewater:** wastewater that has been treated to strict regulatory standards and is typically released to rivers or the sea.

**Recycled water:** purified water that has been produced by taking treated wastewater and removing remaining impurities using advanced treatment techniques.

**Reject water:** water containing impurities removed from the treated wastewater.

# A guide to the stages of water recycling

Water recycling uses advanced treatment techniques to turn highly treated wastewater, that is usually pumped away into rivers and the sea, into purified recycled water.

## Membrane Process

**Treated wastewater**, already extensively cleaned at a wastewater treatment works, is pumped through two filtering processes in the Water Recycling Plant. The first, micro-filtration, removes remaining impurities that could block the membranes used at the second stage of treatment – reverse osmosis. Here, dissolved salts and impurities are removed by pushing the water at high pressure through a membrane of tiny holes more than 50,000 times smaller than the width of a human hair. Dissolved impurities such as bacteria and pharmaceuticals are also removed.

## Advanced Oxidation Process

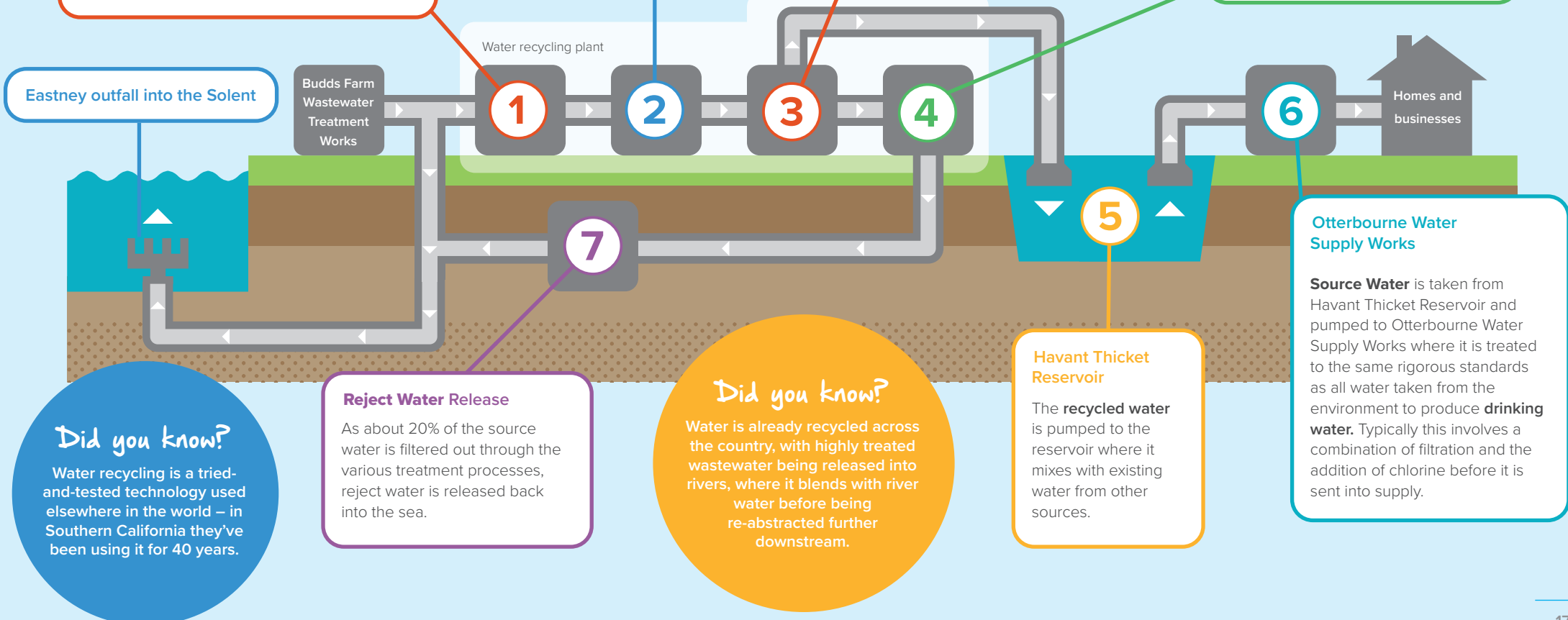
Reverse osmosis is extremely effective at removing impurities. But, as an extra layer of protection, ultraviolet light (just like that found in sunlight) is applied along with a small dose of a chemical called hydrogen peroxide. Both of these treatments are used around the world in water recycling. Ultraviolet light is widely used in other drinking water treatment processes as it helps reduce the amount of chlorine that needs to be added at later stages of treatment.

## Treated Water Conditioning

To make the water drinkable, minerals such as calcium and magnesium salts (that have been removed during the earlier stages of treatment) are added back in. As in traditional treatment methods, some chlorine may be added to the water to ensure it meets strict water quality standards.

## Waste Handling

Water and particles removed by each of the previous stages of treatment are taken away to be cleaned. The liquid is filtered to produce cleaned wastewater, known as reject water, which can be released back into the sea at Step 7. The process produces a concentrated solid matter which is removed and most commonly returned to the wastewater treatment works.



Eastney outfall into the Solent

Budds Farm Wastewater Treatment Works

Water recycling plant

Homes and businesses

Otterbourne Water Supply Works

Havant Thicket Reservoir

The **recycled water** is pumped to the reservoir where it mixes with existing water from other sources.

**Source Water** is taken from Havant Thicket Reservoir and pumped to Otterbourne Water Supply Works where it is treated to the same rigorous standards as all water taken from the environment to produce **drinking water**. Typically this involves a combination of filtration and the addition of chlorine before it is sent into supply.

### Did you know?

Water recycling is a tried-and-tested technology used elsewhere in the world – in Southern California they've been using it for 40 years.

### Reject Water Release

As about 20% of the source water is filtered out through the various treatment processes, reject water is released back into the sea.

### Did you know?

Water is already recycled across the country, with highly treated wastewater being released into rivers, where it blends with river water before being re-abstracted further downstream.

## Water recycling plant

The water recycling plant would be designed to receive, at the peak of a drought, a minimum flow of 19 million litres per day of treated wastewater from Budds Farm Wastewater Treatment Works in order to produce at least 15 million litres per day of purified recycled water. If a larger water recycling plant is needed, to potentially produce up to 60 million litres of water per day, then the plant would be designed to this capacity. The pipeline bringing in the treated wastewater will be sized to accommodate a larger flow into the water recycling plant.

The water recycling plant uses advanced treatment processes, explained on pages 16 and 17, to convert treated wastewater into purified recycled water. Among other technologies in the process, special membranes are used to remove dissolved salts and a large range of other impurities from the treated wastewater.

We will then transfer the recycled water to Havant Thicket Reservoir where it would mix with the spring water already stored in the reservoir. A high lift pumping station to transfer the recycled water from Havant Thicket Reservoir to Otterbourne Water Supply Works would be part of the new water recycling plant.

## Design requirements

As water recycling plants rely on using treated wastewater from wastewater treatment works, they ideally need to be located as close as possible to the wastewater treatment works. Not only would this reduce the length of pipelines needed between the water recycling plant and the wastewater treatment works, it would also reduce the cost and carbon footprint associated with pumping the wastewater over greater distances.

The water recycling plant would consist of one large building, which contains the majority of the process-related equipment and the associated chemicals. Additionally, there are a number of tanks and structures which will be located

externally, along with an administration building and roads for vehicular access. For a water recycling plant capable of producing 15 million litres of recycled water per day, an area of approximately 2.5 hectares (25,000m<sup>2</sup>) will be required.

To inform our process to find a suitable site, we identified that an area of six hectares (60,000m<sup>2</sup>) would be needed to ensure there is sufficient additional space for the high lift pumping station, tunnel shafts for the connecting pipelines, large construction compound and landscaping. This also provides space to accommodate a larger water recycling plant potentially capable of producing up to 60 million litres per day of recycled water, should the longer term planning work show this is required.

## Site selection

We undertook a site selection process to identify the best performing site to locate the new water recycling plant. Initially, we considered siting the water recycling plant at Budds Farm Wastewater Treatment Works as we already own the land and this would minimise the length of connecting pipelines needed between the wastewater treatment works and the water recycling plant. However, the Budds Farm Wastewater Treatment Works site is not large enough to accommodate the design requirements for even a smaller water recycling plant capable of producing at least 15 million litres of recycled water per day so we considered alternative locations outside of Budds Farm Wastewater Treatment Works.

We first looked for sites within a radius of 500 metres of the Budds Farm Wastewater Treatment Works. Given that available land within 500 metres of the Budds Farm Wastewater Treatment Works is severely limited, this search area was then expanded to 1500 metres. We identified sites within this search area that would minimise impacts on residential areas, community facilities and key infrastructure.

We identified nine sites and assessed these against a range of planning and environmental criteria.

From the nine sites considered, two sites emerged as best performing against the assessment criteria. The sites are shown on the plan on page 19.

- Site 71 is developed with warehousing and other businesses. Part of the site is designated as a mineral safeguarded site, which could constrain further redevelopment of sections of the site.
- Site 72 is a former landfill site and consists of grassland, vegetation and gravelled areas. Planning permission was recently granted on the site for industrial, storage and distribution development.

Both sites are bounded by the A27 to the north and to the south by Harts Farm Way from where vehicular access would be gained.

We assessed these two sites in more detail to identify a preferred site. Given that Site 71 is already developed and occupied by various businesses, we concluded that Site 72 is a better site to locate the new water recycling plant as it can be developed more readily.

Please refer to Section 4 of the Scheme Development Summary for more information about our site selection process.

What do you think about the process we went through to arrive at the proposed site for the new water recycling plant?

Proposed sites for the water recycling plant

Do you support our proposal to build a water recycling plant on Site 72 south of Havant?



## The pipeline network

We will need to install three sections of pipeline:

- between Budds Farm Wastewater Treatment Works and the new water recycling plant we will need two pipelines: one to transfer treated wastewater from Budds Farm Wastewater Treatment Works to the proposed water recycling plant and the other to transfer reject water from the water recycling process back to Budds Farm Wastewater Treatment Works.
- to transfer recycled water from the water recycling plant to Havant Thicket Reservoir
- to transfer source water from Havant Thicket Reservoir to Otterbourne Water Supply Works.

## The underground pipelines between Budds Farm Wastewater Treatment Works and the water recycling plant

### Design requirements for these pipelines

We will require two underground pipelines to connect Budds Farm Wastewater Treatment Works and the water recycling plant. One is required to transfer the treated wastewater required for the water recycling plant from Budds Farm Wastewater Treatment Works (which would be up to 450 millimetres in diameter). The other is required to transfer the reject water and any impurities produced by the recycling process back from the water recycling plant to Budds Farm (which would be up to 350 millimetres in diameter) for release via the existing Eastney long sea outfall.

We will need a new pumping station within the Budds Farm Wastewater Treatment Works to transfer the treated wastewater to the water recycling plant.

No physical works are needed within the offshore marine area.

### Route selection

For the selection process for both pipelines we worked on the assumption that Site 72 would be the proposed location of the water recycling plant, so the connections would need to be located between the Budds Farm Wastewater Treatment Works and Site 72.

In doing so, the pipelines would have to cross the Hermitage Stream which is directly upstream of internationally and nationally designated sites within Langstone Harbour. To avoid, reduce or mitigate any impacts during construction, we would need to employ a trenchless construction method underneath the stream. We have calculated that the shortest length of the pipelines required would be approximately 500 metres.

We have considered an open cut construction along the local road network. However, this would involve the pipelines to be longer and cause greater disruption and construction impacts in the area. We would still need to cross the Hermitage Stream whichever installation method is adopted. Taking the shortest and most direct route would minimise these impacts, and also reduce the cost and carbon emissions generated during the construction and operation of the pipelines.

The process for selecting a direct trenchless route for these pipelines has been greatly simplified by the lack of viable options available. In this instance, it has not therefore been necessary to follow the same process for the other two sections of pipeline which are considered further in this section.



*Langstone Harbour*

Do you have any views on the pipelines between Budds Farm Wastewater Treatment Works and the water recycling plant?

**i** Helpful information about installing pipelines

## Installing an underground pipeline

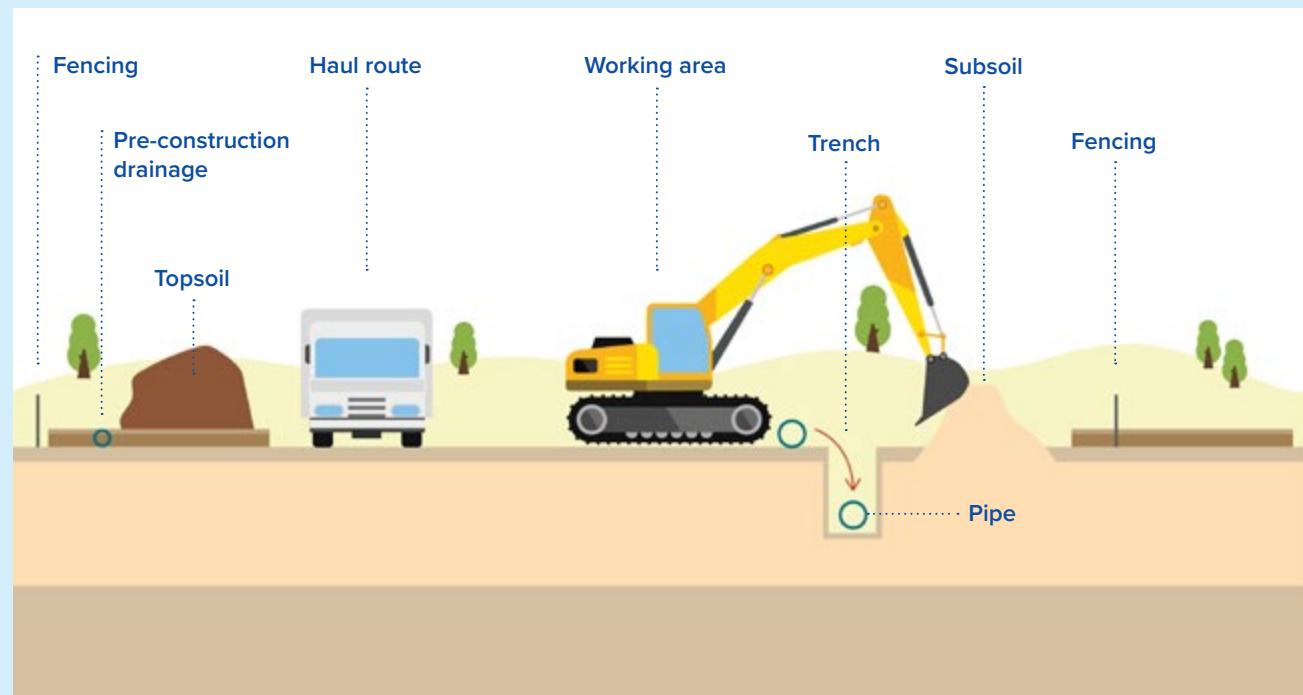
A large part of the Project involves laying pipelines under the ground. Here are some examples of different installation methods we could use.

Are there any areas where you feel construction works will be particularly challenging or disruptive?

### Trenched (open-cut) method

For installation of the majority of the pipeline route, we will likely use the conventional method of open cut excavation. This essentially involves digging a trench, laying the pipe in the trench, and then backfilling the trench with soil.

A typical working area is approximately 40 metres wide which allows sufficient space for digging the trench, storing the pipe alongside the trench before installation, and storing soil from the excavated trench during installation.



All images are not to scale, for indicative purposes only.

**i** Helpful information about installing pipelines

## Trenchless methods

For some sections of the pipeline route there will be critical crossings that will not be generally suited to open cut excavation. Examples of these could be roads, railways, waterways, sensitive environmental areas and other areas where construction could be restricted. Below are some examples of trenchless techniques that could be used.

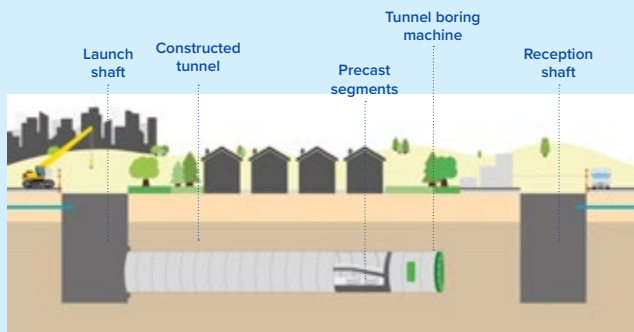
### Tunnelling

Where tunnels are used, typically a tunnel boring machine would be employed, with shafts dug at each end of the tunnel: a launch shaft from where the tunnel boring machine would start and a reception shaft where the tunnel boring machine would emerge and finish.

As shown in the image below, once the machine is launched, the tunnel construction cycle will begin one tunnel lining ring at a time. On completion of the tunnel the tunnel boring machine will be moved into the reception shaft, dismantled and removed, leaving the fully constructed tunnel ready for the pipelines to be installed and connected. Intermediate shafts may be required depending on the length of the tunnel or changes in geology.

We will undertake a site selection process to identify the best site for the launch and reception shafts, and any intermediate shafts if required, and present this at our next consultation.

Typical tunnel boring machine representation

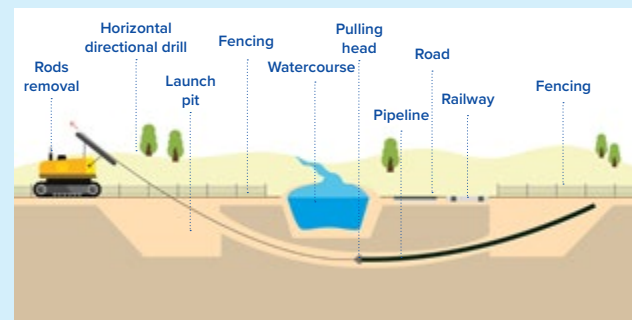


### Horizontal directional drilling

Horizontal directional drilling involves the use of a directional drilling machine, and associated attachments, to accurately drill along the chosen bore path and lay the path for the pipe, as shown in the image below.

Two working areas are established on either side of the feature to be crossed with a pit or shaft created at each end of the pipeline route. The directional drilling machine is guided by the operator to follow the desired route and is advanced through the ground until the machine reaches the reception shaft at the far end of the route. A pipe is pulled through the hole without disturbing the surface.

Typical horizontal directional drilling representation



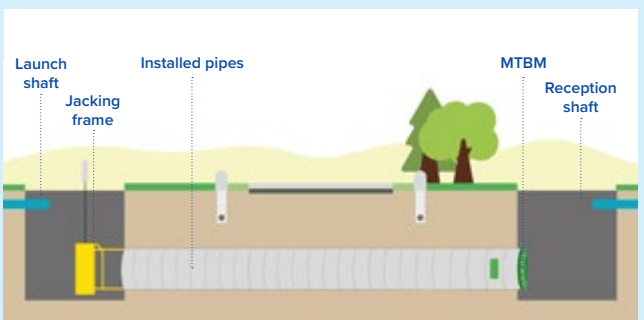
### Microtunnelling (pipe jacking)

Microtunnelling is a trenchless pipeline installation technique that utilises microtunnel boring machines which are usually remote controlled from the surface, to install pipes underground.

As shown in the image below, the microtunnel boring machine is advanced through the ground using specially manufactured jacking pipes which are pushed into the ground using hydraulic pistons. The pistons push the pipe and microtunnel boring machine forward at a controlled rate to ensure effective and safe progress of the machine as it cuts the soil.

The microtunnel boring machine is guided by a steering system which allows the operator to follow the desired route by using steering pistons located just behind the cutterhead. As each pipe advances through the ground one pipe length at a time, the pistons are withdrawn to allow the next pipe section to be added to the pipe string. This process continues until the machine reaches the reception shaft at the far end of the route.

Typical microtunnel (pipe jacking) representation



## The underground pipeline between the water recycling plant and Havant Thicket Reservoir

### Design requirements for this pipeline

We will need a pipeline of up to 750 millimetres in diameter to transfer the purified recycled water from the water recycling plant to Havant Thicket Reservoir approximately 3.5 kilometres to the north.

The broad geographical location of the corridor for this section (referred to as corridor section O) is defined by the location of the water recycling plant and Havant Thicket Reservoir. Options were considered to open cut through the local road network or to construct a tunnel for the pipeline.

## The underground pipeline between Havant Thicket Reservoir and Otterbourne Water Supply Works

### Design requirements for this pipeline

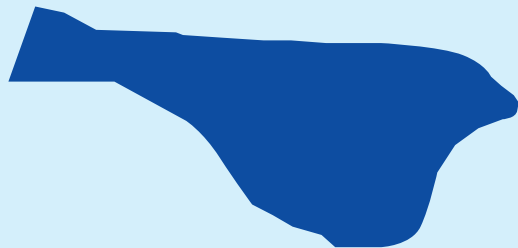
We will need a pipeline of approximately 40 kilometres and up to 1200 millimetres in diameter to transfer water from Havant Thicket Reservoir to Otterbourne Water Supply Works.

Next we set out how we have developed the corridors for these pipelines. Before you read on it may be useful to know the difference between a corridor and a pipeline route.

### **i** Helpful information about corridors and routes

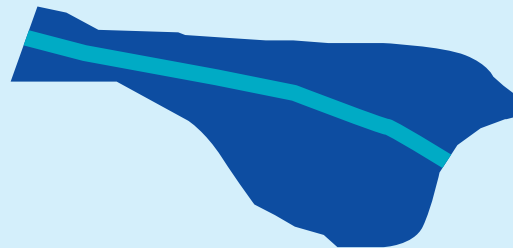
#### Corridor

Corridors are carefully identified areas of land within which the pipeline could be routed. The corridors are developed by analysing various opportunities and constraints, including the need to avoid environmentally sensitive areas, historic features and residential and community land uses where possible. For this Project our corridors vary in width depending on these opportunities and constraints.



#### Route

A pipeline route is a more specific single path along which the pipeline would be laid. In this consultation we have shown an indicative pipeline route within the preferred corridor.



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## Pipeline corridor development

Here, we explain how we developed possible corridors for the new pipelines between the new water recycling plant and Havant Thicket Reservoir, and Havant Thicket Reservoir and Otterbourne Water Supply Works. Further details on the process for corridor development can be found in Section 4 of the Scheme Development Summary.

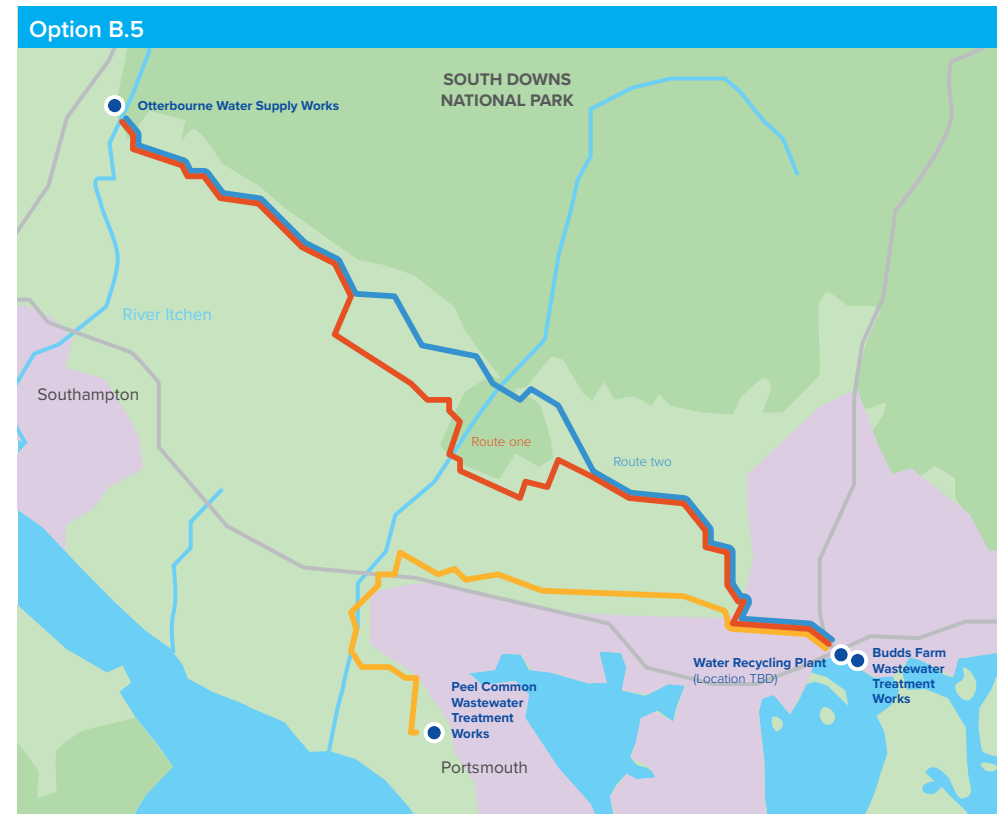
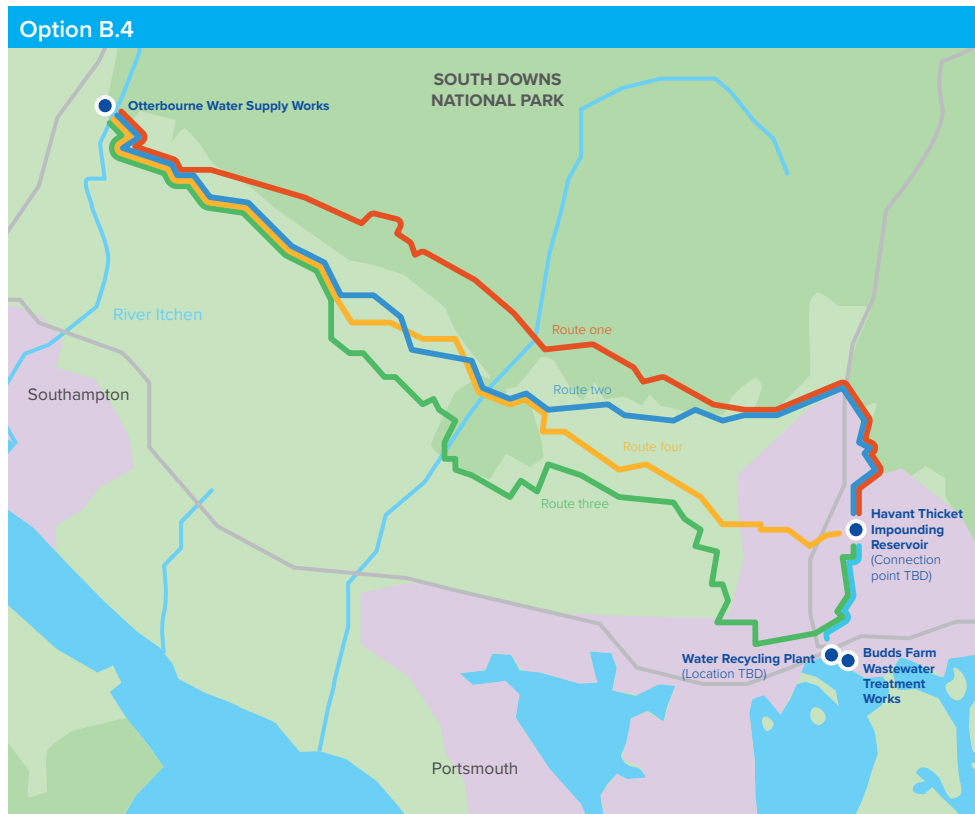
### Where our pipelines corridors came from

We started by looking at the work carried out to inform our previous consultation in 2021 which identified a number of possible pipeline routes associated with the combined water transfer and water recycling options - Option B.4 and Option B.5.

The most northerly pipeline routes for Option B.4 (red and blue in the plan) would have had a significantly greater impact on the South Downs National Park than the other pipeline routes. Both pipeline routes would also have potentially impacted ancient woodland where they lie in

close proximity to the northern edge of Staunton Country Park. As a result, only the yellow and green pipeline routes were taken forward for further consideration at this stage. These were largely identical to the red and blue pipeline routes identified for Option B.5. Additionally, the northern section of the yellow pipeline route for Option B.5 was also taken forward as a potentially viable alternative to get part of the way to Otterbourne.

For more information on how Options B.4 and B.5 were developed since the 2021 consultation please see the Scheme Development Summary.



## How we generated the corridors

The original pipeline routes, presented at the 2021 consultation, were developed taking into account many factors that will influence the final specific routing. These included, as far as possible, residential properties, community facilities, ancient woodland, heritage sites (e.g. scheduled monuments and listed buildings), protected landscapes (e.g. national parks) and internationally and nationally designated ecological sites.

Following the options appraisal process, which selected Option B.4 as our proposed solution (i.e the Project we are now consulting on) we developed all of these possible pipeline routes into wider pipeline corridors. Whilst this might seem like a backward step, it was crucial we fully considered the extents to which the routes could be sited within the influencing factors.

## Assessing the corridors

We split each pipeline corridor into sections and worked closely with our technical teams to assess the performance of each corridor section in detail against carefully selected evaluation criteria. These criteria included a range of planning, environmental, construction, transport and land use considerations and were developed in consultation with local stakeholders.

Please refer to Section 4 of the Scheme Development Summary for further details of the evaluation criteria.

The various pipeline corridor sections which were identified and assessed are shown on the plan on page 26 and details provided in pages 27 to 40. From our assessment work, a preferred corridor between Havant Thicket Reservoir and the water recycling plant and Havant Thicket Reservoir and Otterbourne Water Supply Works emerged which performed better overall against the evaluation criteria than the other corridor sections. The preferred corridor is highlighted on the plan on page 26. Subject to the feedback we receive from this consultation, we are currently not intending to progress the other corridor sections. We will not need all of the land in the corridor for the pipeline route.

At this early stage, we have shown an indicative pipeline route within our corridor which we are referring to as the “best engineering solution” pipeline route. This has been selected based on the topography (levels) of the land, construction constraints and all of the information that has been gathered to date by our technical teams.

Once we have selected a proposed corridor, we will investigate the detailed routing of the pipeline within this corridor and develop the route further, taking into account engineering and environmental factors as well as the feedback we receive from this consultation and our engagement with stakeholders.

We will work closely with local authorities and environmental bodies and listen to the views of local communities to ensure that any concerns are heard.

In the next section we set out the corridor sections between the Havant Thicket Reservoir and Otterbourne Water Supply Works that we have identified and evaluated. We provide an explanation as to why corridor sections are preferred or are not currently being progressed.

First, we present the preferred corridor, followed by the corridor sections that are not currently being progressed.

Further information can be found in Section 4 of the Scheme Development Summary and the Book of Maps.



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What do you think about the process we went through to arrive at the pipeline corridor sections?

What factors are important to you that we should consider when looking at the detailed routing of the pipeline within the preferred corridor?

### Corridor sections



### Corridor sections

This is a key to each of the corridor sections.

Our preferred corridor is highlighted.

### How to use the corridor tab system

On the next few pages you'll see the different corridor sections highlighted at the top of each page.

Use the colour coded tab system we've created to easily identify the corridor section on the plan.



M N O P Q R S T V W X Y Z

## Corridor Section O

### Section description

This corridor section is a narrow route which starts from the water recycling plant south of Havant and heads north through Havant. It crosses the A27, the Hermitage Stream, a railway line, the B2149 and Bidbury and Bedhampton Park. The section crosses areas at risk of flooding west of the Leigh Park area associated with the Hermitage Stream. At the northern end, it crosses into Staunton Country Park and Grade II\* Listed Leigh Park and connects into Havant Thicket Reservoir.

### Assessment outcomes

As well as accommodating the pipeline transferring recycled water from the water recycling plant to Havant Thicket Reservoir (which would be up to 750 millimetres in diameter), this corridor section could also accommodate the pipeline starting the transfer of water from Havant Thicket Reservoir to Otterbourne Water Supply Works (which would be up to 1200 millimetres in diameter) to minimise construction impacts.

Co-locating both pipelines along the same route would make open cut construction of the pipeline challenging. The open cut route for the pipeline would be located within the road network in Havant, along Bedhampton Road, Park Lane and Middle Park Way. Co-locating the pipelines in an open cut trench would result in the need for a trench approximately four metres wide and therefore would result in potential road closures. As well as impacts to the road network, there is also potential for impacts to residential properties in Havant through noise, vibration and dust generated by open cut construction.

We are unable to co-locate the two pipelines within the pipeline corridor that will be used for the approved Portsmouth Water pipeline due to a lack of space and incompatible timings.

Please refer to the Book of Maps for details of Portsmouth Water's pipeline area.



Tunnelling the route (with two pipelines in the same tunnel) will reduce the level of construction activity at surface level and avoid surface crossings of the Hermitage Stream which has the potential to affect internationally designated habitats downstream within Langstone Harbour. Tunnelling also reduces the risks associated with undertaking construction activities in areas at risk of flooding.

Our tunnel would be approximately 15 metres deep, depending on the ground profile, and we acknowledge there is the potential for vibration impacts during construction. One of our key aims is to avoid any impacts of our proposals that cannot be avoided through further surveys and investigations, consultation and engagement, iterative design and robust impact assessments. This will enable us to identify appropriate measures to mitigate impacts. For more information refer to Section 4 of this brochure for our approach to environmental impact assessments.

We will need to connect the northern end of the corridor section with Havant Thicket Reservoir which will be built within Staunton Country Park and Leigh Park, which is a listed park and garden. The reception shaft for the tunnel boring machine will be located near the connection point and we will need to install a small section of the pipeline using the open cut excavation method through the park as we will not be able to locate the shaft close enough to the reservoir.

We propose to locate the launch shaft of the tunnel on the site of the water recycling plant site to reduce the land required. The material generated by tunnel excavation will need to be removed from the tunnel launch shaft via the local road network.

Further information on the options we evaluated within corridor section O can be found in Section 4 of the Scheme Development Summary.

**Our preferred corridor includes corridor section O with a tunnelled route that contains two pipelines and an open cut section through Leigh Park.**

# Corridor Section P

## Section description

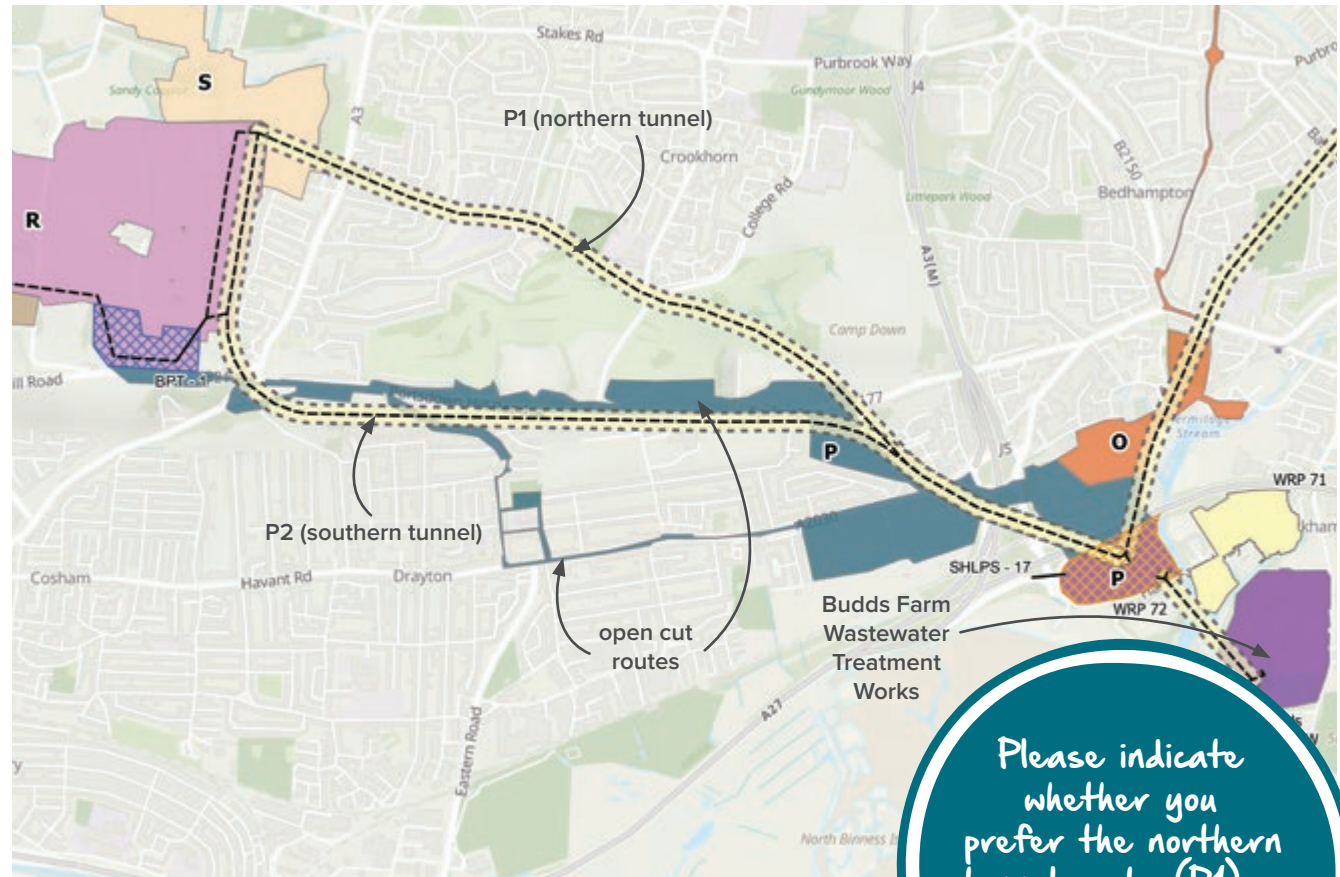
This corridor section starts south of Havant and runs from east to west, before heading northwest, crossing the A27, A3 (M), the West Coastway railway line, Drayton and Farlington, prior to then ascending Portsdown Hill.

## Assessment outcomes

We considered a tunnelled route in this corridor section as this would reduce the level of construction activity at surface level and would also significantly reduce the potential air quality, noise, vibration, socio-economic, transport and landscape impacts along the length of the tunnel compared to the open cut route. Wayfarers Walk and Solent Way long distance paths and National Cycle Route 222 would be impacted if an open cut method was adopted. Further information on decision making between the open cut and tunnelled route in corridor section P can be found in Section 4 of the Scheme Development Summary.

Within this corridor section we propose two options for a tunnelled route.

- **The northern tunnel route option (P1) follows a route south of Crookhorn and would avoid Fort Purbrook. It has the potential to impact groundwater during construction as sections of this tunnel would be located within Source Protection Zone 1c which protects groundwater quality in the Havant area.**
- **The southern tunnel route option (P2) follows Portsdown Hill Road and runs adjacent to Fort Purbrook. There is potential for the tunnel to encounter tunnels under the fort associated with previous military uses of the fort.**



Corridor section P

Please indicate whether you prefer the northern tunnel route (P1) or the southern tunnel route (P2).

Our tunnel would be approximately 30 metres deep depending on ground profile although we acknowledge there is the potential for vibration impacts during construction. One of our key aims is to avoid any impacts of our proposals and then identify and manage any impacts of our proposals that cannot be avoided through further surveys and investigations, consultation and engagement, iterative design and robust impact assessments. This will enable us to identify appropriate measures to mitigate impacts. For more information refer to Section 4 of this brochure for our approach to environmental impact assessments.

A tunnel launch and reception site would be needed for the tunnelled option. Locating the launch shaft of the tunnel on the water recycling plant site would reduce the land required. The location of a reception shaft for either tunnel route would need to consider any areas at risk of flooding, landscape impacts and other sensitive receptors.

**Our preferred corridor includes corridor section P.**

Material would also need to be removed from the tunnel construction compounds predominantly focused at the tunnel launch site at the southeast of the corridor in Havant.

# Corridor Section R

## Section description

This corridor section is routed west of Widney and ends at the A32. The south of the corridor section follows the ridge of Portsdown Hill, and the north of the corridor section routes further down the ridge towards the base of the River Wallington valley.

From the start of this section of corridor R, which follows on from corridor section P, it crosses the B2177 and into an open landscape characterised by farmland. The most notable feature to be crossed is the River Wallington which is in an area where flood risk is high.

As the corridor section follows the ridge of Portsdown Hill and is predominantly within farmland, the south of corridor section is within an elevated and exposed landscape. Parts of the corridor section are designated as the Portsdown Hill and Forest of Bere areas of Special Landscape Quality.

Directly south of the corridor are a number of heritage assets, three Palmerston Forts which line the ridge of Portsdown Hill, the Nelson's Monument and a World War II Anti-Aircraft Gun Site. These sites are classified as Scheduled Monuments and Grade I and II\* listed buildings respectively, which provides them protection against harm from development.

Parts of the south of the corridor section are owned by the Ministry of Defence and therefore gaining consent to construct the pipeline in this area could be more challenging.

The north of the corridor is further away from the ridge of Portsdown Hill and therefore the landscape is not as exposed. This area is in closer proximity to locally designated environmental sites and areas of ancient woodland.

The southeast of the corridor section covers land that is designated as open space. There is space within this corridor section to avoid impacting on this land.

We show on the map below the zone for a break pressure tank we are progressing in corridor section R. Please refer to page 42 for more information on the requirements for break pressure tanks.

The corridor would intersect long distance walking routes (Allen King Way, Pilgrims Trail and Wayfarer's Walk) which have broad views of the surrounding area.

A small part west of the corridor section intersects with part of the approved Welborne Garden Village development. The pipeline would need to be sited to avoid impacting development in this area.

## Assessment outcomes

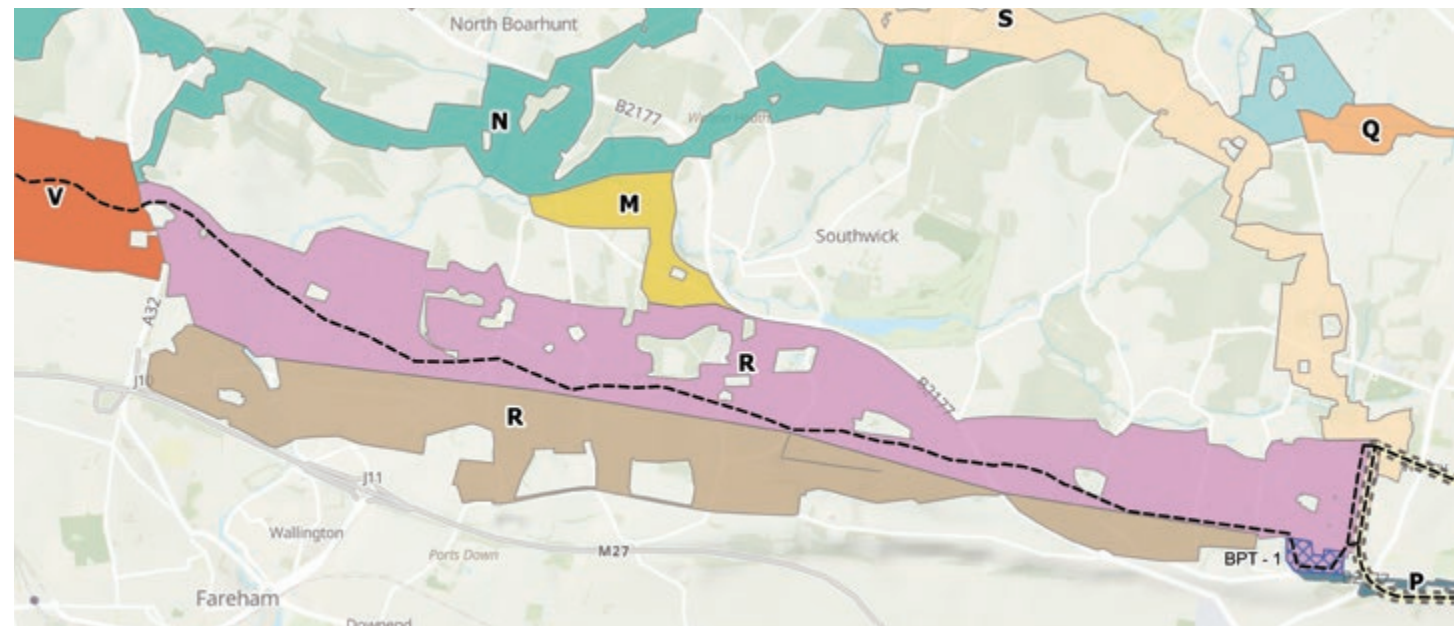
There are consenting risks associated with constructing the pipeline close to the heritage assets directly south of the corridor section, potentially impacting their setting, and with potential impacts to the landscape character of the area during construction on the ridge of Portsdown Hill.

These risks led to the conclusion that this corridor section should be trimmed so that the southern part was not progressed. This means that the nearest heritage asset to the south of the corridor section would be approximately 150 metres at its closest point.

Trimming the south of the corridor section (shaded brown below) means that the northern section is being progressed as part of the preferred corridor. As mentioned above, the north of the corridor is close to locally designated sites and ancient woodland. The exact location of the pipeline to be determined through further route refinement would be sited to avoid impacts on these areas where possible.

A potential pipeline route through corridor section R is likely to reduce the amount of above ground plant required, however further design review is required to determine this.

**Our preferred corridor includes corridor section R.**



Corridor section R

# Corridor Section V

## Section description

This corridor section begins west of Wickham Road, north of Fareham and passes west of Wickham.

The corridor section begins by crossing Wickham Road (A32) and follows Knowle Road through the site of the approved Welborne Garden Village development. It heads northwest towards the north edge of Knowle, and crosses National Cycle Network Route 224 on Mayles Lane. It crosses the River Meon and an area of high flood risk around the river, before moving towards Titchfield Lane and crossing the southwest edge of Wickham Park Golf Club. From here, the corridor section heads northeast to cross Winchester Road (A334) and Pricketts Hill to connect to corridor section Y.

The corridor section is within a locally designated valued landscape.

The corridor section intersects the Chichester to Bitterne Roman Road and, as a result, there is higher potential to encounter archaeological remains during construction of the pipeline in this area.

We show on the map the zones for two intermediate pumping stations we are progressing in corridor section V. Please refer to page 42 for more information on the requirements for intermediate pumping stations.

## Assessment outcomes

This route is located in a sensitive landscape adjacent to the Portsdown Hill and Fareham Special Landscape Quality areas. There is potential for ecological and hydrological impacts associated with crossing of the River Meon which we consider can be mitigated.

The indicative pipeline route follows Titchfield Lane, however, installation could potentially require a closure of part of Titchfield Lane and impact the west side of Wickham Park Golf Club. To reduce the extent of construction works we could route the pipeline to the west of Titchfield Lane which would cross ancient woodland or the route could be sited to the east of Titchfield Lane which would have more impacts on the golf club.

The route to the west of Titchfield Lane could potentially impact ancient woodland which would not meet the objectives set by planning and environmental policy.

Further site selection and engagement with landowners including Wickham Park Golf Club will be undertaken to identify the best route through this area.

We will work with the developer of the Welbourne Garden Village to understand how a pipeline route can be best located alongside the development.

**Our preferred corridor includes corridor section V.**



Corridor section V

## Corridor Section Y

### Section description

This corridor section heads northwest across rural land and crosses Blackhorse Lane and the B2177 (Winchester Road). It continues northwest, crosses Sandy Lane, Curdridge Lane, and Botley Road (B3035) from where it heads north and crosses the River Hamble and the Pilgrims' Trail long distance route to reach corridor section Z south of Bishop's Waltham.

### Assessment outcomes

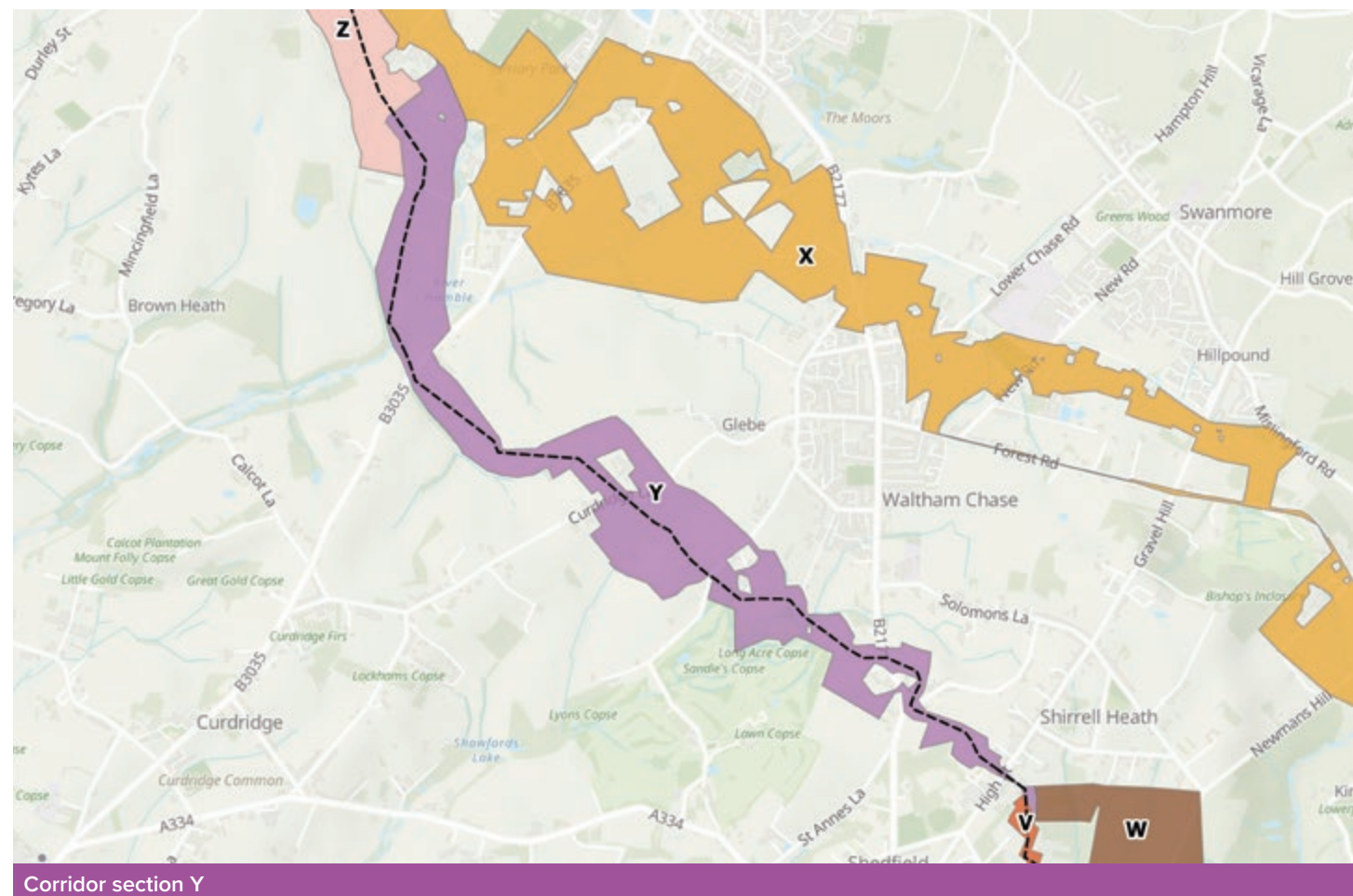
Significant constraints in this corridor section relate to proximity to residential properties. The corridor passes close to a number of properties where there is potential for impacts through noise, vibration and dust from construction works. Further work will be undertaken throughout the development of the Project to avoid and minimise these impacts.

We are likely to use trenchless construction methods to avoid following an access road next to properties east of High Street. This would avoid impacting on access to properties and posing disruption to the High Street in Shirrell Heath that could occur if we employ an open cut excavation method here.

Further west, where the corridor crosses Blackhorse Lane and Winchester Road (B2177), our indicative pipeline route passes east of The Forge Inn, providing a buffer from properties on Blackhorse Lane and avoiding passing close to properties west of Winchester Road. There is an alternative option that crosses Blackhorse Lane, passes south of The Forge Inn and through a gap between properties west of Winchester Road. This option is closer to properties and construction works have the potential to have a greater impact.

Trenchless construction will be utilised when crossing the River Hamble to avoid direct impacts to the watercourse.

**Our preferred corridor includes corridor section Y.**



Corridor section Y

## Corridor Section Z

### Section description

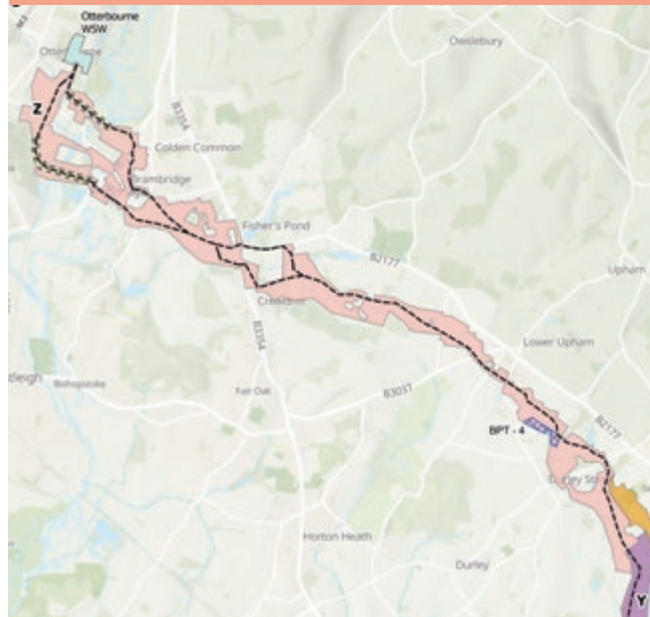
The corridor section begins south of Newtown and continues north to cross Winters Hill. It heads northwest to cross Scivier's Lane, Alma Lane, Mortimers Lane (B3037) and Stroudwood Lane southwest of Lower Upham. It continues northwest, south of the village of Colden Common, crosses Highbridge Road (B3335), the River Itchen, the Itchen Way path and the South West Main Line railway until it reaches Otterbourne Water Supply Works.

We show on the map the zone for a break pressure tank (BPT-4) we are progressing in corridor section Z. Please refer to page 42 for more information on the requirements for break pressure tanks.

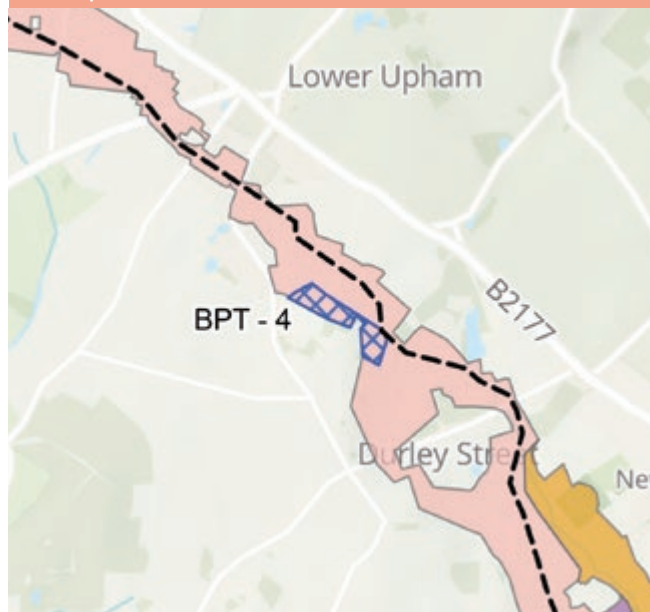
### Assessment outcomes

The corridor section begins south of Newtown. The indicative pipeline route runs close to overhead power lines and tracks the route of a tributary of the River Hamble. Sufficient clearance from overhead power lines would be required and impacts to the watercourse would need to be mitigated. There is an alternative option further west to the east of Durley Street which would avoid the overhead power lines and the proximity to the tributary of the River Hamble. This option would bring the pipeline closer to properties in Durley Street. From Winters Hill, the corridor section passes southwest of Kimbers Copse and heads north west to cross Alma Lane, Scivier's Lane Mortimers Lane (B3037) and Stroudwood Lane south west of Lower Upham. It continues northwest until it reaches a point east of Crowdhill. There are two potential routes at this point in the corridor section:

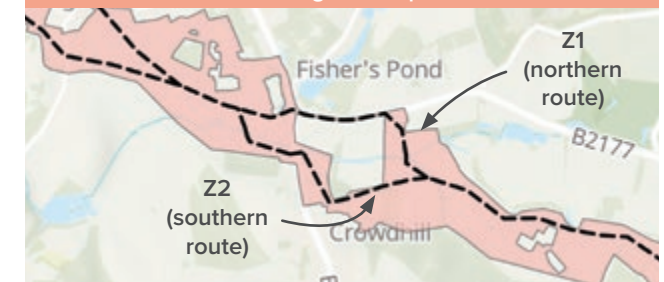
Corridor section Z



Break pressure tank 4 within corridor section Z



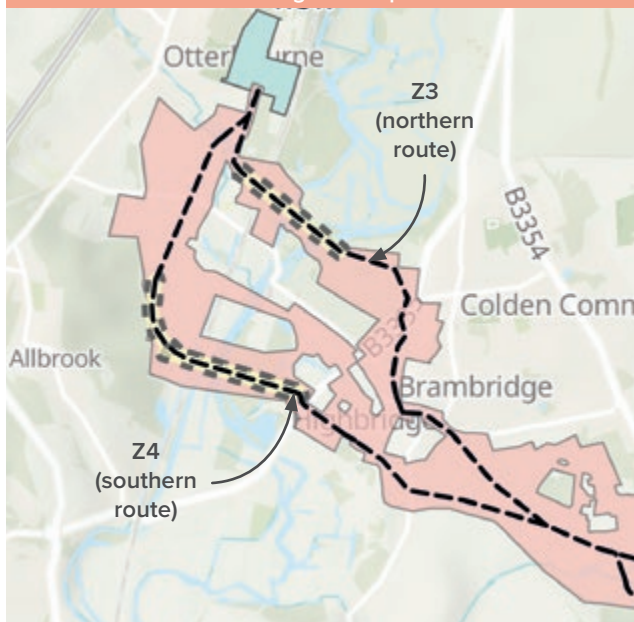
Corridor section Z showing route options Z1 and Z2



- The northern route (Z1) crosses Bow Lake and routes along Portsmouth Road (B2177) to the junction between Portsmouth Road, Main Road and Winchester Road (B3354). A culvert crosses Main Road and therefore open cut construction cannot be used, so we are likely to cross Main Road using trenchless methods. This could result in a road closure at a busy junction. This route additionally intersects with groundwater source protection zone 2c which protects groundwater abstraction at Otterbourne.
- The southern route (Z2) passes north of Crowdhill through a historic landfill where there is potential to disturb and expose buried material. It runs adjacent to the Park Pale at Marwell Scheduled Monument where construction work has the potential to impact the setting of this heritage asset. The route crosses Winchester Road (B3354) and joins up with the northern route.

Please indicate whether you prefer the northern route (Z1) or the southern route (Z2)

Corridor section Z showing route options Z3 and Z4



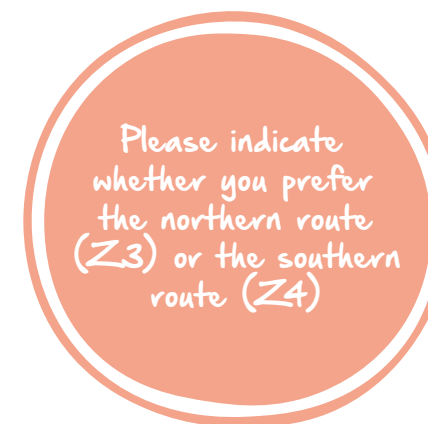
Before reaching Otterbourne, the corridor section has to cross the River Itchen. The river is an internationally and nationally designated ecological site and therefore it is heavily protected by planning and environmental criteria. For this reason, we have decided to tunnel under the river, as well as the Itchen Way path and the South West Main Line railway. There are two potential routes for crossing the River Itchen.

- The northern route (Z3) passes through the South Downs National Park. National policy gives National Parks the highest status of protection in relation to landscape and scenic beauty and requires us to look at the scope for developing the Project outside of the National Park in the first instance. As construction work associated with constructing the tunnel will take place within the National Park, there is potential for temporary adverse impacts to its special landscape qualities. Crossing of Highbridge Road (B3335) is required. The corridor is approximately 200 metres from the Moated Site at Otterbourne Manor scheduled monument. There is potential to avoid or minimise impacts resulting from construction works given the distance of the corridor from this asset.
- The southern route (Z4) is located outside of the South Downs National Park. The route passes close to ancient woodland at Otterbourne Park Wood. It also passes adjacent to the Moated Site at Otterbourne Manor scheduled monument, where there is potential for impacts to the setting of this asset during construction of the pipeline. The southern route has to cross an upstream tributary of the River Itchen, which is considered to be linked to the River Itchen ecological sites. Trenchless construction would be utilised here, however there remains the potential for water quality impacts as a result of construction activity in the flood plain of the tributary. The eastern section of this route is within areas of high flood risk so we will need to assess further where we locate the tunnel launch shaft to ensure this is not located in a high risk flood zone. Crossing of the Highbridge Road (B3335) is required. There are two historic landfills west of Highbridge Road and south of Kiln Lane. Construction within these areas has the potential to expose and disturb buried material so appropriate environmental controls would be required to mitigate any risk.

The most significant constraints within this corridor section relate to the potential for construction within, or in close proximity to the South Downs National Park, proximity to scheduled monuments and proximity to the River Itchen and its tributaries.

We will look to reduce construction impacts as far as possible within Durley Street, and on the Main Road (B3354) near Fisher's Pond. As the pipeline corridor approaches Otterbourne, there is optionality for crossing the River Itchen.

**Our preferred corridor includes corridor section Z.**





## Corridor sections we are not currently progressing

The following section of the brochure sets out the other corridor sections that we have considered and evaluated as part of the process of developing the Project. We are not currently progressing these corridor sections as they performed less well than the preferred corridor sections when undertaking the scheme development evaluation.

More detail on the constraints of these corridors can be found in Section 4 of the Scheme Development Summary.

## Corridor Section Q

### Section description

The corridor section begins west of Havant Thicket Reservoir and heads west towards Waterlooville, crosses the A3(M), the B2150, various watercourses such as Hermitage Stream, Potwell Tributary, Old Park Stream and Park Lane Stream and intersects a new housing development at Berewood on the west of Waterlooville and joins corridor section T.

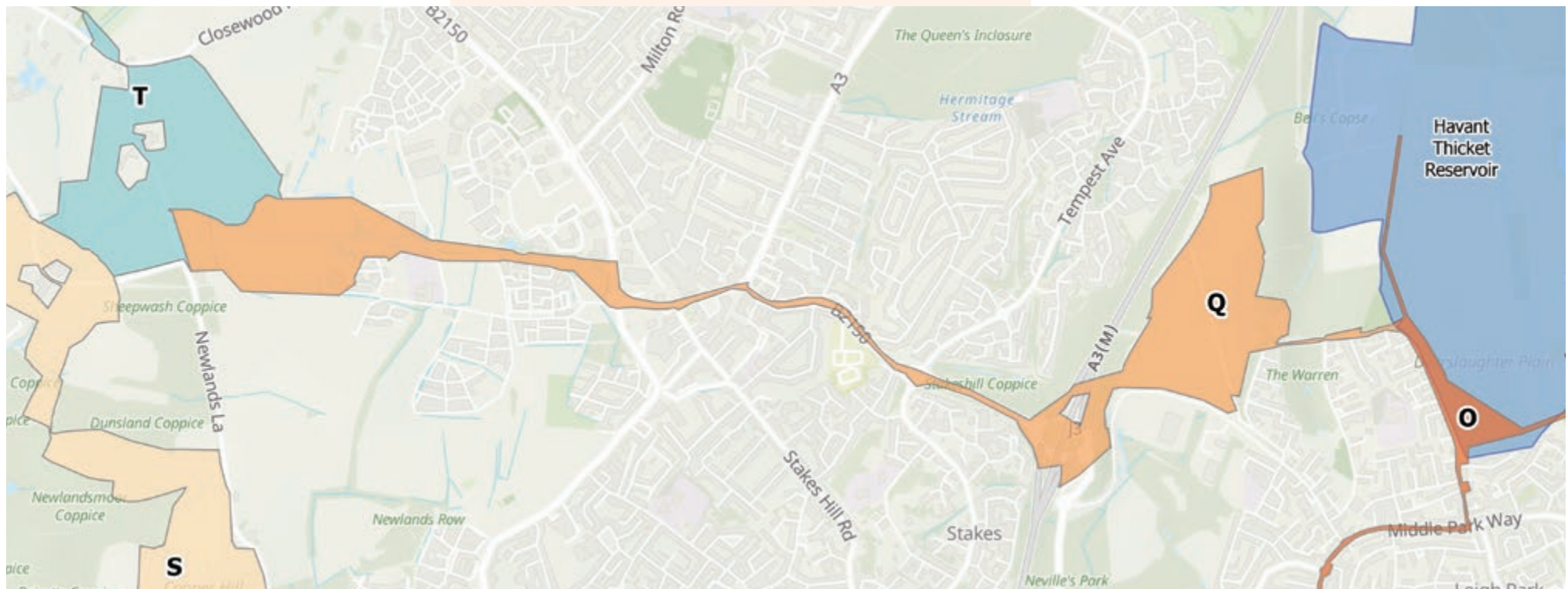
### Assessment outcomes

This corridor section consists of an open cut trench route. Tunnelling is not viable as there is not a suitable location for siting the intermediate shaft that is required for the operation of the tunnel boring machine within Waterlooville.



An open cut route would have significant construction constraints as a result of having to cross various underpasses and overpasses along the road network in Waterlooville and the limited space available for construction, given the corridor section runs through a densely built-up area.

**This corridor section is not currently being progressed and does not form part of the preferred corridor as construction using the open cut excavation method would cause significant disruption and impacts within Waterlooville.**



Corridor section Q

## Corridor Section S

### Section description

The corridor section begins west of Widley and heads north towards Purbrook Heath and northwest towards Hipley.

There is a major pinch point between two areas of ancient woodland (Dunsland Coppice and Wards Coppice) south of Furzeley Corner. The corridor section goes on to cross a solar farm on the Southwick Estate at Belney Lane and ends to the west of Hipley.

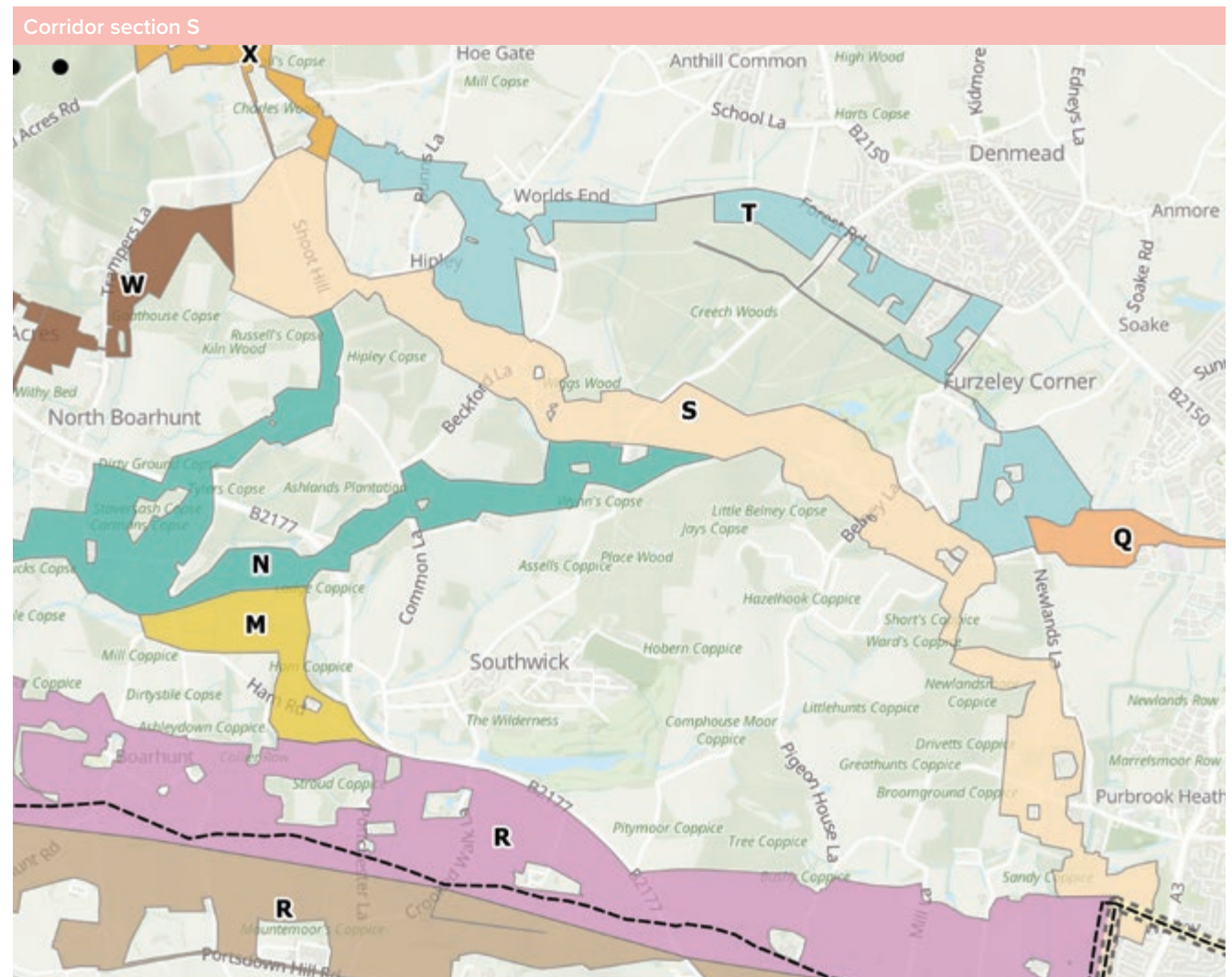
### Assessment outcomes

The most significant constraint with the corridor section is the pinch point between two areas of ancient woodland. There would not be sufficient space to provide adequate buffers from the ancient woodland through open cut construction. There would be potential for impacts to the ancient woodland which would be against the objectives of planning and environmental policy. Therefore this section of the route would need to be tunnelled to avoid direct and indirect impacts. A tunnel would require permanent structures associated with shafts and access roads in this location. As there are no alternative options within this corridor to avoid the ancient woodland, or avoid the need to tunnel under the ancient woodland, this has contributed to this corridor not being progressed.

Another consideration was the solar farm which extends across the width of the corridor section. This poses a constraint as there is no potential to avoid this intersection given the ancient woodland to the south and Creech Wood which is used for recreational purposes to the north. Routing the pipeline through this corridor section would require removal of the affected solar panels, and we would need to agree with the developer how to manage the interaction between the projects.

**This section is not currently being progressed and does not form part of the preferred corridor as a result of the lack of suitable alternatives for avoiding ancient woodland and potential impacts on the solar farm.**

Corridor sections that are not currently being progressed





# Corridor Section T

## Section description

The corridor section begins at a point southeast of Furzeley Corner. It heads northwest along Forest Road and crosses Bunkers Hill. The central section of the corridor section passes Creech Woods and heads towards Worlds End. The River Wallington is crossed in multiple locations by this corridor section.

## Assessment outcomes

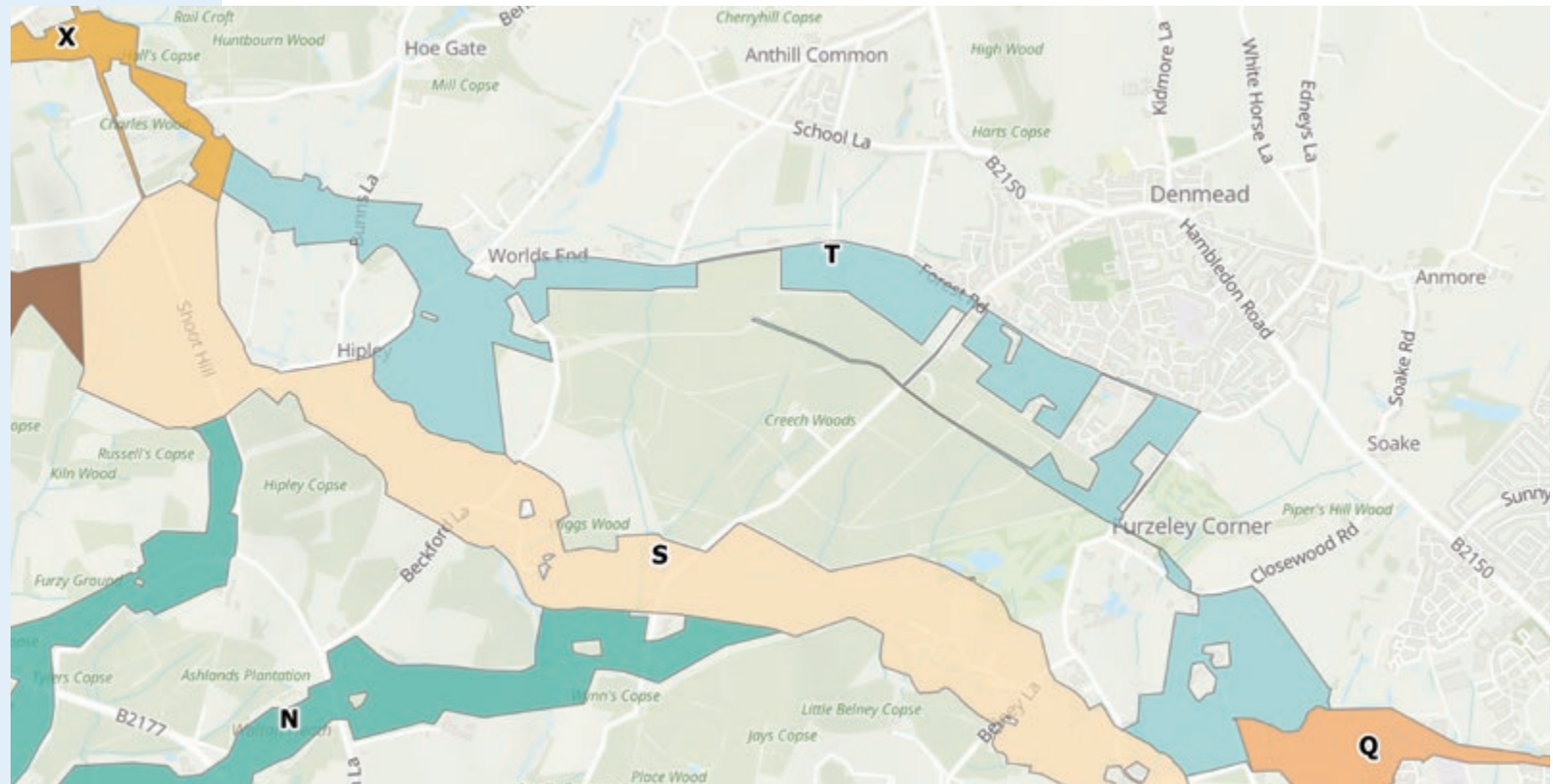
Extended sections of the pipeline within this corridor section would have to be laid using the open cut construction method within the existing road network on Furzeley Road and Forest Road adjacent to properties within Denmead. This would result in likely noise, vibration and air quality impacts, as well as disruption to transport routes and access to properties. Given the rural location and low strategic importance of the road network in this location, tunnelling is not considered to be an appropriate solution in this location.

An option to route south of Forest Road within Creech Woods is not viable as a result of the loss of woodland that would be required to construct the pipeline.

The corridor is adjacent to two areas of Source Protection Zone 1 at World's End. These are protected areas where water is abstracted from the ground. Construction within this area has the potential to impact water quality.

The corridor cuts through the area where the two sides of Furzeley Golf Course meet at Furzeley Road. There would be potential impacts to the golf course.

**This section is not currently being progressed and does not form part of the preferred corridor as there are more suitable corridor sections within the preferred corridor that do not impact on the road network or residential properties as much as this corridor section.**



Corridor section T

Corridor sections that are not currently being progressed

# Corridor Section M

## Scheme Description

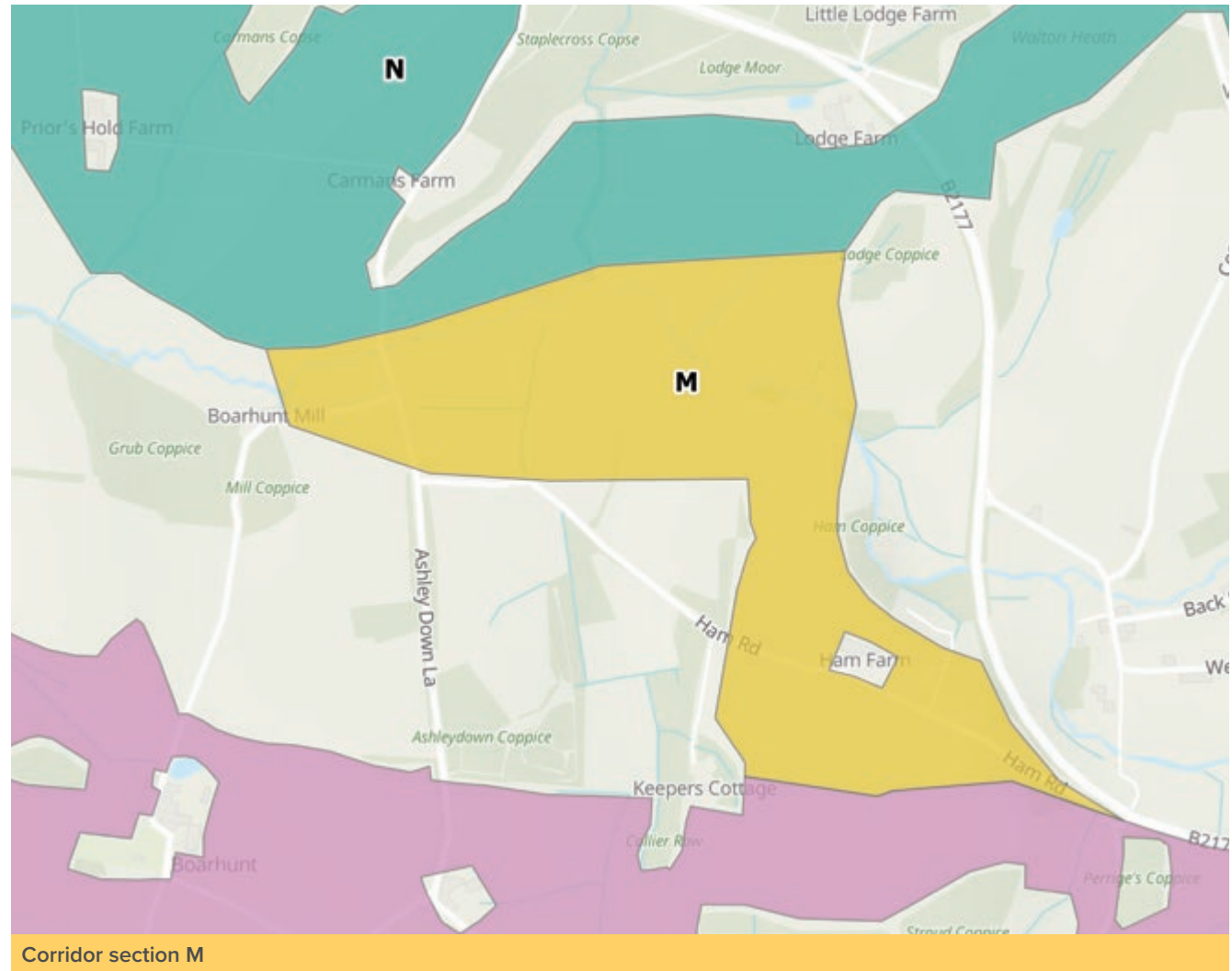
The corridor section starts at Stroud Coppice, heads northwest towards Boarhunt Mill and crosses the River Wallington to join with corridor section N.

## Assessment outcomes

This corridor section was developed as a connection between corridor section N and R to route further north to reduce interfaces with heritage assets in the south of corridor section R.

There are few significant constraints within this corridor aside from being in an area at high risk of flooding as it descends into the valley of the River Wallington. This means that the corridor will have to cross into and along a large area where the risk of flooding is high. National policy dictates that the sequential test should be applied when selecting our route. There are currently other corridor sections that do not pass through high flood risk areas to the extent of corridor section M, and these should be progressed ahead of this corridor section.

**This section is not currently being progressed and does not form part of the preferred corridor as there are other options that do not cross through high risk flood areas as much as this corridor section.**



Corridor section M

# Corridor Section N

## Scheme Description

The corridor section follows one of two routes, crosses the B2177 east of North Boarhunt and Wickham Common and reaches corridor section V along one of two routes.

## Assessment outcomes

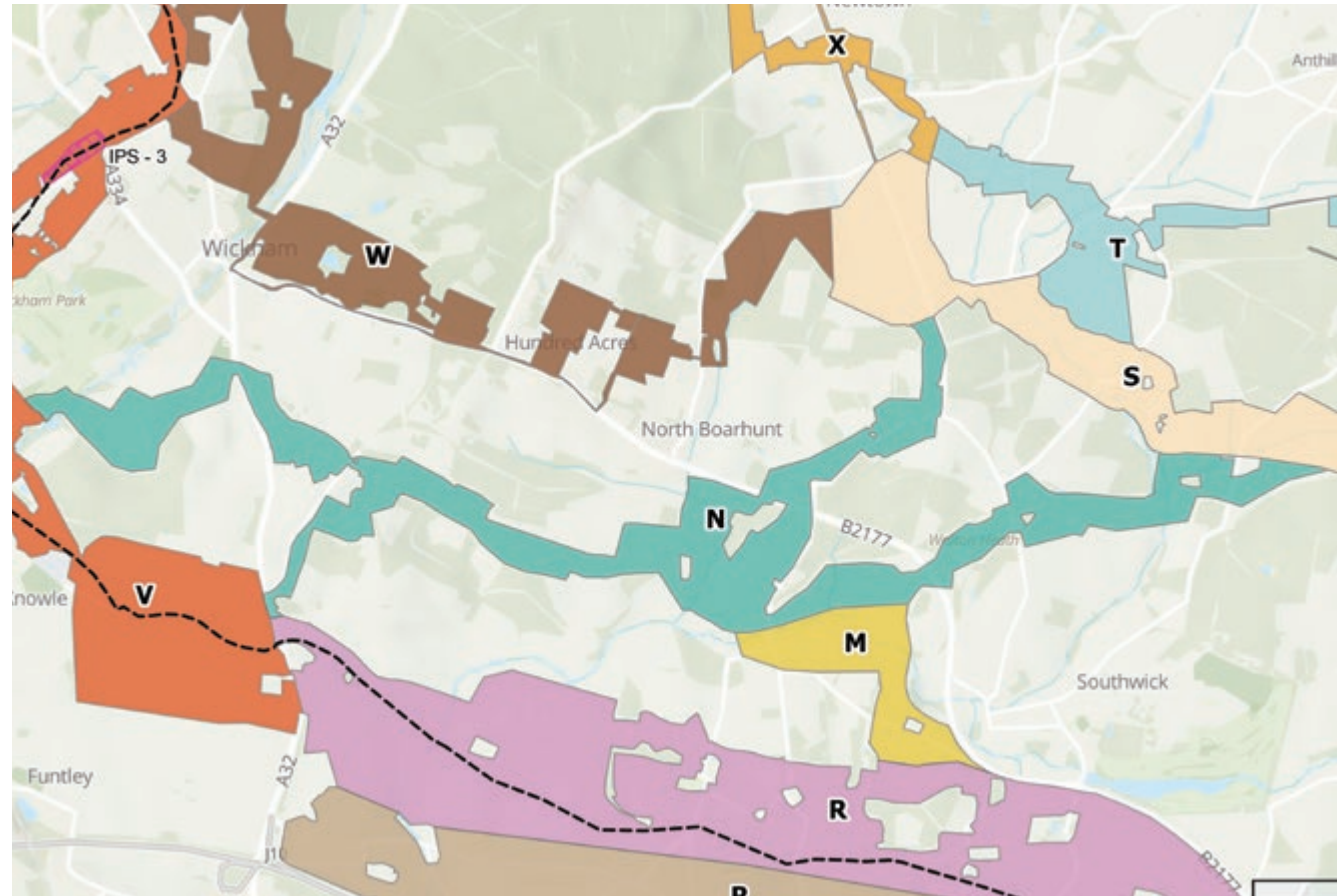
This corridor section was developed as an alternative to corridor section W to avoid the South Downs National Park.

There are limited constraints within this corridor, aside the crossing of the River Wallington and the potential for sediment supply during construction.

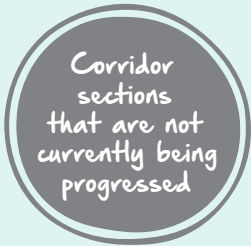
The northeast of the corridor section passes through a number of locally designated ecological sites. Construction of the pipeline in these areas could result in loss of habitat within these sites. The corridor section is also in close proximity to areas of ancient woodland however impacts can be avoided through future pipeline siting.

The corridor section crosses the B2177 east of North Boarhunt. There is potential for disruption to this route.

**The progression of this corridor is dependent on the progression of corridor section M or S which are both currently not being progressed. Therefore this section is also not currently being progressed and does not form part of the preferred corridor.**



Corridor section N





# Corridor Section W

## Scheme Description

This corridor section follows on from the end of corridor section S and follows Southwick Road (B2177) towards Wickham where it crosses the A32 and the River Meon and heads north to reach corridor section Y.

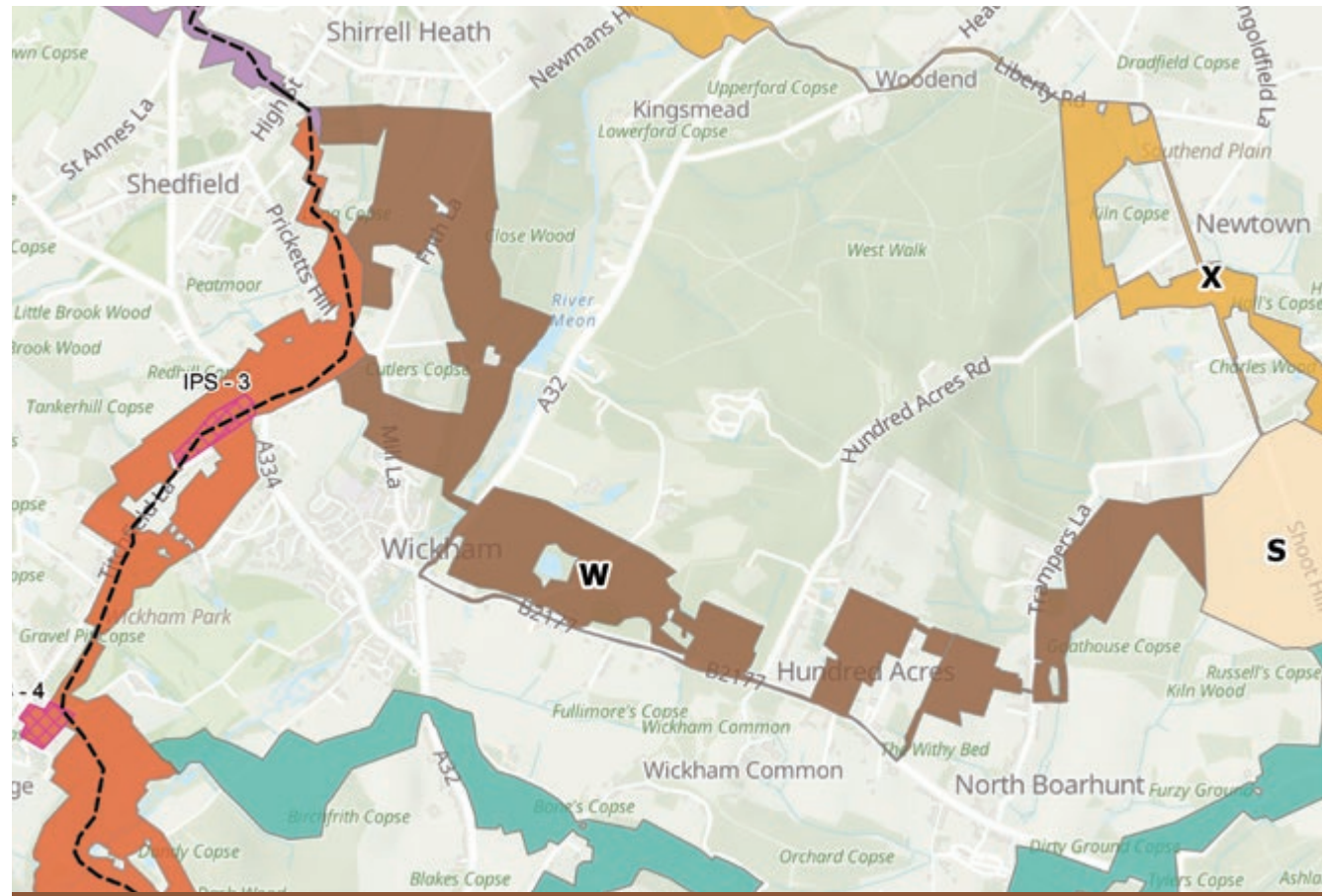
## Assessment outcomes

Large sections of the corridor are within the South Downs National Park. National policy gives National Parks the highest status of protection in relation to landscape and scenic beauty, and requires us to look at the scope for developing the Project outside of the National Park in the first instance. There are other corridor sections that do not intersect with the South Downs National Park and therefore these should be progressed ahead of this corridor section.

There is potential for extended sections of the pipeline to be laid within Southwick Road (B2177), which poses the potential for disruption within this route. The corridor would also need to cross the A32.

This corridor is in close proximity to residential properties in North Boarhunt and Hundred Acres, where there is the potential for noise, vibration and air quality impacts during construction.

**As there are other alternative corridor sections which are outside of the South Downs National Park, this section is not currently being progressed and does not form part of the preferred corridor.**



Corridor section W





# Corridor Section X

## Section description

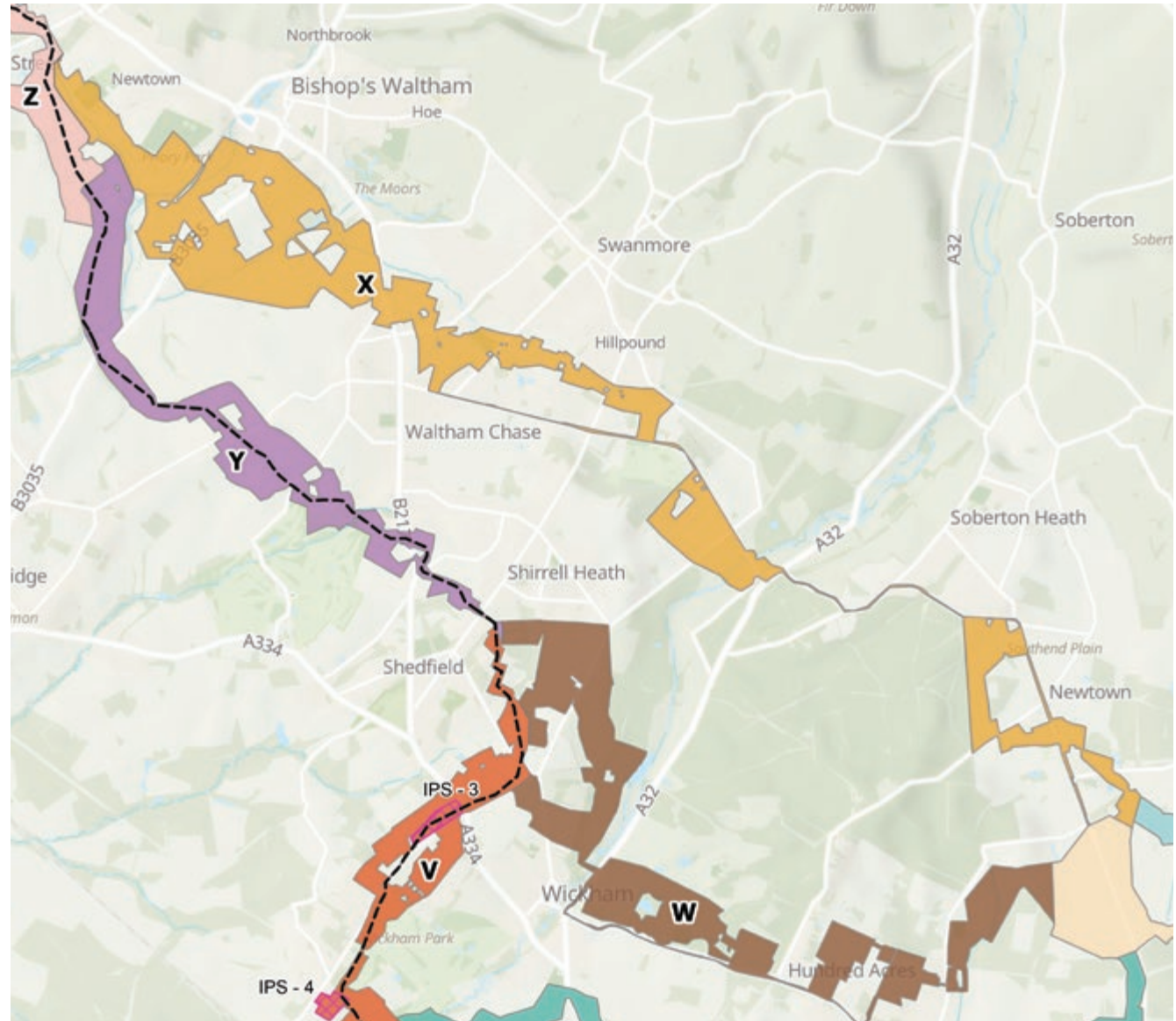
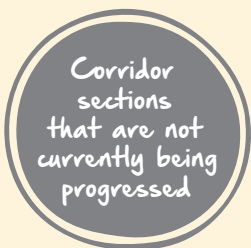
The corridor section begins at Newtown and heads northwest following the route of Church Road. It continues northwest, following Liberty Road, Heath Road and Budden's Lane, and then crosses the A32 east of Mislingford, a disused railway line, and the River Meon. The corridor section continues north of Waltham Chase and reaches corridor section Z south of Bishop's Waltham.

## Assessment outcome

Sections of the corridor are within the South Downs National Park. National policy gives National Parks the highest status of protection in relation to landscape and scenic beauty, and requires us to look at the scope for developing the Project outside of the National Park in the first instance. There are other corridor sections that do not intersect with the South Downs National Park and therefore these should be progressed ahead of this corridor section.

Additionally, there are significant construction challenges within this corridor section. Extended parts of the corridor are routed along Liberty Road, Heath Road and Budden's Lane which would result in disruption to these routes during construction. Additionally, there are significant elevation differences west of Budden's Lane when crossing a disused railway line, the River Meon and the A32.

**As there are other alternative corridor sections which are outside of the South Downs National Park, this section is not currently being progressed and does not form part of the preferred corridor.**



Corridor section X

## Above ground plant

At a number of points along the pipeline we will need to install plant such as break pressure tanks and intermediate pumping stations above ground and air valves and washout points below ground.

The purpose of these is to ensure that the water flows in the pipeline as it navigates the topography along the pipeline route. This helps reduce the maximum pressure within the pipeline and the overall energy consumption as well as ensuring that any surge, created by rapid variances in flow, is managed.

Once we have identified a single pipeline route, the exact locations of above ground plant will be shown at the next stage of consultation. At this stage, we have only identified broad zones where we think the plant could be located.

### Site Selection

The site selection process was informed by the pipeline corridors, hydraulic analysis and a number of engineering criteria which provided locations for the above ground plant. These locations were expanded into wider zones where the plant could be sited at future stages of the development of the project. This provides further flexibility to locate the above ground plant responding to specific constraints of these zones.

We then undertook a refinement process in order to find the best zones for the plant. This included employing a methodology developed by our technical teams to identify zones that performed the best against environmental and planning policy, whilst balancing this against the constructability of the plant in that location.

More detail on the process of site selection for above ground plant can be found in Section 4 of the Scheme Development Summary.

As the scheme development work progresses, we may need to identify additional areas for above ground plant.

## High lift pumping station

The high lift pumping station is the first pumping station required along the pipeline route to support the transfer of water from Havant Thicket Reservoir to Otterbourne Water Supply Works.

### Design requirements

A search area for the high lift pumping station was identified to meet the criteria of four kilometres from Havant Thicket Reservoir, 500 metres from the pipeline corridors and within ground equal or less than 30 metres above sea level, to match the level of the reservoir for pump efficiency. The reason that the high lift pumping station can be located relatively far away from the reservoir is because of the topography, in that the reservoir is located at a higher level so water flows naturally towards the high lift pumping station.

### Site Selection

Following the definition of the search area above, zones were identified within this that minimised impacts on residential areas, community facilities and key infrastructure. This resulted in the identification of 34 zones.

We evaluated the zones against a number of environmental and planning criteria to identify the best performing zone.

This evaluation resulted in 10 zones that were assessed in more detail. A full summary of this can be found in Section 8 of the Scheme Development Summary. Many of the zones that were not selected are located on land with dense woodland, have already been developed, or are located within land that is to be developed as part of strategic employment developments. This resulted in the identification of a zone, which is the same as the proposed site for the new water recycling plant, known as Site 72, as the optimum location to locate the high lift pumping station.

As well as being identified as the best performing site through the site selection process, Site 72 also provides the opportunity to co-locate the high lift pumping station with the water recycling plant, which reduces the number of areas we need to locate new plant, minimising impacts during construction.

A plan showing the proposed locations of the high lift pumping station, intermediate pumping stations and break pressure tanks is shown on page 43.

What do you think about the process we went through to arrive at the proposed site for the high lift pumping station?

Do you support our proposal to build a high lift pumping station in the proposed location?

## Intermediate Pumping Stations

Once the water leaves the high lift pumping station it will require additional pumping during the water transfer process. This is done to reduce the maximum pressure in the transfer pipeline and overcome topographical high points.

### Design Requirements

Zones for the intermediate pumping stations were determined by their proximity to the pipeline corridor and by hydraulic modelling, which identifies where a pumping station would be needed as a result of the topography of the pipeline corridor or the pressure within it.

We identified that a site of approximately 0.62 hectares (6,200 m<sup>2</sup>) is required to accommodate an intermediate pumping station.

Along the preferred corridor, the number of intermediate pumping stations that will be required is dependent on the final route chosen and the pressure within the pipeline.

### Site selection

To identify the best zones for the intermediate pumping stations that are required to accompany the pipeline, our technical teams evaluated the various options against planning and environmental criteria. This followed the same process as the evaluation of corridor sections. More information on the methodology for the site selection of intermediate pumping stations can be found in Section 4 of the Scheme Development Summary.

Following our evaluation, we propose to progress the following zones through further development of the Project:

- Intermediate Pumping Station 3 located in corridor section V
- Intermediate Pumping Station 4 located in corridor section V

We are currently not progressing these zones:

- Intermediate Pumping Station 1 located in corridor section W
- Intermediate Pumping Station 2 located in corridor section X
- Intermediate Pumping Station 5 located in corridor section Y

More details on the outcomes of the site selection for the intermediate pumping stations can be found in Section 4 of the Scheme Development Summary.

## Break Pressure Tanks

Break pressure tanks are located at high points on the route. Water is pumped up hill into the tank and then flows downhill from the tank through gravity. This reduces the amount of energy required if the entire route was pumped. As break pressure tanks help to reduce the overall maximum pressure within the system, this reduces rapid changes in water pressure within the pipeline, which are associated with sudden changes in flow rate.

The break pressure tanks are currently proposed to be partially buried to blend into the surrounding landscape.

### Design requirements

Zones for the break pressure tanks were determined by their proximity to the pipeline corridor and by hydraulic modelling, which identifies where a break pressure tank would be needed as a result of the topography of the pipeline corridor.

We identified that a site of approximately 0.45 hectares (4,500 m<sup>2</sup>) is required to accommodate a break pressure tank.

### Site selection

To identify the best zones for the break pressure tanks that are required to accompany the pipeline, our technical teams evaluated the various options against planning and environmental criteria. This followed the same process as the evaluation of corridor sections. More information on the methodology for the site selection of break pressure tanks can be found in Section 4 of the Scheme Development Summary.

Following our evaluation, we propose to progress the following zones through further development of the Project:

- Break Pressure Tank 1 in corridor section R
- Break Pressure Tank 4 in corridor section Z

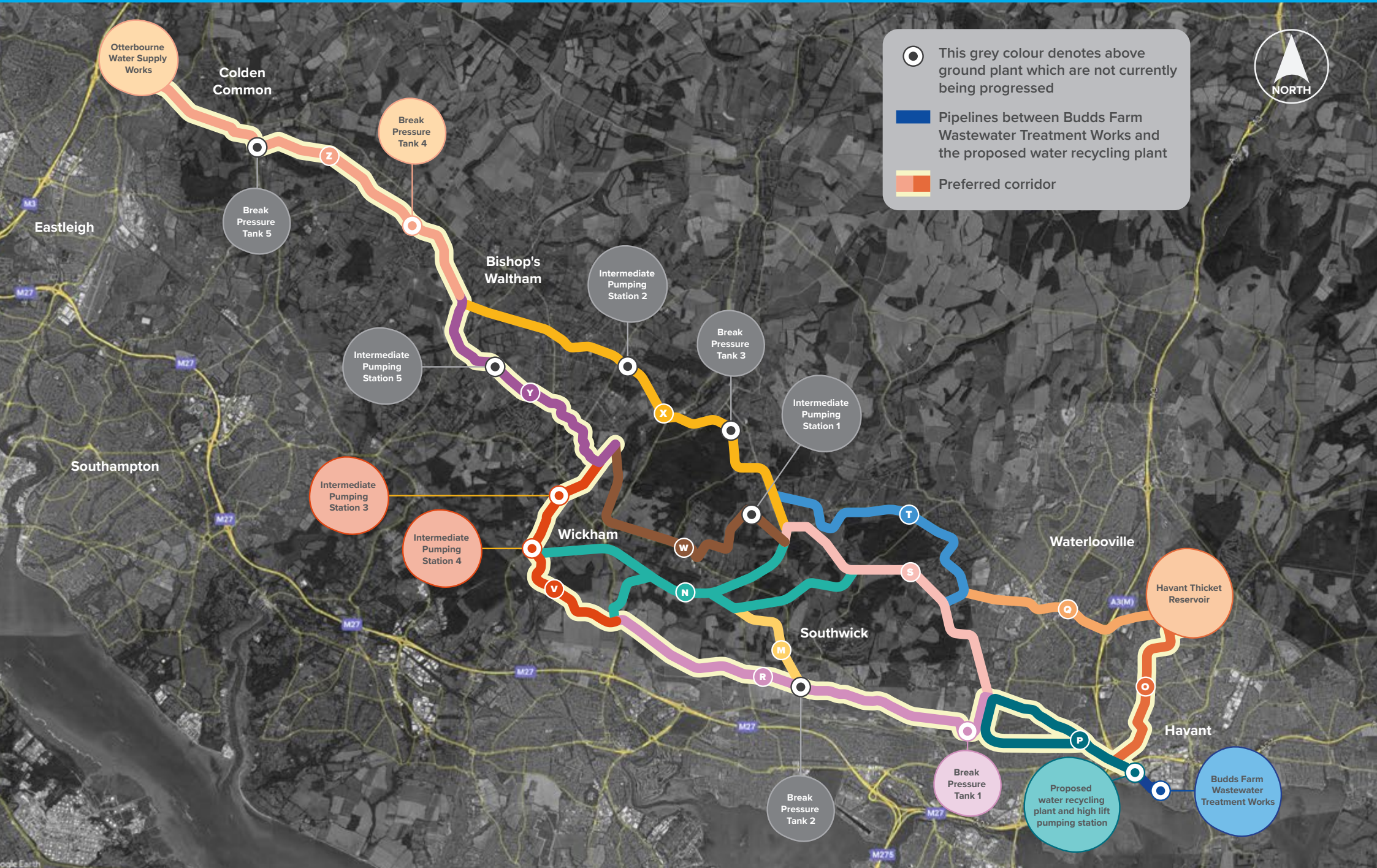
We are currently not being progressing these zones:

- Break Pressure Tank 2 in corridor section R
- Break Pressure Tank 3 in corridor section X
- Break Pressure Tank 5 in corridor section Z

More details on the outcomes of the site selection for the break pressure tanks can be found in Section 4 of the Scheme Development Summary.

What do you think about the process we went through to arrive at the potential zones for the above ground plant?

Plan showing potential zones for above ground plant



# 4. Seeking permission to deliver our Project

This section provides more information about how we propose to secure consent for the Project and how the Environmental Impact Assessment and consultation processes will inform the development and implementation of the Project.

from  
**Southern  
Water** 

## National Policy Statements

This Project has been designated as a project of national significance. It will be considered through the major infrastructure consent process set out in the Planning Act 2008 having regard to relevant National Policy Statements.

Government policy in respect of major infrastructure projects is set out in a series of 'National Policy Statements'. The National Policy Statement for Water Resources Infrastructure remains in draft and is yet to be formally adopted, however, is a relevant and material consideration in decisions on such projects.

For our Project, the draft National Policy Statement identifies an immediate need to increase resilience of the water sector and maintain sufficient water in our watercourses, lakes and wetlands to protect the environment.

Whilst policies in National Policy Statements take priority in decision making on relevant projects, local policy can also be important particularly where it helps to identify local planning designations and priorities.

## Applying for a Development Consent Order

As a development of national significance, we will seek approval in the form of a Development Consent Order and submit an application to the Planning Inspectorate. Under this process, the application would be considered by an appointed Examining Authority with the final decision made by the Secretary of State.

The process for preparing and determining a development consent application follows a series of steps as set out on the next page. You can find out more by visiting <https://infrastructure.planninginspectorate.gov.uk/application-process/the-process/>.

The Development Consent Order process is a streamlined consent route for major infrastructure projects, and was established to provide a faster and fairer process for interested persons, such as landowners, organisations and members of the public. The process puts emphasis on early engagement with communities and stakeholders to allow for the opportunity to influence a project before an application is made for development consent.

In determining a development consent application, the Secretary of State must have regard to documents called 'local impact reports' prepared by local planning authorities which set out details of the likely impacts of a proposed development on the authority's area.

## Indicative process for preparing and determining a development consent application

**We are here**

*Indicative timeframe from Development Consent Order Application to Decision = 18 months*



## Approach to Environmental Impact Assessment

The Environmental Impact Assessment process is an important framework around which the consent process for major infrastructure is built, informing scheme development, consent, and future plans for delivery. The following section considers how environmental assessment, avoidance and impact mitigation has and will continue to inform our Project.

### Assessing the environment

We recognise that our proposals have the potential to impact local communities and the surrounding environment in a number of ways. Impacts, both beneficial and adverse, may occur during the construction and operation of the Project and will need to be assessed fully through a process known as Environmental Impact Assessment.

The purpose of the Environmental Impact Assessment is to identify the likely significant effects of a proposed development. It also assesses the combined impact of the Project with other projects in the area (referred to as ‘cumulative’ effects).

As part of the Environmental Impact Assessment process, we will carry out a preliminary environmental impact assessment. This assessment will represent a point in the assessment process when the design of the project is still in development, and the likely significant effects are continuing to be understood. We will present these early assessment outcomes in our next consultation. The potential for measures to address environmental effects will then be considered, and feedback from consultation and engagement will help to inform the design development of the Project. This will include identifying opportunities to enhance the environment through environmental design.

The findings of our Environmental Impact Assessment will be documented in an Environmental Statement and we will also complete supporting environmental assessments, such as a Flood Risk Assessment, Water Framework Directive Assessment and Habitat Regulations Assessment. The key stages of the assessment process are shown in the diagram below.

### Gathering data and undertaking surveys

To understand the existing environment (i.e. baseline conditions), we will use data from a wide range of sources. These include organisations such as Natural England and the Environment Agency, local authorities, academic organisations, expert environmental organisations, conservation groups and other relevant interest groups. This knowledge will be further enhanced and supplemented through comprehensive field-based surveys, to identify baseline conditions and potentially sensitive receptors such as protected species, unknown archaeology or areas of contamination.

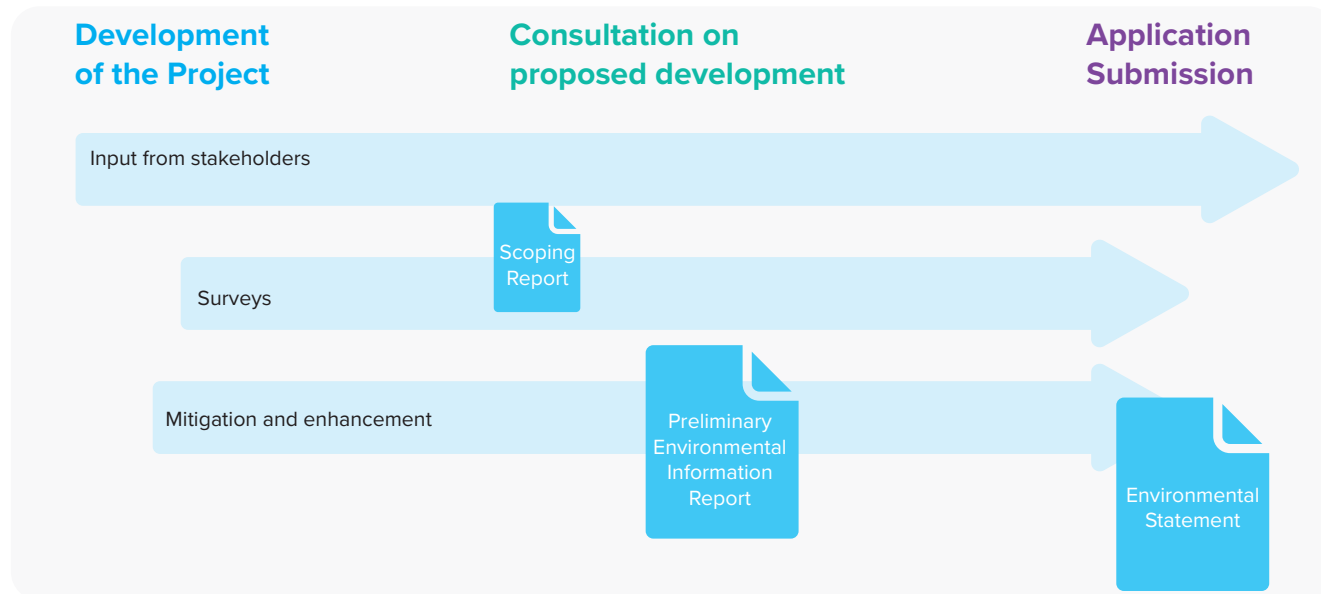
Our surveys started in 2021 and will continue throughout the pre-application stage of the Project to make sure we have a good understanding of the existing environment.

### Avoiding and mitigating our impacts

In line with Environmental Impact Assessment good practice, we are following a ‘hierarchy’ of mitigation where we seek to avoid impacts in the first instance. In developing the corridor sections we have taken into account guiding principles such as avoiding internationally and nationally important features, such as nature conservation designations and the South Downs National Park as much as possible. Please refer to Section 4 of the Scheme Development Summary for further details.

Where impacts cannot be avoided, we will seek to minimise these as far as practicably possible. In some cases, it may also be possible to identify opportunities for enhancements to achieve improved environmental outcomes.

The design of the Project will seek to include measures to avoid and minimise environmental impacts along with additional mitigation measures that will be secured through the Development Consent Order or other relevant legal agreements entered into with the relevant local authority.



We will present further detail on our mitigation proposals at the next stage of consultation. This may also include mitigation proposals for temporary construction activities.

We need to deliver the right balance between the strategic benefits of the Project, the effects of its construction and operation on local communities and the environment, and the need to deliver a value for money solution for customers.

## Engagement and consultation

An integral part of developing and delivering an effective scheme is meaningful and effective engagement with stakeholders. Alongside effective engagement a transparent approach to consultation must show how stakeholder views inform and shape our proposals, and how they will play a part in future implementation.

### The consultation process

We have been engaging with a range of stakeholders through the development of this scheme, and have held one round of consultation in 2021. Feedback from this engagement and consultation has already informed the Project.

As we further develop the details of the Project, we will continue to consult with a wide variety of people and organisations who might be affected by or interested in our Project. This is why we are seeking your views on our emerging proposals at this early stage by undertaking this consultation.

We will hold another consultation in 2023 to update on how the scheme has developed further and seek your views. See Section 5 of this brochure for more details.

All comments we receive will be considered and reported in a document called the Consultation Report which will be submitted with our application - but before that we will provide an update at our next consultation on how we have had regard to comments received during this consultation.

### Engaging with landowners

We will need to access, use and acquire land either on a temporary or permanent basis for a variety of reasons for the Project – to install the pipelines, to build the new water recycling plant, pumping stations and break pressure tanks, to safely construct the Project and to operate and maintain the pipeline and equipment over its lifetime.

Landowners are important to us, and we have been contacting various potentially affected landowners. As the Project develops, we will continue to contact landowners within the preferred corridor to arrange access to private land for surveys.

As we progress with the consent process, we will seek agreements with the relevant landowners for the installation and operation of the pipeline, the water recycling plant and other infrastructure such as pumping stations and break pressure tanks.

## Share your views

Our consultation is open between **5 July** and **16 August 2022**. This is your opportunity to learn about what the Project means for you and your area and express your views on our Project.

The easiest way for you to send us your feedback is to complete the online feedback form which can be found at <https://hampshireWTWRP.commonplace.is>

You can access the full suite of consultation materials, view our virtual exhibition and browse our maps to pinpoint where you live or work in relation to the Project.

### Come along to our events

We are hosting a series of drop-in sessions in locations close to the Project. Details of the Project described in this brochure will be on display and you can meet members of the Project team to ask us any questions you may have.

| Date                | Time       | Venue details  |
|---------------------|------------|--|
| Wednesday<br>6 July | 2pm – 8pm  | Leigh Park Community Centre,<br>Dunsbury Way,<br>Havant<br>PO9 5BG               |
| Saturday<br>9 July  | 10am – 4pm | Jubilee Hall,<br>Little Shore Lane,<br>Bishop's Waltham<br>SO32 1ED              |
| Friday<br>15 July   | 2pm – 8pm  | Wickham Community Centre,<br>Mill Lane,<br>Wickham<br>O17 5AL                    |
| Saturday<br>16 July | 10am – 4pm | Meridian Shopping Centre,<br>Elm Lane,<br>Havant<br>PO9 1UN                      |
| Thursday<br>21 July | 2pm – 8pm  | Southwick D-Day Memorial Hall,<br>Priory Road,<br>Southwick<br>PO17 6ED          |
| Friday<br>22 July   | 2pm – 8pm  | Colden Common<br>Community Centre,<br>St Vigor Way,<br>Colden Common<br>SO21 1UU |

### Attend an online briefing

If you can't make an event, don't worry – we're holding a series of virtual briefings that you can join from the comfort of your own home. These sessions provide you the same information shown at the public consultation events and give you the chance to submit questions about the project to the team. The online briefings will take place on Microsoft Teams (with a web browser) between 7.00pm and 8.30pm.

To register, email [HampshireWTWRP@southernwater.co.uk](mailto:HampshireWTWRP@southernwater.co.uk) and let us know which date you wish to sign up for:

- Tuesday 26 July
- Wednesday 3 August
- Thursday 11 August


## Contact us

If you would like this consultation brochure or the feedback form as a printed copy, or in large print, please contact us using the details below. We will be happy to print and post A3 sheets of any maps free of charge.

 Email us at [HampshireWTWRP@southernwater.co.uk](mailto:HampshireWTWRP@southernwater.co.uk)

 Write to us at **FREEPOST HAMPSHIRE WTWRP CONSULTATION** (no stamp is required)

 Follow us on Twitter [@SouthernWater](https://twitter.com/SouthernWater)

 If you have questions about the consultation please call **0330 303 0368**.

**Paper copies of the consultation materials**

You can visit one of the locations listed below to read reference copies of the consultation materials and pick up a printed feedback form.

| Deposit location           | Address  | Opening times |               |
|----------------------------|--|---------------|---------------|
| Bishops Waltham Library    | Free Street<br>Bishop's Waltham<br>Southampton<br>SO32 1EE | Monday        | Closed        |
|                            |  | Tuesday       | 1–5pm         |
|                            |  | Wednesday     | 9:30am–1:30pm |
|                            |  | Thursday      | Closed        |
|                            |  | Friday        | 1–5pm         |
|                            |  | Saturday      | 9:30am–1:30pm |
|                            |  | Sunday        | Closed        |
| Chandler's Ford Library    | Oakmount Road<br>Chandler's Ford<br>Eastleigh<br>SO53 2LH  | Monday        | 9:30am–5pm    |
|                            |  | Tuesday       | 9:30am–5pm    |
|                            |  | Wednesday     | 9:30am–5pm    |
|                            |  | Thursday      | 9:30am–5pm    |
|                            |  | Friday        | 9:30am–1:30pm |
|                            |  | Saturday      | 9:30am–5pm    |
|                            |  | Sunday        | Closed        |
| Cosham Library             | Spur Road<br>Cosham<br>Portsmouth<br>PO6 3EB               | Monday        | 9:30am–6pm    |
|                            |  | Tuesday       | 9:30am–6pm    |
|                            |  | Wednesday     | 9:30am–5pm    |
|                            |  | Thursday      | 9:30am–6pm    |
|                            |  | Friday        | 9:30am–5pm    |
|                            |  | Saturday      | 10am–3:30pm   |
|                            |  | Sunday        | Closed        |
| Eastleigh Library          | Swan Centre<br>Eastleigh<br>SO50 5SF                       | Monday        | 9:30am–1:30pm |
|                            |  | Tuesday       | 9:30am–5pm    |
|                            |  | Wednesday     | Closed        |
|                            |  | Thursday      | 9:30am–5pm    |
|                            |  | Friday        | 9:30am–5pm    |
|                            |  | Saturday      | 9:30am–5pm    |
|                            |  | Sunday        | Closed        |
| Fair Oak Community Library | Campbell Way<br>Upham<br>Eastleigh<br>SO50 7AX             | Monday        | 9:30am–1pm    |
|                            |  | Tuesday       | 2–5pm         |
|                            |  | Wednesday     | 9:30am–5pm    |
|                            |  | Thursday      | 2–5pm         |
|                            |  | Friday        | 9:30am–1pm    |
|                            |  | Saturday      | 9:30am–1pm    |
|                            |  | Sunday        | Closed        |

| Deposit location          | Address   | Opening times |                           |
|---------------------------|---|---------------|---------------------------|
| Havant Borough Council    | Public Service<br>Plaza<br>Civic Centre Road<br>Havant<br>PO9 2AX | Monday        | 9am–5pm                   |
|                           |   | Tuesday       | 9am–5pm                   |
|                           |   | Wednesday     | 9am–5pm                   |
|                           |   | Thursday      | 9am–5pm                   |
|                           |   | Friday        | 9am–5pm                   |
|                           |   | Saturday      | Closed                    |
|                           |   | Sunday        | Closed                    |
| Leigh Park Library        | 50 Park Parade<br>Leigh Park<br>Havant<br>PO9 5AB                 | Monday        | 9:30am–4:30pm             |
|                           |   | Tuesday       | 9:30am–4:30pm             |
|                           |   | Wednesday     | 9:30am–4:30pm             |
|                           |   | Thursday      | 9:30am–7:00pm             |
|                           |   | Friday        | 9:30am–4:30pm             |
|                           |   | Saturday      | 9:30am–13:30pm            |
|                           |   | Sunday        | Closed                    |
| Paulsgrove Library        | Marsden Road<br>Portsmouth<br>PO6 4JB                             | Monday        | 9:30am–12:30pm & 1:30–5pm |
|                           |   | Tuesday       | Closed                    |
|                           |   | Wednesday     | 9:30am–12:30pm & 1:30–5pm |
|                           |   | Thursday      | 9:30am–12:30pm & 1:30–5pm |
|                           |   | Friday        | 9:30am–12:30pm & 1:30–5pm |
|                           |   | Saturday      | 10am–3:30pm               |
|                           |   | Sunday        | Closed                    |
| Portchester Community Hub | 2 New Parade<br>West Street<br>Portchester<br>Fareham<br>PO16 9UY | Monday        | 9:30am–4:15pm             |
|                           |   | Tuesday       | 9:30am–4:15pm             |
|                           |   | Wednesday     | 9:30am–4:15pm             |
|                           |   | Thursday      | 9:30am–4:15pm             |
|                           |   | Friday        | 9:30am–4:15pm             |
|                           |   | Saturday      | 9:30am–12pm               |
|                           |   | Sunday        | Closed                    |

# 5.

## Next steps

After this consultation has closed, we will review our proposals, having regard to the feedback received from this consultation alongside the findings of our ongoing work.



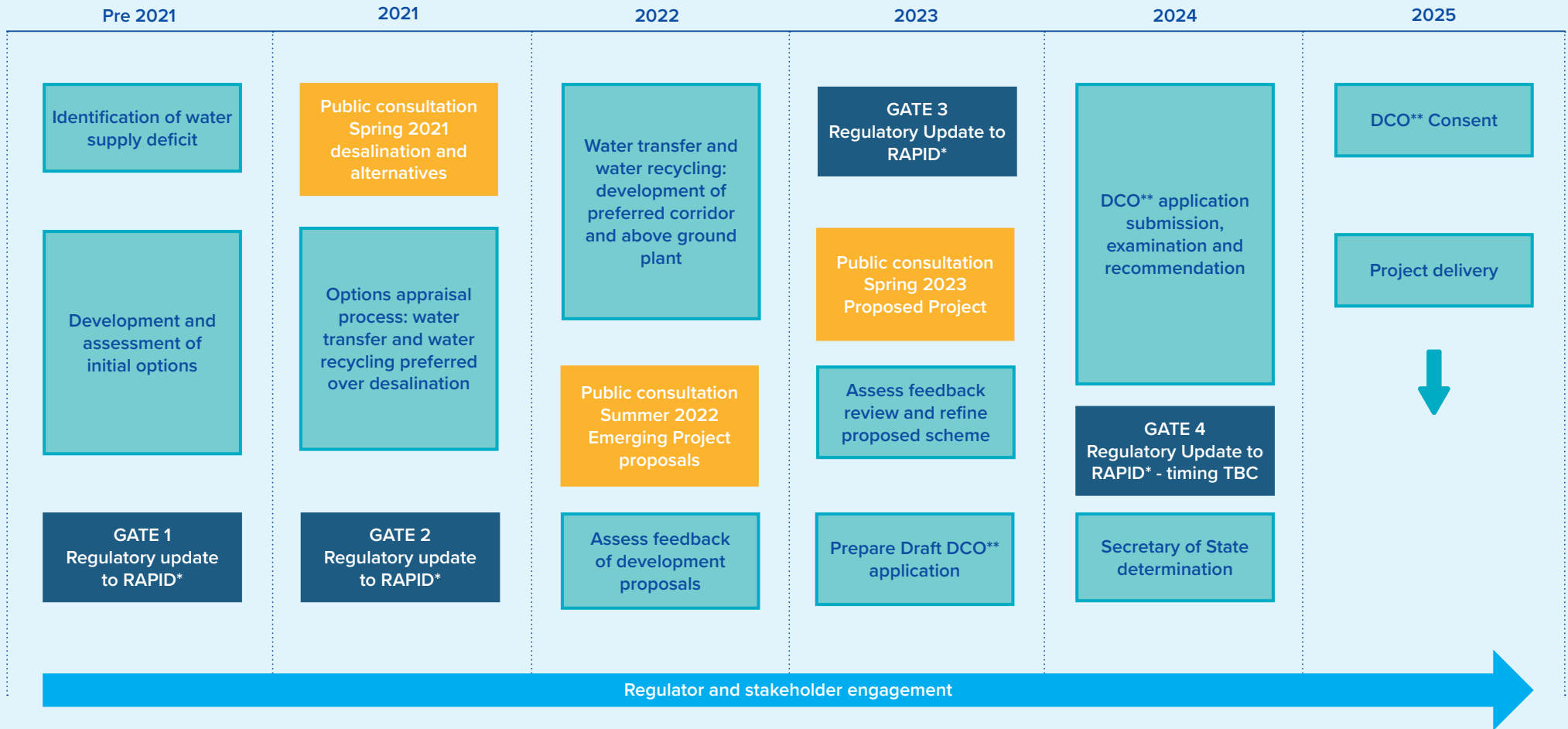
We will then develop our proposals further before consulting next year on a preferred pipeline route and other elements of the Project. We will also have developed likely working areas for construction such as the compounds and access routes we will need. We will continue to engage with stakeholders and interested parties to develop the Project further.

At our next consultation we anticipate presenting information on:

- further details on the site of the water recycling plant and the pipelines connecting the plant to Budds Farm Wastewater Treatment Works;
- the preferred pipeline route within the corridor for the pipeline from the water recycling plant to Havant Thicket Reservoir;
- the preferred pipeline route within the proposed corridor for the pipeline from the pumping station at the water recycling plant to Otterbourne Water Supply Works;
- the locations of construction compounds and the temporary working areas;
- the location of launch, reception and any intermediate shafts in sections that will be tunnelled;
- the locations of above ground plant such as pumping stations and break pressure tanks we will require in the proposed corridor;
- the locations of potential sites for ecological mitigation; and
- a Preliminary Environmental Information Report which will outline the likely significant environmental effects of our proposals, based upon emerging assessment work.

Following the next consultation, we will prepare and submit an application for development consent for the Project, for submission to the Planning Inspectorate.

**i** Helpful information about the process so far and next steps



\*RAPID stands for Regulators' Alliance for Progressing Infrastructure Development. It is an advisory board that makes recommendations to Ofwat.

\*\*DCO stands for Development Consent Order



from  
Southern  
Water. 

The Southern Water logo is a stylized graphic of three wavy lines, representing water, positioned to the right of the word "Water." in the text above.

## C.3 2022 Scheme Development Summary

# Hampshire Water Transfer and Water Recycling Project



**Scheme Development Summary**  
Public Consultation 2022



from  
**Southern  
Water** 

# Contents

|  |    |
|--|----|
| Contents   | 2  |
| 1. Introduction  | 6  |
| 1.1. Background  | 6  |
| 1.2. Purpose   | 7  |
| 2. Stage 1: Development and Assessment of Initial Options            | 8  |
| 2.1. Options Presented at Gate 1                                     | 8  |
| 2.2. Post-Gate 1 Assessment  | 9  |
| 3. Stage 2: Options Appraisal Process                                | 11 |
| 3.1. Introduction  | 11 |
| 3.2. Site and Route Selection  | 11 |
| 3.2.1. Desalination  | 12 |
| 3.2.2. Water Recycling   | 19 |
| 3.2.3. Water Transfer  | 25 |
| 3.3. Consenting Evaluation   | 33 |
| 3.4. Multi-Criteria Decision Analysis                                | 37 |
| 3.5. Legal and Policy Objectives                                     | 39 |
| 3.6. Water for Life Hampshire Strategic Objectives                   | 39 |
| 3.7. Interim Business Evaluation                                     | 41 |
| 3.8. Future Needs Assessment   | 41 |
| 3.9. Final Business Evaluation                                       | 42 |
| 3.10. Options Appraisal Process Conclusions and Recommendations      | 42 |
| 4. Stage 3: Water Transfer and Recycling                             | 43 |
| 4.1. Development of a Preferred Corridor and Above Ground Plant      | 43 |
| 4.2. Site Selection  | 43 |
| 4.2.1. Water Recycling Plant   | 43 |
| 4.2.2. High Lift Pumping Station                                     | 45 |
| 4.3. Defining Corridor Sections and Above Ground Plant Zones         | 50 |
| 4.3.1. Pipeline Routes   | 50 |
| 4.3.2. Back-Check of Pipeline Routes                                 | 52 |
| 4.3.3. Combination of Pipeline Routes                                | 53 |
| 4.3.4. Corridor Identification                                       | 53 |
| 4.3.5. Above Ground Plant  | 54 |
| 4.3.6. Corridor Section and Above Ground Plant Refinement Evaluation | 54 |

|   |  |     |
|---|--|-----|
| 4.4.  | Corridor Sections and Above Ground Plant Refinement Methodology              | 55  |
| 4.4.1.  | Evaluation Topics  | 55  |
| 4.5.  | Corridor Section Evaluation: The Preferred Corridor                          | 56  |
| 4.5.1.  | Corridor Section O   | 56  |
| 4.5.2.  | Corridor Section P   | 58  |
| 4.5.3.  | Corridor Section R   | 61  |
| 4.5.4.  | Corridor Section V   | 64  |
| 4.5.5.  | Corridor Section Y   | 65  |
| 4.5.6.  | Corridor Section Z   | 67  |
| 4.6.  | Corridor Section Evaluation: Corridor Sections that are Not Being Progressed | 71  |
| 4.6.1.  | Corridor Section Q   | 71  |
| 4.6.2.  | Corridor Section M   | 74  |
| 4.6.3.  | Corridor Section S   | 76  |
| 4.6.4.  | Corridor Section W   | 78  |
| 4.6.5.  | Corridor Section N   | 81  |
| 4.6.6.  | Corridor Section T   | 83  |
| 4.6.7.  | Corridor Section X   | 85  |
| 4.7.  | Above Ground Plant Zones Evaluation Outcomes                                 | 89  |
| 4.7.1.  | Intermediate Pumping Station 1 Zone  | 89  |
| 4.7.2.  | Intermediate Pumping Station 2 Zone  | 90  |
| 4.7.3.  | Intermediate Pumping Station 3 Zone  | 92  |
| 4.7.4.  | Intermediate Pumping Station 4 Zone  | 93  |
| 4.7.5.  | Intermediate Pumping Station 5 Zone  | 94  |
| 4.7.6.  | Break Pressure Tank 1 Zone   | 95  |
| 4.7.7.  | Break Pressure Tank 2 Zone   | 97  |
| 4.7.8.  | Break Pressure Tank 3 Zone   | 98  |
| 4.7.9.  | Break Pressure Tank 4 Zone   | 100 |
| 4.7.10.   | Break Pressure Tank 5 Zone   | 101 |
| 4.8.  | Corridor Section and Above Ground Plant Refinement Evaluation Conclusions    | 102 |
| 4.8.1.  | Summary of the Preferred Corridor  | 102 |
| 4.8.2.  | Indicative Pipeline Route  | 103 |
| Table 1 – Gate 1 Options  |  | 8   |
| Table 2 - Options taken forward to Gate 2   |  | 10  |
| Table 3 - Criteria for terrestrial desalination sites                                       |  | 12  |
| Table 4 - Criteria for marine desalination sites  |  | 13  |
| Table 5 – Summary of Base Case component options  |  | 17  |
| Table 6 – Assessment of the preferred desalination option                                   |  | 18  |
| Table 7 - Site search criteria for water recycling  |  | 19  |
| Table 8 - Water recycling sites environmental and planning considerations                   |  | 23  |
| Table 9 - Water recycling initial pipeline routes environmental and planning considerations |  | 24  |
| Table 10 - Site search criteria for water transfer high lift pumping station                |  | 26  |

|   |     |
|---|-----|
| Table 11 - Water transfer high lift pumping station sites environmental and planning considerations | 30  |
| Table 12 – Initial water transfer pipeline routes environmental and planning considerations         | 31  |
| Table 13 - Consenting evaluation criteria   | 33  |
| Table 14 - Consenting evaluation outcomes   | 36  |
| Table 15 - Multi-Criteria Decision Analysis best value lenses breakdown                             | 38  |
| Table 16 - Multi-Criteria Decision Analysis ranking   | 39  |
| Table 17 - Legal and Policy Obligations ranking   | 39  |
| Table 18 - Matrix of Water for Life Hampshire Strategic Objectives                                  | 39  |
| Table 19 - Water for Life Hampshire strategic objectives ranking                                    | 40  |
| Table 20 - Overall ranking of the Options Appraisal Process   | 41  |
| Table 21 - Overall ranking of the options appraisal process revised to meet the updated deficit     | 41  |
| Table 22 - Site search criteria for water transfer and water recycling high lift pumping station    | 45  |
| Table 23 – High lift pumping station environmental and planning considerations                      | 48  |
| Table 24 - Corridor Section O constraints overview  | 56  |
| Table 25 - Corridor Section P constraints overview  | 59  |
| Table 26 - Corridor Section R constraints overview  | 61  |
| Table 27 - Corridor Section V constraints overview  | 64  |
| Table 28 - Corridor Section Y constraints overview  | 66  |
| Table 29 - Corridor Section Z constraints overview  | 68  |
| Table 30 - Corridor Section Q constraints overview  | 72  |
| Table 31 - Corridor Section M constraints overview  | 74  |
| Table 32 - Corridor Section S constraints overview  | 76  |
| Table 33 - Corridor Section W constraints overview  | 79  |
| Table 34 - Corridor Section N constraints overview  | 81  |
| Table 35 - Corridor Section T constraints overview  | 83  |
| Table 36 - Corridor Section X constraints overview  | 86  |
| Table 37 - Intermediate Pumping Station 1 Zone constraints overview                                 | 89  |
| Table 38 - Intermediate Pumping Station 2 Zone constraints overview                                 | 90  |
| Table 39 - Intermediate Pumping Station 3 Zone constraints overview                                 | 92  |
| Table 40 - Intermediate Pumping Station 4 Zone constraints overview                                 | 93  |
| Table 41 - Intermediate Pumping Station 5 Zone constraints overview                                 | 94  |
| Table 42 - Break Pressure Tank 1 Zone constraints overview  | 96  |
| Table 43 - Break Pressure Tank 2 Zone constraints overview  | 97  |
| Table 44 - Break Pressure Tank 3 Zone constraints overview  | 98  |
| Table 45 - Break Pressure Tank 4 Zone constraints overview  | 100 |
| Table 46 - Break Pressure Tank 5 Zone constraints overview  | 101 |

|  |     |
|--|-----|
| Figure 1 - Key milestone timeline                                  | 7   |
| Figure 2 - Identified terrestrial and marine desalination sites    | 14  |
| Figure 3 - Short list of terrestrial and marine desalination sites | 16  |
| Figure 4 - Base Case site and route options                        | 18  |
| Figure 5 – Identified water recycling sites                        | 20  |
| Figure 6 - Water recycling sites short list                        | 22  |
| Figure 7 – Initial water recycling pipeline routes                 | 24  |
| Figure 8 - Identified water transfer sites                         | 27  |
| Figure 9 - Water transfer sites short list                         | 29  |
| Figure 10 - Initial water transfer pipeline routes                 | 31  |
| Figure 11 - Water recycling plant site comparison                  | 44  |
| Figure 12 - High lift pumping station sites                        | 47  |
| Figure 13 - Progressed pipeline routes for Option B.4              | 51  |
| Figure 14 - Progressed pipeline routes for Option B.5              | 52  |
| Figure 15 - Combined pipeline routes for Option B.4 and B.5        | 53  |
| Figure 16- Corridor section options                                | 55  |
| Figure 17 - Preferred corridor                                     | 103 |

# 1. Introduction

## 1.1. Background

This document summarises the development of Southern Water’s Strategic Resource Option, now known as the ‘Hampshire Water Transfer and Water Recycling Project’ (the Project), from the public consultation that took place in February to April 2021 (the Spring 2021 consultation) to our 2022 consultation in July and August 2022 (the 2022 consultation).

As a result of abstraction licence changes on the rivers Test and Itchen, and the ecological risk that long-term reliance on drought permits and drought orders could pose to these rare and protected habitats, we have entered into an operating agreement with the Environment Agency (under Section 20 of the Water Resources Act 1991). This enables us to continue to meet our water supply duty until we develop alternative water resource solutions for our western supply area in Hampshire.

Our Water Resource Management Plan 2019 was prepared to meet a 1-in-200 year drought level of resilience, which forecast an overall water resource deficit in the western supply area of around 192 million litres per day (Ml/d) by 2030. Our plan sets out how we will meet this deficit through a number of leakage and demand reduction measures, and through the development of several new supply solutions, including a long-term and large-scale water resource solution.

The preferred long-term water resource solution, or ‘Base Case’ identified in the plan for the western supply area was a 75 Ml/d desalination plant at Fawley in the New Forest. As an adaptive plan, our Water Resource Management Plan 2019 also considered a number of strategic alternative options in parallel with the preferred solution. Our principal alternative to the Fawley desalination scheme specified in the plan was an indirect water re-use scheme (also referred to as water recycling) utilising the lower River Itchen as an environmental buffer.

Following the Price Review 19 final determination and the creation of the Regulators’ Alliance for Progressing Infrastructure Development (RAPID) ‘gated process’, we were required to consider a number of additional alternative schemes that were not specifically included in our Water Resource Management Plan 2019. In particular, certain water recycling options were considered, including the use of an environmental buffer (such as the creation of new lakes and wetlands to store recycled water) near to Otterbourne Water Supply Works and the enhanced use of the Havant Thicket reservoir, which is under development by Portsmouth Water on our behalf.

At the first stage of RAPID’s gated process, known as Gate 1, we presented a range of options including desalination, water recycling, water transfers including enhanced use of the Havant Thicket Reservoir. Since Gate 1, we undertook a robust options appraisal process to test the options still under consideration using a range of criteria informed by environmental and planning policy, as well as legal and deliverability objectives. We also took into account known risks to our supply demand balance and undertook a future needs assessment. Regard was also had to feedback received both through consultation and through engagement with stakeholders.

From February to April 2021, Southern Water carried out a public consultation which focused primarily on Option A.1 (the desalination Base Case), but also introduced the alternatives. There were nine options and they are outlined in detail in Table 1 in Section 2.

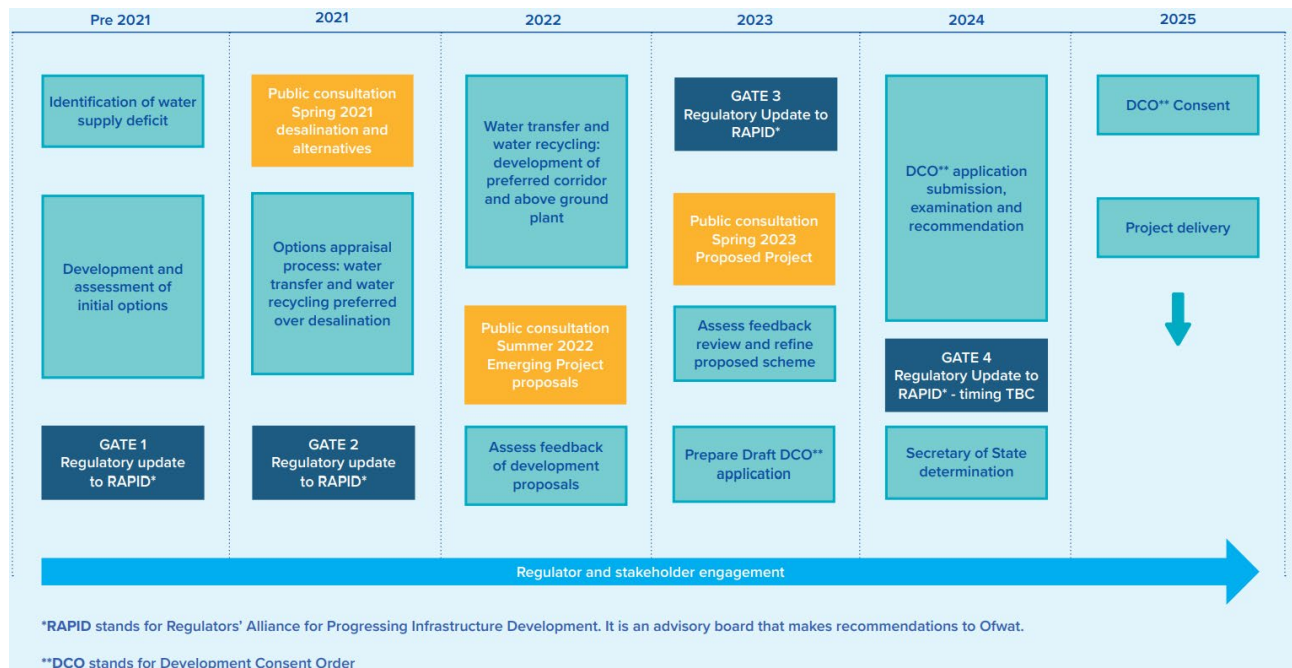
In September 2021, we provided an Interim Update to RAPID highlighting that the desalination options at Fawley had the potential to result in adverse environmental impacts, with these options ranked the lowest out of all the options considered. Our Interim Update confirmed that the desalination option at Fawley, nor

any of the other desalination options, would be progressed any further. Regulators and other statutory bodies were engaged as part of the options appraisal process and support for this approach was provided by both the Environment Agency and RAPID.

In December 2021, as part of our Gate 2 submission to RAPID, we presented the outputs of our full options appraisal process. The highest-ranking option, referred to as Option B4 and confirmed then as our new selected option, involved a combination of both water transfer and water recycling technology – now known as the Hampshire Water Transfer and Water Recycling Project.

Figure 1 provides a timeline for key project milestones.

**Figure 1 - Key milestone timeline**



## 1.2. Purpose

The purpose of this document is to summarise the evolution of options since our Spring 2021 consultation and provide an overview of the decision-making and scheme development processes that resulted in the selection and subsequent development of the preferred option that is now being consulted on as part of our 2022 consultation.

## 2. Stage 1: Development and Assessment of Initial Options

### 2.1. Options Presented at Gate 1

Table 1 details the strategic resource options that Southern Water submitted at Gate 1 to RAPID and were then subject to consultation in Spring 2021. This comprised the Base Case and eight strategic alternatives.

At Gate 1, we also submitted a joint proposal with Wessex Water and Bristol Water to RAPID for a regional water transfer scheme called ‘West Country North Sources and Transfer’. This scheme was not considered as an alternative to the Base Case as it could not deliver water supplies to address our forecast deficit by 2027. It was therefore not included in the Spring 2021 consultation.

**Table 1 – Gate 1 Options**

| Configuration Type | Option No.      | Option Description   |
|--------------------|-----------------|--|
| Desalination       | A.1 (Base Case) | 75 MI/d of drinking water produced by desalination plant in the Fawley area supplying the Hampshire Southampton West Water Resource Zone, with the interface between the new and existing distribution system located at Testwood Water Supply Works.  |
|                    | A.2             | 61 MI/d of drinking water produced by desalination plant in the Fawley area supplying the Hampshire Southampton West Water Resource Zone, with the interface between the new and existing distribution system located at Testwood Water Supply Works.  |
|                    | D.1             | Proposed to provide 40 MI/d desalinated water for dedicated industrial use at an existing large coastal industrial facility. The existing 30 MI/d supplied by South West Water to this facility was then intended to be released and redirected to Southern Water at Testwood Water Supply Works and re-purposed for drinking water supply. The remaining existing 10 MI/d supplied by Southern Water to this facility was then intended to be released and redirected to Testwood Water Supply Works and re-purposed for drinking water supply<br>The option is supplemented by an additional 40 MI/d water recycling plant utilising treated wastewater from Budds Farm Wastewater Treatment Works.<br>This option provides a cumulative 81 MI/d when both the desalination and water recycling components are operating at full capacity. |
| Water Recycling    | B.1             | Budds Farm Wastewater Treatment Works transfer to new 61 MI/d water recycling plant. Bulk transfer to Lower Itchen and a new 61 MI/d abstraction from the Lower Itchen. Water is then transferred for treatment at Otterbourne Water Supply Works.   |
|                    | B.2             | Budds Farm Wastewater Treatment Works transfer to new 61 MI/d water recycling plant. Bulk transfer to a new constructed and lined environmental buffer. Abstraction and transfer for treatment at Otterbourne Water Supply Works.  |
|                    | B.3             | Budds Farm Wastewater Treatment Works transfer to new 61 MI/d water recycling plant. Direct transfer direct to Otterbourne Water Supply Works for treatment.   |
|                    | B.4             | Budds Farm Wastewater Treatment Works transfer to new 61 MI/d water recycling plant. Transfer to Havant Thicket Reservoir which acts as an environmental buffer, then 75 MI/d direct raw water transfer to Otterbourne Water Supply Works for treatment. .   |

| Configuration Type | Option No. | Option Description   |
|--------------------|------------|--|
|                    | B.5        | Peel Common Wastewater Treatment Works and Budds Farm Wastewater Treatment Works transfer to a new 75 MI/d water recycling plant. Bulk transfer to a lake that provides an environmental buffer at Otterbourne Water Supply Works for treatment. |
| Water Transfer     | D.2        | 61 MI/d raw water transfer from the Havant Thicket Reservoir to Otterbourne Water Supply Works for treatment.  |

## 2.2. Post-Gate 1 Assessment

We progressed each of the options detailed in Table 1 beyond Gate 1 and the Spring 2021 consultation to further understand and assess their feasibility. Three of the Options presented at Gate 1 were not continued to Gate 2, and as such were not taken forward to the options appraisal process.

Option B.1 was an alternative option to the 75 MI/d desalination plant in Fawley that was included in our Water Resources Management Plan 2019. However, we stopped progressing it after Gate 1 following the Water Services Regulation Authority’s (Ofwat - the body responsible for the regulation of the water industry) decision not to fund further investigations as part of its Gate 1 Final Decision. This was due to environmental concerns about the impact of the recycled water release on the integrity of the River Itchen Special Area of Conservation and the scheme’s ability to meet the resource deficit.

Option D.1 was discontinued in July 2021. Part of this option relies on a South West Water abstraction from the River Avon, which is a chalk stream that already has significant pressures on its abstractions. This meant there would be uncertainty in being able to rely on the 30 MI/d supply from South West Water. Additionally, the cost of supply for the desalination element of this option was potentially commercially unviable as it would require a considerable increase in the cost of supplying the industrial facility compared to their existing commercial arrangements. These risks made it too unreliable to be a genuine alternative to the desalination Base Case in the context of the urgent need to meet the supply deficit.

Option B.3 was also discontinued in July 2021. Option B.3 was a direct water recycling solution which did not involve the transfer of recycled water to an environmental buffer before the transfer to the supply works. Direct water recycling is currently not in use in the UK and is a relatively new approach, with around four plants in operation around the world. Significant further work and lead in time would be required to build regulatory acceptance, public support, and operational experience around this new approach, and until this has been completed, we are focusing on an indirect water recycling solution. Option B.3 only allowed for direct recycling, meaning that it was not considered preferable to the desalination Base Case, particularly in the context of the urgent need to meet the supply deficit.

Further modelling of Option B.4 during late 2021 indicated a reduction in the required output of the water recycling plant from 61 MI/d to 15 MI/d. A water recycling plant delivering 61 MI/d in combination with the Havant Thicket Reservoir transfer was shown at the time to be oversized to meet the 1-in-200-year drought scenario.

Table 2 presents the options taken forward to the options appraisal process presented at Gate 2. The options that were not progressed into the options appraisal process after Gate 1 are highlighted in red.

**Table 2** - Options taken forward to Gate 2

| Configuration Type | Option No.           |
|--------------------|----------------------|
| Desalination       | A.1                  |
|                    | A.2                  |
|                    | D.1 – Not progressed |
| Water Recycling    | B.1 – Not progressed |
|                    | B.2                  |
|                    | B.3 – Not progressed |
|                    | B.4                  |
|                    | B.5                  |
| Water Transfer     | D.2                  |

## 3. Stage 2: Options Appraisal Process

### 3.1. Introduction

The options appraisal process considered the various scheme options to identify a preferred option and a back-up option in order to inform our Gate 2 submission to RAPID. A back-up option was selected to mitigate potential delivery risks associated with the delivery of the preferred option.

It was important that the process was robust so that an appropriate option was selected, having regard to relevant planning policy tests. The process was developed in consultation with stakeholders and was undertaken by qualified individuals. The process was iterative and comprised:

- Site and route selection
- Consenting evaluation
- Multi-Criteria Decision Analysis
- Assessment against legal and policy objectives
- Assessment against Water for Life Hampshire strategic objectives
- Interim Business Evaluation
- Future Needs Assessment
- Final Business Evaluation

### 3.2. Site and Route Selection

This section provides an overview of the site and route selection stage. The outcome of this stage was the identification of the best performing sites and pipeline route configurations to be used by each option. Options fall into three groupings as follows;

- **Desalination:** for Options A.1 and A.2;
- **Water Recycling:** for Options B.2, B.4 and B.5; and
- **Water Transfer:** for Options B.4 and D.2. (Note Option B4 is a combination of both water transfer and water recycling technologies)

To identify the best performing sites and routes, a site selection process considered the performance of sites and routes against engineering, environmental and planning criteria. The process was as follows:

- Determination of a search area for the components of each option;
- Identification of terrestrial and marine sites (if required) based on initial physical and technical requirements;
- Appraisal of these sites against nearby sensitive receptors;
- Review of major development proposals and compatibility with each site;
- Assessment against relevant planning policies, and engineering criteria;
- The refinement of initial pipeline route options; and
- Evaluation of the individual components to identify a selected configuration.

The route selection involved a further assessment of the initial pipeline routes presented at Gate 1 and the Spring 2021 consultation. These initial pipeline routes had been identified having regard to environmental constraints and relevant planning policy. The best performing initial pipeline routes were identified and combined with the best performing sites to form configurations for each option. These configurations then progressed to the next stage of the options appraisal process for further assessment. It should be noted that we are not currently consulting on these initial pipeline routes, but we are consulting on the pipeline corridor

that has been developed using the best performing initial pipeline routes as the starting point, as described in Section 4.

The following sections provide an overview of the route and site selection.

### 3.2.1. Desalination

The desalination solution related to two options: Options A.1 and A.2. The infrastructure required for these options comprised:

- Terrestrial desalination plant;
- Terrestrial intake pumping station
- Marine intake; and
- Marine outfall.

In our Water Resource Management Plan 2019, we presented the Base Case as our preferred solution to the water supply deficit. The Base Case comprised a 75 Ml/d desalination plant at Ashlett Creek near Fawley, an abstraction from the existing Fawley Deep Dock, four potential discharge points and four initial pipeline routes from the desalination plant to Testwood Water Supply Works.

The RAPID gated process required us to assess alternatives to the Base Case, and therefore this section presents the process that we undertook to identify and assess those alternatives. The site selection process started with the identification of a search envelope for the terrestrial desalination plant, terrestrial intake pumping station, marine intake and marine outfall. Sites for the required infrastructure were then identified. Table 3 details the criteria for the terrestrial sites and Table 4 details the criteria for the marine sites.

The search area between two points along the South Coast was identified for the terrestrial sites:

- The western extent of the search area was located at Bournemouth to allow potential connectivity with the Knapp Mill Water Supply Works to Testwood Water Supply Works pipeline;
- The eastern extent of the search area was located at Eastney, which could potentially provide connectivity to Testwood Water Supply Works without crossing National Parks;

A search area for the terrestrial sites was drawn 5 km from the coastline between the western and eastern extent. Future rates of coastal erosion were also considered to ensure that infrastructure was not located in potentially vulnerable locations.

The search area for the marine sites was 800 metres from the coastline parallel to the terrestrial search area as it was considered the maximum distance for the operation of the required equipment. This distance would also be preferable from a construction and cost perspective.

Terrestrial and marine sites were identified within the search zones. Table 3 details the criteria for identifying terrestrial sites and Table 4 details the criteria for identifying marine sites.

**Table 3 - Criteria for terrestrial desalination sites**

| Element         | Details  |
|-----------------|--|
| Land Use        | Avoidance of the following areas: <ul style="list-style-type: none"> <li>■ Densely populated residential areas, private residences, car homes, hospitals, schools, universities, places of worship, burial grounds, holiday parks, hotels, retail parks and leisure parks;</li> <li>■ Key transport infrastructure; and</li> <li>■ Key utilities.</li> </ul> |
| Land Conditions | Avoidance of the following land conditions: <ul style="list-style-type: none"> <li>■ Marsh;</li> </ul>   |

| Element   | Details   |
|-----------|---|
|           | <ul style="list-style-type: none"> <li>■ Mudflat;</li> <li>■ Cliff face; and</li> <li>■ Open water.</li> </ul>  |
| Site Size | <p>61 Ml/d Desalination Plant (Option A.2) - Minimum of 40,470 m<sup>2</sup> + 4,047 m<sup>2</sup> for construction</p> <p>75 Ml/d Desalination Plant (Option A.1) – Minimum of 48,564 m<sup>2</sup> + 4,047 m<sup>2</sup> for construction</p> |

**Table 4 - Criteria for marine desalination sites**

| Element                                 | Details   |
|---|---|
| Water Depth (intake)                    | Minimum water depth at end of intake 3 m at lowest astronomical tide  |
| Hydrodynamics and Water Depth (outfall) | Areas where there is a minimum average current speed of 0.3 m/s and a minimum mean lowest astronomical tide of 5 m.   |
| Marine Spatial Allocations              | <p>Avoidance of the following areas:</p> <ul style="list-style-type: none"> <li>■ Anchorage areas;</li> <li>■ Disposal and dredging areas; and</li> <li>■ Naval base exclusion zones</li> </ul> |

The application of the above search area and criteria resulted in the identification of 159 terrestrial sites, 38 marine intake sites and 15 marine outfall sites. These are shown in Figure 2.

Hampshire Water Transfer and Water Recycling Project – Scheme Development Summary

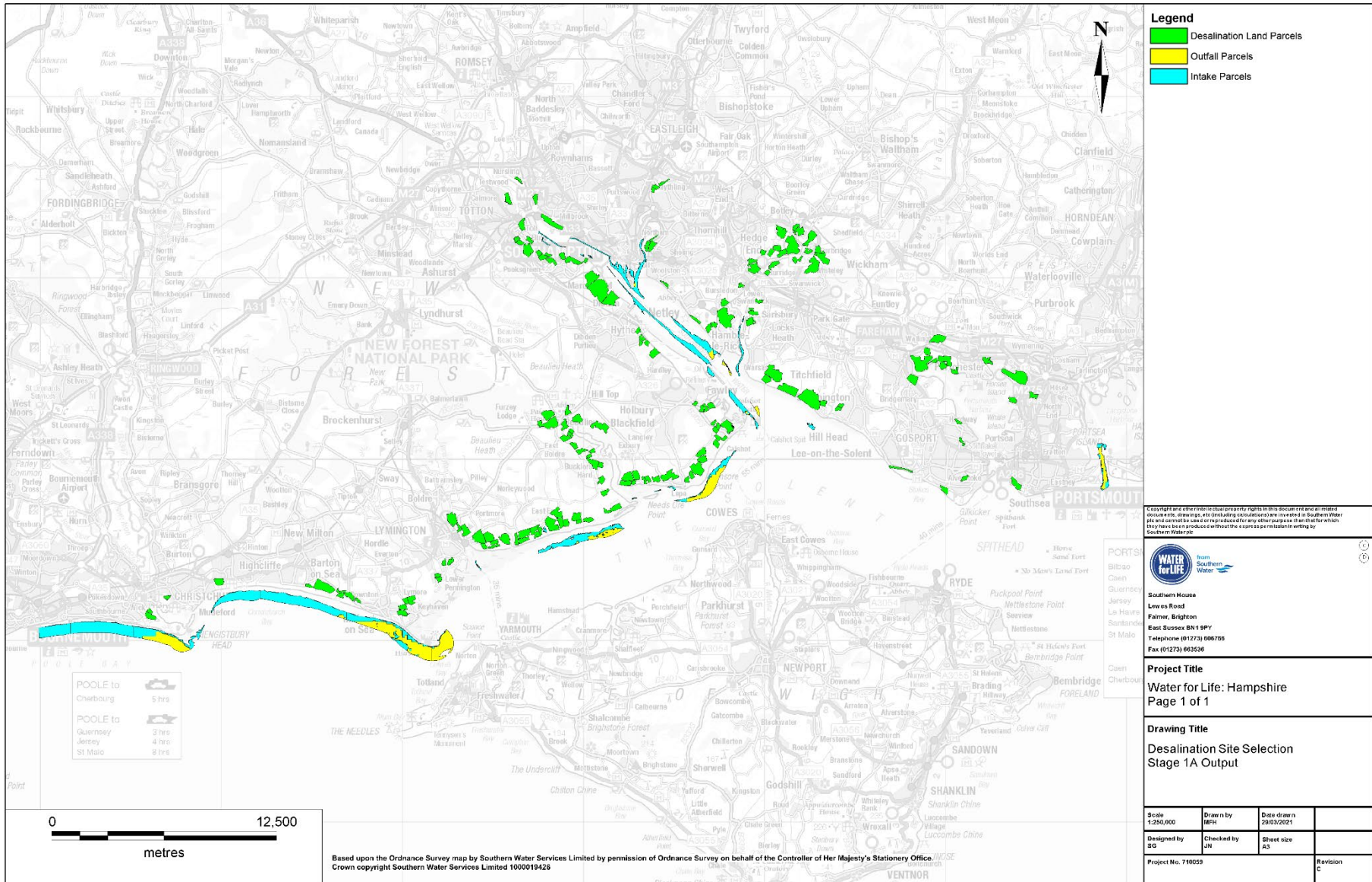


Figure 2 - Identified terrestrial and marine desalination sites

## Long List of Sites

This stage aimed to refine the long list of 159 terrestrial sites, 38 marine intake sites and 15 marine outfall sites into a short list. To create a short list of terrestrial sites, an 800m buffer was created around each of the marine intake sites as a result of the technical limits of equipment associated with the intake for the desalination plant. Any sites outside of the buffer were discounted as they would be unviable from a technical perspective given the distances. This refinement process resulted in the progression of 54 terrestrial sites, 26 marine intake sites and 14 marine outfall sites.

These sites were then grouped into clusters to form viable configurations that do not have large distances between the components. These sites are split across five broad geographical clusters named A, B, C, D and E, the western extent being Christchurch (A) and the eastern extent Hill Head (E).

These sites were then assessed against a set of planning considerations to identify a short list of sites. For the terrestrial sites, these included proximity to planning designations such as:

- Special Areas of Conservation / Ramsar / Special Protection Area (including potential and candidate sites);
- Site of Special Scientific Interest / National Nature Reserve;
- Scheduled Monuments;
- National Parks / Areas of Outstanding Natural Beauty / Green Belt;
- Ancient Woodland;
- Grade 1 and 2\* Registered Parks and Gardens and Listed Buildings and Battlefield Sites;
- Residential (noise/vibration and air quality impact);
- Hospitals, Care Homes, Schools; and
- Amenity Spaces e.g., allotments, public parks, playgrounds, playing fields.

For the marine sites, these included:

- Special Area of Conservation / Ramsar / Special Protection Area (including potential and candidate sites);
- Site of Special Scientific Interest;
- Marine Conservation Zone;
- Scheduled Monuments;
- Marine Scheduled Monuments;
- Protected wrecks sites;
- Proximity to Residential receptors (noise / vibration and air quality impact); and
- Recreational Areas e.g. yachting, fishing and diving.

The 54 terrestrial sites, 26 marine intake sites and 14 marine outfall sites were assessed against the above criteria, and the five best performing sites for each component type (terrestrial, marine intake and marine outfall) for each cluster progressed to the short list stage. A total of 28 terrestrial sites, 19 marine intake sites and 13 marine outfall sites were identified for the short list, as shown in Figure 3.

Hampshire Water Transfer and Water Recycling Project – Scheme Development Summary

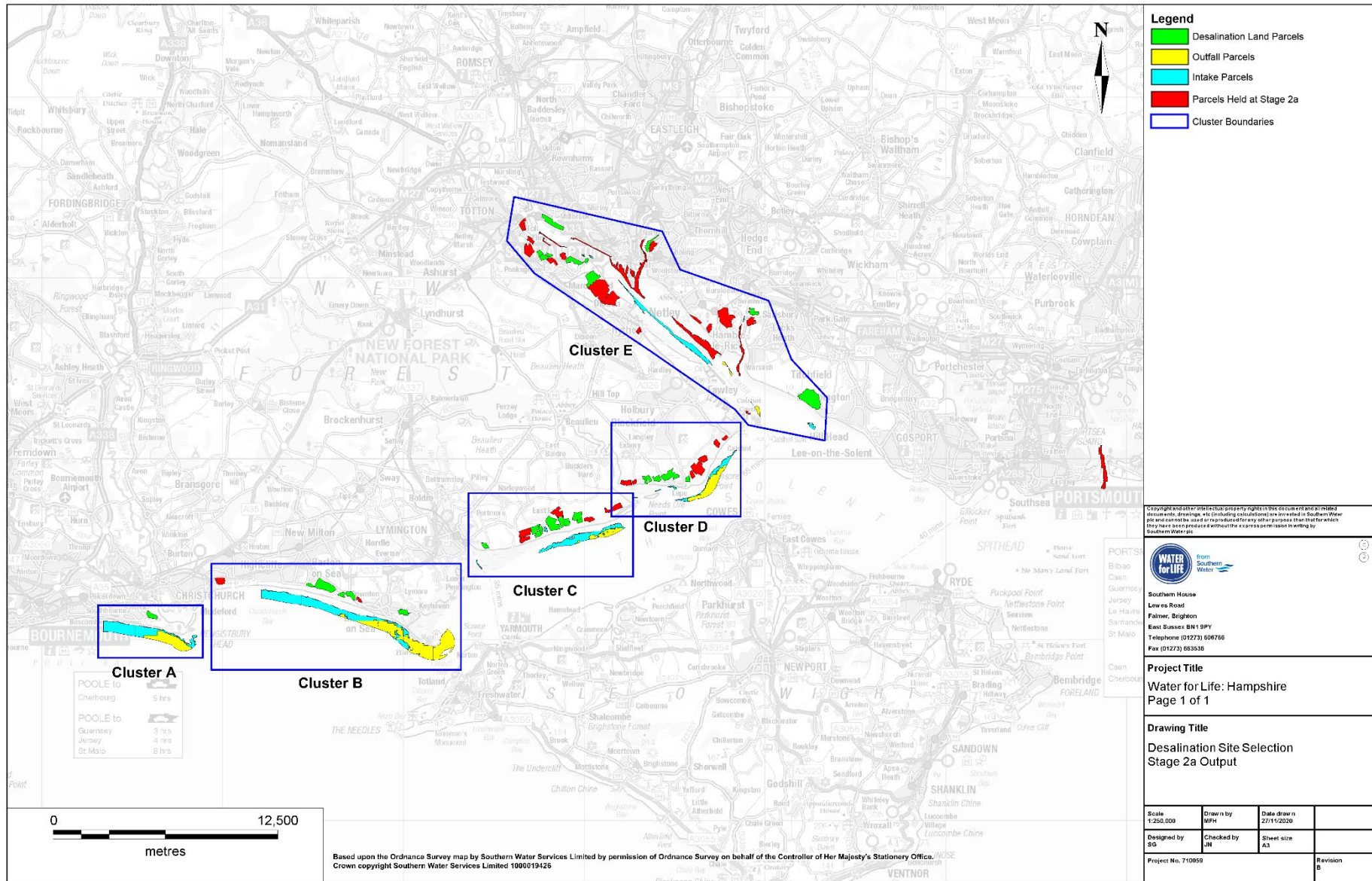


Figure 3 - Short list of terrestrial and marine desalination sites

## Short List of Sites

The short list was assessed against environmental, planning and engineering considerations, such as flood risk, ground conditions, ground contamination, historic environment and transport accessibility. We also considered potential interactions with approved or accepted Development Consent Order applications made within 5 years, or developments screened or determined to be EIA developments or subject to Transport and Works Orders within 3 years.

Following this assessment, a total of 16 terrestrial sites, 15 marine intake sites and 11 marine outfall sites across the 5 clusters were progressed to the next stage of the site selection process.

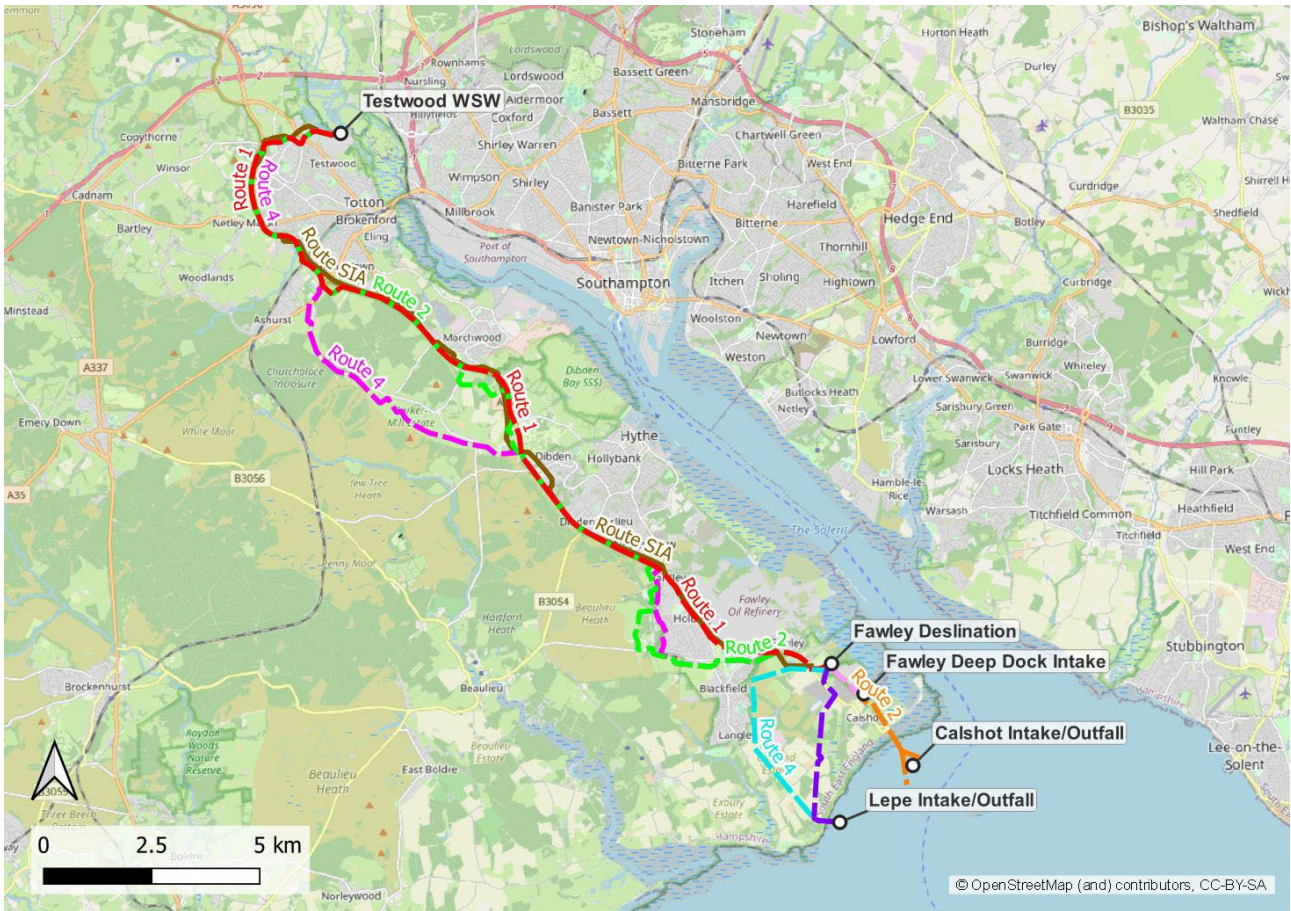
An assessment against national policy was undertaken on the remaining clusters. The marine sites were near Special Areas of Conservation and Special Protection Areas. Therefore, clusters A, B, C, D and E had the potential for adverse effects to these ecological designations and therefore these options were considered to have greater potential environmental impacts than the Base Case. The aim of this site selection was to identify if there were any suitable alternatives to the Base Case. Given the potential impacts that the alternatives in clusters A, B, C, D and E would pose, these were not considered to be suitable alternatives. The Base Case was therefore taken forward for further assessment to identify a preferred configuration.

## Assessment of Sites

Each individual component of the Base Case (desalination plant, intake and outfall infrastructure and initial pipeline routes) was considered in further detail. Table 5 details the component options for the Base Case that were then assessed. The potential options for the Base Case are shown in Figure 4.

**Table 5** – Summary of Base Case component options

| Solution     | Terrestrial Site | Intake and Outfall (Marine)  | Initial Pipeline Routes   |
|--------------|------------------|--|---|
| Desalination | Ashlett Creek    | <p>Fawley to Abstraction / Discharge Route 1 (intake from the existing Fawley Deep Dock and outfall most direct route to marine discharge site)</p> <p>Fawley to Abstraction Discharge Route 2 (Calshot Intake / Outfall) – note uses redundant Fawley Power Station water tunnels</p> <p>Fawley to Abstraction Discharge Route 3 (Lepe) (this option included a terrestrial intake pumping station)</p> <p>Fawley to Abstraction Discharge Route 4 (Lepe) (this option included a terrestrial intake pumping station)</p> | <p>Fawley to Testwood Route 1</p> <p>Fawley to Testwood Route 2</p> <p>Fawley to Testwood Route 4</p> <p>Fawley to Testwood Route SIA</p> <p>Initial pipeline route 3 was discounted prior to Stage 4 owing to significant engineering feasibility issues associated with the routeing along a live freight railway</p> |



**Figure 4 - Base Case site and route options**

A more detailed assessment of the selected desalination option is summarised in Table 6, below.

**Table 6 – Assessment of the preferred desalination option**

| Sub-Component                              | Environmental and Planning Considerations  |
|--|--|
| Terrestrial Site                           | The site for the desalination plant was located within the National Park, which would be contrary to the Draft National Policy Statement for Water Resources Infrastructure (dNPS).  |
| Marine Intake and Outfall (Lepe Option)    | This option is located in close proximity to the Solent and Southampton Water Special Protection Area and Solent Maritime Special Area of Conservation and therefore had the potential to pose a significant adverse effect on the integrity of these sites. Such an option would be contrary to the dNPS unless it was demonstrated that there was no less damaging feasible alternative solution.  |
| Marine Intake and Outfall (Calshot Option) | Further environmental information, especially in relation to potential to impact internationally designated ecological sites within the Solent, would be required to establish the potential for significant adverse effects on the integrity of these sites. In view of the potential to re-use existing infrastructure this, Option was considered preferable to the Lepe intake / outfall Option above, however there remained potential to impact the habitat that is functionally linked to the River Itchen Special Area of Conservation and River Test Site of Special Scientific Interest. |

| Sub-Component  | Environmental and Planning Considerations  |
|--|--|
| Initial Pipeline Routes (Four considered: 1, 2, 4 and SIA) | Initial pipeline routes 1 and 2 were likely to have fewer potential impacts on the New Forest National Park and other national level designations, although there remained significant challenges associated with the deliverability of these initial pipeline routes. |

## Conclusions

The assessment set out above determined that the Calshot marine intake / outfall options should be taken forward and the Lepe options discounted due to the potential of that option to pose significant adverse effects to designated sites. The desalination plant site at Ashlett Creek was progressed as this was the only remaining site for desalination. Regarding the initial pipeline routes, routes 1 and 2 were recommended to be included within the preferred configuration. These components were progressed for Option A.1 and A.2.

### 3.2.2. Water Recycling

The water recycling site and route selection related to Options B.2, B.4 and B.5. The following sections detail the considerations applied to the potential siting for the water recycling plant.

A terrestrial search area for the water recycling plant was determined by two factors:

- A search radius of 1.5 km around Budds Farm Wastewater Treatment Works. This distance was chosen by increasing the search area from Budds Farm Wastewater Treatment Works in 500m increments to identify a site that minimised pipeline distances and therefore carbon footprint.
- Areas of coastline susceptible to sea flooding and coastal erosion and where major infrastructure development would not be suitable.

Table 7 details the criteria used to determine suitability of sites within the 1.5km search area.

**Table 7 - Site search criteria for water recycling**

| Element         | Details   |
|-----------------|---|
| Land Use        | Avoidance of the following areas: <ul style="list-style-type: none"> <li>■ Densely populated residential areas, private residences, care homes, hospitals, schools, universities, places of worship, burial grounds, holiday parks, hotels, retail parks and leisure parks;</li> <li>■ Key transport infrastructure; and</li> <li>■ Key Utilities.</li> </ul> |
| Land Conditions | Avoidance of the following areas: <ul style="list-style-type: none"> <li>■ Marsh;</li> <li>■ Mudflat;</li> <li>■ Cliff face; and</li> <li>■ Open water.</li> </ul>  |
| Site Size       | 61 Ml/d water recycling plant (Options B.2 and B.4) - Minimum of 40,470 m <sup>2</sup> + 4,047 m <sup>2</sup> for construction<br>75 Ml/d water recycling plant (Options B.5) – Minimum of 48,564 m <sup>2</sup> + 4,047 m <sup>2</sup> for construction  |

The application of the search area and search criteria resulted in the identification of 17 sites. These are shown in Figure 5.

● Hampshire Water Transfer and Water Recycling Project – Scheme Development Summary

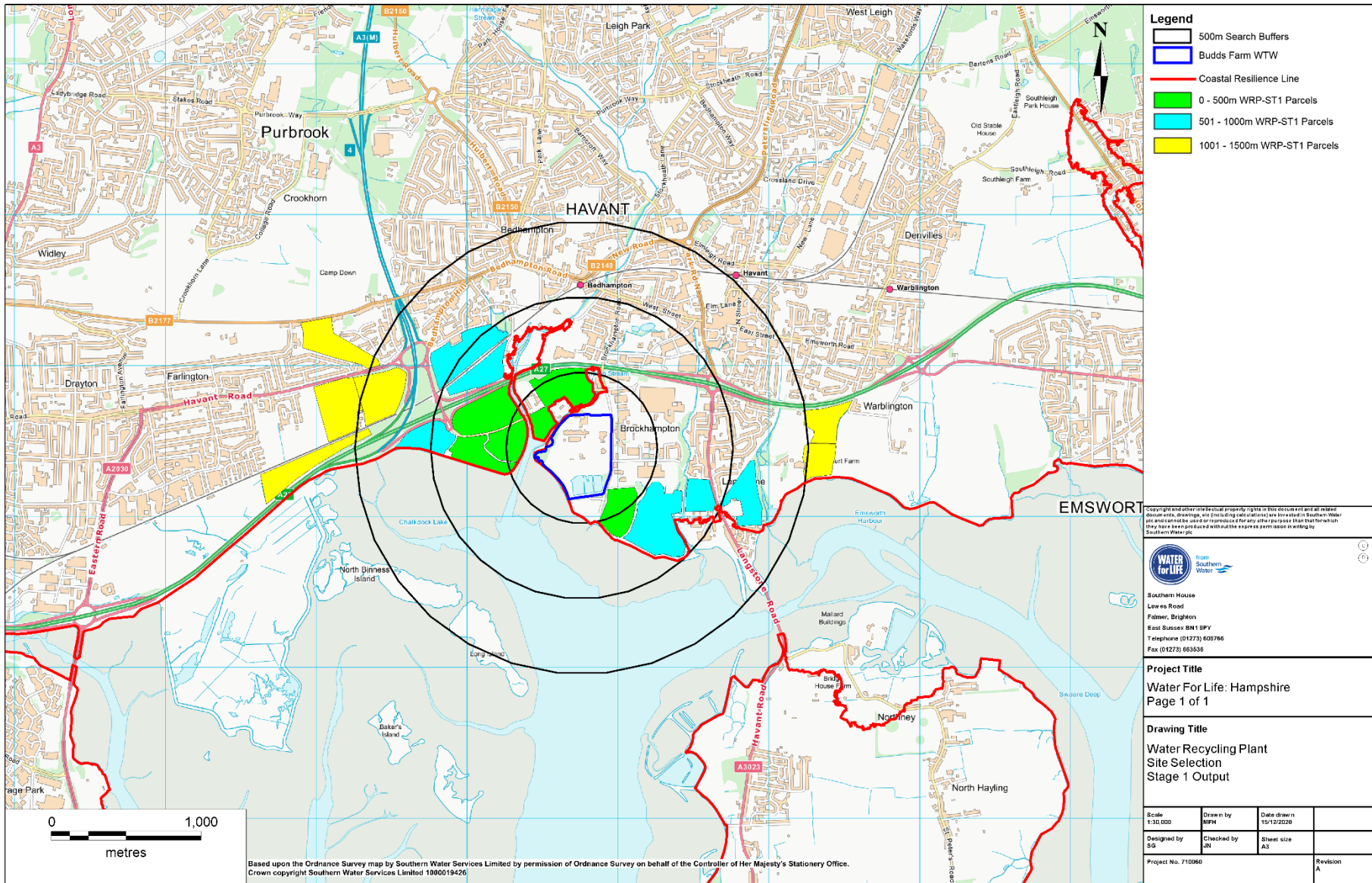


Figure 5 – Identified water recycling sites

### Long List of Sites

The 17 sites were assessed against the same planning considerations as desalination options, outlined in Section 3.2.1. The sites were then considered in terms of their proximity to these designations, resulting in a short list of 7 best performing sites. Some sites did not progress because of their proximity to ecological sites in Langstone Harbour, and other sites were near residential areas.

### Short List of Sites

The 7 short listed sites were assessed against additional environmental, planning and engineering considerations, such as flood risk, ground conditions, ground contamination, historic environment and transport accessibility. Approved or accepted Development Consent Order applications made within 5 years, or developments screened or determined to be EIA developments or subject to Transport and Works Orders within 3 years, were also taken into account. The 5 best performing sites progressed for further assessment and are shown in Figure 6.

● Hampshire Water Transfer and Water Recycling Project – Scheme Development Summary

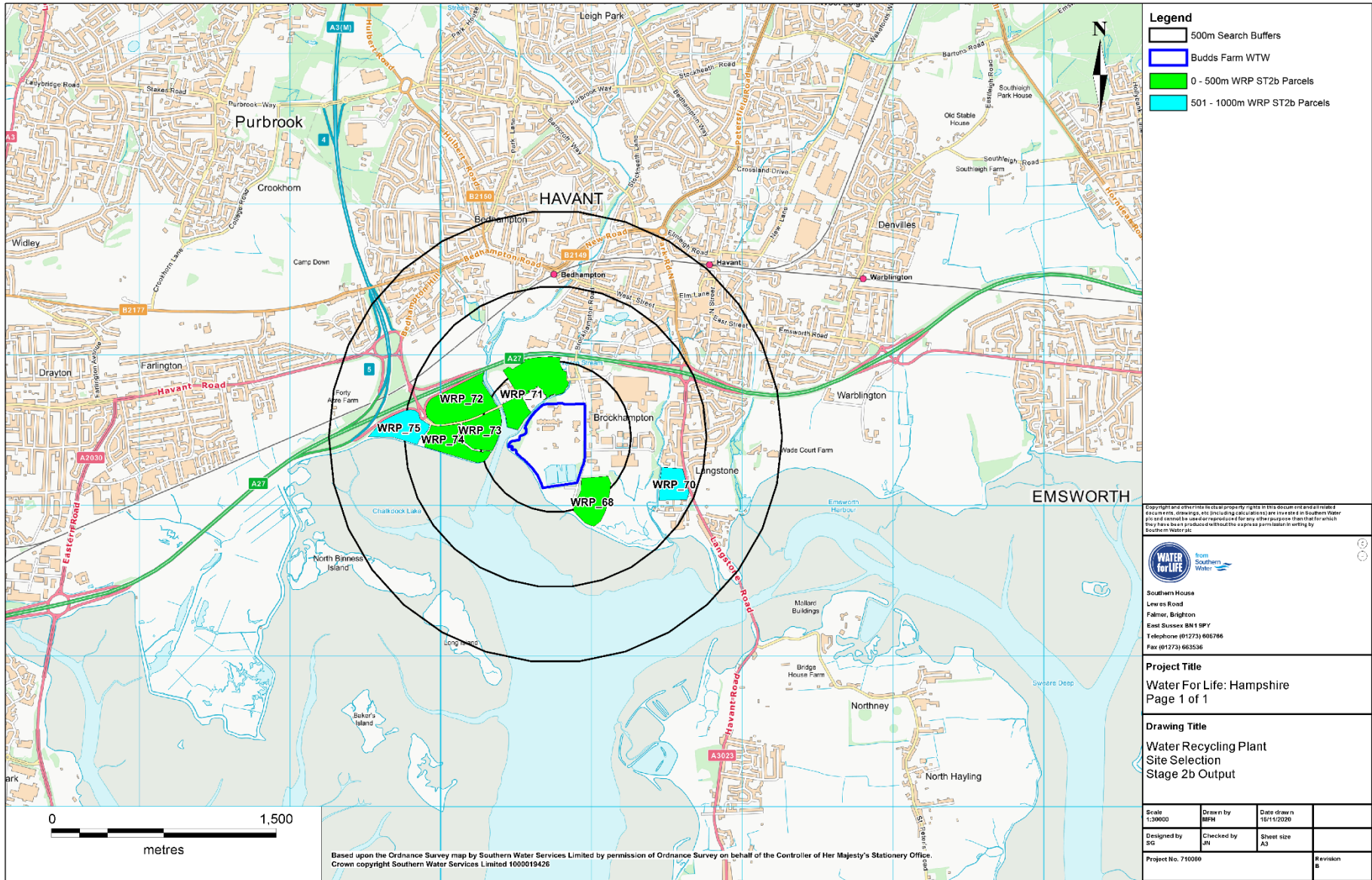


Figure 6 - Water recycling sites short list

## Assessment of Sites

Each of the five shortlisted sites were assessed against environmental and planning considerations, as set out in Table 8.

**Table 8 - Water recycling sites environmental and planning considerations**

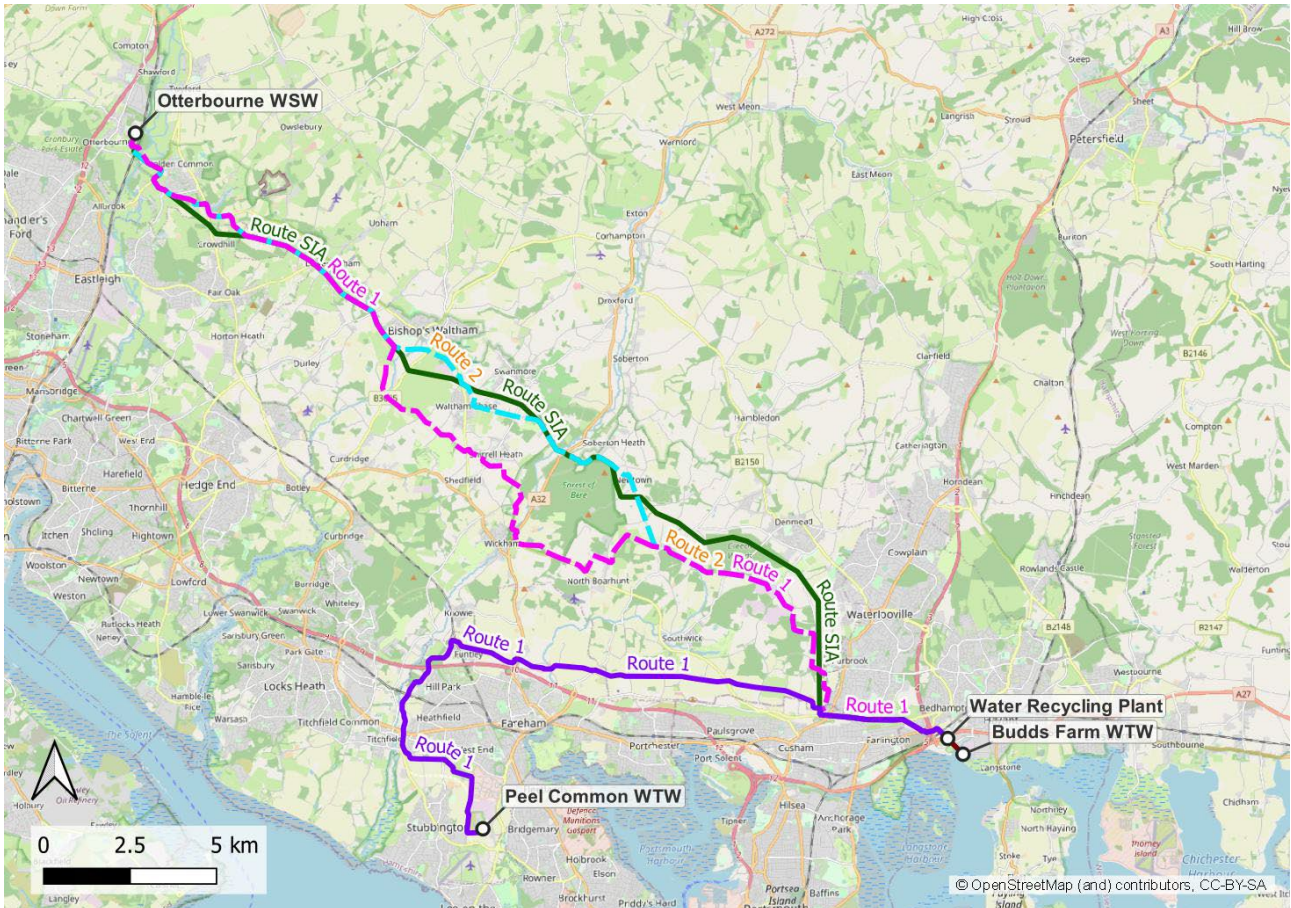
| Site   | Environmental and Planning Considerations  |
|--------|--|
| WRP_68 | This site is adjacent to a Site of Importance for Nature Conservation and within a Secondary Support Area in the Solent and Waders Brent Goose Strategy. These ecological considerations limited this being a potentially suitable site.   |
| WRP_70 | This site is designated as a Secondary Support Area in the Solent and Waders Brent Goose Strategy. The site is also close to the AONB, existing industrial land uses and the A27.<br><br>The Secondary Support Area and proximity to the AONB limited this being a potentially suitable site.  |
| WRP_71 | This site is allocated within the Havant Borough Council adopted Core Strategy (2011) and Allocations (2014) as a site suitable for employment and warehouse use. It is located in the Broadmarsh Industrial Area, which the Core Strategy identifies as potentially accommodating 16,300 square metres of new employment floorspace and between 233 and 452 jobs. The site is already developed and comprises existing / active warehousing and office uses.<br><br>The use of this site would lead to a loss of employment land and a net loss of existing employment floor area. Whilst this would conflict with Local Plan policy, it could potentially provide a suitable site subject to land assembly.<br><br>Existing infrastructure may also present engineering challenges for this site.<br><br>There are no significant environmental constraints associated with this site. |
| WRP_72 | The western part of the site is identified as a low use site in the Solent and Waders Brent Goose Strategy, which may require mitigation measures to be put in place.<br><br>The site is designated as a 'gateway' employment site and outline planning permission was granted in June 2022 for a mix of employment uses (falling within use classes E, B2, B8).<br><br>The site is also a former landfill site, which would require some mitigation measures to be put in place.<br><br>The site was considered to be potentially suitable.   |
| WRP_75 | This site is designated as a Core Area in the Solent and Waders Brent Goose Strategy. This designation poses a significant constraint to future development on this site as this constitutes functional habitat associated with the Special Protection Area and Ramsar wetlands of the Solent Coast. This site was not considered to be suitable due to the resulting conflict with the dNPS for Water Resources Infrastructure.   |

On the basis of this assessment, sites WRP\_71 and WRP\_72 were identified as the most preferable sites. WRP\_71, however, is already developed and comprises existing / active warehousing and office uses and is considered to be significantly more difficult to deliver and develop than WRP\_72. WRP\_72 has an outline

planning permission and is adjacent to ecologically sensitive receptors but there are no other impediments to delivery. It was therefore recommended that WRP\_72 was taken forward.

### Initial Pipeline Routes

The initial pipeline routes for water recycling identified at Gate 1 and presented in the Spring 2021 consultation are shown in Figure 7. These initial pipeline routes relate to Options B.2 and B.5<sup>1</sup>.



**Figure 7 – Initial water recycling pipeline routes**

Table 9 summarises the environmental and planning considerations for the initial pipeline routes for water recycling.

**Table 9 - Water recycling initial pipeline routes environmental and planning considerations**

| Initial Pipeline Route   | Environmental and planning considerations   |
|--------------------------|---|
| Initial Pipeline Route 1 | <p>Appropriate routing and mitigation for the crossing of the River Itchen Special Area of Conservation would be required.</p> <p>Potential effects on ancient woodland would require appropriate mitigation to avoid potentially unacceptable effects.</p> <p>The pipeline is within the National Park but would be underground. Future work would be needed to identify siting requirements for potential pumping stations.</p> |

<sup>1</sup> Option B.4 combined water recycling with water transfer and therefore consists of an alternative set of initial pipeline routes. Options B.2 and B.5 do not utilise the Havant Thicket Reservoir.

| Initial Pipeline Route     | Environmental and planning considerations   |
|----------------------------|---|
| Initial Pipeline Route 2   | <p>Appropriate routing and mitigation for the crossing of the River Itchen Special Area of Conservation would be required.</p> <p>Potential effects on ancient woodland would require appropriate mitigation to avoid potentially unacceptable effects.</p> <p>The pipeline is within the National Park but would be underground. Future work would be needed to identify siting requirements for potential pumping stations.</p> <p>Appropriate routing would be required to reduce potential impacts on nationally designated cultural heritage features.</p> |
| Initial Pipeline Route SIA | <p>Appropriate routing and mitigation for the crossing of the River Itchen Special Area of Conservation would be required.</p> <p>Potential effects on ancient woodland would require appropriate mitigation to avoid potentially unacceptable effects.</p> <p>The pipeline is within the National Park but would be underground. Future work would be needed to identify siting requirements for potential pumping stations.</p>   |

All three initial pipelines route options performed in a comparable way and each needs to cross the River Itchen Special Area of Conservation prior to connecting into Otterbourne Water Supply Works. All routes would run partially through the South Downs National Park and would require appropriate siting to avoid impacts on ancient woodland. It was concluded that initial pipeline route 1 and initial pipeline route 2 would be progressed. This would provide optionality around the Forest of Bere to take a northern route using initial pipeline route 1 which further intersects the South Downs National Park, or a southern route outside of the National Park which would be longer.

WRP\_72 and initial pipeline routes 1 and 2 were taken forward for Options B.2 and B.5. For Option B.4 which also includes the requirement for a water recycling plant, WRP\_72 was also taken forward.

### 3.2.3. Water Transfer

Option B.4 comprises both water recycling (Option B.2) and water transfer (Option D.2) technology. The results presented for the water recycling plant sites for Option B.2 and Option B5 above apply equally to Option B.4. These are not considered further in this section. This section identifies the site for a high lift pumping station and initial pipeline routes between the Havant Thicket Reservoir and Otterbourne Water Supply Works for Options B.4 and D.2.

#### High Lift Pumping Station Site Selection

A search area for the high -lift pumping station was driven by the proximity to the Havant Thicket Reservoir. The search area was initially located to the west of the proposed reservoir.

Table 10 details the criteria used to identify suitable sites for the high lift pumping station.

**Table 10** - Site search criteria for water transfer high lift pumping station

| Element         | Details  |
|-----------------|--|
| Land Use        | <p>Avoidance of the following areas:</p> <ul style="list-style-type: none"> <li>■ Densely populated residential areas, private residences, care homes, hospitals, schools, universities, places of worship, burial grounds, holiday parks, hotels, retail parks and leisure parks;</li> <li>■ Key transport infrastructure; and</li> <li>■ Key Utilities.</li> </ul> |
| Land Conditions | <p>Avoidance of the following areas:</p> <ul style="list-style-type: none"> <li>■ Marsh;</li> <li>■ Mudflat;</li> <li>■ Cliff face; and</li> <li>■ Open water.</li> </ul>  |
| Site Size       | 6,341 m <sup>2</sup> + 4,046 m <sup>2</sup> for construction compound  |

The application of the search area and criteria resulted in the identification of 18 sites, shown in Figure 8.

Hampshire Water Transfer and Water Recycling Project – Scheme Development Summary

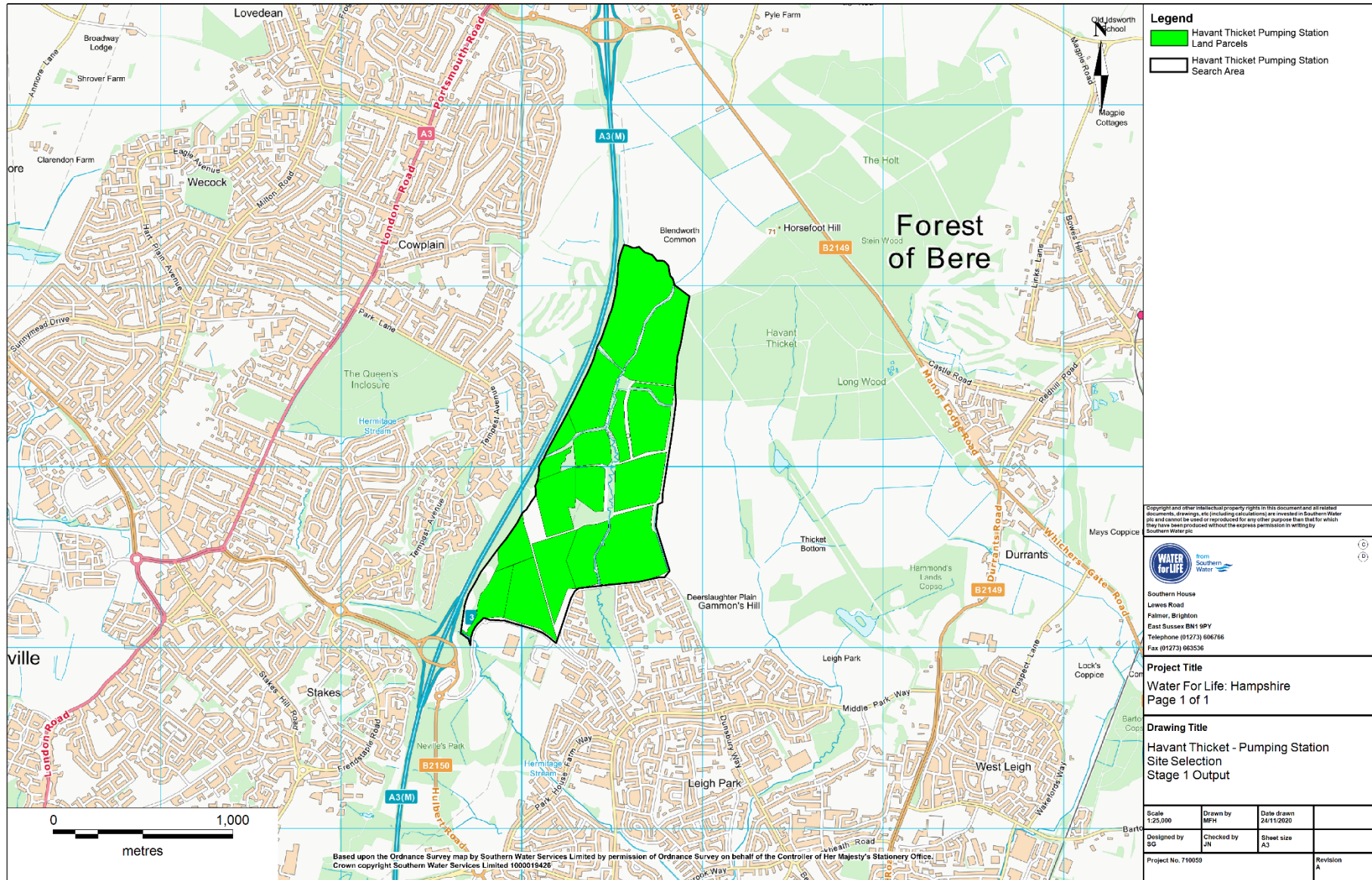


Figure 8 - Identified water transfer sites

## Long List of Sites

The 18 sites were assessed against the same planning considerations as those used for desalination, outlined in Section 3.2.1. The sites were then considered in terms of their proximity to these designations:

The six best performing sites were progressed to the short list stage.

## Short List of Sites

The six short listed sites were assessed against additional environmental, planning and engineering considerations, such as flood risk, ground conditions, ground contamination, historic environment and transport accessibility. Approved or accepted Development Consent Order applications made within 5 years, and developments screened or determined to be EIA developments as well as those subject to Transport and Works Orders within 3 years, were also taken into account. Two sites had the potential to conflict with a planned development and were therefore excluded from further consideration, and one site scored lower because of its inaccessibility and proximity to the South Downs National Park. The remaining three sites progressed for further assessment. These are shown in Figure 9.

Hampshire Water Transfer and Water Recycling Project – Scheme Development Summary

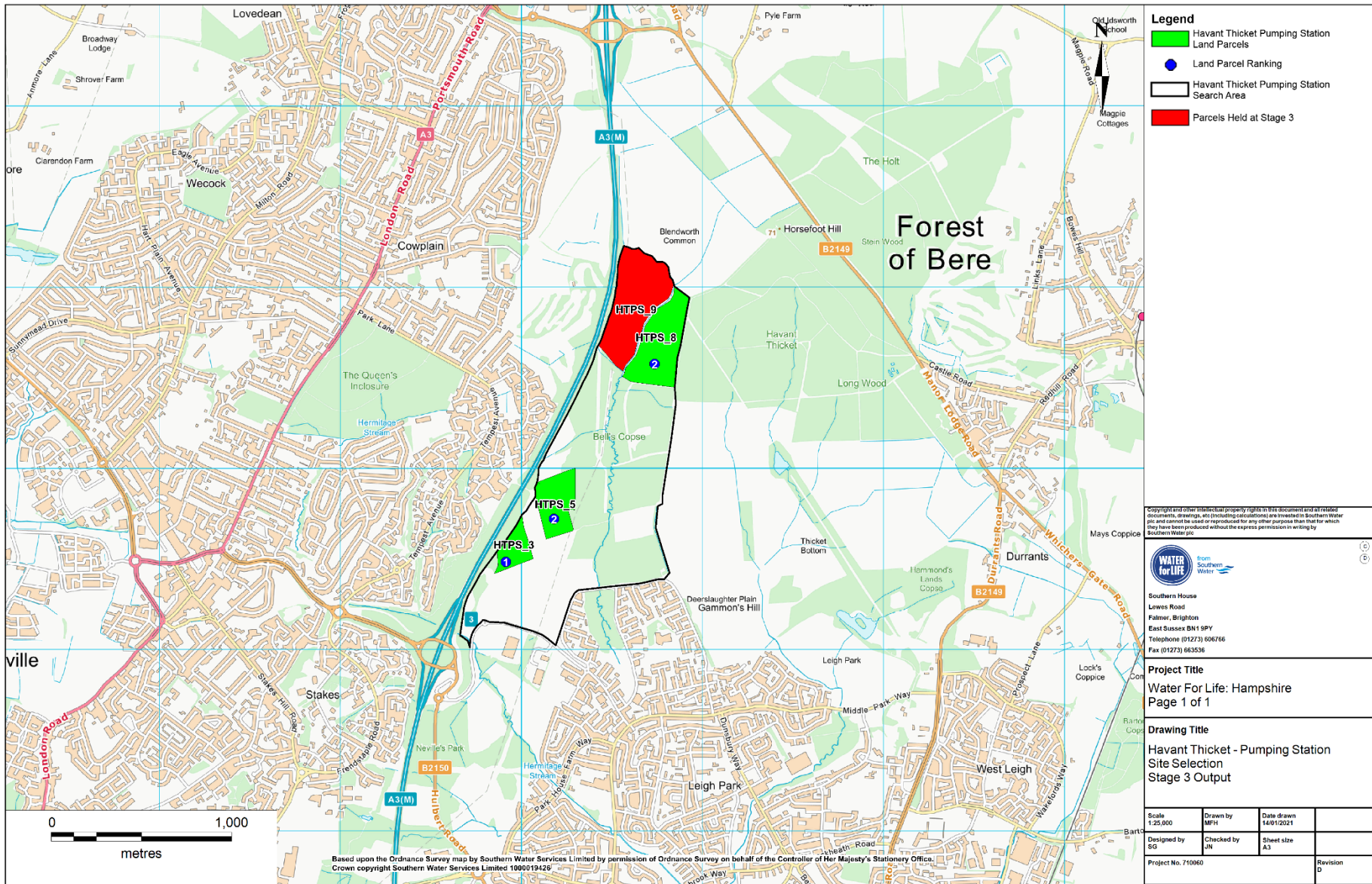


Figure 9 - Water transfer sites short list

## Assessment of Sites

The three remaining sites were considered using further environmental, planning and engineering criteria, as summarised in Table 11.

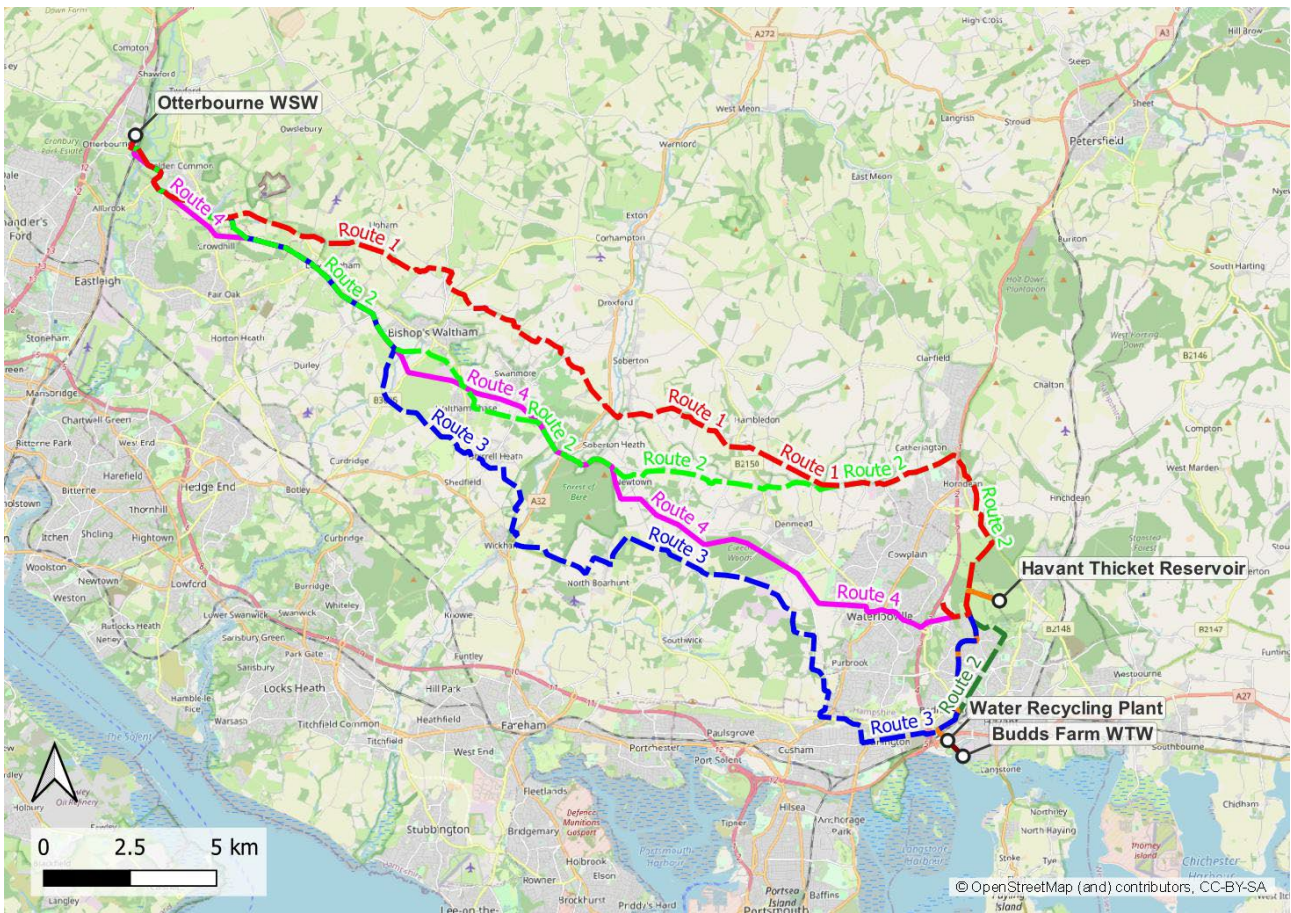
**Table 11** - Water transfer high lift pumping station sites environmental and planning considerations

| Site   | Environmental and planning considerations  |
|--------|--|
| HLPS_3 | Bats associated with the Singleton and Cocking Tunnels Special Area of Conservation are understood to be linked to bat populations recorded within the Havant Thicket reservoir site and surrounding areas. There is therefore potential for impacts to habitats functionally linked to the Special Area of Conservation. This site is also a habitat mitigation site for the adjacent Dunsbury Park development. There would be a need for further investigation of the potential mitigation required to ensure no adverse effects on integrity of the Special Area of Conservation and there may be a need to find replacement land for the habitat mitigation associated with the Dunsbury Park mitigation site.  |
| HLPS_5 | There would be a need for further investigation of the potential mitigation required to ensure no adverse effects on integrity of the Special Area of Conservation. However, this site has the fewest anticipated environmental impacts, has no restrictive designations, and is not within the proposed replacement habitat for the Dunsbury Park development.  |
| HLPS_8 | As with HLPS_3, the bats present on the site are linked to the Special Area of Conservation and is therefore potential for impacts to habitats functionally linked to the Special Area of Conservation. There would be a need for further investigation of the potential mitigation required to ensure no adverse effects on integrity of the Special Area of Conservation.<br><br>This site also lies immediately adjacent to an area of ancient, replanted woodland. The site is also located on the Blendworth Common (South) Site of Importance for Nature Conservation. This site is considered to have greater potential for significant adverse environmental impact, due to the proximity of ancient woodland and the designation of the site as a Site of Importance for Nature Conservation. |

Site HLPS\_8 was considered to have greater potential for significant environmental effects due to the proximity of ancient woodland and priority habitat as well as being designated a Site of Importance for Nature Conservation. HLPS\_5 was considered to have the fewest potential environmental impacts and it is not designated as mitigation habitat for the Dunsbury Park development.

## Initial Pipeline Routes

The initial pipelines routes presented at Gate 1 and the Spring 2021 consultation for the water transfer Option D.2 are shown in Figure 10.



**Figure 10 - Initial water transfer pipeline routes**

Table 12 summarises the environmental and planning considerations for the initial pipeline routes for water transfer

**Table 12 – Initial water transfer pipeline routes environmental and planning considerations**

| Initial Pipeline Route   | Environmental and planning considerations  |
|--------------------------|--|
| Initial Pipeline Route 1 | <p>Appropriate routing and mitigation of watercourse crossings would be required to avoid potential impacts on the integrity of the Special Protection Area.</p> <p>Potential effects on ancient woodland would also need to be further assessed and appropriate mitigation implemented to avoid potentially unacceptable effects.</p> <p>Initial pipeline route 1 would have a significantly impact on the National Park and greater environmental impacts when compared to the other considered initial pipeline routes and was therefore not considered a preferred initial pipeline route.</p> |
| Initial Pipeline Route 2 | <p>Appropriate routing and mitigation of watercourse crossings would be required to avoid potential impacts on the integrity of the Special Protection Area.</p> <p>Potential effects on ancient woodland would also need to be considered further and appropriate mitigation implemented to avoid likely unacceptable effects.</p> <p>There would be a potentially greater impact on ancient woodland associated with</p>   |

| Initial Pipeline Route   | Environmental and planning considerations   |
|--------------------------|---|
|                          | <p>this initial pipeline route owing to the routing north along the edge of Staunton Country Park.</p> <p>This initial pipeline route would have the least impact on the South Downs National Park and would have fewer environmental impacts from a landscape perspective compared to initial pipeline route 1.</p>  |
| Initial Pipeline Route 3 | <p>Appropriate routeing and mitigation of watercourse crossings would be required to avoid potential impacts on the integrity of the Special Protection Area.</p> <p>Potential effects on ancient woodland would also need to be considered further and appropriate mitigation implemented to avoid potentially unacceptable effects. The environmental impact associated with this initial pipeline option is considered to be lower than for initial pipeline routes 1 and 2, including the potential impact on ancient woodland.</p> <p>This initial pipeline route would have a limited impact on the South Downs National Park and would have fewer environmental impacts from a landscape perspective compared to initial pipeline route 1.</p> |
| Initial Pipeline Route 4 | <p>Appropriate routeing and mitigation of watercourse crossings would be required to avoid potential impacts on the integrity of the Special Protection Area.</p> <p>Effects on ancient woodland would also need to be considered further and appropriate mitigation implemented to avoid potentially unacceptable effects.</p> <p>This initial pipeline route would have a limited impact on the South Downs National Park and would have fewer environmental impacts from a landscape perspective compared to initial pipeline route 1.</p>   |

All initial pipeline routes considered at this stage in the process would intersect the South Downs National Park. However, initial pipeline route 1 would have a significantly greater impact than the other initial pipeline routes. Therefore, it was not considered a preferred option in view of the availability of other alternatives. All initial pipeline routes considered at this stage have potential to impact on the Special Protection Area associated with the crossings of designated watercourses. As such, all routes would require appropriate design of the crossings to avoid impacts to the integrity of the Special Protection Area where possible. All options have the potential to affect areas of ancient woodland, with initial pipelines routes 1 and 2 potentially having a greater impact on ancient woodland when they are in proximity to the northern edge of Staunton Country Park.

Two routes from the water recycling plant to Havant Thicket Reservoir were also considered. The risks associated with these routes were similar. Both routes would potentially impact ancient woodland although this would be possible to mitigate through the type of construction technique. Both routes would also have an interface with Staunton Country Park which is a grade II\* listed park and garden. There were no significant differentiators or reasons why both routes should not be progressed.

Following this evaluation, it was recommended that initial pipelines routes 3 and 4 should be progressed and initial pipeline routes 1 and 2 between the water recycling plant and Havant Thicket Reservoir should be taken forward.

#### Outcomes for B.4

The outcome of the site selection process recommended that the following components were taken forward:

- Site WRP\_72;
- Initial pipeline route 3 and initial pipeline route 4 to connect Havant Thicket Reservoir to Otterbourne Water Supply Works;
- Site HLPS\_5 (as a baseline only against which future alternative locations, if different, can be compared against and original assumptions and judgements reviewed accordingly);
- Both potential initial pipeline routes between the water recycling plant and Havant Thicket Reservoir.

#### Outcomes for D.2

The outcome of the site selection process recommended that the following components were taken forward:

- Initial pipeline route 3 and initial pipeline route 4 to connect Havant Thicket Reservoir to Otterbourne Water Supply Works; and
- Site HLPS\_5 (as a baseline only against which future alternative locations, if different can be compared against and original assumptions and judgements reviewed accordingly).

### 3.3. Consenting Evaluation

A consenting evaluation was undertaken for the selected configurations using criteria informed by:

- Policy tests set out in the Draft National Policy Statement (dNPS) for Water Resources Infrastructure (November 2018)
- National Planning Policy Framework (2021) (NPPF)
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
- The Conservation of Habitats and Species Regulations 2017 (as amended) (Habitat Regulations)
- Marine Policy Statement (2011)
- Marine Plans (South Inshore and South Offshore) (2018)

The consenting evaluation criteria and sub-criteria are detailed in Table 13.

**Table 13 - Consenting evaluation criteria**

| Criterion  | Sub-criteria   |
|--|--|
| Air Quality and Emissions  | <ul style="list-style-type: none"> <li>■ Dust</li> <li>■ Vehicular emissions</li> <li>■ Odour</li> </ul>   |
| Biodiversity and Nature Conservation Terrestrial (International)             | <ul style="list-style-type: none"> <li>■ Special Areas of Conservation, Special Protection Areas, Sites of Special Scientific Interest, Ramsar sites and all potential, possible and candidate sites</li> <li>■ Functionally linked habitat</li> </ul> |
| Biodiversity and Nature Conservation Terrestrial (National)                  | <ul style="list-style-type: none"> <li>■ Nationally designated sites</li> <li>■ Priority habitats</li> <li>■ Ancient woodland and veteran trees</li> </ul>   |
| Biodiversity and Nature Conservation Marine – Habitats Regulation Assessment | <ul style="list-style-type: none"> <li>■ Special Areas of Conservation, Special Protection Areas, Ramsar and all potential, possible and candidate sites</li> <li>■ Functionally linked habitat</li> </ul>   |
| Biodiversity and Nature Conservation Marine                                  | <ul style="list-style-type: none"> <li>■ Nationally designated sites</li> <li>■ Impact on priority habitats</li> </ul>   |

| Criterion   | Sub-criteria  |
|---|---|
| Carbon  | <ul style="list-style-type: none"> <li>■ Embodied carbon</li> <li>■ Carbon emissions</li> </ul>   |
| Coastal Change / processes                            | <ul style="list-style-type: none"> <li>■ Impact on coastal processes (coastal erosion / deposition)</li> </ul>  |
| Geology and Soils                                     | <ul style="list-style-type: none"> <li>■ Designated sites</li> <li>■ Soil resource</li> <li>■ Risk of mobilisation of contaminants</li> </ul>   |
| Historic Environment – Terrestrial                    | <ul style="list-style-type: none"> <li>■ Heritage assets</li> <li>■ Unknown archaeology (impact on areas of archaeological potential)</li> </ul>  |
| Historic Environment – Marine                         | <ul style="list-style-type: none"> <li>■ Heritage assets</li> <li>■ Unknown archaeology (impact on areas of archaeological potential)</li> </ul>  |
| Landscape / Seascape and Townscape and Visual Amenity | <ul style="list-style-type: none"> <li>■ Nationally and regionally important sites</li> <li>■ Visual amenity</li> </ul>   |
| Major accidents and disasters                         | <ul style="list-style-type: none"> <li>■ Risks associated with existing facilities</li> <li>■ Risks associated with the operation of the plant itself</li> </ul>  |
| Resource and waste management                         | <ul style="list-style-type: none"> <li>■ Waste generation</li> <li>■ Waste facilities / infrastructure</li> <li>■ Impact on Mineral Safeguarding Areas</li> <li>■ Proximity to licensed dredging, disposal and extraction areas</li> </ul>                                      |
| Socio-economic impact                                 | <ul style="list-style-type: none"> <li>■ Impacts on Public Rights of Way and recreational facilities</li> <li>■ Impact on community facilities</li> <li>■ Impact on marine recreation</li> <li>■ Impact on commercial fisheries</li> <li>■ Impact on licensing areas</li> </ul> |
| Traffic and Transport                                 | <ul style="list-style-type: none"> <li>■ Impact on shipping and navigation</li> <li>■ Impact on marine vessel users</li> <li>■ Impact on road and rail network</li> <li>■ Impact on road users</li> </ul>   |
| Water Quality and Resources                           | <ul style="list-style-type: none"> <li>■ Impact on marine water quality</li> <li>■ Impact on terrestrial water quality</li> <li>■ Impact on watercourse geomorphology and hydrology</li> <li>■ Impact on groundwater resources</li> </ul>                                       |
| Flood Risk  | <ul style="list-style-type: none"> <li>■ Impact on flood risk</li> <li>■ Impact on flood defences</li> </ul>  |
| Interface with Future Development and Planning        | <ul style="list-style-type: none"> <li>■ Risks associated with existing/future Nationally Significant Infrastructure Projects</li> <li>■ Risks associated with 'other' development</li> <li>■ Risks associated with compromising future marine development</li> </ul>           |
| Land Use (Special Category Land)                      | <ul style="list-style-type: none"> <li>■ Impact on Special Categories of Land</li> </ul>  |
| Green Belt  | <ul style="list-style-type: none"> <li>■ Impact on Green Belt</li> </ul>  |
| Technology and compliance with regulatory approvals   | <ul style="list-style-type: none"> <li>■ Technological viability</li> <li>■ Ability to secure necessary regulatory permits and licences</li> </ul>  |

| Criterion        | Sub-criteria  |
|------------------|---|
| Constructability | <ul style="list-style-type: none"> <li>■ Construction risks</li> <li>■ Construction timescales</li> <li>■ Interfaces with utilities</li> <li>■ Topography challenges</li> </ul> |
| Resilience       | <ul style="list-style-type: none"> <li>■ Likely resilience of the solution</li> <li>■ Self-sufficiency of the solution</li> </ul>   |
| Cost             | <ul style="list-style-type: none"> <li>■ Capital cost</li> <li>■ Operational cost</li> </ul>  |

The evaluation identified potential conflicts against the criteria during both construction and operation. It also identified the potential design and mitigation requirements that would need to be considered. Each option was RAG rated against each topic to determine deliverability in planning, environmental and engineering terms.

The main conclusions of the Consenting Evaluation were as follows:

- Options A.1 and A.2 were expected to give rise to significant effects on the integrity of multiple Special Protection Areas. The Habitat Regulations means that such an option would not be acceptable where there was a suitable alternative. These options could therefore not be considered to be preferable.
- Options B.2 and B.5 were considered to have fewer environmental impacts than Options A.1 and A.2 but impacts in relation to a required buffer lake would need to be reviewed further. Pipelines for these option routes would cross the River Itchen Special Area of Conservation. Any potential effects to the River Itchen would require mitigation to avoid adverse impacts on the integrity of the river.
- Option B.4, which does not require an EBL, would have fewer environmental impacts than Options B.2 / B.5 Pipelines for these option routes would cross the River Itchen Special Area of Conservation. Any potential effects to the River Itchen would require mitigation to avoid adverse impacts on the integrity of the river.
- Option D.2 was considered the best performing option within the Consenting Evaluation. Pipelines for these option routes would cross the River Itchen Special Area of Conservation. Any potential effects to the River Itchen would require mitigation to avoid adverse impacts on the integrity of the river. Further analysis is needed about the ability of D.2 to meet the long-term supply duty during drought conditions and to provide a sufficient level of long-term resilience.
- Further work is needed in respect of Options D.2 / B.4 in relation to:
  1. Crossing the River Itchen Special Area of Conservation;
  2. Seeking to minimise and avoid impacts on the South Downs National Park;
  3. Avoiding and minimising effects on ancient woodland;
  4. Avoiding and reducing impacts on heritage assets; and
  5. Further refinement of the design of the intermediate pumping stations and break pressure tanks.

The outcomes and ranking of the consenting evaluation process is summarised in Table 14, below.

**Table 14 - Consenting evaluation outcomes**

| Consenting Evaluation Ranking | Option | Consenting Evaluation Outcomes  |
|-------------------------------|--------|---|
| 1                             | D.2    | <ul style="list-style-type: none"> <li>■ Has fewest environmental impacts.</li> <li>■ Potential to impact the River Itchen Special Area of Conservation at the crossing points with the pipeline route. It is considered likely that significant adverse effects to the integrity of the Special Area of Conservation can be avoided through a design and engineering solution.</li> <li>■ The pipeline routes would run partly through the South Downs National Park and there is a need for further engagement with the South Downs National Park Authority and further route development to minimise impact.</li> <li>■ There is potential for effects on ancient woodland that need to be further considered and avoided where practicable.</li> <li>■ Further work is needed to define the location and siting of the break pressure tank and intermediate pumping station.</li> </ul>   |
| 2                             | B.4    | <ul style="list-style-type: none"> <li>■ This has fewer environmental impacts than A.1 / A.2 and would not lead to the same marine impacts, or significant adverse effects to the integrity of the Solent and Dorset Coast Special Protection Area. It has fewer environmental impacts than Options B.2 / B.5.</li> <li>■ Potential to impact the River Itchen Special Area of Conservation at the crossing points with the pipeline route. It is considered likely that significant adverse effects to the integrity of the Special Area of Conservation can be avoided through a design and engineering solution.</li> <li>■ The pipeline routes would run partly through the South Downs National Park and there is a need for further engagement with the South Downs National Park Authority and further route development to minimise impact.</li> <li>■ There is potential for effects on ancient woodland that need to be further considered and avoided where practicable.</li> <li>■ Further work is needed to define the location and siting of the break pressure tank and intermediate pumping station.</li> </ul>   |
| 3                             | B.2    | <ul style="list-style-type: none"> <li>■ This has fewer environmental impacts than A.1 / A.2 and would not lead to the same marine impacts, or significant adverse effects to the integrity of the Special Protection Area.</li> <li>■ Potential to impact the River Itchen Special Area of Conservation at the crossing points with the pipeline route. It is considered likely that significant adverse effects to the integrity of the Special Area of Conservation can be avoided through a design and engineering solution.</li> <li>■ The pipeline routes would run partly through the South Downs National Park and there is a need for further engagement with the South Downs National Park Authority and further route development to minimise impact.</li> <li>■ There is potential for effects on ancient woodland that need to be further considered and avoided where practicable.</li> <li>■ The Otterbourne EBL has the potential to affect the integrity of the River Itchen Special Area of Conservation during construction and during operation as a result of the emergency discharge. As the level of design development is at an early stage, on a precautionary basis an adverse effect on integrity cannot be ruled out. However, it is likely that mitigation measures, supported by further design / modelling evidence will allow significant adverse effects to be avoided.</li> </ul> |

| Consenting Evaluation Ranking | Option | Consenting Evaluation Outcomes   |
|-------------------------------|--------|--|
|                               |        | <ul style="list-style-type: none"> <li>■ The Otterbourne EBL would need to be subject to further assessment post Gate 2 in parallel to further work in relation to the risks to the River Itchen Special Area of Conservation.</li> <li>■ Further work is needed to define the location and siting of the break pressure tank and intermediate pumping station.</li> <li>■ Initial modelling indicated that no risk or pathway to Langstone Harbour designations was expected.</li> </ul>  |
| 3                             | B.5    | <ul style="list-style-type: none"> <li>■ The infrastructure required for Option B.5 would be the same as for Option B.2 with the exception of the additional connecting pipeline between Peel Common and the water recycling plant.</li> <li>■ Whilst the construction of the additional length of pipeline would increase the number of potentially affected receptors for certain planning topics, the level of planning risk for each of the topics would be the same as reported for Option B.2.</li> <li>■ Further work is needed to define the location and siting of the break pressure tank and intermediate pumping station.</li> <li>■ There are potential benefits on the water environment associated with B.5 as some flows would be diverted from the Peel Common Wastewater Treatment Works Long Sea Outfall which is a less well mixed environment than the Eastney Long Sea Outfall.</li> </ul>   |
| 5                             | A.1    | <ul style="list-style-type: none"> <li>■ A.1 would lead to a range of significant environmental impacts, including the potential to harm the integrity of a Special Protection Area, and is not considered preferable, as there are other options that would lead to fewer impacts.</li> <li>■ The location of the terrestrial site for desalination within the New Forest National Park and the likely significant landscape and visual impacts would be in conflict with the dNPS.</li> <li>■ There is potential for direct and indirect effects on ancient woodland and the New Forest Site of Special Scientific Interest that need to be further considered and avoided.</li> <li>■ Significant constructability and traffic and transport risks related to construction in the Hythe Bypass.</li> <li>■ Potential for direct impacts on nationally designated heritage assets.</li> <li>■ Production of solid waste as a result of the desalination process that would presently need to be landfilled and therefore make achieving waste hierarchy requirements and non-compliance with zero to waste landfill policies difficult.</li> </ul> |
| 5                             | A.2    | <ul style="list-style-type: none"> <li>■ Refer to the summary for A.1.</li> </ul>  |

### 3.4. Multi-Criteria Decision Analysis

Economic appraisal helps decision-makers to consider how well an investment or intervention performs when considering its impacts on ‘economic wellbeing’ or ‘public value’ from the perspective of customers, the wider UK population (individuals, households, businesses) and the environment (collectively referred to as ‘economic benefits’), relative to the costs of delivering that investment or intervention. These impacts can be measured in either monetary or non-monetary terms, in line with best practice guidance from our regulators and from the UK Government.



The Water Resources Planning Guideline<sup>2</sup> defines a best value plan as one that:

- Considers factors alongside economic cost and seeks to achieve an outcome that increases the overall benefit to customers, the wider environment and overall society;
- Is efficient and affordable to deliver, legally compliant and accounts for the range of legislation that applies to it; and
- And where the outcome of increased benefits will be typically measured relative to the 'least cost' programme that delivers the minimum requirements to meet supply duties.

We used the multi-criteria decision analysis to inform our assessment of the relative performance of the options against best value as part of the overall options appraisal process. The aim of the multi-criteria decision analysis was to provide an overall ranking of options.

The methodology used for the multi-criteria decision analysis comprised of three key strands of activity:

- Consideration of best practice guidance on the economic appraisal of resilience plans and infrastructure investments against best value, and specifically the appraisal of different types of customer, environmental, social and cost impacts associated with major infrastructure projects;
- Development of a comprehensive best value appraisal framework which, using 23 best value criteria, enabled a consistent assessment of the relative performance of the options in terms of their net social impact, their cost to deliver, and the balance between these two factors; and
- Extensive scenario analysis to consider the sensitivity of the results to different views on the relative importance (weighting) of the different criteria within Southern Water's best value appraisal framework, based on HM Treasury Green Book guidance on switching values, considering the different factors within net social impact, cost, and again the balance between the two.

Following the development of the 23 best value criteria, and the application of the importance weighting to these, the sub criteria were summarised into five best value 'lenses'. These five lenses are:

- Best Value Ranking 1: Whole life cost;
- Best Value Ranking 2: Average affordability;
- Best Value Ranking 3: Net social impact;
- Best Value Ranking 4: Net social impact relative to whole life cost; and
- Best Value Ranking 5: Net social impact relative to affordability.

The outcomes of the multi-criteria decision analysis provided a ranking of the options against these five best value lenses.

A breakdown of how the options performed against each best value lens is shown in Table 15.

**Table 15 - Multi-Criteria Decision Analysis best value lenses breakdown**

| Option | Best Value Ranking |                          |                      |  |  |
|--------|--------------------|--------------------------|----------------------|--|--|
|        | 1: Whole Life Cost | 2: Average Affordability | 3: Net Social Impact | 4: Net Social Impact Relative to Whole Life Cost | 5: Net Social Impact Relative to Affordability |
| A.1    | 5                  | 5                        | 5                    | 5  | 5  |
| A.2    | 5                  | 5                        | 6                    | 6  | 6  |
| B.2    | 3                  | 3                        | 4                    | 4  | 4  |
| B.4    | 2                  | 2                        | 3                    | 2  | 2  |
| B.5    | 4                  | 4                        | 2                    | 3  | 3  |
| D.2    | 1                  | 1                        | 1                    | 1  | 1  |

<sup>2</sup> Environment Agency, Natural England and Ofwat, Water Resources Planning Guideline, July 2021, Section 9.1

The ranking of the options following the multi-criteria decision analysis is shown in Table 16.

**Table 16 - Multi-Criteria Decision Analysis ranking**

| Option | Multi-Criteria Decision Analysis Ranking |
|--------|--|
| A.1    | 5  |
| A.2    | 5  |
| B.2    | 3  |
| B.4    | 3  |
| B.5    | 3  |
| D.2    | 1  |

### 3.5. Legal and Policy Objectives

The options were assessed against the legal and policy objectives using a RAG rating defined as follows:

- **RED:** Based on the available information the option does not meet and would not be expected to meet the relevant objectives;
- **AMBER:** based on the available information there is a risk that the option may not meet, or may not fully meet, the relevant objectives or that significant known or expected barriers would need to be overcome in order for it to meet or fully meet the relevant objectives; and
- **GREEN:** based on the available information the option is considered to mainly or fully meet the objectives.

The ranking of the options from the legal and policy objectives review are shown in Table 17.

**Table 17 - Legal and Policy Obligations ranking**

| Option | Legal and Policy Obligations Ranking |
|--------|--------------------------------------|
| A.1    | Red                                  |
| A.2    | Red                                  |
| B.2    | Amber                                |
| B.4    | Amber                                |
| B.5    | Amber                                |
| D.2    | Amber                                |

### 3.6. Water for Life Hampshire Strategic Objectives

To assess the options against the Water for Life Hampshire strategic objectives, a matrix was prepared to capture the strategic objectives of the project. The matrix is shown in Table 18.

**Table 18 - Matrix of Water for Life Hampshire Strategic Objectives**

| Strategic Objective | Definition  | Purpose   |
|---------------------|---|---|
| Best Value          | Southern Water will deliver solutions which provide the best value to its customers whilst discharging Southern Water’s ‘all best endeavours’ legal obligation in the Section 20 agreement and all other legal and policy requirements and obligations. | To ensure a fundable plan (acceptable to Ofwat) |



| Strategic Objective | Definition   | Purpose   |
|---------------------|--|---|
| Net Zero Carbon     | Southern Water will deliver solutions which ensure that it can continue to make progress towards meeting, and to support and contribute to, Water UK’s commitment to become net zero carbon by 2030.   | To meet industry-wide commitments   |
| Adaptability        | <p>Southern Water will ensure that all projects within the Programme are sustainable by being flexible and adaptable, including in terms of their:</p> <ol style="list-style-type: none"> <li>1. Capacity and scalability;</li> <li>2. Ability to contribute to strategic reinforcement of the regional and national network;</li> <li>3. Ability to rely on appropriate transitional measures to manage risks around delivery timescales; and</li> <li>4. Ability to allow for technological innovation.</li> </ol> | To ensure suitability to meeting long term water supply requirements and therefore sustainability of supply |

The options were assessed against the Water for Life Hampshire strategic objectives matrix using a RAG rating defined as follows:

- **RED:** Based on the available information the option does not meet and would not be expected to meet the relevant objectives;
- **AMBER:** based on the available information there is a risk that the option may not meet, or may not fully meet, the relevant objectives or that significant known or expected barriers would need to be overcome in order for it to meet or fully meet the relevant objectives; and
- **GREEN:** based on the available information the option is considered to mainly or fully meet the objectives.

The ranking of the options from the Water for Life Hampshire strategic objectives review are shown in Table 19.

**Table 19 - Water for Life Hampshire strategic objectives ranking**

| Option | Water for Life Hampshire Strategic Objectives Ranking |                 |              |
|--------|---|-----------------|--------------|
|        | Best Value  | Net Zero Carbon | Adaptability |
| A.1    | Red   | Amber           | Amber        |
| A.2    | Red   | Amber           | Amber        |
| B.2    | Amber   | Amber           | Amber        |
| B.4    | Amber   | Amber           | Green        |
| B.5    | Amber   | Amber           | Amber        |
| D.2    | Green   | Amber           | Green        |



### 3.7. Interim Business Evaluation

The overall ranking of the options appraisal process at the interim business evaluation stage is shown in Table 20.

**Table 20** - Overall ranking of the Options Appraisal Process

| Option | Overall Ranking |
|--------|-----------------|
| D.2    | 1               |
| B.4    | 2               |
| B.2    | 3               |
| B.5    | 4               |
| A.1    | =5              |
| A.2    | =5              |

In summary:

- Options D.2 and B.4 were ranked 1<sup>st</sup> and 2<sup>nd</sup> respectively, with Option D.2 considered the most favourable option as it had a lower capital cost. Options D.2 and B.4 are also considered the most adaptable and able to meet future needs, on account of the flexibility and evolvability afforded by their integration with Havant Thicket Reservoir;
- Options B.2 and B.5 were ranked 3<sup>rd</sup> and 4<sup>th</sup> respectively, with neither option being evaluated as favourably under the ‘adaptability’ criteria as Options D.2 and B.4; and
- Option A.1 and A.2 would lead to a range of significant environmental impacts, including the potential to harm the integrity of a Special Protection Area. Therefore, they are not considered preferable, as there are other options that would lead to fewer impacts. These Options were therefore ranked the joint 5<sup>th</sup> and least favoured options. It was recommended that they should not be progressed beyond Gate 2.

Following the options appraisal process, Option D.2 was ranked the highest. Options A.1 and A.2 were not progressed following the interim business evaluation.

### 3.8. Future Needs Assessment

An assessment was undertaken to establish whether the options could meet the needs of a larger supply deficit given the water supply challenges faced in Hampshire. This tested whether the required capacity of the options could be expanded to meet a supply deficit of 87 MI/d. Table 21 outlines a revised ranking of the options when this updated capacity requirement is applied to the options that progressed from the interim business evaluation stage of the process.

**Table 21** - Overall ranking of the options appraisal process revised to meet the updated deficit

| Option | Overall Ranking | Resolves Revised 87 MI/d Deficit? |
|--------|-----------------|-----------------------------------|
| B.4    | 1               | ✓                                 |
| B.5    | 2               | ✓                                 |
| B.2    | =3              | ✗                                 |
| D.2    | =3              | ✗                                 |

Options B.2 and D.2 were not capable of meeting the updated deficit and could not be amended to meet the updated deficit. Therefore, both options were considered to be the least favourable options.

Options B.4 and B.5 could be adapted to provide a transfer of 87 MI/d which would meet the updated deficit. As such, both options were considered viable options. Option B.4 is regarded as more preferable than

Option B.5 on account of its flexibility as it has the potential to evolve further through integration with Havant Thicket Reservoir.

### 3.9. Final Business Evaluation

Following the future needs assessment, a high-level review of the outcomes of the assessment was undertaken to check whether the outcomes would result in any changes to previous conclusions from the optional appraisal.

A summary of the final business evaluation is as follows:

- Option B.4 was ranked 1<sup>st</sup> on account of its lower cost relative to Option B.5, its excellent continued scalability to meet future needs (on account of the flexibility afforded by the integration of Havant Thicket Reservoir and water recycling working in tandem) and the means by which the option represents a regionally resilient solution that supports both Southern Water and Portsmouth Water; and
- Option B.5 was ranked 2<sup>nd</sup> on account of its relatively higher cost relative to Option B.4, its lower flexibility in scalability terms and its lesser ability to act as a regional asset that benefits both Southern Water and Portsmouth Water.

### 3.10. Options Appraisal Process Conclusions and Recommendations

It was recommended that Option B.4 be confirmed as the selected option at Gate 2 with Option B.5 as the back-up option for the following reasons:

- Based on the information currently available Option B.4 is considered to have fewer environmental impacts than Option B.5, as the development of an environmental buffer would not be required.
- Option B.4 can be constructed and commissioned quicker than Option B.5, and therefore provides a good option to maintain compliance with Southern Water's supply obligations. This reduces reliance on the prolonged use of interim measures and reduces operating costs.
- Option B.4 has the second lowest whole life cost forecasts and, relative to desalination, a low energy burden.
- Option B.4 would support the objective of promoting Havant Thicket Reservoir as a water resource asset that can potentially meet Southern Water and Portsmouth Water's future needs to 2040 and beyond, and is also geographically well located for both companies.
- Unlike Option B.5, Option B.4 does not exhaust supplies of treated wastewater locally and therefore can be further evolved to meet as yet unknown future needs.
- Option B.4 is regarded as more resilient than Option B.5 as it is not wholly reliant on a single process.

## 4. Stage 3: Water Transfer and Recycling

### 4.1. Development of a Preferred Corridor and Above Ground Plant

Following the options appraisal process, Option B.4 was confirmed in the Gate 2 submission as the selected option and Option B.5 was confirmed as the back-up option. This section outlines how Option B.4 has been developed following the options appraisal process and Gate 2 submission in order to identify a preferred corridor.

The back-up option, Option B.5, is not being developed further in its entirety at this stage and is not progressing through any consent process. However, as Options B.4 and B.5 share some of the same components (including some of the pipelines), the progress made in developing these components for Option B.4 means that same components are progressed for Option B.5.

The stages of the development of the corridor and above ground plant was as follows:

- Updates to any previously undertaken site selection given the changes to project requirements;
- Defining and dividing corridors from the pipelines that progressed from Gate 2 for Options B.4 and B.5. This stage included a back-check of any additional potential pipelines post Gate 2;
- Identification of above ground plant zones that are required to accompany the pipelines;
- Evaluation of the corridor sections and above ground plant against criteria developed with our technical teams; and
- Identification of a preferred corridor route.

### 4.2. Site Selection

The design evolution process continued after Gate 2 and changes to sites were considered using the site selection criteria described in the options appraisal process. This related to the water recycling plant and the high lift pumping station. The following sections present the summary of this additional option appraisal work.

#### 4.2.1. Water Recycling Plant

In the option appraisal process at Gate 2, the site selection for the water recycling plant used a minimum site size of 40,470 m<sup>2</sup> for a 61 MI/d plant (Option B.2), and a minimum site size of 48,564 m<sup>2</sup> for a 75 MI/d plant (Option B.5). As outlined in Section 2, for Option B.4 the plant size was reduced to a minimum 15 MI/d water recycling plant, rather than the original 61 MI/d or 75 MI/d plant that would be required for Option B.2 and B.5.

The future needs assessment outlined that the options would need to be adaptable to respond to a larger supply deficit in the future and the dNPS also requires us to ensure that our proposals can provide resilience in the future. To ensure our water recycling plant site could fulfil this, we amended our search criteria to 60,000 m<sup>2</sup> so that we could provide a 15 MI/d water recycling plant with potential to expand up to a 60 MI/d water recycling plant if required. This larger parcel size, based on a more developed understanding of the Project, also provides sufficient additional space for locating the high lift pumping station, tunnel shafts for connecting pipelines, on-site construction working areas and site access arrangements.

As the new site search criteria was larger than the original site selection criteria described in Section 3, a back-check was undertaken to identify sites that meet the revised site size. Figure 11 shows all the sites that were identified in the previous site selection for the water recycling plant. The sites in red have an area of less than the 60,000 m<sup>2</sup> and were therefore not progressed as they were too small.

Hampshire Water Transfer and Water Recycling Project – Scheme Development Summary

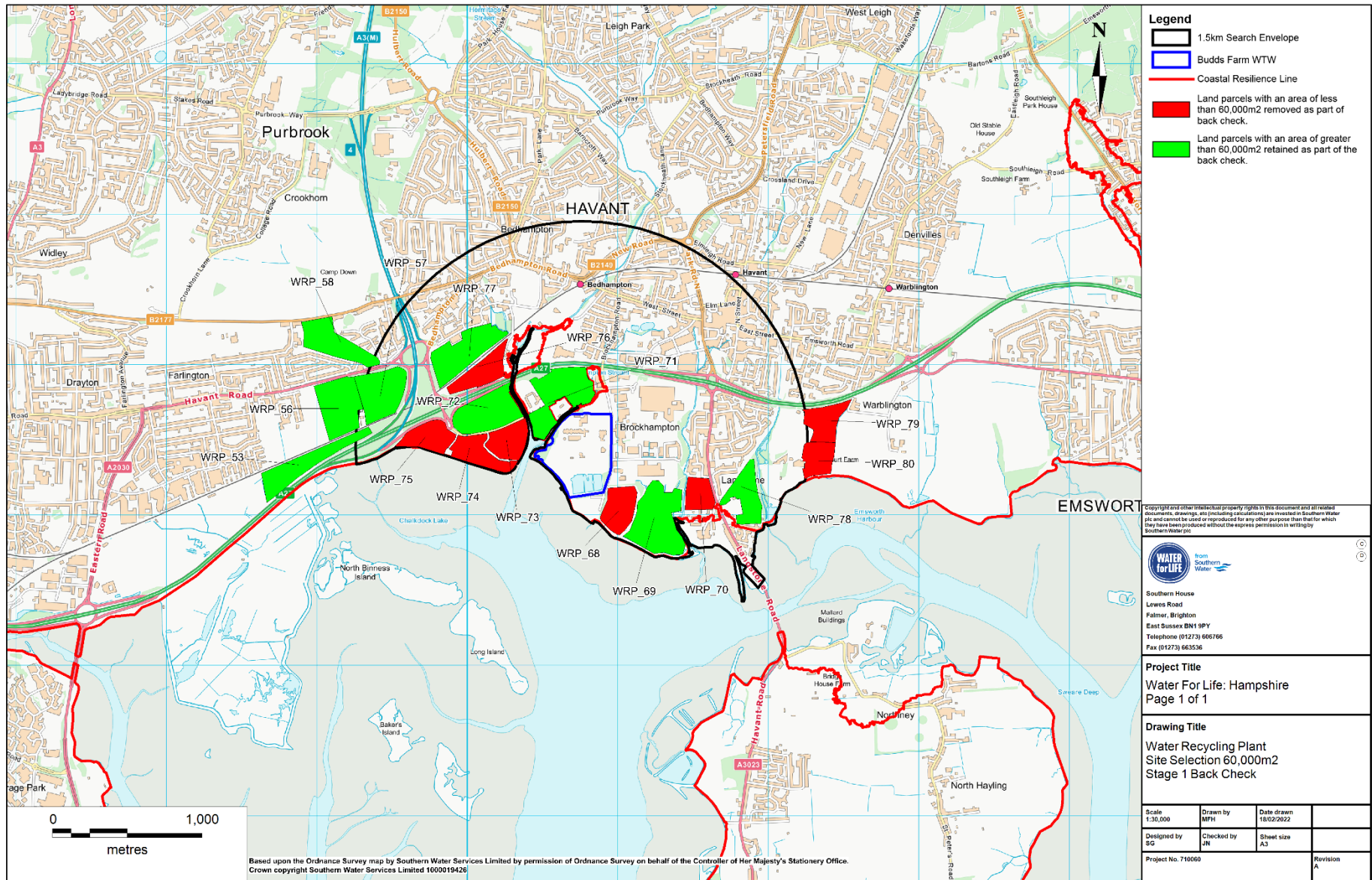


Figure 11 - Water recycling plant site comparison

We then undertook an assessment using the same site selection process as described in Section 3.2.1 which was applied to the remaining sites. This confirmed that options WRP\_71 and WRP\_72 were the best performing sites, and therefore WRP\_72 remained the preferred site. We also identified that if we were to search for a site that could fit just the 15 Ml/d water recycling plant, site WRP\_72 would remain as the best performing site. Further details on the reason for selecting WRP\_72 as the preferred site can be found in Section 3.2.1.

#### 4.2.2. High Lift Pumping Station

The previous site selection for the high lift pumping station related to a search area west of Havant Thicket Reservoir. With pipeline routes 3 and 4 for water transfer and water recycling being progressed, this means that the high lift pumping station could now potentially be sited to the south, as well as to the west, of the Havant Thicket Reservoir. We looked at a different search area to the west of the Havant Thicket Reservoir which is led by the route of pipeline route 4, compared to the site selection outlined in Section 3, to reflect the development of the pipeline routes in this area.

Two new search areas were therefore defined, reflecting the western (pipeline route 4) and southern (pipeline route 3) pipeline corridors from Havant Thicket Reservoir. The search area was defined using the following criteria:

- Within 500 m of the boundary of the pipeline corridors;
- Within 4 km of the footprint of the Havant Thicket Reservoir, but not within the footprint;
- Ground level of equal or less than 30 metres above sea level to enable sufficient hydraulic connectivity with Havant Thicket Reservoir; and
- Outside areas of coastline susceptible to sea flooding and coastal erosion as major infrastructure development would not be suitable in these areas.

Later sections of this document outline that only the southern pipeline route from Havant Thicket Reservoir is being progressed, and therefore this section only details the site selection for the southern search area. A site selection for the western search area has been undertaken, which employed the same methodology. Table 22 details the criteria used to determine suitable sites.

**Table 22** - Site search criteria for water transfer and water recycling high lift pumping station

| Element         | Details  |
|-----------------|--|
| Land Use        | Avoidance of the following areas: <ul style="list-style-type: none"> <li>■ Densely populated residential areas, private residences, car homes, hospitals, schools, universities, places of worship, burial grounds, holiday parks, hotels, retail parks and leisure parks;</li> <li>■ Key transport infrastructure; and</li> <li>■ Key Utilities.</li> </ul> |
| Land Conditions | Avoidance of the following areas: <ul style="list-style-type: none"> <li>■ Marsh;</li> <li>■ Mudflat;</li> <li>■ Cliff face; and</li> <li>■ Open water.</li> </ul>   |
| Site Size       | High lift pumping station with a tank requires 5,320 m <sup>2</sup> plus 4,047 m <sup>2</sup> for a temporary construction compound.<br><br>High lift pumping station without a tank requires 4,620 m <sup>2</sup> plus 4,047 m <sup>2</sup> for a temporary construction compound.  |

### Long list of Sites

For the southern search area, 34 sites were identified. This list of sites was then assessed against an initial set of environmental planning considerations set out in the site selection process sections within Section 3. The variance between the best performing and least well performing parcels was principally proximity to ancient woodland, listed buildings, registered parks and gardens, residential properties, and amenity spaces.

As a result, nine sites progressed to the shortlist stage.

### Shortlisted Sites

The five short listed sites were assessed against additional environmental, planning and engineering considerations, such as flood risk, ground conditions, ground contamination, historic environment and transport accessibility. Approved or accepted Development Consent Order developments made within 5 years, or developments subject to Transport and Works Orders within three years, were also taken into account. None of the shortlisted sites had the potential to conflict with a planned development. Five sites progressed to further assessment. The sites that did not progressed performed worse as a result of poor access to transport routes and proximity to scheduled monuments, national trails, public rights of way and rivers. The five sites are shown in Figure 12.

Hampshire Water Transfer and Water Recycling Project – Scheme Development Summary

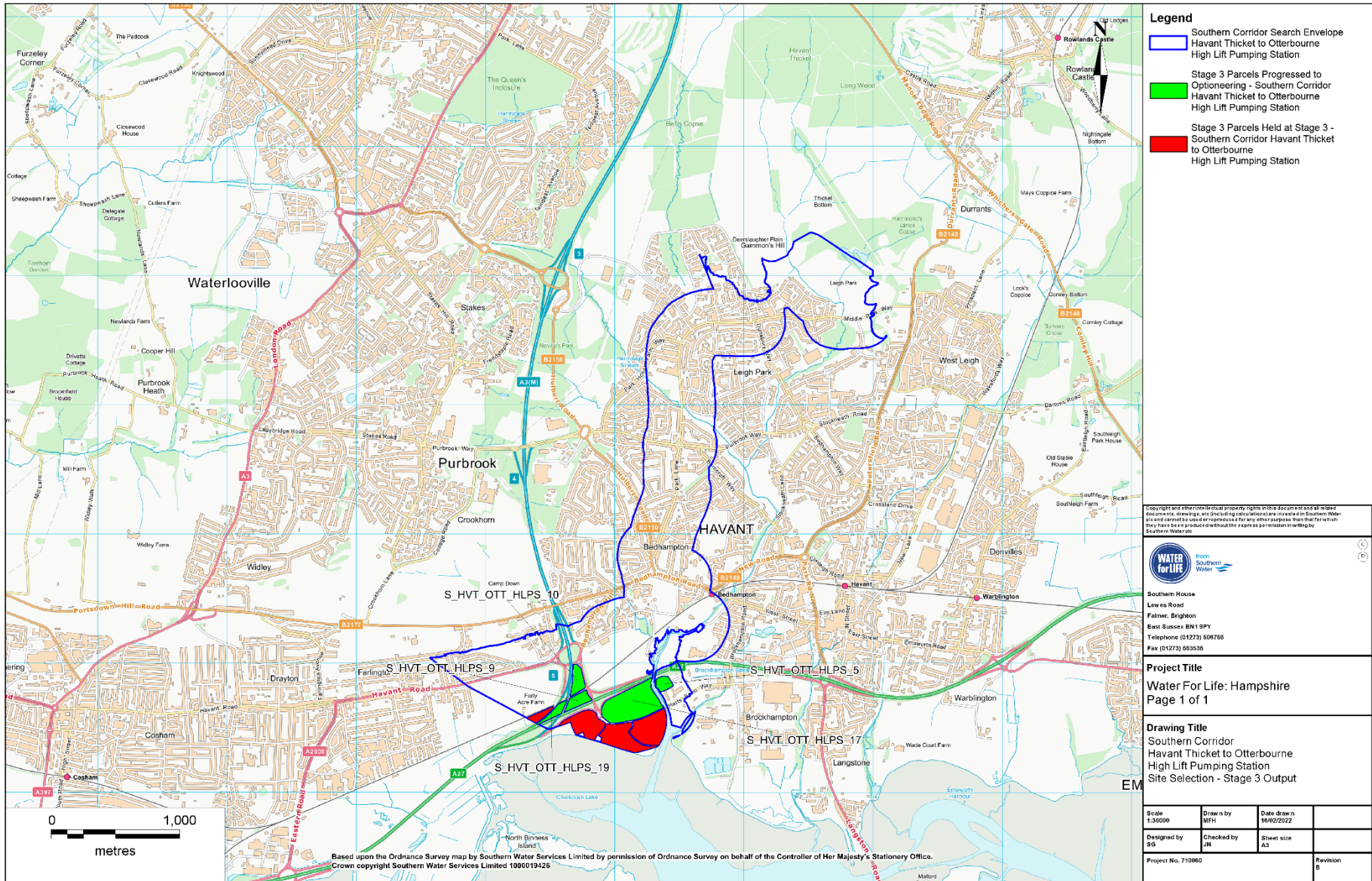


Figure 12 - High lift pumping station sites

## Assessment of Sites

The five sites were considered against further environmental, planning and engineering criteria, and the outcomes of these evaluations are summarised in Table 23 below.

**Table 23 – High lift pumping station environmental and planning considerations**

| Site      | Environmental and planning considerations  |
|-----------|--|
| S_HLPS_5  | <p>Developing this site would result in the potential displacement or loss of employment space which would also have potential planning and cost implications associated with the acquisition of this site.</p> <p>The site is located 410 m north of the Solent Maritime Special Area of Conservation, Langstone Harbour Site of Special Scientific Interest and Chichester and Langstone Harbour Special Protection Area and Ramsar sites. As a result, there is potential for impacts to these sites, however this is not considered to be a reason to not take the site forward, and this will need to be subject to further assessment under the Habitats Regulations.</p> <p>The site is constrained by the existing employment developments surrounding the site to the south and east and the A27 and Hermitage Stream to the north and west. This site is located 40 m from the preferred water recycling plant site and as such localised infrastructure would be required to cater for two sites, such as road access and localised pipeline connections. However, the water recycling plant and high lift pumping station on a single site would remain preferable.</p> <p>It was recommended that this site is not progressed.</p>  |
| S_HLPS_9  | <p>The site is located 173 m north of the Solent Maritime Special Area of Conservation, Langstone Harbour Site of Special Scientific Interest and Chichester and Langstone Harbour Special Protection Area and Ramsar sites. As a result, there is potential for impacts to these site, and this will need to be subject to further assessment.</p> <p>Site is located on land between a railway line, A3(M) and a major roundabout. The site appears to be mostly undesignated woodland. A private access track runs along the northern boundary of the site and there appears to be informal footpaths running through the site.</p> <p>Whilst the woodland site does not have a formal local or national nature conservation designation, constructing the high lift pumping station in this location would result in the loss of numerous trees, particularly given the landscape and visual amenity impacts. There may also be potential ecological impacts that would require further investigation to determine whether any part of this site could be classed as priority habitat.</p> <p>As there is land owned by National Highways and Network Rail, negotiations with both parties should be commenced as early as possible to acquire the land/interests/rights and negotiate protective measures by agreement.</p> <p>It was recommended that this site is not progressed.</p> |
| S_HLPS_10 | <p>The site is located 294 m north of the Solent Maritime Special Area of Conservation, Langstone Harbour Site of Special Scientific Interest and Chichester and Langstone Harbour Special Protection Area and Ramsar sites. As a result, there is potential for impacts to these site, and this will need to be subject to further assessment.</p> <p>The site is located on land between a railway line, A3(M) and a major roundabout. The site appears to be mostly undesignated woodland with some potential informal uses towards the centre of the site. To the south of the site, there are some storage units or cabins associated</p>   |

| Site      | Environmental and planning considerations   |
|-----------|---|
|           | <p>with the railway. Whilst the woodland site does not have a formal local or national nature conservation designation, constructing the high lift pumping station in this location would result in the loss of numerous trees, particularly given the landscape and visual amenity impacts. There may also be potential ecological impacts that would require further investigation to determine whether any part of this site could be classed as priority habitat.</p> <p>As there is land owned by National Highways and Network Rail, negotiations with both parties should be commenced as early as possible to acquire the land/interests/rights and negotiate protective measures by agreement.</p> <p>It was recommended that this site is not progressed.</p>   |
| S_HLPS_17 | <p>This site is located 160 m north of the Solent Maritime Special Area of Conservation, Langstone Harbour Site of Special Scientific Interest and Chichester and Langstone Harbour Special Protection Area and Ramsar sites. As a result, there is potential for impacts to these site, and this will need to be subject to further assessment.</p> <p>The site is allocated in the adopted Havant Borough Local Plan 2014 as a gateway employment site for over 20,000 m<sup>2</sup> of manufacturing and warehouse use with an outline planning application approved in June 2022 on the site for the development of the whole site for 29,000 m<sup>2</sup> of employment units (Ref APP/21/00189).</p> <p>The site has the advantage of allowing the co-location of the water recycling plant and high lift pumping station in a single location and reduce the overall land take required compared to if two sites were used (such as road accesses and connecting infrastructure), this would result in a reduced impacts such as noise, traffic and operating impacts are located on one site rather than two.</p>  |
| S_HLPS_19 | <p>The site is located 146m north of the Solent Maritime Special Area of Conservation, Langstone Harbour Site of Special Scientific Interest and Chichester and Langstone Harbour Special Protection Area and Ramsar sites. As a result, there is potential for impacts to these site, and this will need to be subject to further assessment.</p> <p>Site is located on land between a railway line, A3(M) and a major roundabout. The site is covered in dense woodland. Whilst the woodland on site does not have a formal local or national nature conservation designation, constructing the high lift pumping station in this location would result in the loss of numerous trees, particularly given the landscape and visual amenity impacts. There may also be potential ecological impacts that would require further investigation to determine whether any of this site could be classed as priority habitat.</p> <p>As the land is owned by National Highways and Network Rail, negotiations with both parties should be commenced as early as possible to acquire the land/interests/rights and negotiate protective measures by agreement.</p> <p>It was recommended that this site is not progressed.</p> |

On the basis of the site assessment, it was considered that site S\_HLPS\_17 would be the preferred site for the high lift pumping station in association with the southern corridor route (pipeline route 3). Sites S\_HLPS\_11, S\_HLPS\_9, S\_HLPS\_19 are located on land with dense woodland which could lead to a loss of trees and subsequent landscape and visual amenity impacts. These sites are therefore considered to have the potential for significant adverse environmental impacts and as such are not being progressed.

Site S\_HLPS\_5 is constrained by the size of the site and the existing business use. S\_HLPS\_17 is the same site as that proposed for the water recycling plant - combining the high lift pumping station with the water recycling plant site would reduce the need for multiple sites and improve the viability of the wider scheme. It is therefore recommended that this site be taken forward as the preferred site.

## 4.3. Defining Corridor Sections and Above Ground Plant Zones

### 4.3.1. Pipeline Routes

This section provides an overview of how we took the pipeline routes outlined in Section 3.2 and expanded these into the corridor sections. We then evaluated the corridor sections to identify a preferred corridor. A corridor is a wider area of land where a pipeline could be sited. This approach allows us to make refinements to our pipeline routes responding to more local constraints.

The starting point was taking the pipeline routes that we identified as the best performing routes in Section 3.2 for water recycling and water transfer. Our selected option following the options appraisal process was Option B.4, so we looked at both the water transfer and Option B.5's water recycling pipeline routes. Figure 13 provides a plan of the indicative pipeline routes for water transfer and Figure 14 provides a plan of the indicative pipeline routes for water recycling.

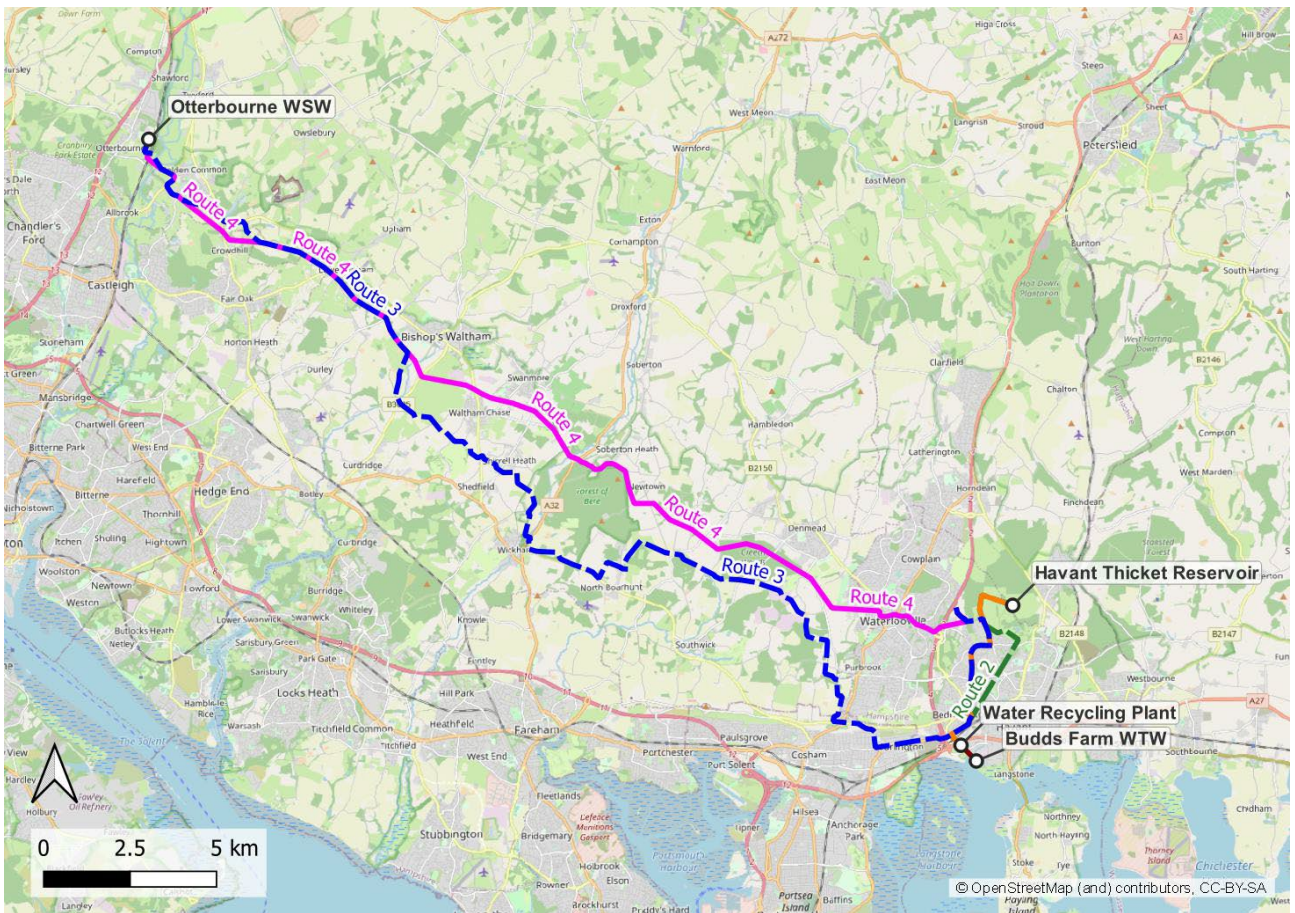
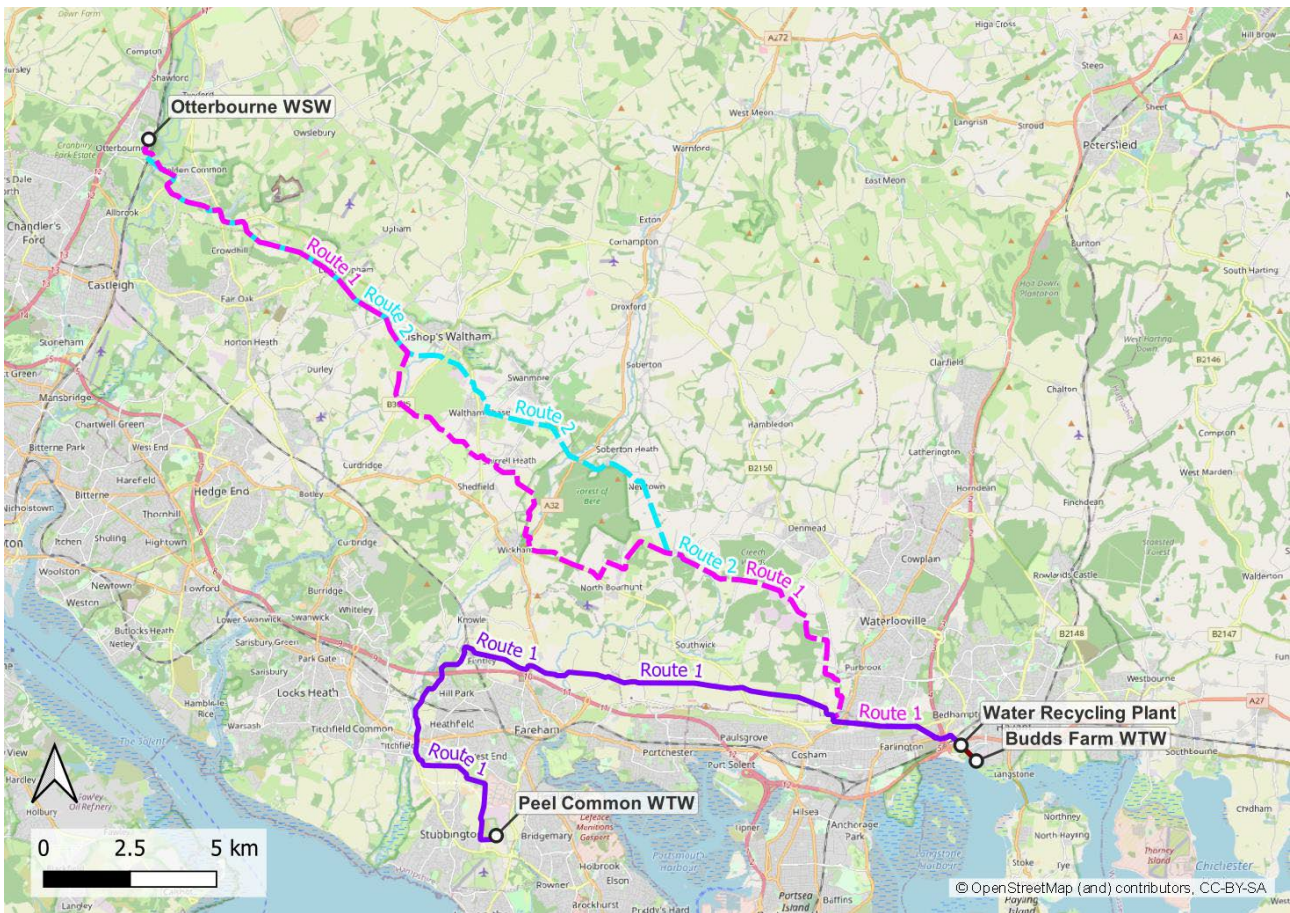


Figure 13 - Progressed pipeline routes for Option B.4



**Figure 14 - Progressed pipeline routes for Option B.5**

#### 4.3.2. Back-Check of Pipeline Routes

Following Gate 2, a back-check of these pipeline routes took place in order to:

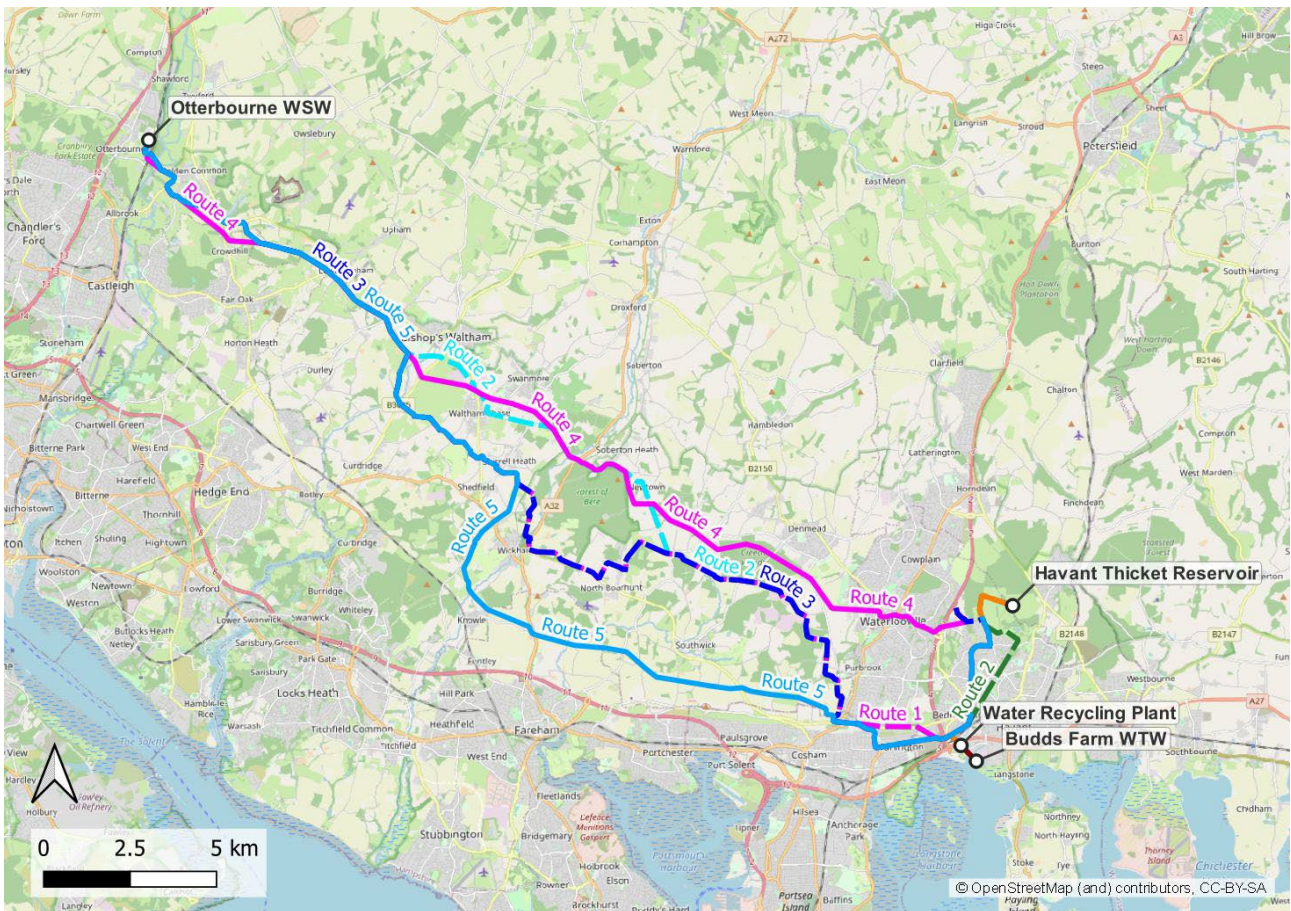
- Improve the hydraulic performance of the pipeline route. Additional topographical data (Environment Agency Light Detection and Ranging) was considered;
- identify any additional potential alternative pipeline routes that would avoid or reduce interference with high-risk or constrained areas, including the South Downs National Park;
- Account for changes to land use since the routes were drawn pre-Gate 2, as a result of new development shown by updated aerial imagery;
- Consider with greater significance the potential for routes that diverge from the direct route options developed pre-Gate 2; and
- Include corridors that lead to and contain tunnelling shafts or portals, which are considered necessary where there are significant constraints for planning and construction, such as dense urban areas.

Following this back-check, an additional pipeline route was identified which has been assessed using the same process as the other pipelines at previous stages of the options appraisal process detailed in Section 3, to ensure the inclusion of this additional pipeline route would not increase the level of impact identified for Option B.4 as part of the earlier options appraisal process. This pipeline route is known as Route 5. This route followed a similar route to the northern section of the pipeline between the Peel Common Wastewater Treatment Works and the water recycling plant as part of Option B.5 (the southern Route 1 in Figure 14).

The back-check followed the same format of the Consenting Evaluation that was part of the options appraisal process, as outlined in Section 4.3.2. The consenting evaluation concluded that the inclusion of Route 5 would not result in an increase to the overall environmental impacts of Option B.4 or B.5.

### 4.3.3. Combination of Pipeline Routes

To ensure all potential options were considered, we combined Route 5 with the best performing pipeline routes for water transfer shown in Figure 7 and water recycling in Figure 8. The pipeline route to transfer water from Peel Common Wastewater Treatment Works to the water recycling plant (shown in Figure 14) was not included for Option B.4, as this is part of Option B.5 which we are not progressed at the same rate as Option B.4. The result of the combined pipeline routes is shown in Figure 15.



**Figure 15 - Combined pipeline routes for Option B.4 and B.5**

### 4.3.4. Corridor Identification

The pipeline routes were developed into corridors to identify potential zones where a pipeline could reasonably be laid. Corridors are wider areas of land where a pipeline could be located. The corridors were sized to allow for the pipeline route to be defined to reflect a number of localised constraints following further data collection. The corridors were then divided into corridor sections so that each section could be assessed.

Alternative corridors that do not necessarily follow the pipeline routes shown in Figure 15 were identified at later stages throughout the evaluation of corridor sections. These were identified to aid engineering and constructability considerations and provide alternative routes where there were significant environmental or

planning constraints. These routes have been subject to back checking so the process is robust in accordance with previous stages.

Further route refinement within the corridor that will take place at future stages of the project will have regard to consultation feedback and ongoing engagement with interested parties as the design development of the scheme progresses.

#### 4.3.5. Above Ground Plant

Once the pipeline corridors were defined, the initial requirements for above ground plant were identified through hydraulic modelling and calculations for the pipeline corridors. The following above ground plant were currently identified as necessary for the operation of the pipelines:

- High lift pumping station: please refer to Section 4.2.2
- Intermediate pumping station: required as a result of significant distance and/or a large amount of static head to overcome during the transfer; and
- Break pressure tanks: required within the pipeline route to mitigate potential surge issues and reduce overall pumping costs and energy requirements.

The exact locations of the intermediate pumping station and break pressure tanks can only be finalised once a preferred route has been confirmed. Potential zones for siting the above ground plant at this initial stage have been produced through an iterative process employing the following parameters:

- Hydraulics data;
- Emergency discharge availability/impact;
- Dimensions – land take/maximum area for the infrastructure;
- Proximity requirements, especially in relation to the pipeline;
- Access arrangements;
- Energy requirements;
- Other associated development required; and
- Operational details.

As the development of the Project progresses, we may identify a need for additional above ground equipment.

#### 4.3.6. Corridor Section and Above Ground Plant Refinement Evaluation

Following the identification of corridor sections and above ground plant, a process to refine the options took place to identify the preferred corridor. Engineering and constructability site visits were undertaken to progress the understanding of constraints beyond the initial desk-based assessments. This resulted in additional route options being identified, which were considered as potentially more suitable than the existing routes.

Figure 16 shows the corridor sections that were taken forward to the corridor section and above ground plant evaluation.

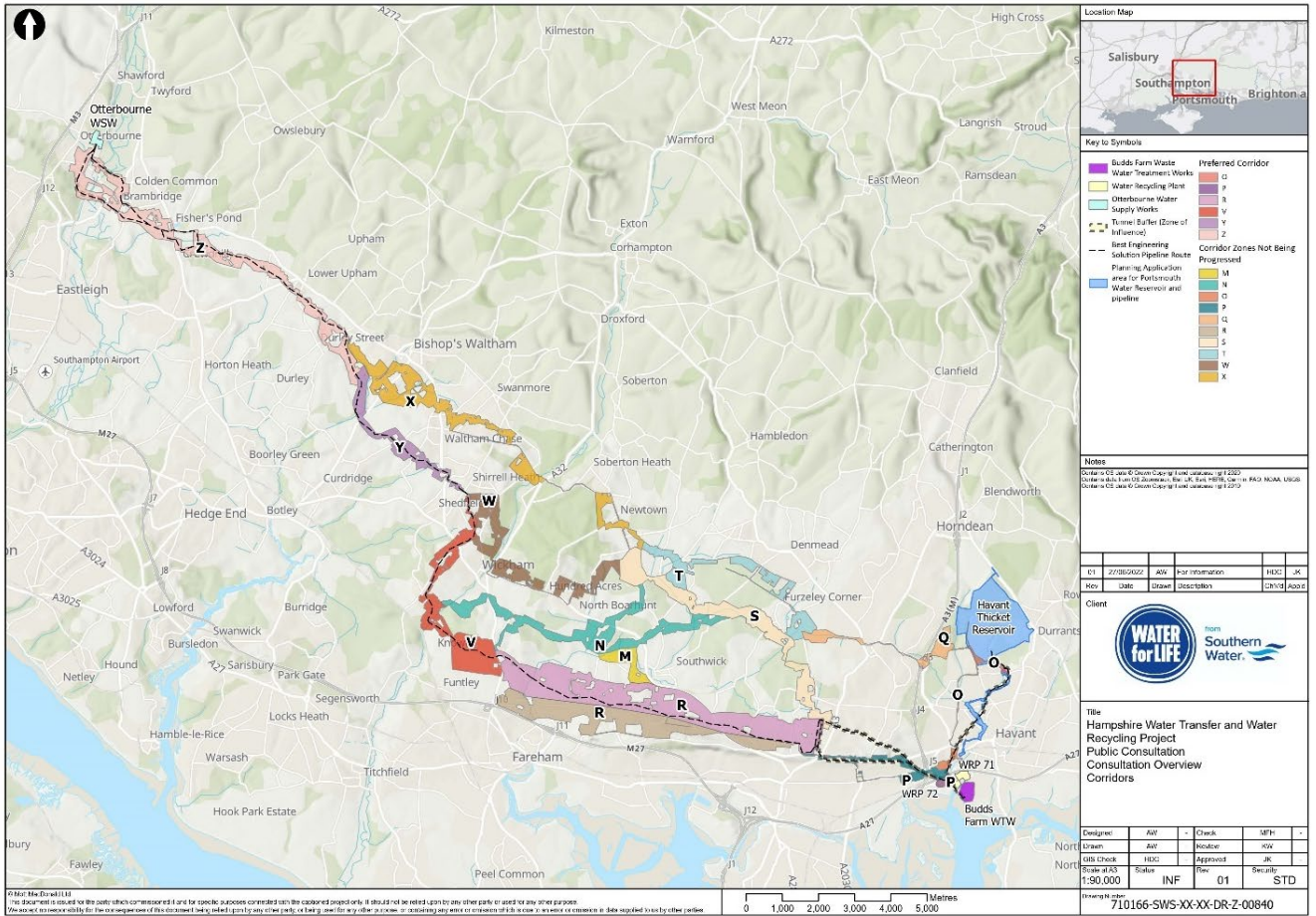


Figure 16- Corridor section options

## 4.4. Corridor Sections and Above Ground Plant Refinement Methodology

### 4.4.1. Evaluation Topics

The evaluation of the pipeline corridors and above ground plant were then assessed using criteria informed by those used at Gate 2, namely:

- Constructability
- Hydraulics
- Landscape
- Ecology
- Heritage
- Water Quality
- Flood Risk
- Geology and Soils
- Socio-economics
- Planning
- Special Categories of Land

## 4.5. Corridor Section Evaluation: The Preferred Corridor

This section sets out the conclusions of the evaluations of each corridor section. The Book of Maps provides plans of all the corridor sections described below.

### 4.5.1. Corridor Section O

Corridor Section O is required to connect the water recycling plant to Havant Ticket Reservoir. Two options have been considered: an open cut route constructed within the existing road network, and a tunnel. At the north of the corridor, the route would require an open cut connection into the Havant Thicket Reservoir.

Depending on the route selected from the Havant Thicket Reservoir to Otterbourne, two pipelines may be required in this corridor.

Maps of Corridor Section O can be viewed in Sheet 1 and 2 of the Book of Maps.

**Table 24 - Corridor Section O constraints overview**

| Topic            | Open Cut Route  | Tunnelled Route   |
|------------------|---|---|
| Constructability | Two pipelines could be required, with a trench approximately 4m wide. This would need temporary road closures, including sections of Bedhampton Road, Park Lane and Middle Park Way. The route would follow a similar route to the Portsmouth Water scheme, but would be commenced after those works had been completed.  | Tunnelling would mean construction works will be mostly underground with some surface construction works at either end of the corridor section for the tunnel drive and reception shafts.<br><br>Intermediate shafts may be required along the tunnel route to allow for safe operation of the Tunnel Boring Machine, and these will be identified at subsequent design stages. |
| Hydraulics       | Due to the topography of the corridor, both the open cut and tunnelled options would need to be pumped. The pipeline from the Havant Thicket Reservoir can utilise a gravity feed due to the topography of the corridor.  |   |
| Landscape        | The north of the route intersects Staunton Country Park and the above ground construction would potentially temporarily impact access to certain areas as well as landscape quality. The south of the route intersects Bidbury and Bedhampton Park and the above ground construction could lead to temporary restrictions to access and loss of landscape features. | The tunnel reception shaft in the proximity of the Havant Thicket Reservoir would be potentially located within Staunton Country Park and above ground construction would temporarily impact. Open cut construction would still be required to connect the tunnel to the reservoir.   |
| Ecology          | The route crosses the Hermitage Stream, which is upstream of the Solent Maritime SAC and the Solent and Southampton Water Ramsar site. There is potential for pollution resulting from construction works which could adversely impact water quality in the stream and the designated sites.  | There is potential for impacts on deciduous woodland and floodplain and coastal grazing marsh priority habitat as a result of the construction of tunnel launch and reception sites. Further detailed design stages would aim to reduce the potential for impacts through sensitive siting of the shafts.   |

| Topic         | Open Cut Route   | Tunnelled Route   |
|---------------|--|---|
|               | <p>Impacts can be reduced by a trenchless crossing underneath the Hermitage Stream and the implementation of best practice measures.</p> <p>Sections of the corridor section intersect floodplain and coastal grazing marsh and deciduous woodland priority habitat. There is potential for a temporary loss of habitats during construction which would require reinstatement.</p>  |   |
| Heritage      | <p>The route would intersect the Bidbury, Old Brockhampton and the Sir George Staunton Conservation Areas and could harm these heritage assets.</p> <p>The north of the corridor section route intersects the Leigh Park Grade II* Listed Park and Garden at Staunton Country Park. Construction has the potential to affect the character and setting of the park, which further design would seek to reduce.</p>   | <p>The tunnel launch shaft will be in the proximity of the Bedhampton and the Old Brockhampton Conservation Areas. The tunnel reception shaft will be within the Sir George Staunton Conservation Area. Construction has the potential to affect the character and setting of the park, which further design would seek to reduce.</p> <p>The north of the corridor section intersects the Leigh Park Grade II* Listed Park and Garden at Staunton Country Park. Construction has the potential to affect the character and setting of the park, which further design would seek to reduce.</p> |
| Water Quality | <p>The corridor section route intersects several watercourses in Havant, including the Hermitage Stream. There is therefore potential for pollution generated by construction activities. Trenchless crossing and the implementation of best practice measures would seek to reduce impacts.</p> <p>The south of the corridor section is within a Source Protection Zone 1 and Drinking Water Safeguarding Zone for Bedhampton Spring. Construction in this area has potential for impacts to groundwater quality.</p> | <p>Tunnelling has the potential to impact on the quality and quantity of groundwater within the East Hants Chalk and South Hants Lambeth Group. The south of the corridor section is within a Source Protection Zone 1 and Drinking Water Safeguarding Zone for Bedhampton Spring. Tunnelling within this area has potential for impacts to groundwater quality.</p>  |
| Flood Risk    | <p>The corridor section route intersects areas at high risk of flooding. Further work would be needed to understand the potential of construction works to increase flood risk.</p>  | <p>The launch and reception shafts are located outside of high flood risk areas.</p>  |

| Topic                 | Open Cut Route  | Tunnelled Route  |
|-----------------------|---|--|
| Geology and Soils     | <p>The corridor section route runs along the road network and there is potential contamination that could be mobilised during construction.</p> <p>A section of the south of the corridor section would intersect Grade 1 agricultural land, which could be adversely impacted during construction.</p>   | No constraints identified  |
| Socio-economics       | <p>Construction works would lead to temporary impacts to the road network in Havant, which could be considered significant. This would affect access to residential properties and community facilities.</p> <p>Construction close to residential properties has the potential to impact on air quality, noise and vibration.</p> <p>Access to Staunton Country Park and Bidbury and Bedhampton Park may be restricted during construction.</p> | <p>There is potential for vibration impacts during tunnelling. Excavated materials would also increase road traffic.</p> <p>Access to Staunton Country Park and Bidbury and Bedhampton Park may be restricted during construction.</p> |
| Special Category Land | Staunton Country Park and Leigh Park are public open space and construction may lead to temporary closures to parts of these areas.   |  |

## Conclusion

A tunnelled route for Corridor Section O is the preferable option. This would avoid construction within the road network, which would result in adverse impacts on the local transport network and restrict access to community facilities. Likely impacts of dust emissions, noise and vibration would also be significantly reduced.

A tunnelled route would avoid intersecting the Hermitage Stream, which is linked to ecological sites in Langstone Harbour. The tunnelled route would also not impact high flood risk zones.

Impacts on open space would be reduced by tunnelling. However, construction works within Staunton Country Park and Leigh Park listed park and garden could not be avoided.

### 4.5.2. Corridor Section P

This corridor section connects Corridor Section O to Corridor Section R. It involves routing through Drayton and Farlington, to Portsdown Hill. Two options for the pipeline were considered: an open cut route within the existing road network, or a tunnelled route.

There is optionality in the open cut route to either route south following Havant Road and Farlington Avenue or further north along Portsdown Hill Road.

There are two potential tunnelled routes, a northern option (P1) and a southern option (P2).

Maps of Corridor Section P can be viewed in Sheet 2 and 3 of the Book of Maps.

**Table 25** - Corridor Section P constraints overview

| Topic            | Open Cut Route Constraints  | Tunnelled Route Constraints   |
|------------------|---|---|
| Constructability | <p>Trenchless crossing of the A27, A3(M) and the west coast railway line would be required.</p> <p>Open cut construction would be required along sections of Havant Road, Portsdown Hill Road, and Farlington Avenue. This is likely to result in impacts on the transport network in Drayton and Farlington.</p>   | <p>As a result of the topography of the corridor, a deep tunnel will be required.</p> <p>The tunnel launch shaft would preferably be located near to the water recycling plant site, and the reception shaft would be located on the ridge of Portsdown Hill. For the tunnel reception shaft, there is optionality to site the shaft further to the north, or further to the south.</p> |
| Hydraulics       | <p>Corridor Section P rises from east to west relatively sharply up to the ridge of Portsdown Hill. Therefore, the pumping station must be located to the east before the pipeline ascent of Portsdown Hill.</p> <p>The open cut route through Farlington Avenue would require several bends which is hydraulically undesirable as it results in greater energy losses.</p> | <p>Corridor Section P rises from east to west relatively sharply up to the ridge of Portsdown Hill. Therefore, the pumping station must be located to the east before the pipeline ascent of Portsdown Hill to allow the water to be transferred up Portsdown Hill.</p>   |
| Landscape        | <p>Open cut construction on the ridge of Portsdown Hill would result in temporary adverse impacts to the visual amenity of the area given Portsdown Hill is an elevated and highly visible landscape. The route also intersects the Portsdown Hill Open Downs Landscape Character Area, where there is potential for adverse impacts to landscape quality.</p>              | <p>The tunnel reception shaft is located on the ridge of Portsdown Hill. As Portsdown Hill is an elevated and highly visible landscape, construction works would potentially temporarily adversely impact the visual amenity of the area. Siting the tunnel reception shaft further north would reduce these impacts.</p>   |
| Ecology          | <p>The south of the corridor section is in the proximity of the Chichester and Langstone Harbour Special Protection Area and Ramsar sites. There is potential for impacts to habitats that are functionally linked to these sites. Noise and vibration generated by construction works also have the potential to impact these sites.</p>                                   | <p>No significant constraints identified.</p>   |

| Topic             | Open Cut Route Constraints  | Tunnelled Route Constraints   |
|-------------------|---|---|
|                   | The corridor section intersects areas of lowland meadow and grassland priority habitat. The route also intersects several locally designated Sites of Importance for Nature Conservation.   |   |
| Heritage          | Fort Purbrook is directly north of the corridor section, north of Portsdown Hill Road. The fort is designated as a scheduled monument and Grade II* listed building. Construction of the pipeline has potential to temporarily adversely affect the setting of the fort. There is also potential for buried archaeology surrounding Portsdown Hill which could be encountered during construction of the pipeline. The southern open cut route would be preferable from a heritage perspective. | The southern tunnel route (P2) would be in close proximity to Fort Purbrook which is designated as a scheduled monument and Grade II* listed building. Therefore, the northern tunnelled route would be preferred.  |
| Water Quality     | The south of the corridor section is in the proximity of Langstone Harbour. There is potential for pollution to reach the harbour as a result of construction activity. Best practice mitigation would be employed to avoid impacts.  | The northern tunnel option (P1) would be located within Source Protection Zone 1, and therefore construction of the tunnel has the potential to adversely impact groundwater quantity and quality. Further detailed design in the future would be required to reduce potential impacts. |
| Flood Risk        | The corridor section does not intersect any high-risk flood zones.  | The northern tunnel reception shaft option is located south of a high-risk flood area. Further detailed siting would be required to ensure there is no impact on flood risk.  |
| Geology and Soils | The corridor section has the potential to encounter sources of contamination in Farlington and at Fort Purbrook which could potentially be mobilised as a result of construction works.   | The southern tunnel route (P2) has the potential to encounter sources of contamination at Fort Purbrook which could potentially be mobilised as a result of construction works.   |
| Planning          | The corridor section intersects with a housing development under construction south of Havant Road.   | No constraints identified.  |

| Topic                 | Open Cut Route Constraints   | Tunnelled Route Constraints   |
|-----------------------|--|---|
|                       | <p>However, the pipeline could be routed to avoid this.</p> <p>The north of the corridor section intersects Countryside Rights of Way land south of Portsdown Hill Road.</p>                 |   |
| Socio-economics       | <p>Open cut construction has the potential for disturbance to residential properties through noise, vibration and air quality, and impact access to properties and community facilities.</p> | <p>There is potential for vibration impacts during construction of the tunnel.</p> <p>Material will be removed from the tunnel at the tunnel launch shaft. There would be an increase in traffic on the wider road network.</p> |
| Special Category Land | <p>The southern open cut route intersects land held by the Ministry of Defence on Farlington Avenue.</p>   | <p>The southern tunnel (P2) would intersect land held by the Ministry of Defence on Farlington Avenue.</p>  |

## Conclusion

A tunnelled route would reduce the potential air quality, noise, vibration, socio-economic, transport and landscape impacts relative to the open cut route. An open cut route is therefore not being progressed. A tunnelled route with optionality for a northern (P1) or southern tunnel (P2) is being taken forward.

### 4.5.3. Corridor Section R

Corridor Section R routes east to west along the ridge of Portsdown Hill and south of Southwick before crossing the valley of the River Wallington. This corridor section would be constructed using an open cut method.

Maps of Corridor Section R can be viewed on Sheets 3, 4, 5 and 6 of the Book of Maps.

**Table 26** - Corridor Section R constraints overview

| Topic            | Open Cut Route Constraints  |
|------------------|---|
| Constructability | <p>The corridor section is principally located on agricultural land. The River Wallington would be crossed using a trenchless technique.</p> <p>This corridor section runs through an existing utility corridor used by several suppliers. Most of the existing utilities run along the southern section including gas mains and high-voltage cables. The pipeline route is positioned further north to avoid these where possible.</p> |
| Hydraulics       | <p>The corridor section is routed east to west. The south of the corridor section is along the ridge of Portsdown Hill, and the north of the corridor section follows the base of the River Wallington valley.</p> <p>The pipeline route should, where possible, avoid undulating sections Corridor Section R.</p>  |

| Topic         | Open Cut Route Constraints  |
|---------------|---|
| Landscape     | <p>The corridor section intersects the Portsdown Hill and Forest of Bere Special Landscape Quality Areas and the Portsdown Hill Open Downs Landscape Character Area.</p> <p>To avoid temporary impacts on the landscape, the pipeline should be routed adjacent to the existing B-road, as the backdrop of woodland would provide screening.</p>  |
| Ecology       | <p>Most of this corridor section is arable land. There is potential for impacts to habitats functionally linked to the Portsmouth Harbour Ramsar and Special Protection Area, as well as hydrological impacts when crossing the River Wallington. Trenchless construction underneath the river and best practice methods would reduce impacts.</p> <p>Northern sections of the corridor intersect lowland meadows with adjacent deciduous woodland priority habitat. One area of lowland meadow is likely to be unavoidable within the corridor. However, any loss of the priority habitat will be temporary and reversible. In this area, the corridor section is directly adjacent to the Stroud Coppice ancient woodland and Site of Importance for Nature Conservation. A buffer would be required to avoid impacts. Species associated with the Site of Importance for Nature Conservation may be disturbed during the works. Routing further south in the corridor section would avoid interfaces with these ecological sites.</p> <p>There are two Sites of Importance for Nature Conservation within the corridor, further pipeline routing should avoid intersecting with these sites.</p> |
| Heritage      | <p>The corridor section is in the proximity of Fort Southwick (grade I), Fort Nelson (grade I) and Fort Widley (grade II*) listed buildings and scheduled monuments. As a result of the open landscape area, the setting of these assets will be sensitive to temporary construction impacts. The corridor section also include the Church of St Nicholas (grade I listed building), The Nelson Monument (grade II* listed building) and the World War II Heavy Anti-Aircraft Gunsite at Monument Farm scheduled monument.</p> <p>To mitigate impacts on the settings of heritage assets, a northern route would be preferred, to move further down the Portsdown Hill ridge, out of view.</p> <p>Below ground works are likely to encounter archaeological remains associated with heritage assets. Further archaeological assessment would be required. The west of the corridor section is less sensitive, but there is still potential for buried archaeology.</p>  |
| Water Quality | <p>The corridor section crosses the River Wallington, where there is potential for impacts to the hydrology and geomorphology of the river. Trenchless crossing of the river and its floodplain and best practice mitigation would be employed to reduce the potential for impacts.</p> <p>At the far north of the corridor, there is potential for impacts to the geomorphology from the crossing of an unnamed watercourse near Southwick Park Lake. Impacts could be minimised when open cut trenching by using temporary dams to allow work to be undertaken in dry conditions, and reinstating the channel once the trench has been installed. Once operational, the pipeline could become exposed as a result of adjustment of the bed and banks of the watercourse, which could result in geomorphological instability.</p>  |

| Topic                 | Open Cut Route Constraints  |
|-----------------------|---|
|                       | <p>There is potential for impact on water quality during construction as a result of sediment supply and contaminants to Potwell Tributary, River Wallington below Southwick and an unnamed watercourse near Southwick Park Lake. Best practice mitigation would be required to prevent these impacts. Routing through the south of the corridor section would minimise impacts by reducing interfaces with watercourses.</p> <p>The west of the corridor section is within Source Protection Zone 3 and a Drinking Water Safeguarded Zone, with the south west of the corridor section within Source Protection Zone 1. Mitigation is required to ensure there would be no impacts to groundwater as a result of construction.</p> |
| Flood Risk            | <p>The corridor section intersects high risk flood areas associated with the River Wallington</p>   |
| Geology and Soils     | <p>The Portsdown Oil Fuel Reservoir is located at the south of the corridor. There are additional historic landfills and potentially contaminated land associated with previous military uses directly south of the corridor section which should be avoided.</p> <p>Parts of the west of the corridor section is Grade 1 agricultural land.</p>  |
| Planning              | <p>The southeast of the corridor section intersects with designated open space.</p> <p>The west of the corridor section is within the approved Welborne Garden Village development, comprising 6000 dwellings, community facilities, commercial and employment space.</p>   |
| Socio-economics       | <p>The west of the corridor section is adjacent to Boundary Oak School, future pipeline route refinement would be required to ensure impacts are avoided.</p>   |
| Special Category Land | <p>Southern sections of the corridor section is owned by the Ministry of Defence, and these areas should be avoided by the pipeline.</p>  |

## Conclusion

There are significant constraints relating to heritage and landscape in this corridor section during construction.

Acknowledging the constraints associated with the south of the corridor, it is proposed that this corridor section is reduced in size, to follow a northern route which would avoid the identified heritage assets. The south of the corridor section is therefore not being progressed, but the north of the corridor is being progressed as part of the preferred corridor as the significant constraints within the corridor section are avoided by removing the southern part.

This corridor section would avoid the need for the initial pipeline routes that were identified before Gate 2 further north, which intersect the South Downs National Park.

Corridor Section R potentially reduces the number of permanent above ground plant needed across the pipeline route compared to other corridor options. However, there is a possibility that the requirement for additional above ground plant is identified as the scheme is developed further, and is dependent on pipeline routing and system design.

#### 4.5.4. Corridor Section V

Corridor Section V connects from Corridor Section R northwards towards Corridor Section Y. It crosses the River Meon and passes to the west of Wickham. There are two options to reduce the length of construction works needed on Titchfield Lane, a western option which includes an area of ancient woodland and an eastern option which goes further into Wickham Park Golf Club.

Maps of Corridor Section V can be viewed on Sheets 6 and 7 of the Book of Maps.

**Table 27 - Corridor Section V constraints overview**

| Topic            | Open Cut Route Constraints   |
|------------------|--|
| Constructability | <p>A crossing of the Winchester Road (A32) is required, which could be constructed using an open cut or trenchless method. Open cut construction would involve a lane closure which has the potential for disruption on this route.</p> <p>The corridor section involves routing along Titchfield Lane which is a narrow and busy route. To avoid a temporary road closure, there are two alternative locations where a crossing of the road can be made.</p> <p>Crossing of the River Meon can be completed through trenchless construction.</p>  |
| Hydraulics       | <p>The crossing of the River Meon is one of the lowest points within the corridor section route. The topography increases north of Wickham, which means that a pumping station may be needed at the Intermediate Pumping Station 3 Zone.</p>   |
| Landscape        | <p>The corridor section is within the Lower Meon Valley Area of Special Landscape Quality and adjacent to the western boundary of Portsdown Hill and Fareham Areas of Special Landscape Quality. The landscape is described as a wooded and enclosed and the Hampshire Character Assessment notes the tranquillity of the landscape.</p> <p>Ancient woodland is adjacent to the corridor section, meaning that the siting of the pipeline route should ensure an adequate buffer to avoid impacts.</p> <p>There are 9 TPOs throughout the corridor section.</p> <p>This corridor section would provide a route outside of the South Downs National Park.</p>   |
| Ecology          | <p>The corridor section crosses the River Meon which is upstream of the Southampton and Solent Water Ramsar. It is also a compensatory habitat under the Southern Water drought scheme. Any hydrological impacts to the River Meon could potentially impact the Ramsar site. Trenchless crossing of the River Meon would reduce the potential for impacts, and could be extended across the floodplain grazing marsh to avoid impacts to this functionally linked habitat. Further assessment is required to ensure that trenchless crossing of the River Meon would not pose a hydrogeological risk to the watercourse or the functionally linked floodplain grazing marsh.</p> <p>The western alternative route at Titchfield Lane would intersect an area of deciduous woodland priority habitat and ancient woodland. A route along Titchfield Lane, or the eastern option would be preferred in terms of the dNPS as it would avoid ancient woodland.</p> |
| Heritage         | <p>The corridor section is directly adjacent to Little Park Mansion which is a grade II listed building.</p>   |

| Topic                 | Open Cut Route Constraints  |
|-----------------------|---|
|                       | <p>The Chichester to Bitterne Roman Road intersects the corridor section and there is a high potential for archaeology.</p> <p>The eastern option at Titchfield Lane is least preferred as the pipeline route would be close to the Wickham Heritage Conservation Area.</p>   |
| Water Quality         | The corridor section crosses the river Meon which is a chalk river and as such is sensitive to the supply of fine sediment or changes in hydrology. Trenchless crossing of this watercourse and its associated floodplain would reduce potential impacts.   |
| Flood Risk            | The corridor section crosses areas of flood zone 2 and 3 associated with the river Meon. Flood risk will need to be managed during construction in this area.   |
| Geology and Soils     | Historic landfills have been identified adjacent to the corridor section. Mitigation is required to ensure there is no mobilisation of contaminants as a result of construction activities.   |
| Planning              | The corridor section intersects the Welborne Garden Village development. The corridor section also intersects land subject to an application for 200 dwellings and green infrastructure. Further coordination would be required.  |
| Socio-economics       | The corridor section intersects Wickham Park Golf Club, and therefore construction will result in land take from the golf club. The western route at Titchfield Lane or the route along Titchfield Lane would reduce the amount of land required. The eastern option crosses further into the golf club, requiring more land. |
| Special Category Land | <p>The south east of the corridor section intersects with land owned by Homes England.</p> <p>The arrangements for the land required within Wickham Park Golf Club would need to be established.</p>  |

## Conclusion

This corridor is outside of the South Downs National Park but is located in a sensitive landscape. There is potential for ecological and hydrological impacts associated with watercourse crossings, requiring mitigation. The corridor section crosses Wickham Park Golf Club and there are intersections with other development proposals, which require further co-ordination.

Additional options were introduced to address constructability constraints associated with works to Titchfield Lane. The western route is not preferred as a result of direct impacts to ancient woodland and the golf club. The original route and the eastern route have constraints relating to impacts on the road network and impacts on Wickham Park Golf Club.

This corridor section is being progressed as part of the preferred corridor.

### 4.5.5. Corridor Section Y

Corridor Section Y connects northwest from either Corridor Section V or Corridor Section W to Corridor Section Z. Given the corridor section's proximity to residential receptors when crossing Winchester Road and Black Horse Lane there are options in the corridor section.

Maps of Corridor Section Y can be viewed on Sheets 8 and 9 of the Book of Maps.

**Table 28** - Corridor Section Y constraints overview

| Topic             | Open Cut Route Constraints  |
|-------------------|---|
| Constructability  | <p>The crossing at the High Street in Shirrell Heath is a pinch point close to several residential properties.</p> <p>Another pinch point is located when crossing Winchester Road (B2177). A trenchless crossing would likely be required, however there is limited space to the west of Winchester Road given the residential properties in the area. The northern option provides an alternative route further north for crossing Winchester Road, where there are fewer residential properties.</p> <p>Trenchless crossing of the River Hamble would be required.</p>   |
| Hydraulics        | <p>The corridor section crosses three river valleys related to the River Meon and Hamble, with little scope to avoid high points. Trenchless crossings at Shirrell Heath and Curdridge Lane would flatten the hydraulic profile.</p>  |
| Landscape         | <p>Construction may have temporary effects on landscape, including, field boundaries, trees and woodland. There is potential for visual amenity impacts on residential receptors during construction. The corridor section crosses Pilgrims Trail long distance route. There is potential for a change of view from this route during construction.</p>   |
| Ecology           | <p>The corridor section crosses the River Hamble which is upstream of the Solent Maritime Special Area of Conservation and Solent and Southampton Water Ramsar. A trenchless crossing would be needed to avoid hydrogeological impacts.</p> <p>The corridor section crosses an area of deciduous woodland priority habitat. The northern option at Winchester Road and Black Horse Lane crosses traditional orchard priority habitat. If habitats were lost, compensation may be required.</p> <p>Turtle Dove population(s) have been identified within the corridor section. Removal of hedgerows and scrub within the proximity of these areas should be avoided.</p> |
| Heritage          | <p>There are no nationally designated heritage assets within the corridor section. There is potential for buried archaeology around the River Hamble. Careful placement of trenchless crossing shafts would be required.</p>  |
| Water Quality     | <p>The River Hamble should be crossed trenchless to avoid impacts to the hydrology or geomorphology of the watercourse. The corridor section is within the River Hamble and Hamble Estuary Urban Waste Water Treatment Directive Catchments. Construction works should consider how temporary waste water is managed.</p>   |
| Flood Risk        | <p>The corridor section crosses flood zone 2 and 3 when crossing the River Hamble. Trenchless construction across the river would minimise and avoid impacts within high-risk flood areas.</p>  |
| Geology and Soils | <p>The corridor section crosses the Land at Rossgarth historic landfill. The northern option at Winchester Road and Black Horse Lane would avoid potential contaminated land impacts.</p>   |

| Topic                 | Open Cut Route Constraints   |
|-----------------------|--|
|                       | <p>Shirrell Heath Sand Pit is adjacent to the corridor section and Ash House Farm historic landfill is partially within the corridor section. There is potential for contaminated land in this area.</p> <p>The corridor section intersects areas of Grade 1 agricultural land.</p>  |
| Planning              | <p>South of Waltham Chase, west of the Winchester Road, there is a minerals and waste application for the excavation of 230,000 tonnes of soft sand with phased working and restoration backfilling with up to 435,000 tonnes of clean inert waste/materials. If construction works are to take place alongside the working of this site, there is potential for disruption to the road network and residents.</p> |
| Socio-economics       | <p>The corridor section passes near to residential properties. The northern option at Winchester Road and Black Horse would be preferred as it avoids residential receptors.</p> <p>The corridor section is adjacent to the Meon Valley Hotel and Country Club. Routing to the north of the corridor section will mitigate impacts on this site.</p>   |
| Special Category Land | <p>There is potential for impacts to open space provided by the Meon Valley Hotel and Country Club.</p>  |

## Conclusion

The most significant constraints within this corridor section relate to constructability and the potential for construction work taking place close to residential properties. The northern option at Winchester Road and Black Horse Lane can be utilised to reduce potential impacts as well as standard construction mitigation. This corridor section is part of the preferred corridor.

### 4.5.6. Corridor Section Z

Corridor Section Z connects Corridor Sections X and Y in the southeast to Otterbourne in the north. The below table details the constraints within Corridor Section Z.

At Durley Street south of Newtown, there is optionality in the corridor section to avoid intersections with watercourses and electricity cables.

There is further optionality south of Fisher’s Pond, where the corridor section splits. The northern route (Z1) along Portsmouth Road (B2177), and the southern route (Z2) passes north of Crowdhill and adjacent to the Park Pale at Marwell scheduled monument, which is within an area of high archaeological potential.

At the north west of the corridor section, there are two options for crossing the River Itchen. The northern route (Z3) passes through the South Downs National Park. The southern route (Z4) passes south, outside of the South Downs National Park but intersects the floodplain of an upstream tributary of the River Itchen. Both. Both options would involve tunnelling under the River Itchen to avoid any direct works within the river.

Maps of Corridor Section Z can be viewed on Sheets 9, 10 and 11 of the Book of Maps.

**Table 29** - Corridor Section Z constraints overview

| Topic            | Open Cut Route Constraints  |
|------------------|---|
| Constructability | <p>South of Newtown, the corridor section runs close to overhead power lines. To avoid this, the route would need to be located further north, encroaching on playing fields in Newtown. An alternative option was identified which allows the route to pass south of the overhead power lines.</p> <p>At Fisher’s Pond there are two options. There is the option to route north (Z1), along Portsmouth Road (B2177), and then continue north through Fisher’s Pond along Main Road (B3354). A culvert crosses Main Road, therefore a trenchless crossing could be required and associated temporary road closure and traffic management measures. Alternative to this route is routing further south using route Z2 towards Crowdhill. This involves a trenchless crossing of Winchester Road, re-joining the northern option near Brambridge.</p> <p>The constructability considerations for the two River Itchen options are described below:</p> <ul style="list-style-type: none"> <li>■ Northern Route (Z3): A tunnel to travel the full length under the River Itchen and cross the South West Main Line railway at an acute angle. An engineering case to justify the railway crossing at this angle would be needed, approved by Network Rail. A launch shaft would be constructed to the east of the River Itchen with reception shaft to the west of the railway. Leading to and from the shafts the pipeline would likely be laid as open cut.</li> <li>■ Southern Route (Z4): The southern route would avoid construction in the National Park. A tunnel to travel the full length under the River Itchen is envisaged. This route crosses the South West Main Line railway at a more acceptable angle. Further engagement with Network Rail would be required. A launch shaft will be constructed to the east of the River Itchen with reception shaft to the west of the railway. Leading to and from the shafts the pipeline would likely be laid as open cut. This route provides a greater number of crossing opportunities of the River Itchen, with a view to increase the distance from the chalk aquifer which ground water is abstracted from. The further south the crossing is made, the more likely the crossing can be made through the impermeable clay strata which will offer protection to the nearby groundwater resources.</li> </ul> |
| Hydraulics       | <p>The east of the corridor section is hydraulically unconstrained except for a local high point south of Lower Upham. There is an opportunity to site a break pressure tank to enable gravity flows to Otterbourne in this corridor section. Should a break pressure tank not be required, the pipeline should be routed as far north as possible as it passes the two potential break pressure tanks sites to avoid elevation changes.</p> <p>There are no hydraulic differences between the two River Itchen crossing options.</p>   |
| Landscape        | <p>The length of the corridor section is in proximity of the South Downs National Park, especially at Lower Upham, but only a short section intersects the National Park (section Z3). The route should be sited to avoid potential adverse impacts on the setting of the National Park, in accordance with the dNPS.</p> <p>The landscape considerations of the two River Itchen options are described below:</p> <ul style="list-style-type: none"> <li>■ Northern Route (Z3): This route intersects the South Downs National Park and the remaining corridor section is within its setting. There is an alternative option to cross from east of the River Itchen to Otterbourne, which would be preferable in line with the dNPS.</li> </ul>  |

| Topic    | Open Cut Route Constraints   |
|----------|--|
|          | <ul style="list-style-type: none"> <li>■ Southern Route (Z4): This option is outside of the South Downs National Park. The corridor section is within a locally designated valued landscape where there is limited potential for effects on the special qualities of the landscape. Construction activity and siting would seek to reduce impacts to landscape character. There are TPOs within and adjacent to the corridor section which should be avoided. The corridor section intersects with the Itchen Way. There is potential for intrusive works to affect views from this route.</li> </ul> <p>There are 4 TPO groups and 27 individual TPO trees within or adjacent to the corridor section. The route should avoid impact with these trees.</p> <p>Loss of trees, woodland and other landscape features will have an impact on Forest of Bere and Itchen Valley Landscape Character Areas.</p>   |
| Ecology  | <p>The corridor section intersects areas of floodplain grazing marsh, lowland meadow and deciduous woodland priority habitat, and the following Sites of Importance for Nature Conservation: Kimbers Copse, Chestnut Gulley Wood and Fielders Farm Meadows. These areas should be avoided where possible to prevent habitat loss.</p> <p>The northern route (Z1) at Fisher's Pond is preferred to avoid impacts to woodland within the southern route (Z2).</p> <p>The ecology considerations of the River Itchen crossing routes is as follows:</p> <ul style="list-style-type: none"> <li>■ Northern Route (Z3): This route involves tunnelling under the River Itchen and therefore avoids direct impacts on the Special Area of Conservation and Site of Special Scientific Interest designation. The further reduction of impacts is reliant upon constructing the tunnel within the clay ground and avoiding alluvium which supports habitats within the River Itchen. Further design work is required to ensure this. West of the River Itchen, the route intersects floodplain grazing marsh priority habitat associated with a tributary of the River Itchen, which should be considered functionally linked to the River Itchen Special Area of Conservation. Siting the pipeline route as far east within the corridor section would reduce the potential loss of habitat.</li> <li>■ Southern Route (Z4): This route involves tunnelling under the River Itchen, which avoids impacts on the Special Area of Conservation and Site of Special Scientific Interest designation. The reduction of impacts assumes on a tunnel within the clay ground and that avoiding alluvium which supports habitats within the River Itchen. Further design work is required to ensure this is feasible. As this route option is sited further south to avoid intersecting the South Downs National Park, the route intersects with a tributary of the River Itchen which has the potential to harm the SPA. Trenchless crossing of this tributary would reduce impacts however this is unlikely to result in a significant reduction in risk as construction activity will be required within the floodplain of the tributary. The intersection of the tributary of the River Itchen west of the River Itchen would result in intersecting floodplain grazing marsh priority habitat. Construction activity is likely to result in the loss of priority habitat. The route is adjacent to the Otterbourne Wood Site of Importance for Nature Conservation. There is potential for impacts to root protection zones, and therefore adequate buffers should be implemented to avoid these impacts.</li> </ul> |
| Heritage | <p>The southern route (Z2) at Fisher's Pond is adjacent to the Park Pale at Marwell Scheduled Monument. This is associated with further heritage assets at Marwell Manor which is north east of the corridor section where there are further Scheduled Monuments. There is potential for nationally significant buried archaeology in this area which could be impacted during construction.</p>   |

| Topic             | Open Cut Route Constraints   |
|-------------------|--|
|                   | <p>The southern River Itchen crossing option (Z4) is adjacent to the Moat Otterbourne Manor scheduled monument. There is potential for impacts to the setting of this site. The northern route (Z3) is approximately 200 m away from the scheduled monument.</p>   |
| Water Quality     | <p>South of Newtown, the corridor section runs along the route of a watercourse. This watercourse drains into a sensitive system related to the River Hamble, and therefore mitigation will be required to avoid increased in the supply of fine sediment and contaminants. The southern option at Durley Street is preferable to avoid this watercourse.</p> <p>South of Lower Upham, the corridor section crosses Source Protection Zone 1 and 2. There may be constraints related to deep excavation in this area, although near-surface excavations are likely to be acceptable.</p> <p>The southern route option (Z2) at Fisher’s Pond is preferred, however both options would involve more than one water course crossing. The northern option (Z1) would involve crossing in Source Protection Zone 2, but this would be avoided in the southern option.</p> <p>Crossing the River Itchen involves crossing a number of other watercourses that are connected to it. During construction there is potential for water quality impacts through the supply of fine sediment and contaminants. A tunnelled crossing of the River Itchen would avoid direct impacts. The southern route intersects (Z4) an additional tributary of the River Itchen and has potential for greater water quality impacts than the northern route (Z3).</p> <p>The area is within Source Protection Zone 1. Therefore, there will be constraints related to deeper excavations for trenchless crossings. Construction work related to the crossing would be preferable within the London Clay, below the alluvium that supports the river and above the chalk that supports the groundwater abstraction.</p> |
| Flood Risk        | <p>South of Fisher’s Pond, the corridor section intersects Flood Zone 2 and 3. The southern option (Z2) runs along flood zone 2 and 3, and as a result of the sequential test, the northern option (Z1) would only involve a minor crossing of flood zone 2 and 3.</p> <p>Further detailed siting of tunnel launch and reception shafts would be required for crossing the River Itchen given the proximity to areas of Flood Zone 2 and 3.</p>  |
| Geology and Soils | <p>The western option at Durley Street would be preferred, to avoid existing sources of contamination.</p> <p>The south route (Z2) at Fisher’s Pond crosses through Crowdhill historic landfill. Ground investigation is required to assess contamination risk. Therefore, the northern option (Z1) is preferred.</p> <p>The southern route (Z4) across the River Itchen intersects with a historic landfill at land between Brambridge Road and Kiln Lane. There is potential for the mobilisation of contaminants which could impact human health and controlled waters. Construction in this area should be avoided. Ground investigation is required to assess the risk posed by this source of contamination. The potential pipeline and tunnel route would avoid this site.</p>  |

| Topic                 | Open Cut Route Constraints   |
|-----------------------|--|
|                       | Crossing of the River Itchen and South Downs National Park would be preferable within the London Clay to keep out of the principal aquifer.  |
| Planning              | <p>The corridor section is adjacent to housing allocations south of Bishop’s Waltham. The southern option at Durley Street would be preferred to avoid any potential impacts related to compatibility with future developments.</p> <p>The corridor section intersects the route of the Esso Southampton to London Pipeline, consultation is required to understand potential for compatibility and constraints.</p> |
| Socio-economics       | <p>The southern option at Durley Street is preferred to avoid impacts to playing field south of Newtown.</p> <p>The southern route (Z2) at Fisher’s Pond is preferred to avoid disruption to the road network and local community.</p>   |
| Special Category Land | West of Bishop’s Waltham are allotments, which are adjacent to the corridor section.   |

## Conclusion

The corridor section runs south of the South Downs National Park except for optionality at Z3 which intersects a small part of the National Park. Routing should seek to limit any potential impacts to the setting of the National Park.

This corridor section is to be taken forward as part of the preferred corridor section as it is required for the connection to Otterbourne.

Both the northern (Z3) and southern (Z4) routes for crossing the River Itchen are being taken forward to allow for comparison given the potential constraints associated with each option. Both routes would tunnel under the River Itchen.

The northern route (Z3) is within the South Downs National Park and therefore a reasonable alternative should be sought in line with the dNPS. The southern route (Z4) has increased interfaces with tributaries of the River Itchen, which could harm the River Itchen Special Area of Conservation and Site of Special Scientific Interest.

## 4.6. Corridor Section Evaluation: Corridor Sections that are Not Being Progressed

### 4.6.1. Corridor Section Q

This corridor section has been identified as an alternative corridor section to Corridor Section O as the first part of the pipeline corridor from Havant Thicket Reservoir to Otterbourne. This route encounters a number of level differences as a result of underpasses and overpasses, which would make construction challenging. A tunnelled route was not progressed as no adequate locations for intermediate shafts required for the safe operation of the tunnel boring machine were identified. As such, only an open cut route was taken forward for evaluation.

Corridor Section O also acts as a connection from the water recycling plant to Havant Thicket Reservoir, as well as potentially the first part of the transfer pipeline from Havant Thicket Reservoir to Otterbourne, therefore, if this corridor section were to be progressed, Corridor Section O would still be required.



Maps of Corridor Section Q can be viewed in Sheet 12 and 13 of the Book of Maps.

**Table 30** - Corridor Section Q constraints overview

| Topic            | Open Cut Route Constraints  |
|------------------|---|
| Constructability | <p>At the east end of the route, a full road closure is potentially required on Calshot Road to cross a culvert under the road.</p> <p>Trenchless crossings would be required for crossing the A3(M). The A3(M) is in a cutting at this point, and therefore the shaft will need to be deep. Locating the shaft to the west of the A3(M) will be very difficult due to the lack of access due to housing and wooded areas.</p> <p>Level differences and various underpasses make open cut through Waterlooville unviable. Trenchless construction would be difficult due to limited space available for shafts, and deep crossings required to account for level differences and underpasses. Longer lengths of the corridor section would only be possible by tunnelling. An alternative to the open cut route by tunnelling was considered. However, intermediate shafts would have to be located within the road network, which would result in extended periods of road closures on key routes in Waterlooville. Therefore, this option was not progressed.</p> <p>Trenchless construction would be required around the under-construction Berewood development. The trenchless route will need to be deep to account for drainage channels. The ground in the area of this route has a high water content presenting further constructability constraints.</p> |
| Hydraulics       | <p>The topology of the corridor section peaks in the centre of Waterlooville which precludes the possibility of a gravity feed from east to west through open cut construction. This means that a pumping station would be required to the east of the A3(M) and west of Havant Thicket Reservoir.</p> <p>The built ground level within the corridor section is undulating with relatively sharp ground level changes, especially in the centre of Waterlooville and around the B2150 and A3(M). This would require many air and washout valves, or a flatter pipeline profile which will require substantially deep trenches or trenchless construction in multiple locations. This is hydraulically undesirable as it leads to higher energy losses.</p>  |
| Landscape        | <p>Trenchless crossing of the A3(M) will require construction shafts in wooded areas, and therefore there is potential for the loss of areas of woodland which characterises the landscape.</p>   |
| Ecology          | <p>The route crosses the Hermitage Stream, which is upstream of the Solent Maritime Special Area of Conservation and the Solent and Southampton Water Ramsar site. There is potential for pollution as a result of construction activity which would adversely impact water quality within the stream and the designated sites. Trenchless construction underneath the river and best practice measures would be employed which would reduce the potential for impacts.</p> <p>Deciduous woodland priority habitat can be found adjacent to the A3(M) within the corridor section and floodplain grazing marsh priority habitat is found within the west of the corridor section. There is potential for temporary loss of habitats during construction which would require reinstatement.</p>  |

| Topic                 | Open Cut Route Constraints   |
|-----------------------|--|
|                       | <p>The corridor section intersects a Site of Importance for Nature Conservation and is within the Havant Castle Bechstein Bat area.</p>  |
| Heritage              | <p>There are no designated heritage assets or sites within the corridor section. At the eastern end of the corridor section, there are two non-designated heritage assets within the corridor section: scatter or flint flakes and possible enclosure at Dunsbury Hill. Detailed assessment is required to identify the potential for impacts and mitigation.</p> <p>As a result of a lack of development at the east of the corridor section, the potential for buried archaeology is unknown. West of Waterlooville, the route should be kept as far south as possible, away from the watercourse to avoid encountering buried archaeology located around the river.</p> |
| Water Quality         | <p>Crossing of the Hermitage Stream, Potwell Tributary, Old Park Stream and Park Lane Stream will be required. There is potential for pollution to the watercourses as a result of construction works. Trenchless crossing of the watercourses and best practice mitigation should be employed to reduce potential impacts.</p> <p>The corridor section is within Source Protection Zone 1, there is potential for impacts on groundwater quality resulting from the introduction of contaminants during construction.</p>   |
| Flood Risk            | <p>The corridor section intersects with high flood risk areas associated with river crossings.</p>   |
| Geology and Soils     | <p>Dunsbury Hill Farm historic landfill is within the corridor section at the east end. If construction is required within this area, suitable mitigation will be required.</p>  |
| Planning              | <p>West of Waterlooville, the corridor section route intersects the under-construction Berewood development. Further siting of the pipeline route at future design stages would be required to avoid impacts to this development.</p> <p>West of Havant Thicket Reservoir, the corridor section intersects consented commercial/employment development which is under-construction. It is assumed that the pipeline can be routed to avoid conflict with this development.</p>   |
| Socio-economics       | <p>The open cut route through the road network in Waterlooville would be near a large volume of housing and community facilities including schools. There is potential for temporary impacts to human receptors through dust emissions, vehicular/plant emissions, and the generation of noise and vibration during construction with limited scope to avoid impacts resulting from proximity to receptors.</p> <p>Construction within the road network would result in disruption to a key transport route in Waterlooville, as well as potentially restrict the access to community facilities and businesses.</p>   |
| Special Category Land | <p>There is potential for an area of woodland east of the A3(M) to be undesignated public open spaces given the proximity of residential properties. However, that would need to be confirmed through further surveys and questionnaires.</p>  |

## Conclusion

An open cut route would have numerous constructability, hydraulics and engineering constraints related to ground level differences and the limited space available given the corridor section runs through a built-up area. A tunnelled route was considered to be unviable given the lack of available space in Waterlooville for intermediate shafts.

The environmental constraints relate to potential ecological and landscape impacts associated with the crossing of the A3(M). There is also potential for impacts to residential properties and community facilities through noise, vibration and air quality.

### 4.6.2. Corridor Section M

Corridor Section M has been identified as a connection from Corridor Section R northwards to Corridor Section N which is an alternative to Corridor Section W. It involves descending from Portsdown Hill into the valley or the River Wallington.

Maps of Corridor Section M can be viewed in Sheet 5 of the Book of Maps.

**Table 31 - Corridor Section M constraints overview**

| Topic            | Open Cut Route Constraints   |
|------------------|--|
| Constructability | The corridor section is located in mostly agricultural land, and there are limited major crossings. The River Wallington would be crossed using trenchless techniques. Trenchless crossings of roads and hedgerows can be utilised when required.  |
| Hydraulics       | The corridor section runs north to south into the River Wallington Valley. Utilisation of this option would increase the risk of requiring additional above ground plant across the route.   |
| Landscape        | The corridor section is within the Forest of Bere Landscape Character Area. There is potential for the loss of field boundaries and trees which would result in disruption to the existing landcover. Loss of landscape defining features should be avoided and minimised where possible.<br><br>The corridor section intersects Wayfarer’s Walk, Pilgrim’s Trail, Staunton Way and Allen King Way. There is potential for disruption to the appreciation of views from these routes.  |
| Ecology          | The corridor section is adjacent to areas of ancient woodland. Therefore, appropriate buffers should be applied to avoid direct and indirect impacts to ancient woodland.<br><br>There is potential for impacts to deciduous woodland and floodplain grazing marsh priority habitat. Works within these areas should be reduced and avoided where possible. Any loss of priority habitat should be compensated.<br><br>The corridor section is adjacent to Ashleydown Coppice and Ham Coppice SINSs. Therefore, appropriate buffers should be applied to avoid direct and indirect impacts to these sites. |
| Heritage         | The corridor section is approximately 730m west of Southwick Brewhouse scheduled monument, approximately 850m west of Southwick Priory scheduled monument, and approximately 640m west of the Church of St James without the Priory Gate Grade I listed building. Direct impacts to the scheduled monuments would be avoided given the   |

|                       |   |
|-----------------------|---|
|                       | <p>distance. However, there is potential for impacts to the settings of these heritage assets during construction.</p> <p>The corridor section is approximately 150m west of Southwick Conservation Area. There is potential for impacts to the character and setting of the conservation area as a result of construction activities.</p> <p>There is potential for buried archaeology within the corridor section as a result of the presence of post-medieval heritage sites.</p>          |
| Water Quality         | <p>The corridor section crosses the Potwell Tributary, which is a tributary of the River Wallington. There is potential for sediment supply and impacts to water quality during construction. Trenchless construction can be employed to avoid construction activity within the river.</p>  |
| Flood Risk            | <p>The corridor section intersects Flood Zone 2 and 3 associated with the crossing of a tributary of the River Wallington. There is potential for extended sections of the corridor section to run parallel and adjacent to high flood risk areas. In accordance with the sequential test, more suitable alternatives should be explored above this corridor section considering this interface with a high-risk flood zone and the potential to increase flood risk during construction.</p> |
| Geology and Soils     | <p>Sections of the corridor section are within Grade 3 agricultural land.</p>   |
| Planning              | <p>The corridor section does not directly intersect any existing development or consented sites, however does run adjacent to a small number of residential properties. The pipeline should be sited to avoid close proximity to existing properties.</p>   |
| Socio-economics       | <p>No constraints identified</p>  |
| Special Category Land | <p>No constraints identified</p>  |

## Conclusion

This corridor could provide an alternative to a route through part of Corridor Section R, by routing further north and reducing the interfaces with heritage assets south of Corridor Section R. It avoids the interfaces with consented developments in the west of Corridor Section R. This is also an alternative to a route through Corridor Section S where there is potential for impacts to ancient woodland, ecological sites and a number of constructability constraints.

Corridor Section M is largely in an area at high risk of flooding. National policy dictates that the sequential test should be applied. There are currently other corridor sections that do not pass through high flood risk areas to the extent of Corridor Section M, and these should be progressed ahead of this corridor section.

The elevation of this corridor section results in an increased likelihood of requiring additional permanent above ground plant further along the pipeline route in Corridor Sections V and Z.

As a result of the above constraints, this corridor section is not currently being progressed.

### 4.6.3. Corridor Section S

Corridor Section S runs from the Corridor Section R intersection west of Widley, prior to progressing south of Furzeley Corner and towards Shoot Hill before joining with Corridor Sections W or X.

Maps of Corridor Section S can be viewed in Sheet 3, 13 and 14 of the Book of Maps.

**Table 32 - Corridor Section S constraints overview**

| Topic            | Open Cut Route Constraints   |
|------------------|--|
| Constructability | <p>Predominantly over open agricultural land.</p> <p>One major pinch point is between two areas of ancient woodland (Dunsland Coppice and Wards Coppice) south of Furzeley Corner.</p> <p>Further access points to the road network may be required.</p> <p>Further along route there appears to be habitat corridors joining sections of ancient woodland and these would need to be cleared if open cut option is used. This would also form a permanent wayleave where no major vegetation would be allowed to grow to protect the pipeline and maintain access.</p> <p>The corridor section goes straight through a solar farm which is approximately 850m long. A trenchless technique would require clearing a section of solar panels and associated infrastructure to allow access and construction from the intermediate locations.</p> <p>An open cut solution would require the whole wayleave to be cleared of panels and associated infrastructure.</p> <p>A route through Furzeley Golf Course then heading West along the Southern boundary of Creech Wood would avoid the solar farm but still involve either removing some solar panels and infrastructure to allow an open cut option or a trenchless solution to get from the golf course to the West of the solar farm.</p> <p>There may also be potential risks associated with accessing the pipeline for maintenance.</p> |
| Hydraulics       | <p>There are no major elevation changes, with the possible exception of any trenchless sections. There are no constraints relating the hydraulics of the corridor section.</p>   |
| Landscape        | <p>The corridor section is within the Forest of Bere Landscape Character Area (LCA) characterised as a secluded landscape comprising pastures and woodland. Construction of the pipeline route has the potential to impact the tranquillity of the landscape and result in the temporary loss of woodland.</p> <p>There is potential for limited impacts to the visual amenity of residential receptors in proximity of the corridor section. The corridor section additionally intersects Allan King Way and Wayfarer’s Walk long distance routes where there is potential for intrusive works to disrupt the appreciation of views during construction.</p>  |
| Ecology          | <p>The corridor section crosses the River Wallington which is functionally linked to the Portsmouth Harbour Special Protection Area and Ramsar in two locations. Impacts to the hydrology of the watercourse has the potential to impact these designated sites. Trenchless crossing of the river would avoid these impacts.</p> <p>The corridor section intersects multiple priority habitats: floodplain grazing marsh, deciduous woodland, lowland meadows, fen marsh and swamp, as well as intersecting a</p>  |

| Topic             | Open Cut Route Constraints   |
|-------------------|--|
|                   | <p>number of Sites of Importance for Nature Conservation. Some intersections will be unavoidable within the proximity of the River Wallington, east of Beckford Lane.</p> <p>The corridor section route is flanked by ancient woodland in parts. There is a section where the corridor section passes through a pinch point between two areas of ancient woodland where it would not be feasible to provide a minimum of 15m buffer as advised by Natural England and the Forestry Commission (see <i>Ancient woodland, ancient trees and veteran trees: advice for making planning decisions</i>, 2022). Given the pipeline would be laid within a trench, there will be direct impacts to the root systems of trees within the ancient woodland. To avoid this impact, a tunnel would be required given the depth and distance a trenchless solution would be needed for. Permanent tunnel shafts would have a large land take impact, and a permanent access road would be required. There is currently no road access to this location and therefore a route of approximately 1 km would be required. A tunnelled option would result in significant construction activity in the proximity of ancient woodland and construction of the tunnel has the potential to pose further indirect impacts through polluting the ground and ground water.</p> |
| Heritage          | <p>No nationally designated heritage sites within the corridor section. There are multiple grade II listed heritage assets located north of the northern section of the corridor section. Mitigation would be required to avoid impacts to the setting and character of these assets.</p> <p>The Chichester to Bitterne Roman Road intersects the corridor section. There is potential for buried archaeology in this area.</p>  |
| Water Quality     | <p>The east of the corridor section is within Source Protection Zone 1, and the west of the corridor section is within Source Protection Zone 2. Mitigation will be required to ensure there are no impacts to groundwater during construction.</p> <p>The corridor section crosses multiple rivers along the corridor section but these are not sensitive, standard mitigation will be required to ensure impacts to the geomorphology of the watercourses are avoided and sediment supply is prevented. Trenchless crossing of watercourses would reduce these risks.</p>  |
| Flood Risk        | <p>South of Hipley, the corridor section runs through flood zone 2 and 3 for a distance of approximately 250 m, alongside the River Wallington. Trenchless crossing of the river can be utilised but this is unlikely to stretch across the length of the flood risk areas. South of the intersection, the corridor section runs adjacent to flood zone 2 and 3. In line with the sequential test, there are other corridor sections with less of an interface with high risk flood zones.</p>   |
| Geology and Soils | <p>No impact on geologically designated sites.</p> <p>No sources of contamination within the corridor section have been identified.</p> <p>The length of the corridor section runs through Grade 4 agricultural land, based on the Agricultural Land Classification. Grade 4 land is categorised as poor quality agricultural land. This land does not constitute the Best and Most Versatile (BMV) agricultural land, which falls in grades 1 to 3a.</p>  |
| Socio-economics   | <p>The corridor section intersects with Furzeley Golf Course. Construction of the pipeline could result in land take from the golf course.</p>   |

| Topic                 | Open Cut Route Constraints   |
|-----------------------|--|
|                       | Construction through the solar farm will be complicated and compensation may be required if there is disruption to the operation of the site.  |
| Planning              | There is an existing solar farm within the corridor section at Furzeley Corner. We would need to agree an interface with this development.   |
| Special Category Land | <p>There is concern around the potential land take at the golf course. Engagement will be required to agree arrangements during construction and potentially provision of replacement land.</p> <p>There are implications relating to construction of the pipeline through the solar farm. There is limited opportunity to route around the solar farm given this would involve routing through either ancient woodland to the south, or Furzeley Golf Course and land owned by the Department for Environment, Food and Rural Affairs (Defra) to the north.</p> |

## Conclusion

The intersection with the solar park at Furzeley Corner presents significant constructability risks, given there is no opportunity to route around this site as ancient woodland lies to the south. To the north lies Furzeley Golf Course and Defra owned land. Therefore, there would potentially be a need to provide replacement land as Crown land would be affected. There would be a potential need for extensive lengths of tunnelling or trenchless solutions.

Another significant constraint is the proximity to ancient woodland at a pinch point in the corridor section, where there is potential for direct impacts. The dNPS requires avoiding loss or deterioration of ancient woodland unless there are wholly exceptional reasons. To avoid this impact, a tunnel would be required given the depth and distance a trenchless solution would be needed for. Permanent tunnel shafts would have a large land take impact, and a permanent access road would be required. There is currently no road access to this location and therefore a route of approximately 1 km would be required. A tunnelled option would result in significant construction activity in the proximity of ancient woodland.

Other constraints are related to the presence of priority habitats and impacts on functionally linked habitat within the Portsmouth Harbour Special Protection Area and Ramsar, which are unavoidable.

Due to the topography of this route, there is increased likelihood of requiring additional permanent above ground plant further along the route. As a result of the constructability challenges, environmental constraints and requirement for further permanent above ground plant, this corridor section should not currently be progressed.

### 4.6.4. Corridor Section W

Corridor Section W runs from Creech Farm west of Furzeley Corner before intersecting the B2177 and joining with Corridor Section R near Carmans Farm to the west.

Maps of Corridor Section W can be viewed on Sheets 7 and 15 of the Book of Maps.

**Table 33 - Corridor Section W constraints overview**

| Topic            | Constraints   |
|------------------|---|
| Constructability | <p>At the east of the corridor section, a crossing of Trampers Lane is required. Given that this road is narrow, a road closure will be required. The corridor section will come into close proximity of residential properties on the west side of Trampers Lane and further west, on Firgrove Lane.</p> <p>Construction is required on Southwick Road (B2177) which is a busy road with various junctions. A lane closure would be required which would cause disruption. There is an off-road option north of North Boarhunt which could be utilised to reduce the distance construction is required on Southwick Road. West of Hundred Acres, there is an option for the corridor section to continue along Southwick Road to the junction with the A32 in Wickham, or route through open fields north of Southwick Road (within the South Downs National Park).</p> <p>Once the A32 has been crossed by both options, a crossing of the River Meon is required. Trenchless crossing would be required, and woodland would need to be cleared to allow for shaft construction.</p> <p>The original corridor section runs north adjacent to a disused railway, which is crossed at Northfields Farm House. There is an option to route west earlier which could be utilised to minimise the intersection with the South Downs National Park in this section. Trenchless crossing of the disused railway will be required for both options.</p> |
| Hydraulics       | <p>The corridor section is constrained by the Forest of Bere and residential properties, which forces the corridor section through undesirable changes in elevation, including a local high point in the centre of the corridor section, as well as a number of bends which is hydraulically undesirable, leading to higher energy losses. The corridor section crosses the Meon Valley to the west where there is a steep level change. An intermediate pumping station is required before the elevation increase within this corridor section.</p>  |
| Landscape        | <p>This corridor section intersects the South Downs National Park. Given the dNPS requires looking at options to develop the Project outside of the National Park in the first instance, the intersection presents significant risks to the consentability of this corridor section. Given there are other corridor sections that do not intersect the National Park, these should be preferred over this corridor section.</p> <p>There is difficulty in identifying alternatives as part of this corridor section that go outside of the South Downs National Park, as the South Downs National Park is adjacent to Wickham. Therefore, an alternative route would have to divert around Wickham.</p>   |
| Ecology          | <p>The corridor section crosses the River Meon which is upstream of the Southampton and Solent Water Ramsar. It is also compensatory habitat under a Southern Water drought scheme being delivered separate to this Project. Any hydrological impacts to the River Meon could potentially impact the Ramsar site. Trenchless crossing of the River Meon would reduce the potential for impacts on it, and if it is extended across the floodplain grazing marsh then it can avoid impacts to this functionally linked habitat adjacent to the river. Further assessment is required to ensure trenchless crossing of the River Meon would not pose hydrogeological impacts to the watercourse or the functionally linked floodplain grazing marsh.</p>  |

| Topic                 | Constraints   |
|-----------------------|---|
|                       | There is potential for habitat losses within this corridor section associated with the corridor section intersecting priority habitats, the South Downs National Park and Sites of Importance for Nature Conservation. Land take from these sites should be minimised.  |
| Heritage              | <p>The corridor section is in the vicinity of grade II and II* listed buildings, however these are not within the corridor section. The southern corridor section which continues along Southwick Road to the A32 junction will be in closer proximity to listed buildings, including St Nicholas’s Church (grade II* listed), as well as Wickham Conservation Area. Mitigation could be required for any potential settings impacts.</p> <p>Much of the corridor section traverses undeveloped land where there is potential for buried archaeology.</p> |
| Water Quality         | <p>Trenchless crossing of the River Meon would reduce the potential for impacts to the hydrology and geomorphology of the river.</p> <p>The pipeline route would be preferred near the River Meon, as this keeps to the west of the corridor section, away from the floodplain.</p>   |
| Flood Risk            | The corridor section crosses flood zone 3 when crossing the River Meon. Mitigation will be required to manage flood risk.   |
| Geology and Soils     | <p>No impact to geologically designated sites.</p> <p>The northern off-road route at North Boarhunt is preferred over routing on the road and the option to route west out of the South Downs National Park earlier is preferred to avoid closed permitted landfill to the north of the other route.</p>  |
| Socio-economics       | <p>Avoiding the B2177 would be preferred by either routing north or south given the disruption that would be caused through construction on this busy route.</p> <p>If the southern corridor section option along Southwick Road to the A32 junction in Wickham is followed, access to St Nicholas Church would be impacted.</p>  |
| Planning              | Given the intersection of the corridor with the South Downs National Park, and the requirements of the dNPS, an alternative corridor section should be progressed.  |
| Special Category Land | <p>There are playing fields and allotments in North Boarhunt that should be avoided if possible.</p> <p>Routing south of the B2177 would involve routing through Wickham Common, an area of common land. Under the Commons Act 2006, areas of common land are safeguarded to ensure the special qualities of the land are protected.</p>  |

## Conclusion

There are significant constraints related to the intersection with the South Downs National Park, which is afforded significant protection in the dNPS. Given that there are other alternatives, this corridor section is not currently being progressed.

#### 4.6.5. Corridor Section N

Corridor Section N is an alternative to Corridor Section W which routes through the South Downs National Park from Corridor Section S to Corridor Section V.

Maps of Corridor Section N can be viewed in Sheet 5, 6 and 14 of the Book of Maps.

**Table 34 - Corridor Section N constraints overview**

| Topic            | Constraints   |
|------------------|---|
| Constructability | <p>This corridor section is located in mostly open agricultural land which lends itself to an open cut method.</p> <p>Along the corridor section there are minor and busy roads for the pipeline to cross, which can be constructed using open cut with a full road closure for the minor roads, and a lane closure for the major roads of suitable width.</p> <p>There are numerous locations where HV overhead cables are present so the route would need to be selected to mitigate the risk of crossing these.</p> <p>For the northern option, the River Meon would need to be crossed using a pipe jack technique due to the distance of the crossing, with a shaft constructed either side of the river. The western shaft would be situated in Wickham Park Golf Course.</p>   |
| Hydraulics       | <p>This corridor section is hydraulically similar to the Corridor Section W, in that the pipeline will pass over a local high point in between the River Wallington valley and the River Meon valley. A key difference is that this corridor section places the pipeline closer to the deepest parts of the River Wallington valley and runs alongside the River Wallington for some distance. Due to the relatively short distance to the start of the route, this key difference is unlikely to require additional intermediate pumping. However, it may increase the pressure requirements in some scenarios. A second key difference is this corridor section is predominantly routed through fields, avoiding the requirement for a large number of pipeline bends as found within Corridor Section W which is routed via the road network in parts, this may alleviate some of the pressure requirements.</p> |
| Landscape        | <p>The corridor section intersects the previously local designated landscape of Winchester (now considered valued) Meon Valley, and Forest of Bere Area of Special Landscape Quality, as well as the Forest of Bere East and Meon Valley Landscape Character Areas. There is potential for temporary impacts to landscape defining features and tranquility as a result of construction activity.</p> <p>It also passes Allen King Way, and Pilgrims Trail Long Distance Path and ends next to the Meon Valley trail.</p> <p>This corridor section would be preferable to the Corridor Section W as it would avoid the South Downs National Park.</p> <p>There would also be a need to avoid areas of woodland.</p>   |
| Ecology          | <p>There are numerous large areas of deciduous and ancient woodland directly adjacent to the corridor section. There would be no direct impact if buffers between the woodland and the construction and operation of the pipeline are implemented.</p> <p>There are a number of Sites of Importance for Nature Conservation adjacent to the corridor section. There would be no impact assumed if buffers are implemented.</p>  |

| Topic             | Constraints   |
|-------------------|---|
|                   | <p>The corridor section crosses the River Meon, which is upstream of the Southampton and Solent Water Ramsar site. It is also compensatory habitat under the Southern Water drought scheme. Any hydrological impacts to the River Meon could potentially impact the Ramsar site. Trenchless crossing of the River Meon would reduce the potential for impacts on it, and if it is extended across the floodplain grazing marsh then it can avoid impacts to this functionally linked habitat adjacent to the river. Further assessment is required to ensure trenchless crossing of the River Meon would not pose hydrogeological impacts to the watercourse or the functionally linked floodplain grazing marsh.</p> |
| Heritage          | <p>There are no nationally designated heritage assets within the corridor section. Three grade II listed buildings are located in and near to the corridor section. Further assessment is required to evaluate any impact and understand likely mitigation requirements.</p> <p>There are a number of non-designated heritage assets within the corridor section, where construction works have the potential to pose impacts to buried archaeology. Further assessment is required to identify risk.</p>   |
| Water Quality     | <p>There are potential impacts to water quality through sediment supply and contamination during construction on the River Wallington below Southwick, River Meon and an unnamed watercourse at Prior's Hold Farm. Best practice mitigation would be required to avoid impacts.</p> <p>Trenchless crossing of the River Meon will prevent geomorphological and hydrological impacts during construction.</p> <p>The south of the corridor section intersects Source Protection Zone 2c and 3 designated for the Maindell abstraction. There is potential for impacts to groundwater quality as a result of construction activity. Best practice measures would be required to avoid impacts.</p>                      |
| Flood Risk        | <p>As a result of the watercourse crossings within the corridor section, the corridor section intersects flood zone 2 and 3 and is routed through this area for an extended distance. In accordance with the sequential test, other corridor sections should be progressed ahead of this corridor section. Consultation with the EA and local flood authority is required to identify detail flood risk of the area. A localised assessment of topography during the detailed design stage will assist in defining overland flow pathways.</p>  |
| Geology and Soils | <p>No impact on geologically designated sites.</p> <p>There is potential to construction within areas of contamination to impact controlled waters within the corridor section. Ground investigation is required to identify the risk posed by any sources of contamination within or in proximity to the corridor section.</p>   |
| Socio-economics   | <p>The majority of the site is agricultural and therefore there are no major constraints.</p> <p>The crossing of the A32 may temporarily affect access to community services in Wickham</p>   |

| Topic                 | Constraints   |
|-----------------------|---|
| Planning              | Pipeline corridor section runs adjacent to a mobile home park and a number of rural dwellings in the North Boarhunt and Wickham areas. Best construction practice measures should mitigate this impact. |
| Special Category Land | The west of the corridor section is designated as open space by Fareham Borough Council.  |

## Conclusion

This corridor section would route further south than the original corridor section, and therefore reduces the impact on the South Downs National Park. Mitigation would be required to avoid impacts to areas of woodlands and Sites of Importance for Nature Conservation in this area. Trenchless crossing of the river Meon is required to avoid sediment supply to the River Wallington. However, this option is considered preferable to Corridor Section W.

The most significant constraint within this pipeline is the intersection with an area of high flood risk around the River Wallington. There are other corridor sections that have fewer intersections with high-risk flood areas, and in line with the sequential test within the dNPS these should be progressed above this corridor. As such, this corridor is not currently being progressed.

### 4.6.6. Corridor Section T

The corridor section links Corridor Section X and Corridor Section Q. It lies within the South Downs National Park.

The corridor section begins at a point southeast of Furzeley Corner. It heads northwest along Forest Road and crosses Bunker’s Hill. There is an option for the corridor section to route south of Forest Road through Creech Woods. The River Wallington is crossed in multiple locations by the corridor section.

The south and west ends of the corridor section are through open fields where construction can be open cut. At the east of the corridor section, open cut will likely be difficult around Newlands Lane and Furzeley Golf Course as a result of a pond, drainage channels and residential properties.

The corridor section is narrow in several sections as it is routed through pinch points and along the road network. Therefore, a large number of pipeline bends will be required which will be hydraulically undesirable, leading to higher energy losses.

The corridor section cuts through the area where the two sides of Furzeley Golf Course meet at Furzeley Road. There is potential for land take from the golf course and impacts to the access.

Maps of Corridor Section T can be viewed in Sheet 13 and 14 of the Book of Maps.

**Table 35 - Corridor Section T constraints overview**

| Topic            | Constraints  |
|------------------|--|
| Constructability | <p>The south and west ends of the corridor section are through open fields where construction can be open cut. At the east of the corridor section, open cut may be difficult around Newlands Lane and Furzeley Golf Course as a result of a pond, drainage channels and residential properties.</p> <p>The central section of the corridor section passes Creech Woods, there are two corridor section options, the first cuts through Creech Woods between Furzeley Road and Bunkers Hill, the second routes north of Creech Woods, along Forest Road south of</p> |

| Topic         | Constraints   |
|---------------|---|
|               | <p>Denmead. The first option through Creech Woods could not be constructed open cut, given the limited clearance provided by the woodland, and therefore the section would need to be tunnelled. This route would also result in disruption to road users and residents on Bunkers Hill.</p> <p>The second route option would require construction within Forest Road, which is a busy route on a narrow road. There are locations where fields south of the road could be used, but road closures may be required at certain pinch points.</p>   |
| Hydraulics    | <p>Creech Woods is located on a localised hill and avoiding this area reduces the level of elevation change across the corridor section. There is a low level of elevation change throughout the remainder of the corridor section.</p> <p>The corridor section is narrow in several areas as it is routed through pinch points and along the road network. Therefore, a large number of pipeline bends will be required which will be hydraulically undesirable, leading to higher energy losses.</p>  |
| Landscape     | <p>There is potential for the loss of woodland and trees throughout the corridor section which define the character Forest of Bere Landscape Character Area. The pipeline route should be sited so that it avoids the removal of trees.</p> <p>Construction activities could adversely impact the visual amenity of residential receptors in the proximity of the corridor section.</p> <p>Users of the Allan King Way and Wayfarer’s Walk long distance routes could experience a disruption to the views during construction.</p> <p>There is 1 Tree reservation Order (TPO) group and 16 individual TPO trees located on the boundary of the corridor section. These areas should be avoided by the pipeline route to avoid potential damage to trees.</p> |
| Ecology       | <p>The River Wallington is crossed in multiple locations by the corridor section. The watercourse is upstream of Portsmouth Harbour Special Protection Area and Ramsar. Any potential impacts to the hydrology of the river could impact the designated sites within Portsmouth Harbour. Impacts can be reduced through trenchless crossings of watercourses and the adjacent floodplain grazing marshes designated as priority habitat.</p> <p>The corridor section through Creech Woods would intersect with Creech Walk East Site of Importance for Nature Conservation. There is potential for a temporary loss of habitat.</p>   |
| Heritage      | <p>No impacts on any heritage assets within the corridor section. There is potential for buried archaeology in areas of open, undisturbed ground given their lack of development</p>  |
| Water Quality | <p>There are four main river crossings within the corridor section. To avoid impacts on the hydrology and geomorphology of these rivers, trenchless crossings would be made.</p> <p>The corridor section is within Source Protection Zone 1 at Worlds End and Furzeley Corner. Mitigation will be required to ensure there are no impacts to groundwater during construction.</p>   |
| Flood Risk    | <p>The corridor section crosses flood zone 2 and 3 areas around river crossing sites, and the majority of the north corridor section along Forest Road is directly south of flood zone</p>  |

| Topic                 | Constraints   |
|-----------------------|---|
|                       | 2 and 3. In line with the sequential test referenced in the dNPS, other alternatives have less interfaces with high flood risk areas and therefore should be pursued above this corridor section.   |
| Geology and Soils     | No impact on geologically designated sites.<br>No significant sources of contamination within or around the corridor section.<br>Construction within the road sections could encounter sources of contamination.  |
| Socio-economics       | There is potential for disruption to residential properties to the south of Denmead adjacent to the corridor section route as a result of construction activity in the road network, which could result in likely indirect air quality, noise and vibration impacts.<br>The corridor section cuts through the area where the two sides of Furzeley Golf Course meet at Furzeley Road. There is potential for land take from the golf course and impacts to the access.<br>It would be preferred to minimise construction on Forest Road given the potential for significant disruption to this key route. |
| Planning              | The corridor section intersects the Denmead Waterlooville Settlement Gap Policy Area designated by the Denmead Neighbourhood Plan. Construction should aim to limit impacts to the rural character of this area.  |
| Special Category Land | The corridor section route through Creech Woods intersects land owned by Defra and is Crown Land.<br>Given the potential for disruption to Furzeley Golf Course, which has been identified as green space, consultation will be required to identify suitable arrangements during construction.   |

## Conclusion

There are constructability challenges in this corridor section in relation to in-road works. Routing south of Forest Road through Creech Woods would result in adverse ecology and landscape impacts. Additionally, Creech Woods is owned by Defra. The alternative to this is routing along Forest Road south of Denmead, which could require road closure which will generate disruption to the road network posing impacts for the wider community in this area. This corridor section would also result in a route directly into the South Downs National Park and for this reason this corridor section is not being taken forward at this stage.

### 4.6.7. Corridor Section X

The corridor section links Corridor Section S or T to Corridor Section Z. Part of the corridor section intersects with the South Downs National Park between Budden’s Lane and Bishop’s Wood Road.

The corridor section begins at Newtown and heads north west and crosses Hundred Acres Road. It continues north west, following Liberty Road and Heath Road, crosses the A32 west of Soberton Heath, the River Meon, the Winchester Road (B2177), the River Hamble and joins Corridor Section Z at a point south west of Walthams Cross.

At the southeast of the corridor section, there are two corridor section sub-options have been developed through Newtown:

- Option X1 routes along Church Road, which is a narrow road passing a church and a school, and a road closure would potentially be required. East runs close to overhead power lines and tracks the route of a watercourse which drains into a sensitive system related to the River Hamble. A proposal to move this further east would encroach on playing fields in Newtown
- Option X2 crosses Church Road and routes west across open fields, crossing Hundred Acres Road and routing north to Liberty Road.

After the corridor section crosses the Winchester Road (B2177), two corridor section sub-options have been developed:

- X3 routes south along Bishop’s Wood Road and Forest Road. This would pose disruption to this road route.
- X4 routes north, south of Swanmore, and heads across open fields however the elevation changes as a result of a hill to the north. This would cross a playing field in Swanmore.

Maps of Corridor Section X can be viewed on Sheets 8, 9, 15 and 16 of the Book of Maps.

**Table 36 - Corridor Section X constraints overview**

| Topic            | Constraints   |
|------------------|---|
| Constructability | <p>At the south east of the corridor section, there are two route options through Newtown. One option routes along Church Road, which is a narrow road passing a church and a school. A road closure will be required. The second option crosses Church Road and routes west across open fields, crossing Hundred Acres Road and routing north to Liberty Road where this options joins back to the first option.</p> <p>The route follows Liberty Road and Heath Road, which are narrow roads where road closures would be required to accommodate construction work.</p> <p>There is a significant level difference between Heath Road to the A32, open cut would be difficult as a result of the topography. A road closure would be required on Budden’s Lane.</p> <p>At the end of Budden’s Lane, the corridor section crosses a disused railway line and the A32, which are at different levels. Construction would need to take place under the railway. There is limited place for shafts as a result of woodland and residential properties.</p> <p>A trenchless crossing of the River Meon is required west of the A32.</p> <p>East of Waltham Chase, there are two options for the pipeline route. The first option routes south along Bishop’s Wood Road and Forest Road. This would pose disruption to this road route. The second option routes north, south of Swanmore, is across open fields. This would cross public open space in Swanmore.</p> <p>The north west of the corridor section requires trenchless crossing of the River Hamble. The route will need to be sited to avoid intersections with overhead pylons.</p> <p>The west of the corridor section, after the Meon Valley is less constrained allowing for greater flexibility in pipeline routing</p> |
| Hydraulics       | <p>The east of the corridor section follows the local road network, which will require several bends and is undesirable for hydraulics. The corridor section reaches the highest point of the northern corridor section routes.</p>   |

| Topic     | Constraints  |
|-----------|--|
|           | <p>South of Bishop’s Waltham, the southern corridor section option would be preferred to avoid elevation changes as a result of a hill to the north.</p> <p>An intermediate pumping station will be required in the middle of the corridor section to lift flows from the Meon Valley after gravitating from Break Pressure Tank 3.</p>  |
| Landscape | <p>The corridor section will intersect the South Downs National Park for a section along Budden’s Lane and Bishop’s Wood Road.</p> <p>The dNPS requires the National Park to be avoided unless there are exceptional circumstances. Given there are other corridor sections that do not intersect the National Park, these should be preferred over this corridor section.</p> <p>There are 3 TPO groups and 5 individual TPO trees within the corridor section. Construction works should avoid the removal of these trees.</p>   |
| Ecology   | <p>There are a number of large areas of ancient woodland adjacent to the corridor section within the South Downs National Park. Construction works should not result in the loss of any areas of ancient woodland.</p> <p>The corridor section crosses the River Hamble which is upstream of the Solent and Southampton Water Ramsar. Hydrological impacts to the river have the potential to indirectly impact the Ramsar site. The corridor section also intersects with floodplain grazing marsh associated with the River Hamble and River Meon. Trenchless crossing of the river will avoid impacts. The River Meon is also compensatory habitat under a Southern Water drought scheme being delivered separate to this project. Any hydrological impacts to the River Meon could potentially impact the Ramsar site. Trenchless crossing of the River Meon would reduce the potential for impacts on it, and if it is extended across the floodplain grazing marsh then it can avoid impacts to this functionally linked habitat adjacent to the river. Further assessment is required to ensure trenchless crossing of the River Meon would not pose hydrogeological impacts to the watercourse or the functionally linked floodplain grazing marsh. Turtle Dove population(s) have been identified within the corridor section. Removal of dense hedgerows and scrub within the proximity of these areas should be avoided.</p> <p>There is potential for significant populations of barbastelle bats within the Meon Valley and Bere Forest. Loss of habitats as a result of construction will impact these protected species.</p> <p>The corridor section intersects Bishops Waltham Branch Line Local Nature Reserve and a number of Sites of Importance for Nature Conservation. There is potential for loss of habitats within these sites.</p> |
| Heritage  | <p>There are no designated heritage assets within the corridor section.</p> <p>Bishop’s Waltham Palace and Fishponds scheduled monument, and the wider Bishop’s Waltham conservation area is adjacent to the northwest of the corridor section. There are potential for impacts relating to the setting of these assets and buried archaeology.</p> <p>There is potential for buried archaeology around water crossings within the corridor section.</p>   |

| Topic                 | Constraints   |
|-----------------------|---|
| Water Quality         | <p>There are several watercourse crossings within the corridor section. The most sensitive is the River Meon, which is a chalk river sensitive to sediment supply. Interaction with the river and its floodplain should be minimised through trenchless construction.</p> <p>The corridor section crosses a Source Protection Zone 1 in Newtown and south of Soberton Heath. Mitigation will be required to ensure there are no impacts to groundwater during construction.</p> <p>The River Hamble requires crossing, and a branch of this river is crossed multiple times by this corridor section south of Bishop’s Waltham. Trenchless construction may be required for longer sections within this wetland area.</p> |
| Flood Risk            | <p>The corridor section intersects flood zone 3 when crossing the River Meon, the River Hamble and a larger wetland area south of Swanmore. Flood risk will need to be managed during construction.</p>   |
| Geology and Soils     | <p>There is a water treatment works historic landfill adjacent to the west of Bishops Waltham Railway Path within the corridor section. Ground investigation would be due to proximity of the landfill and the potential for contamination.</p> <p>South of Bishop’s Waltham, the southern option is preferred to avoid potential contamination associated with a water treatment works within the northern option.</p>   |
| Socio-economics       | <p>The church and school on Church Road in Newtown will be significantly impacted if road closures are required.</p> <p>There is potential for significant disruption to the local community as a result of road closures on Liberty Road and Heath Road.</p> <p>The corridor section crosses a playing field south of Swanmore. Mitigation through routing to avoid this site is required.</p>   |
| Planning              | <p>There are allocated housing sites that have been developed at Swanmore, therefore there are sensitive residential receptors in this area.</p> <p>The corridor section runs in close proximity to developed housing allocation south of Bishop’s Waltham.</p> <p>The corridor section crosses the site of an application for a solar farm south of Bishop’s Waltham. The northern route is preferred to avoid this potential future development.</p>  |
| Special Category Land | <p>Public open space will be impacted at the playing fields in Swanmore.</p>  |

## Conclusion

There are significant constraints related to the intersection with the South Downs National Park. The dNPS requires us to look to develop the Project outside of the National Park in the first instance, therefore, this corridor section is not being progressed as there are other alternatives available outside of the National Park.

Additionally, there are significant constraints related to ecology and constructability within this corridor section.

## 4.7. Above Ground Plant Zones Evaluation Outcomes

The book of maps which accompanies the Scheme Development Summary provides plans of all the above ground plant zones described below.

### 4.7.1. Intermediate Pumping Station 1 Zone

For routes through Corridor Sections S, W and Y, an intermediate pumping station at either this location or the Intermediate Pumping Station 5 Zone would be required.

The pumping station would need to be located at the east of Corridor Section W to account for the level changes at the west of the corridor section.

The zone is located directly adjacent to the Goathouse Complex Site of Importance for Nature Conservation between an ancient woodland (Goathouse Coppice) and Goathouse Farm House. The zone is within the Forest of Bere Local Character Area and is in the proximity of the River Wallington.

The zone for Intermediate Pumping Station 1 can be seen in Sheet 16 of the Book of Maps.

**Table 37** - Intermediate Pumping Station 1 Zone constraints overview

| Topic            | Constraints   |
|------------------|---|
| Constructability | <p>Constrained area between an ancient woodland (Goathouse Coppice) and Goathouse Farm house, which is further restricted by the need to avoid 15 metre protection zone.</p> <p>Access route would need to be created from Goathou/Trampers Lane. For construction this would probably have to be separate to the farm house access road.</p> <p>During construction, traffic management may be necessary as Goathouse/Trampers Lane is very narrow.</p>  |
| Hydraulics       | <p>For routes through Corridor Sections S, W and Y, an intermediate pumping station at either this location, or the Intermediate Pumping Station 5 zone will be required.</p> <p>The pumping station is located at the east of the corridor section to account for the level changes at the west of the corridor section.</p>   |
| Landscape        | <p>The site is immediately adjacent to the boundary of the South Downs National Park and could therefore potentially affect its setting. The dNPS requires development to avoid compromising the purposes of nationally designated areas, and such projects should be designed sensitively.</p> <p>The site is within the Forest of Bere Landscape Character Area, which is noted for its tranquillity, and therefore there is potential for construction activity to impact on the tranquillity of the area.</p> |
| Ecology          | <p>There is potential for damage or loss of ancient woodland trees directly adjacent to the site. Mitigation is required during construction to avoid any potential damage to ancient woodland.</p> <p>Goathouse Complex Site of Importance for Nature Conservation is directly adjacent to the site. Standard mitigation and construction buffers are required to avoid impacts to this site through construction pollution.</p>   |
| Heritage         | No issues of note.  |

| Topic                 | Constraints   |
|-----------------------|---|
| Water Quality         | The site is in the proximity of the River Wallington, therefore the supply of sediments and contaminants should be avoided during construction. |
| Flood Risk            | No issues of note.  |
| Geology and Soils     | No issues of note.  |
| Socio-economics       | No issues of note.  |
| Planning              | No issues of note.  |
| Special Category Land | No issues of note.  |

## Conclusion

The site is located immediately adjacent to the South Downs National Park and could therefore affect its setting. The dNPS requires development to avoid impacts when located outside the boundary of a National Park. There is also proximity to ancient woodland and a Site of Importance for Nature Conservation. This site is not being progressed.

### 4.7.2. Intermediate Pumping Station 2 Zone

This pumping station in Corridor Section X is required to lift flows after the break pressure tank further east in the corridor section. Moving the pumping station along the corridor section in either direction may increase the lift requirement due to local changes in elevation.

The pumping station is located at the east of the corridor section to account for the level changes at the west of the corridor section.

The zone is located directly South of Hillpound between Gravel Hill and Mislingford Road within the Forest of Bere West Landscape Character Area and within the setting of the South Downs National Park.

Overhead high voltage cables run across the North of this zone and ancient woodland trees are adjacent to the zone. Users of the Pilgrims Trail would overlook the zone.

The zone is within the River Hamble Urban Waste Water Treatment Directive Catchment and is in the proximity of the Moors Stream.

The zone for Intermediate Pumping Station 2 can be seen in Sheet 15 of the Book of Maps.

**Table 38** - Intermediate Pumping Station 2 Zone constraints overview

| Topic            | Constraints   |
|------------------|---|
| Constructability | <p>Access route from Gravel Hill, Mislingford Road or Bishop's Wood Road and would need to give adequate vision for entering and exiting.</p> <p>Overhead high voltage cables running across the North of this zone would mean the Intermediate Pumping Station would need to be built in the southern section.</p> |

| Topic                 | Constraints  |
|-----------------------|--|
|                       | Permanent access and road would need to be constructed.  |
| Hydraulics            | This pumping station is required to lift flows after the break pressure tank further east in the corridor section. Moving the pumping station along the corridor section in either direction may increase the lift requirement due to local changes in elevation.  |
| Landscape             | The site is within proximity to the South Downs National Park.<br>The corridor section is within the Forest of Bere West Landscape Character Area, and construction could impact the landscape through loss of woodland and the addition of a new built form.<br>There is potential for impacts to the views of residents on Ochardelea, Gravel Hill and Mislingford Road, as well as the views from Pilgrims Trail. |
| Ecology               | There is potential for loss of lowland mixed deciduous woodland priority habitat within the site. The pumping station should be sited to avoid this area.<br>There is potential for damage or loss of ancient woodland trees directly adjacent to the site. Mitigation is required during construction to avoid any potential damage to ancient woodland.  |
| Heritage              | No issues of note  |
| Water Quality         | The site is in the proximity of the Moors Stream. Construction works should avoid the supply of sediment and contaminants into the river.<br>The site is within the River Hamble Urban Waste Water Treatment Directive Catchment. Waste water and surface water during construction should be managed through standard mitigation.   |
| Flood Risk            | No issues of note  |
| Geology and Soils     | No issues of note  |
| Socio-economics       | The pumping station zone is adjacent to residential receptors on Orchardlea. Siting the pumping street away from these receptors would avoid potential impacts.  |
| Planning              | No issues of note  |
| Special Category Land | No issues of note  |

## Conclusion

This site is within proximity to the National Park with the potential to effect its setting. The site also has the potential for impacts on ancient woodland directly adjacent to it. Given there are better performing corridor sections available, this site is not currently being progressed.



### 4.7.3. Intermediate Pumping Station 3 Zone

Intermediate Pumping Station 3 is one option for the intermediate pumping station required in Corridor Section V.

The zone for Intermediate Pumping Station 3 can be seen in Sheet 7 of the Book of Maps.

**Table 39** - Intermediate Pumping Station 3 Zone constraints overview

| Topic             | Constraints   |
|-------------------|---|
| Constructability  | Open agricultural land, straight forward access route from Titchfield Lane although access would need to give adequate vision for entering and exiting.<br>During construction traffic management may be necessary as Titchfield Lane is fairly narrow and quite busy.  |
| Hydraulics        | If a smaller pipeline diameter option is chosen, or the break pressure tank in Corridor Section R cannot be sited in an optimal location, an intermediate pumping station may be required to lift flows from the low point of the of the unavoidable Meon Valley crossing. An intermediate pumping station may not be required in this corridor section if a larger pipeline diameter option is chosen. |
| Landscape         | The corridor section is within the Forest of Bere Local Character Area, characterised by its woodland area. During construction, loss of woodland should be avoided.<br>There is potential for limited adverse impacts to the visual amenity of residential receptors on Titchfield Lane. The pumping station should be sited so impacts are reduced.   |
| Ecology           | No constraints identified   |
| Heritage          | Little Park Mansions grade II listed is directly south of the zone. Construction and operation of the site could impact the setting and character of this asset.<br>The Chichester to Betterne Roman road runs directly adjacent to the south of the site. There is potential for buried archaeology in this area. Therefore, further assessment is required to assess risks.                           |
| Water Quality     | The site is within the Hamble Estuary Urban Waste Water Treatment Directive Catchment. Waste water and surface water during construction should be managed through standard mitigation.   |
| Flood Risk        | No constraints identified   |
| Geology and Soils | No constraints identified   |
| Planning          | No constraints identified   |
| Socio-economics   | No constraints identified   |

| Topic                 | Constraints               |
|-----------------------|---------------------------|
| Special Category Land | No constraints identified |

## Conclusion

There is a Roman road in the immediate proximity of the site. Therefore, there is potential for buried archaeology within the site. Detailed siting within this zone should seek to maximise the distance between residential properties and infrastructure, and minimise any loss of woodland. There are no significant environmental impacts associated with this site and therefore the Intermediate Pumping Station 3 Zone is being taken forward.

### 4.7.4. Intermediate Pumping Station 4 Zone

Intermediate Pumping Station 4 is the alternative intermediate pumping station to Intermediate Pumping Station 3 in Corridor Section V.

The zone for Intermediate Pumping Station 4 is shown on Sheet 7 of the Book of Maps.

**Table 40** - Intermediate Pumping Station 4 Zone constraints overview

| Topic            | Constraints  |
|------------------|--|
| Constructability | <p>Open agricultural land, straight forward access route from Titchfield Lane although access would need to give adequate vision for entering and exiting. Siting of access point would need to be carefully positioned due to the junction opposite and various smaller road junctions in vicinity.</p> <p>During construction traffic management may be necessary as Titchfield Lane is fairly narrow and quite busy.</p>  |
| Hydraulics       | <p>If a smaller pipeline diameter option is chosen, or the break pressure tank in Corridor Section R cannot be sited in an optimal location, an intermediate pumping station may be required to lift flows from the low point of the of the unavoidable Meon Valley crossing. An intermediate pumping station may not be required in this corridor section if a larger pipeline diameter option is chosen.</p>   |
| Landscape        | <p>The site is within a valued landscape (previous Winchester Lower Meon Valley SLQ). This area is described as a wooded enclosed landscape. Construction footprint should be minimised to avoid the potential for loss of woodland and trees which define the landscape quality and character.</p> <p>There is potential for adverse impacts to the visual amenity of residential receptors on Titchfield Lane. The pumping station should be sited so impacts are reduced.</p> |
| Ecology          | <p>Quob Copse Site of Importance for Nature Conservation is within 30 metres of the site. Standard mitigation is required to avoid impacts to this site through construction pollution.</p>  |
| Heritage         | <p>Little Tapnage Farmhouse grade II listed is directly south of the zone. Construction and operation of the site could impact the setting and character of this asset.</p>  |

| Topic                 | Constraints  |
|-----------------------|--|
| Water Quality         | The site is approximately 500 m from the River Meon, which is a chalk river sensitive to fine sediment supply and contaminants. Mitigation is required to avoid the polluting of this watercourse during construction. |
| Flood Risk            | No constraints identified.   |
| Geology and Soils     | The Quob Copse historic landfill is located adjacent to the site. There is potential for the mobilisation of contaminants during construction works.   |
| Planning              | No constraints identified.   |
| Socio-economics       | No constraints identified.   |
| Special Category Land | No constraints identified.   |

## Conclusion

This site is adjacent to a landfill site and therefore there is potential for ground contamination constraints that would require appropriate controls and mitigation. A Grade II Listed farmhouse lies to the south. It would be preferable to site away from the nearby residential receptors to minimise impacts on residential properties. There are no significant impacts associated with this site and therefore the Intermediate Pumping Station 4 zone is being taken forward.

### 4.7.5. Intermediate Pumping Station 5 Zone

Intermediate Pumping Station 5 is an intermediate pumping station within Corridor Section Y. It would only be required for routes through Corridor Sections S, W and Y.

The zone for Intermediate Pumping Station 5 is shown on Sheet 7 of the Book of Maps.

**Table 41** - Intermediate Pumping Station 5 Zone constraints overview

| Topic            | Constraints  |
|------------------|--|
| Constructability | <p>Straight forward access route from Curdrige Lane, although access would need to give adequate vision for entering and exiting.</p> <p>During construction, traffic management may be necessary as Curdrige Lane is fairly narrow and quite busy.</p> <p>Permanent access and road would need to be constructed.</p> |
| Hydraulics       | For routes through Corridor Sections S, W and Y, an intermediate pumping station is required at either this location or the Intermediate Pumping Station 1 zone.   |
| Landscape        | There is potential for impacts to farmland and field boundaries which contribute to the Forest of Bere West Landscape Character Area. Construction footprint and loss of these features should be minimised.   |

| Topic                 | Constraints  |
|-----------------------|--|
|                       | There is potential for limited impacts to the views of residential receptors on Curdrige Lane during construction and operation.   |
| Ecology               | No constraints identified  |
| Heritage              | Goodman’s Farmhouse grade II listed building is adjacent to the site to the east. There is potential for impacts to the setting and character.   |
| Water Quality         | The site is in the proximity of the river Hamble, therefore the supply of sediments and contaminants should be avoided during construction.<br>The site is within the River Hamble Urban Waste Water Treatment Directive Catchment. Waste water and surface water during construction should be managed through standard mitigation. |
| Flood Risk            | No constraints identified  |
| Geology and Soils     | There is a former sandpit at the site location which is not designated as a landfill. The ground may have been backfilled with unknown material where there will be potential for contamination.<br>The site is adjacent to an industrial estate where there may be existing sources of contamination.                               |
| Planning              | No constraints identified  |
| Socio-economics       | No constraints identified  |
| Special Category Land | No constraints identified  |

## Conclusions

Limited constraints have been identified with the exception of potential limitations related to siting and design, due to the proximity of residential receptors and a Grade II Listed Building. Potential contamination risks and the proximity of the River Hamble would need to be managed through appropriate environmental controls. This site is not currently being progressed as it is not required for the corridor sections taken forward as part of the preferred option.

### 4.7.6. Break Pressure Tank 1 Zone

Break Pressure Tank 1 is one option for the break pressure tank that is required in Corridor Section R.

The zone for Break Pressure Tank 1 can be seen in Sheet 3 of the Book of Maps.

**Table 42** - Break Pressure Tank 1 Zone constraints overview

| Topic                 | Constraints   |
|-----------------------|---|
| Constructability      | <p>Temporary and permanent access would potentially pass through an existing Portsmouth Water underground raised reservoir site located north of Portsdown Hill Road, although some alterations to the junction would be required.</p> <p>Natural slope of the ground lends itself to cutting into the slope and shielding any above ground structures from view.</p>   |
| Hydraulics            | <p>This is the first highest point along the preferred corridor and potentially the highest point throughout the corridor sections. As such, this location is conducive to the siting of a break pressure tank. The elevation at this point is sufficient to enable gravity flows for the remainder of the downstream pipeline through Corridor Sections R and V. This presents the opportunity to significantly reduce pumping costs and improve hydraulic control of the system.</p>    |
| Landscape             | <p>The site is located on an elevated exposed east-west ridge. Long panoramic views over the Forest of Bere are visible from this location. Construction and operation of the break pressure tank has the potential to result in impacts to landscape defining features. However, minimising construction footprint will reduce the extent of impacts.</p> <p>The site is intersected by Wayfarers Walk long distance route. There is potential for impacts on views from this route.</p> |
| Ecology               | <p>Portsdown Site of Special Scientific Interest is within 100 m of the break pressure tank zone. There is potential for impacts through air and waterborne pollution.</p>  |
| Heritage              | <p>The Fort Widley Scheduled Monument is located to the west of the break pressure tank zone. Construction and operation of the break pressure tank could impact the setting of the fort and any buried archaeology in the area.</p>  |
| Water Quality         | <p>There is potential for supply of sediment and contaminants as the site is within the catchment of the Potwell Tributary, posing an impact to the water quality of these water bodies.</p>  |
| Flood Risk            | No constraints identified   |
| Geology and Soils     | No constraints identified   |
| Planning              | The site is located within Portsdown Hill open space area adopted by Portsmouth Local Plan.   |
| Socio-economics       | No constraints identified   |
| Special Category Land | The site is located within Portsdown Hill open space area adopted by Portsmouth Local Plan.   |

## Conclusion

This site is optimum from a hydraulics perspective although there are potential constraints associated with heritage, landscape and open space constraints which should be considered in further detail. Further work will be undertaken to determine whether it is possible to adjust the siting of the Break Pressure Tank 1 to minimise impacts whilst optimising hydraulic viability.

This site is being taken forward as part of the preferred corridor.

### 4.7.7. Break Pressure Tank 2 Zone

Break Pressure Tank 2 is the alternative to Break Pressure Tank 1 within Corridor Section R.

The zone for Break Pressure Tank 2 can be seen in Sheet 3, 4 and 5 of the Book of Maps.

**Table 43** - Break Pressure Tank 2 Zone constraints overview

| Topic            | Constraints  |
|------------------|--|
| Constructability | <p>There is a direct access route from Portsdown Hill Road although access would need to give adequate vision for entering and exiting.</p> <p>Sites more exposed further to the West so will have impact on visuals unless all above ground structures are lowered out of sight.</p>  |
| Hydraulics       | <p>This is a high point along the corridor sections. The elevation at this point is sufficient to enable gravity flows for the remainder of the downstream pipeline and presents the same hydraulic advantages as per Break Pressure Tank 1.</p>   |
| Landscape        | <p>A section of the Break Pressure Tank zone to the west is within the Portsdown Hill area of Special Landscape Quality. There is potential for impacts to the 'high scenic quality' of this area. The break pressure tank should be located to the east of the zone to avoid impacts to this designation.</p> <p>The site is located on an elevated exposed east-west ridge. Long panoramic views over the Forest of Bere visible from this location. Construction and operation of the break pressure tank has the potential to result in impacts to landscape defining features, however, minimising construction footprint will reduce the extent of impacts.</p> <p>The Allan King Way and Pilgrim's Trail intersect the zone in two locations. There is potential for impact to views from these routes during construction and operation.</p> |
| Ecology          | <p>There is potential for temporary disturbance to habitat functionally linked to the Chichester and Langstone Harbours Ramsar and Special Protection Area during construction.</p> <p>The break pressure tank zone covers Crooked Walk Banks and Fort Widely and Surrounds Site of Importance for Nature Conservation. There is potential for temporary disturbance from noise, visual and vibration during construction. Siting of the break pressure tank should avoid the Site of Importance for Nature Conservation areas.</p>  |
| Heritage         | <p>The break pressure tank zone is adjacent to Fort Nelson, Fort Southwick, Fort Widley and World War II Heavy Anti-aircraft gun site scheduled monuments. The three forts are also grade I and II* listed buildings. If the break pressure tank is to be sited in this</p>  |

| Topic                 | Constraints   |
|-----------------------|---|
|                       | <p>zone, it should be sensitively sited so impacts on the setting and character of the heritage assets can be reduced during construction and operation.</p> <p>There is potential for buried archaeology within and around the break pressure tank zone as a result of known non-designated heritage assets. Further assessment is required to identify high risk areas.</p> |
| Water Quality         | There is potential for supply of sediment and contaminants as the site is within the catchment of the Potwell Tributary and the River Wallington below Southwick, posing an impact to the water quality of these water bodies.  |
| Flood Risk            | No constraints identified   |
| Geology and Soils     | A section of the south of the break pressure tank zone is on land where there is an underground oil storage reservoir, which is potentially still in use. Therefore, siting the break pressure tank away from this area is preferable.  |
| Planning              | A small section at the south eastern end of the site is located within Portsdown Hill open space area adopted by Portsmouth Local Plan.   |
| Socio-economics       | No constraints identified   |
| Special Category Land | Sections of the break pressure tank zone is owned by the MoD. This land should be avoided where possible.   |

## Conclusion

There are several constraints across multiple topics within the zone, including impacts on landscape and views, nationally designated heritage assets, ecological features and a section which includes an underground oil storage reservoir, open space and MoD owned land. Therefore, Break Pressure Tank Zone 1 is being taken forwards and Break Pressure Tank Zone 2 is not currently being progressed.

### 4.7.8. Break Pressure Tank 3 Zone

A break pressure tank is likely required in Corridor Section X before this section descends towards the Meon Valley.

The zone was selected as it is at the highest point of the corridor section before being constrained by woodland. It is hydraulically unfeasible to move the zone further south, as the outlet main would need to be laid deeper to enable gravity flow west of the corridor section.

South Downs National Park is immediately adjacent to the site.

The zone for Break Pressure Tank 3 can be seen in Sheet 15 of the Book of Maps.

**Table 44 - Break Pressure Tank 3 Zone constraints overview**

| Topic            | Constraints   |
|------------------|---|
| Constructability | An access route at Liberty Road would need to have adequate vision for entering and exiting. A permanent access would need to be constructed. |

| Topic                 | Constraints  |
|-----------------------|--|
|                       | <p>During construction, traffic management would probably be required due to Liberty Road being narrow and not good visibility.</p> <p>Close proximity to the National Park would need to be carefully managed.</p>  |
| Hydraulics            | <p>A break pressure tank is likely required in this corridor section before it towards the Meon Valley. The location of this break pressure tank zone was selected as it is at the highest point of the corridor section before being constrained by woodland. It is hydraulically unfeasible to move this break pressure tank zone further south, as the outlet main would need to be laid deeper to enable gravity flow west of the corridor section.</p>  |
| Landscape             | <p>The South Downs National Park is immediately adjacent to the site. There is potential for effects on the special qualities of the South Downs National Park. Construction works within the National Park and works that will pose indirect impacts should be avoided.</p> <p>There is potential for limited visual amenity impacts to properties in Liberty Road during construction.</p>   |
| Ecology               | <p>Given the proximity to the South Downs National Park, there is potential for indirect impacts to habitats within the National Park.</p> <p>There is potential for damage or loss of ancient woodland trees directly adjacent to the site. Mitigation is required during construction to avoid any potential damage to ancient woodland.</p> <p>West Walk Site of Importance for Nature Conservation is directly adjacent to the site. Standard mitigation and construction buffers are required to avoid impacts to this site through construction pollution.</p> |
| Heritage              | No issues of note  |
| Water Quality         | The site is in the proximity of the Upper Wallington. Construction works should avoid the supply of sediment and contaminants into the river.  |
| Flood Risk            | No issues of note  |
| Geology and Soils     | No issues of note  |
| Socio-economics       | No issues of note  |
| Planning              | No issues of note  |
| Special Category Land | No issues of note  |

## Conclusion

The dNPS affords the highest status of protection to National Parks in relation to landscape and scenic beauty. Given the potential for effects on the special qualities of the South Downs National Park, this zone is not being progressed.

### 4.7.9. Break Pressure Tank 4 Zone

Break Pressure Tank 4 is one option for the break pressure tank that is required in Corridor Section Z.

The zone for Break Pressure Tank 4 is shown on Sheet 9 of the Book of Maps.

**Table 45 - Break Pressure Tank 4 Zone constraints overview**

| Topic            | Constraints  |
|------------------|--|
| Constructability | Only access via private road off Scivier’s Lane. Permanent access and road would need to be constructed. Construction activities close to large residential houses/building so disruption would need to be mitigated carefully.  |
| Hydraulics       | This break pressure tank is preferred over the Break Pressure Tank 5 zone, as it will provide a greater level of hydraulic control owing to its higher elevation.<br><br>For routes through Corridor Sections R and V, if Break Pressure Tank 1 or Break Pressure Tank 2 are constructed in an optimal location and a larger pipeline diameter is used, a break pressure tank may not be required in Corridor Section Z. If a break pressure tank is required in Corridor Section Z, only one of Break Pressure Tank 4 or Break Pressure Tank 5 is needed.     |
| Landscape        | Construction should avoid the loss of parkland/pasture landscape features that contribute to the Forest of Bere West Landscape Character Area.<br><br>There is potential for moderate to large adverse impacts to the views of residential receptors on Sciviers Lane. Construction duration and footprint should be minimised to reduce impacts.  |
| Ecology          | There is potential for the loss of lowland mixed deciduous woodland. The break pressure tank should be sited to avoid these areas and provide appropriate construction buffers to avoid indirect impacts.<br><br>Barbastelle bats have been identified within the site. Therefore, there is potential for the loss of species and habitats during construction. Loss of woodland should be avoided.  |
| Heritage         | No constraints identified  |
| Water Quality    | The site is in the proximity of the Upper Hamble and Horton Heath Stream, therefore the supply of sediments and contaminants should be avoided during construction.<br><br>The site is within the River Hamble Urban Waste Water Treatment Directive Catchment. Waste water and surface water during construction should be managed through standard mitigation.<br><br>The site is within Source Protection Zone 1 and 2 at Lower Upham. Mitigation would be required to ensure there are no impacts to groundwater as a result of construction on this site. |

| Topic                 | Constraints               |
|-----------------------|---------------------------|
| Flood Risk            | No constraints identified |
| Geology and Soils     | No constraints identified |
| Planning              | No constraints identified |
| Socio-economics       | No constraints identified |
| Special Category Land | No constraints identified |

### Conclusion

There are limited constraints associated with this site based on current information, with the exception of the proximity of residential receptors. Further work would need to be undertaken to reduce impacts on residential receptors. This site is being taken forward as part of the preferred corridor.

#### 4.7.10. Break Pressure Tank 5 Zone

Break Pressure Tank 5 is the alternative option for a break pressure tank in Corridor Section Z.

The zone for Break Pressure Tank 5 is shown on Sheet 10 of the Book of Maps.

**Table 46 - Break Pressure Tank 5 Zone constraints overview**

| Topic            | Constraints   |
|------------------|---|
| Constructability | <p>Straight forward access route from B3354 although access would need to give adequate vision for entering and exiting and level difference between road and field dealt with. Permanent access and road would need to be constructed.</p> <p>Overhead high voltage cables in vicinity would need to be managed.</p>   |
| Hydraulics       | <p>This break pressure tank provides a lower level of hydraulic control.</p> <p>For routes through Corridor Sections R and V, if Break Pressure Tank 1 or Break Pressure Tank 2 are constructed in an optimal location and a larger pipe diameter is used, a break pressure tank may not be required. If Break Pressure Tank 4 or Break Pressure Tank 5 are required, only one is needed.</p> |
| Landscape        | <p>Construction should avoid the loss of pasture and field boundary landscape features that contribute to the Forest of Bere West Landscape Character Area.</p> <p>There is potential for moderate to large adverse impacts to the views from Hillview Manor Park in Crowdhill which is adjacent to the site. Construction duration and footprint should be minimised to reduce impacts.</p>  |
| Ecology          | <p>There is potential for damage or loss of ancient woodland trees directly adjacent to the site.</p>   |

| Topic                 | Constraints  |
|-----------------------|--|
| Heritage              | The Park Pale at Marwell scheduled monument is adjacent to the site. This is associated with further heritage assets at Marwell Manor. Construction and operation of the break pressure tank has potential to impact the setting and character of the scheduled monument.  |
| Water Quality         | The site is in the proximity of Bow Lake, therefore the supply of sediments and contaminants should be avoided during construction.<br>The site is within the River Itchen Urban Waste Water Treatment Directive Catchment. Waste water and surface water during construction should be managed through standard mitigation. |
| Flood Risk            | No constraints identified  |
| Geology and Soils     | The site is located on Crowdhill historic landfill. Ground investigations are required to assess the contamination risk. It is likely that this will present a significant risk due to the potential industrial waste input.   |
| Planning              | No constraints identified  |
| Socio-economics       | No constraints identified  |
| Special Category Land | No constraints identified  |

### Conclusion

Compared to the Break Pressure Tank 4 zone, this zone is considered to have a greater number of constraints particularly from a heritage, landscape, water and ecology perspective. This site is not therefore being progressed.

## 4.8. Corridor Section and Above Ground Plant Refinement Evaluation Conclusions

### 4.8.1. Summary of the Preferred Corridor

Following the corridor section and above ground plant refinement evaluation, a preferred pipeline corridor has been identified. The preferred corridor was selected to route outside of the National Park where possible, given that the dNPS affords the highest status of protection to National Parks in relation to landscape and scenic beauty, and requires us to look to develop the Project outside of the National Park in the first instance. Part of Corridor Section Z (option Z3) is within the South Downs National Park. However, we have provided optionality (options Z3 and Z4) for crossing the River Itchen which provides routes within and outside the South Downs National Park to acknowledge the other ecological constraints in this area. The preferred corridor also reduces the amount of permanent above ground plant that is required to accompany the pipeline.



The preferred corridor proposes to utilise tunnelled routes through Corridor Sections O and P to avoid constructability challenges and reduce above ground construction activity, and likely impacts in close proximity to residential properties, where there is potential for indirect impacts on air quality, noise and vibration, and significant disruption to local roads within a densely populated urban area

The preferred corridor passes through Corridor Section R. It is acknowledged that there could be possible landscape and heritage setting impacts associated with the Scheduled Monuments south of Corridor Section R. In light of this, a route further north in Corridor Section R could be utilised, however there is risk of requiring additional above ground plant along the pipeline by taking a more northerly route.

The preferred corridor is shown in Figure 17.

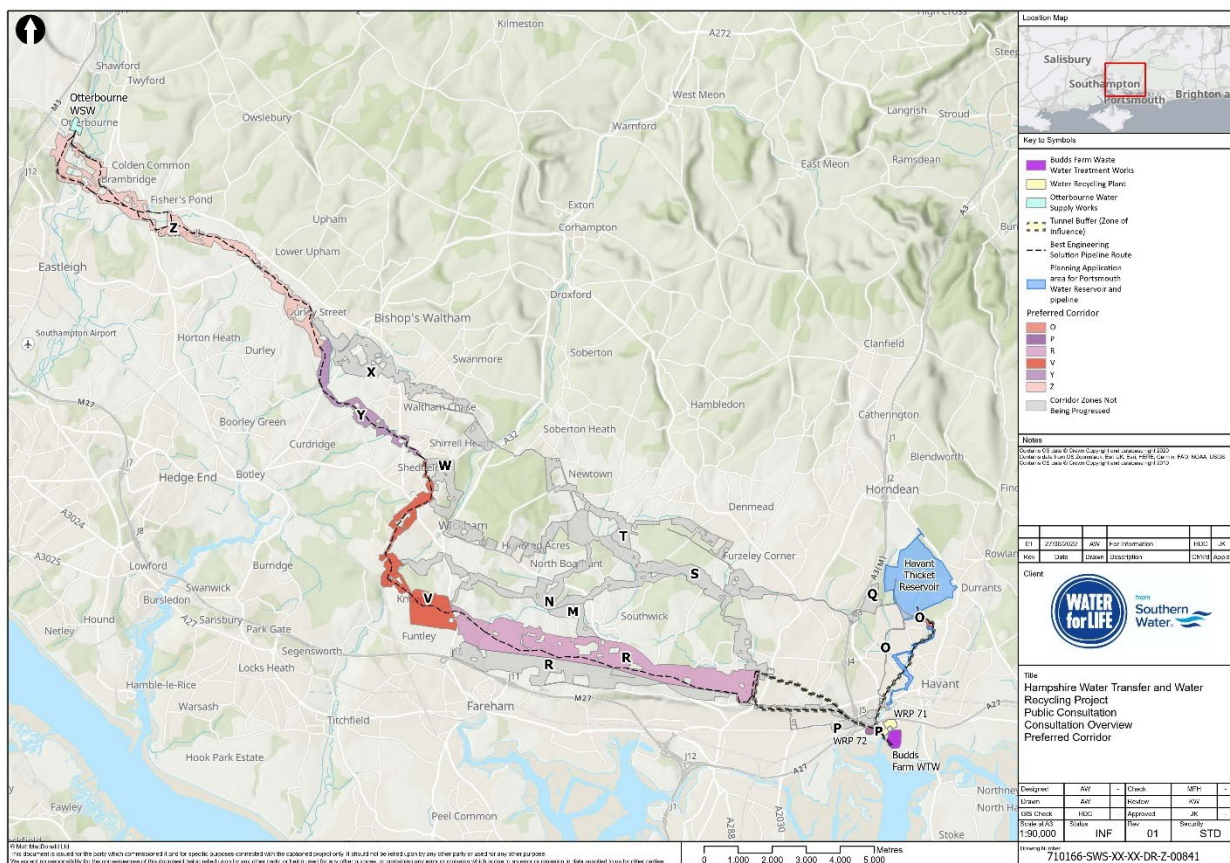


Figure 17 - Preferred corridor

#### 4.8.2. Indicative Pipeline Route

We are showing an indicative pipeline route within the preferred corridor (black dotted line in Figure 17). This represents the best route for a pipeline solely from an engineering perspective, based largely on the topographic levels of the land. We are calling this our ‘best engineering solution’ pipeline route. We expect this route to change as we develop this further, taking into account other key factors, including the feedback we receive from this consultation and ongoing engagement.

## C.4 Book of Maps

# Hampshire Water Transfer and Water Recycling Project

Book of Maps

Public consultation 2022



from  
Southern  
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from  
Southern  
Water. 

The Southern Water logo is a stylized graphic of three wavy lines, representing water, positioned to the right of the text "Water.".

# Contents

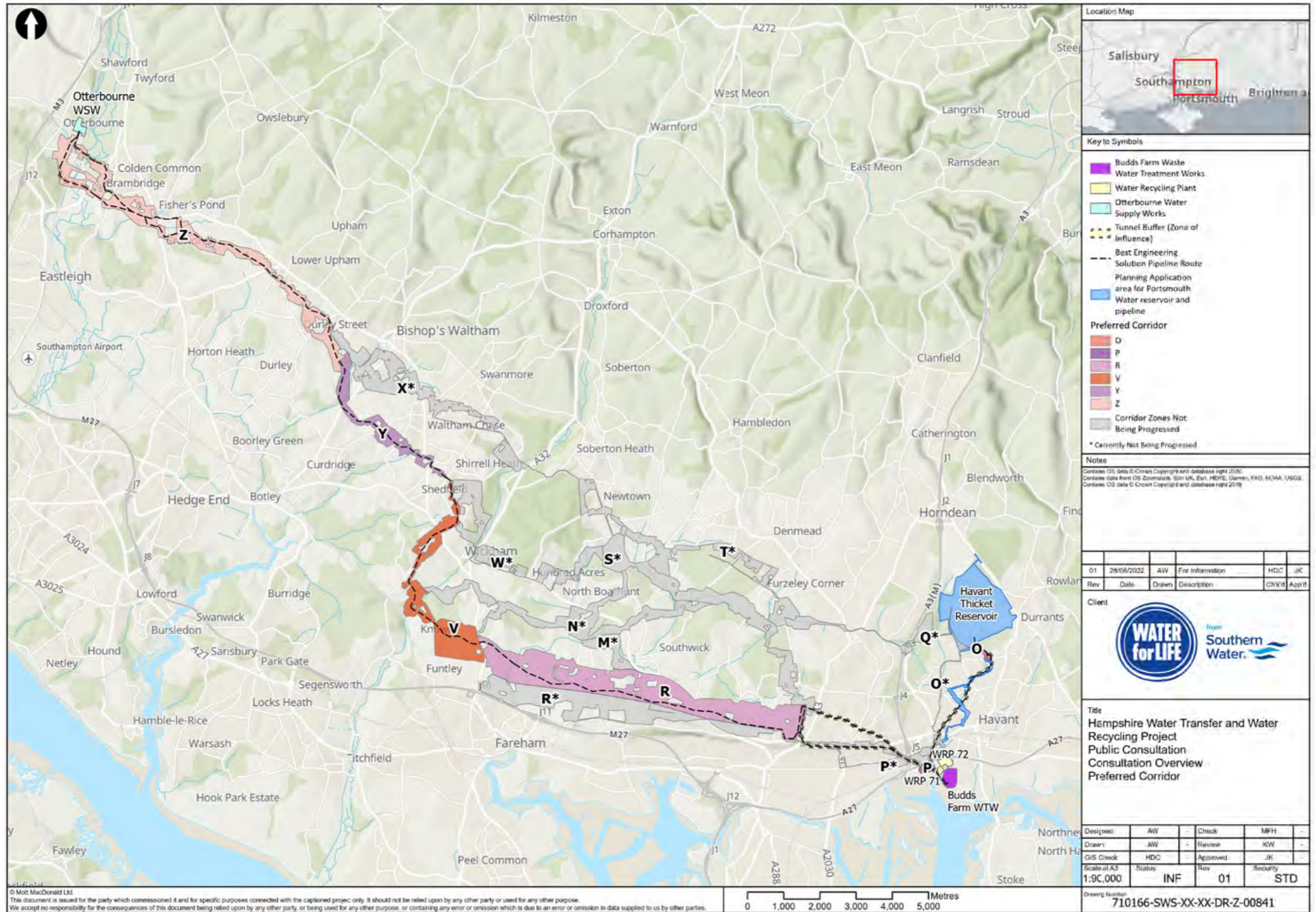
|                                  | Page                       |
|----------------------------------|----------------------------|
| Preferred corridor .....         | 5                          |
| All corridor sections .....      | 9                          |
| Environmental designations ..... | 13                         |
| Corridor section O .....         | 14, 15, 26                 |
| Corridor section P .....         | 14, 16                     |
| Corridor section R .....         | 14, 17, 18, 19, 20         |
| Corridor section V .....         | 14, 20, 21, 22             |
| Corridor section Y .....         | 14, 22, 23                 |
| Corridor section Z .....         | 14, 23, 24, 25             |
| Corridor section Q .....         | 14, 15, 26, 27             |
| Corridor section S .....         | 14, 17, 27, 28, 29         |
| Corridor section T .....         | 14, 27, 28, 29             |
| Corridor section M .....         | 14, 18, 19, 28             |
| Corridor section N .....         | 14, 19, 20, 21, 27, 28, 29 |
| Corridor section W .....         | 14, 21, 22, 28, 29, 30     |
| Corridor section X .....         | 14, 22, 23, 28, 29, 30     |
| Hydrology and Hydrogeology ..... | 33                         |
| Corridor section O .....         | 34, 35                     |
| Corridor section P .....         | 34, 35, 36                 |
| Corridor section R .....         | 34, 35, 36                 |
| Corridor section V .....         | 34, 36, 37                 |
| Corridor section Y .....         | 34, 36, 37                 |
| Corridor section Z .....         | 34, 36, 37                 |
| Corridor section Q .....         | 34, 35, 36                 |
| Corridor section S .....         | 34, 35, 36                 |
| Corridor section T .....         | 34, 35, 36                 |
| Corridor section W .....         | 34, 35, 36, 37             |
| Corridor section X .....         | 34, 35, 36, 37             |
| Above ground plant .....         | 39                         |
| Corridor section O .....         | 40, 41                     |
| Corridor section P .....         | 40, 41, 42                 |
| Corridor section R .....         | 40, 41, 42                 |
| Corridor section V .....         | 40, 42, 43                 |
| Corridor section Y .....         | 40, 42, 43                 |
| Corridor section Z .....         | 40, 42, 43                 |
| Corridor section Q .....         | 40, 41, 42                 |
| Corridor section S .....         | 40, 41, 42                 |
| Corridor section T .....         | 40, 41, 42                 |
| Corridor section M .....         | 40, 41, 42                 |
| Corridor section N .....         | 40, 41, 42                 |
| Corridor section W .....         | 40, 41, 42, 43             |



# Preferred corridor



from  
**Southern  
Water** 



**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline Route
- Planning Application area for Portsmouth
- Water reservoir and pipeline

**Preferred Corridor**

- O
- P
- R
- V
- Y
- Z
- Corridor Zones Not Being Progressed

\* Currently Not Being Progressed

**Notes**

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| Rev | Date       | Drawn | Description     | CHKD | Appr |
|-----|------------|-------|-----------------|------|------|
| 01  | 28/05/2022 | AW    | For Information | HDC  | JK   |

Client

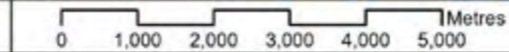
**Title**

Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Consultation Overview  
 Preferred Corridor

|             |        |     |           |     |   |
|-------------|--------|-----|-----------|-----|---|
| Designed:   | AW     | -   | Check:    | MFH | - |
| Drawn:      | AW     | -   | Review:   | KW  | - |
| GIS Check:  | HDC    | -   | Approved: | JK  | - |
| Scale of A3 | Status | Rev | Security  |     |   |
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Drawing Number: **710166-SWS-XX-XX-DR-Z-00841**

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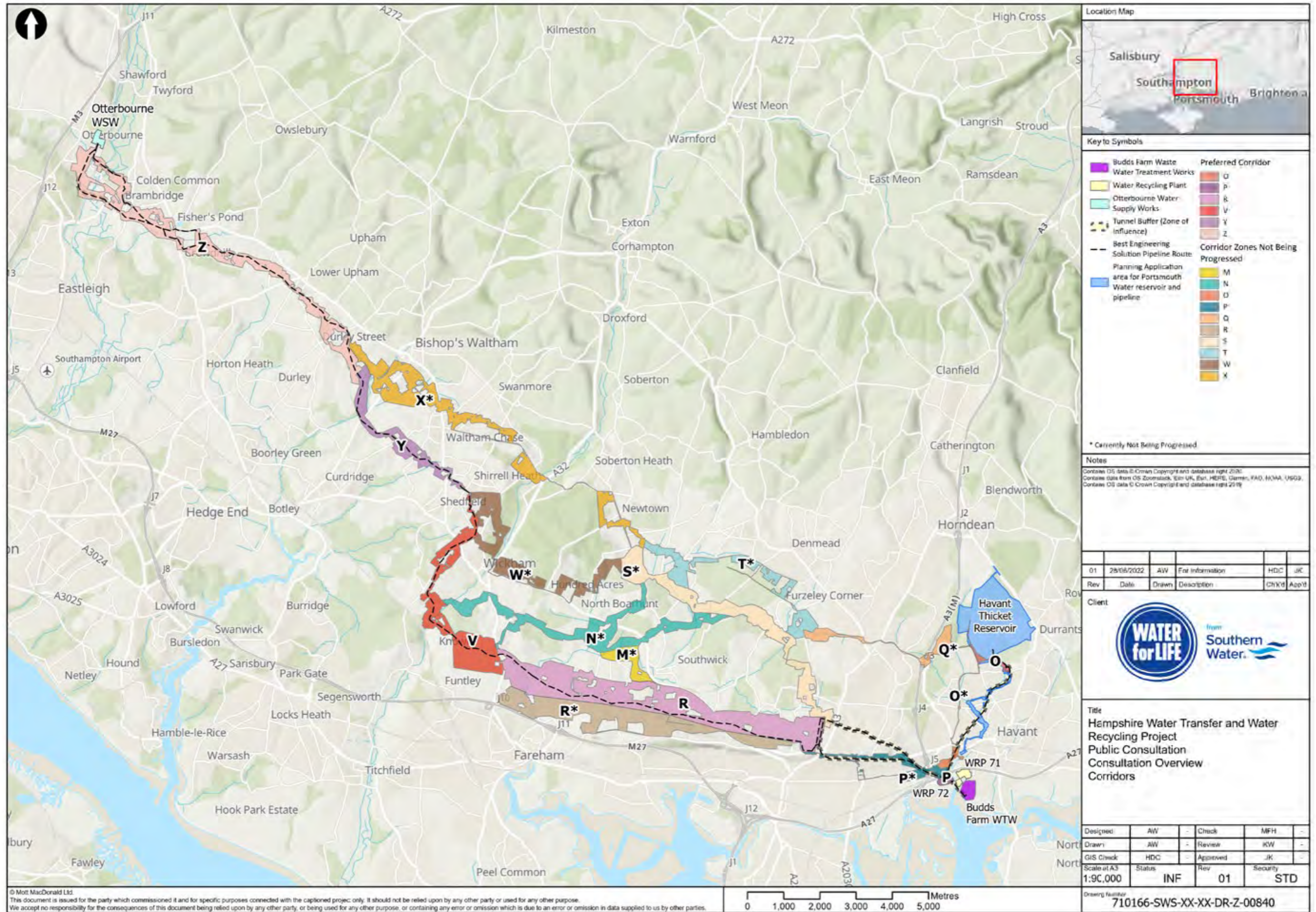




# All corridor sections



from  
**Southern  
Water** 



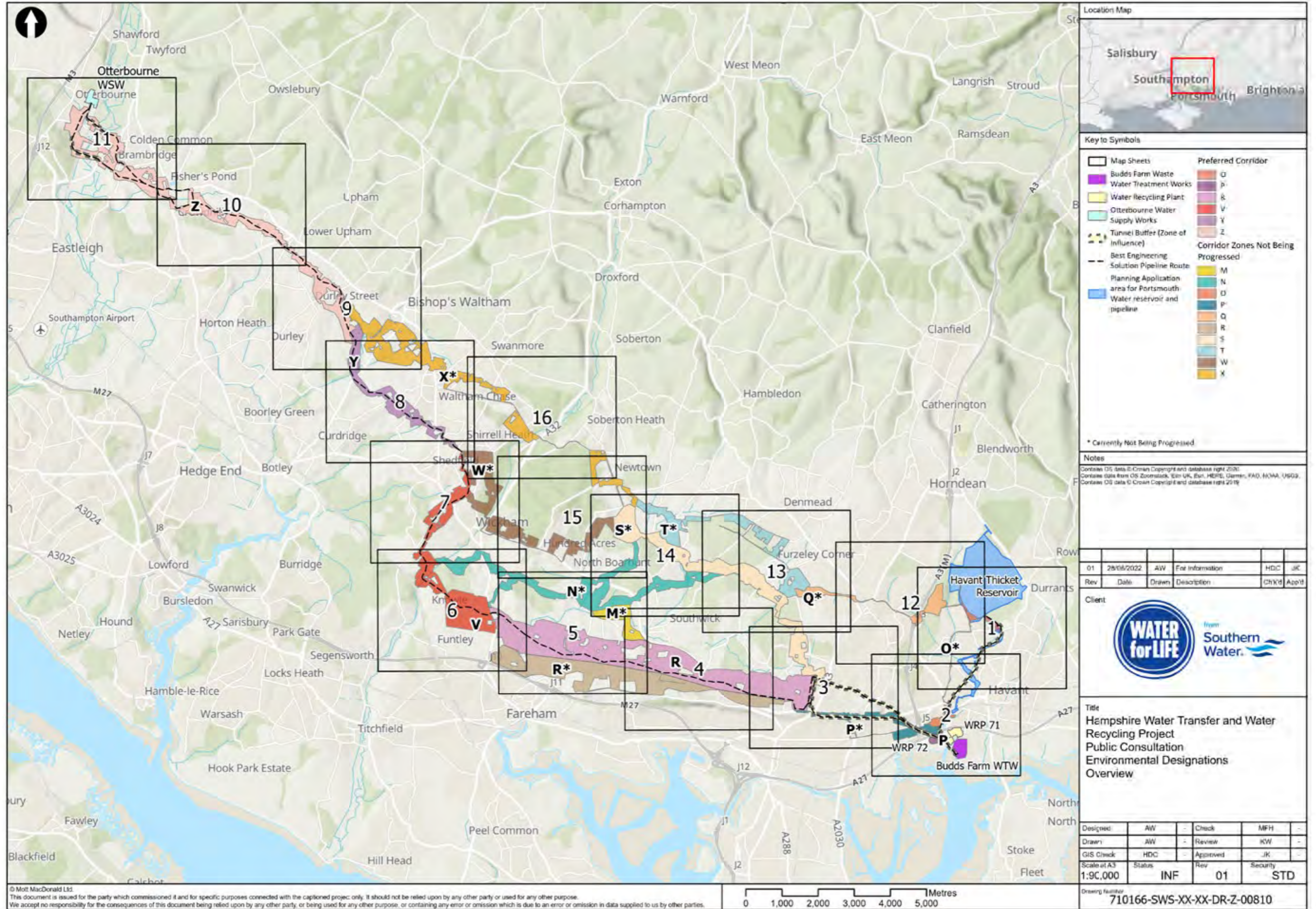




# Environmental designations



from  
**Southern  
Water** 



**Key to Symbols**

|  |  |  |                    |
|--|--|--|--------------------|
|  | Map Sheets                               |  | Preferred Corridor |
|  | Budds Farm Waste                         |  | A                  |
|  | Water Treatment Works                    |  | B                  |
|  | Water Recycling Plant                    |  | C                  |
|  | Otterbourne Water Supply Works           |  | D                  |
|  | Tunnel Buffer (Zone of Influence)        |  | E                  |
|  | Best Engineering Solution Pipeline Route |  | F                  |
|  | Planning Application area for Portsmouth |  | G                  |
|  | Water reservoir and pipeline             |  | H                  |
|  |  |  | I                  |
|  |  |  | J                  |
|  |  |  | K                  |
|  |  |  | L                  |
|  |  |  | M                  |
|  |  |  | N                  |
|  |  |  | O                  |
|  |  |  | P                  |
|  |  |  | Q                  |
|  |  |  | R                  |
|  |  |  | S                  |
|  |  |  | T                  |
|  |  |  | U                  |
|  |  |  | V                  |
|  |  |  | W                  |
|  |  |  | X                  |

**Corridor Zones Not Being Progressed**

|  |   |
|--|---|
|  | M |
|  | N |
|  | O |
|  | P |
|  | Q |
|  | R |
|  | S |
|  | T |
|  | U |
|  | V |
|  | W |
|  | X |

\* Currently Not Being Progressed

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Client



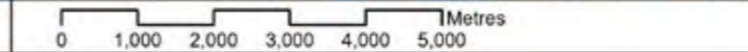

**Title**

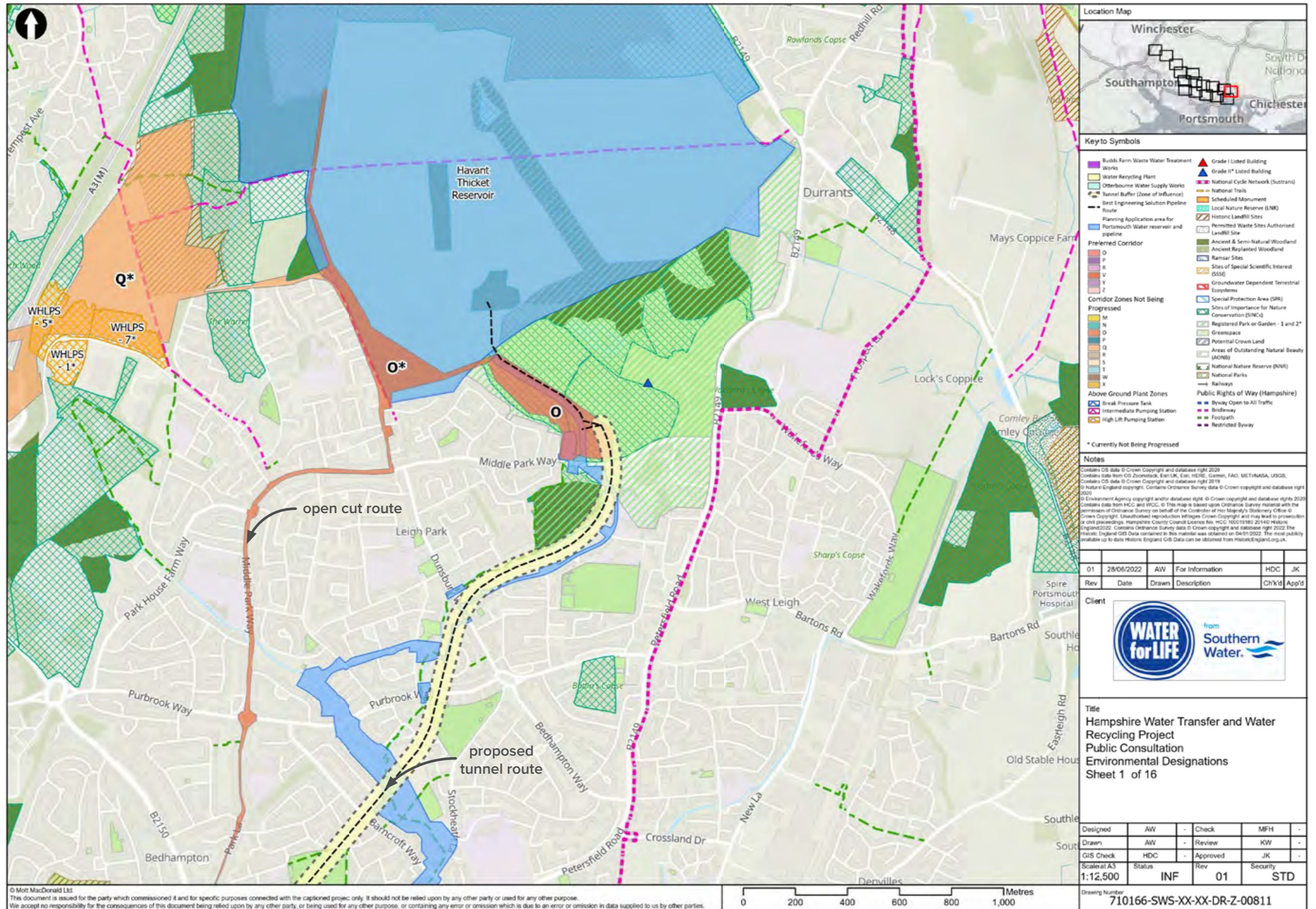
Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Overview

|             |        |          |          |
|-------------|--------|----------|----------|
| Designed    | AW     | Check    | MFH      |
| Drawn       | AW     | Review   | KW       |
| GIS Check   | HDC    | Approved | JK       |
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Drawing Number  
**710166-SWS-XX-XX-DR-Z-00810**

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**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline
- Grade I Listed Building
- Grade II\* Listed Building
- National Cycle Network (Sustrans)
- National Trails
- Scheduled Monument
- Local Nature Reserve (LNR)
- Historic Landfill Sites
- Permitted Waste Sites Authorised Landfill Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ramsar Sites
- Sites of Special Scientific Interest (SSSI)
- Groundwater Dependent Terrestrial Ecosystems
- Special Protection Area (SPA)
- Sites of Importance for Nature Conservation (SINC)
- Registered Park or Garden - 1 and 2\*
- GreenSpace
- Potential Crown Land
- Areas of Outstanding Natural Beauty (AONB)
- National Nature Reserve (NNR)
- National Parks
- Railways
- Public Rights of Way (Hampshire)
  - Byway Open to All Traffic
  - Bridleway
  - Footpath
  - Restricted Byway

**Preferred Corridor**

**Corridor Zones Not Being Progressed**

**Above Ground Plant Zones**

\* Currently Not Being Progressed

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| Rev | Date       | Drawn | Description     | CHK'd | App'd |
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| 01  | 28/06/2022 | AW    | For Information | HDC   | JK    |

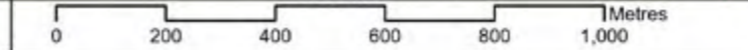


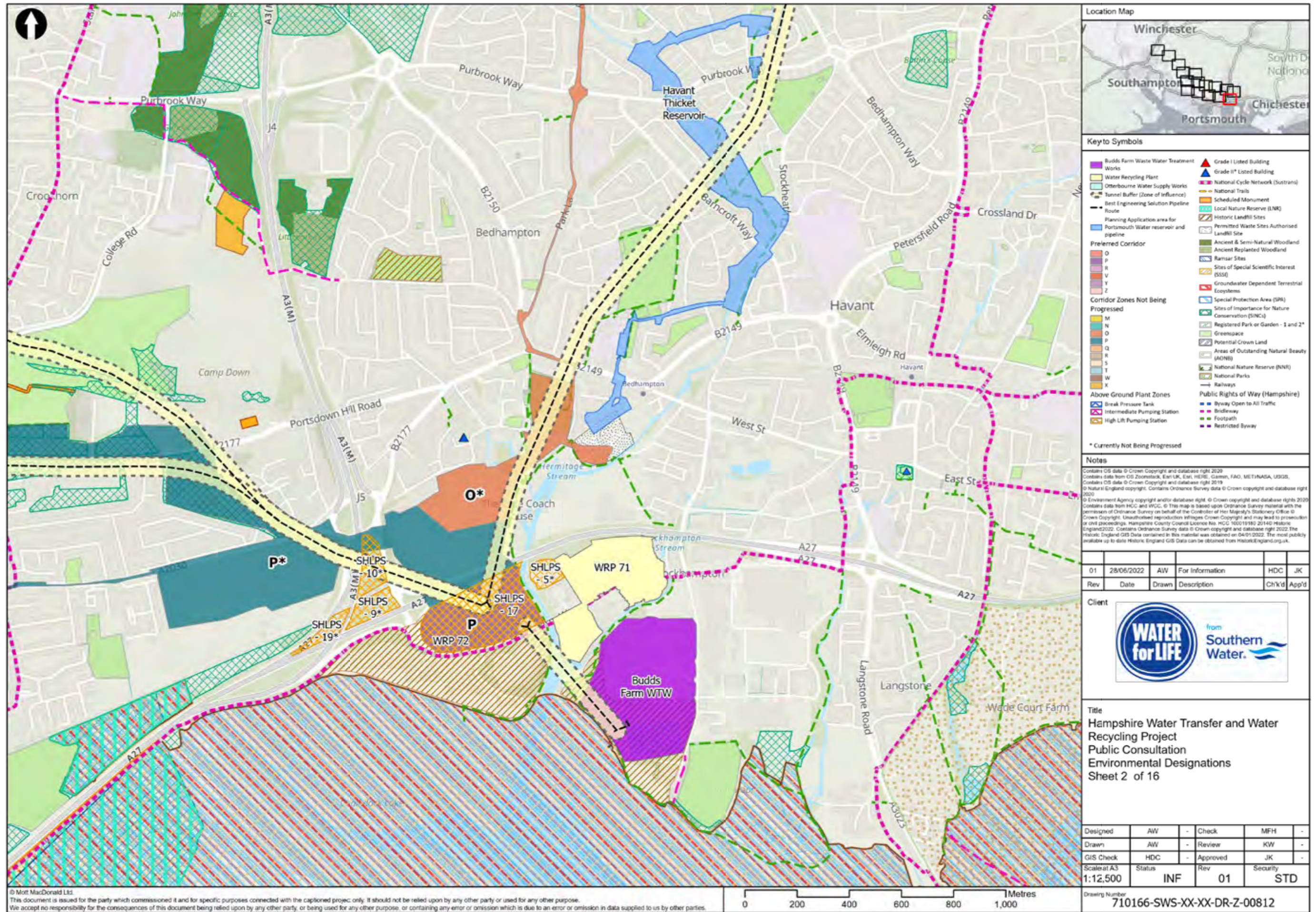
**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 1 of 16

|             |        |     |          |     |   |
|-------------|--------|-----|----------|-----|---|
| Designed    | AW     | -   | Check    | MFH | - |
| Drawn       | AW     | -   | Review   | KW  | - |
| GIS Check   | HDC    | -   | Approved | JK  | - |
| Scale at A3 | Status | Rev | Security |     |   |
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Drawing Number  
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**Key to Symbols**

|   |  |
|---|--|
| Budds Farm Waste Water Treatment Works                                | Grade I Listed Building                            |
| Water Recycling Plant   | Grade II* Listed Building                          |
| Otterbourne Water Supply Works  | National Cycle Network (Sustrans)                  |
| Tunnel Buffer (Zone of Influence)                                     | National Trails                                    |
| Best Engineering Solution Pipeline                                    | Scheduled Monument                                 |
| Route   | Local Nature Reserve (LNR)                         |
| Planning Application area for Portsmouth Water reservoir and pipeline | Historic Landfill Sites                            |
| Permitted Waste Sites Authorised Landfill Site                        | Permitted Waste Sites Authorised Landfill Site     |
| <b>Preferred Corridor</b>   | Ancient & Semi-Natural Woodland                    |
| O   | Ancient Replanted Woodland                         |
| P   | Ramsar Sites                                       |
| R   | Sites of Special Scientific Interest (SSSI)        |
| V   | Groundwater Dependent Terrestrial Ecosystems       |
| Y   | Special Protection Area (SPA)                      |
| Z   | Sites of Importance for Nature Conservation (SINC) |
| <b>Corridor Zones Not Being Progressed</b>                            | Registered Park or Garden - 1 and 2*               |
| M   | GreenSpace   |
| N   | Potential Crown Land                               |
| D   | Areas of Outstanding Natural Beauty (AONB)         |
| P   | National Nature Reserve (NNR)                      |
| Q   | National Parks                                     |
| R   | Railways   |
| S   | Public Rights of Way (Hampshire)                   |
| T   | Byway Open to All Traffic                          |
| W   | Brideway   |
| X   | Footpath   |
|   | Restricted Byway                                   |

\* Currently Not Being Progressed

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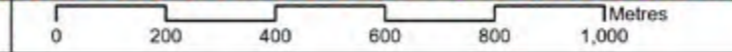
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| Rev | Date       | Drawn | Description     | Ch'kd | App'd |



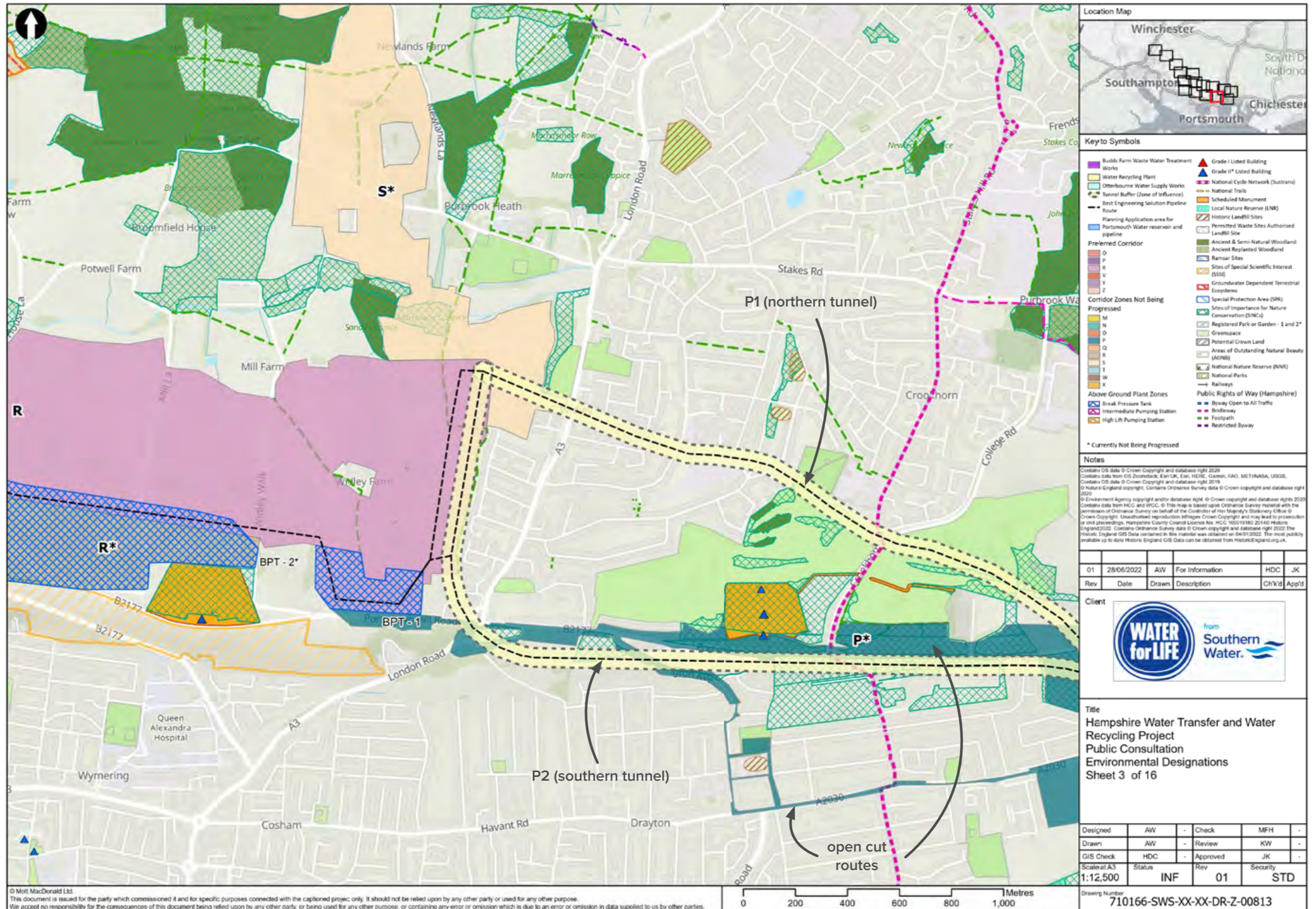
**Title**  
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 Public Consultation  
 Environmental Designations  
 Sheet 2 of 16

|             |        |     |          |     |          |
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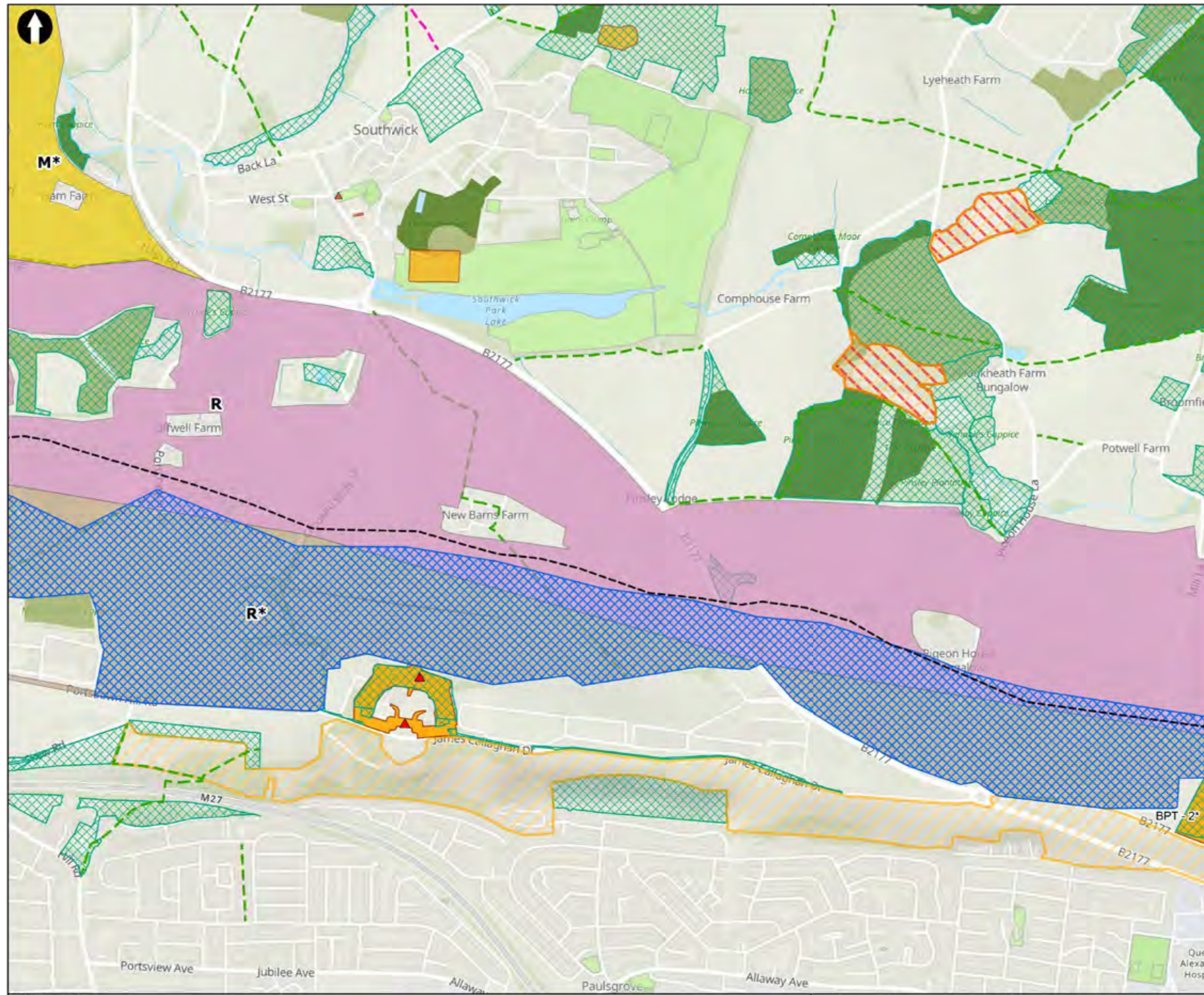
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**Key to Symbols**

|   |   |
|---|---|
| Budds Farm Waste Water Treatment Works                                | Grade I Listed Building                             |
| Water Recycling Plant   | Grade II* Listed Building                           |
| Otterbourne Water Supply Works  | National Cycle Network (Sustrans)                   |
| Tunnel Buffer (Zone of Influence)                                     | National Trails                                     |
| Best Engineering Solution Pipeline                                    | Scheduled Monument                                  |
| Route   | Local Nature Reserve (LNR)                          |
| Planning Application area for Portsmouth Water reservoir and pipeline | Historic Landfill Sites                             |
|   | Permitted Waste Sites Authorised Landfill Site      |
| <b>Preferred Corridor</b>   | Ancient & Semi-Natural Woodland                     |
| O   | Ancient Replanted Woodland                          |
| P   | Ramsar Sites  |
| R   | Sites of Special Scientific Interest (SSSI)         |
| V   | Groundwater Dependent Terrestrial Ecosystems        |
| Y   | Special Protection Area (SPA)                       |
| Z   | Sites of Importance for Nature Conservation (SINCs) |
|   | Registered Park or Garden - 1 and 2*                |
| <b>Corridor Zones Not Being Progressed</b>                            | Greenpace   |
| M   | Potential Crown Land                                |
| N   | Areas of Outstanding Natural Beauty (AONB)          |
| D   | National Nature Reserve (NNR)                       |
| O   | National Parks                                      |
| P   | Railways  |
| Q   | Public Rights of Way (Hampshire)                    |
| R   | Byway Open to All Traffic                           |
| S   | Brideway  |
| T   | Footpath  |
| W   | Restricted Byway                                    |
| X   |   |

\* Currently Not Being Progressed

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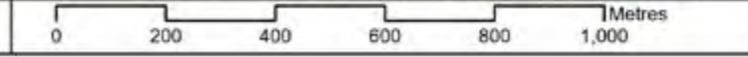
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| Rev | Date       | Drawn | Description     | Ch'kd | App'd |



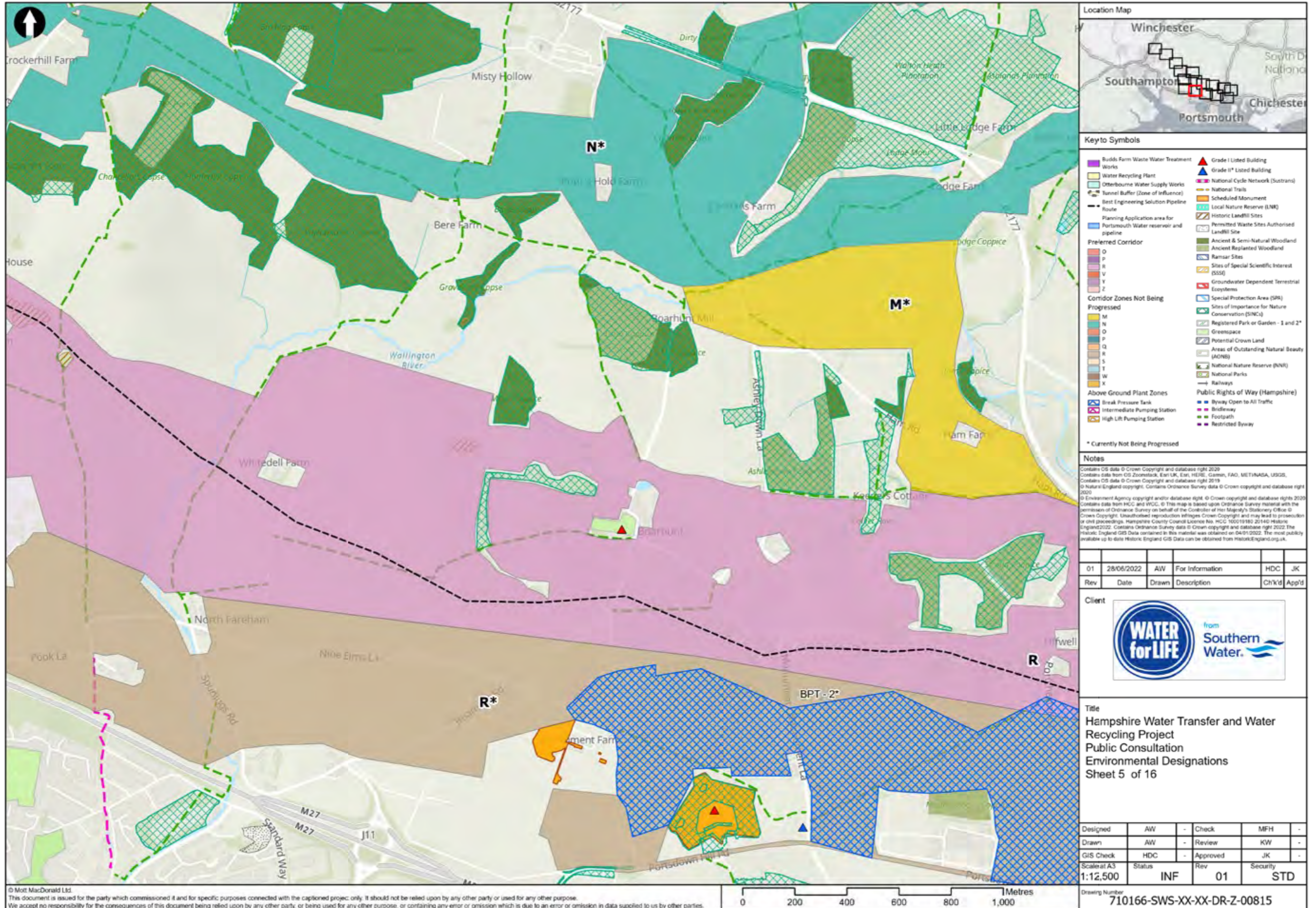
**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 4 of 16

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| Drawn       | AW     | -   | Review   | KW  | - |
| GIS Check   | HDC    | -   | Approved | JK  | - |
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**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline
- Grade I Listed Building
- Grade II\* Listed Building
- National Cycle Network (Sustrans)
- Scheduled Monument
- Local Nature Reserve (LNR)
- Historic Landfill Sites
- Permitted Waste Sites Authorised Landfill Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ramsar Sites
- Sites of Special Scientific Interest (SSSI)
- Groundwater Dependent Terrestrial Ecosystems
- Special Protection Area (SPA)
- Sites of Importance for Nature Conservation (SINC)
- Registered Park or Garden - 1 and 2\*
- GreenSpace
- Potential Crown Land
- Area of Outstanding Natural Beauty (AONB)
- National Nature Reserve (NNR)
- National Parks
- Railways
- Public Rights of Way (Hampshire)
- Byway Open to All Traffic
- Brideway
- Footpath
- Restricted Byway

\* Currently Not Being Progressed

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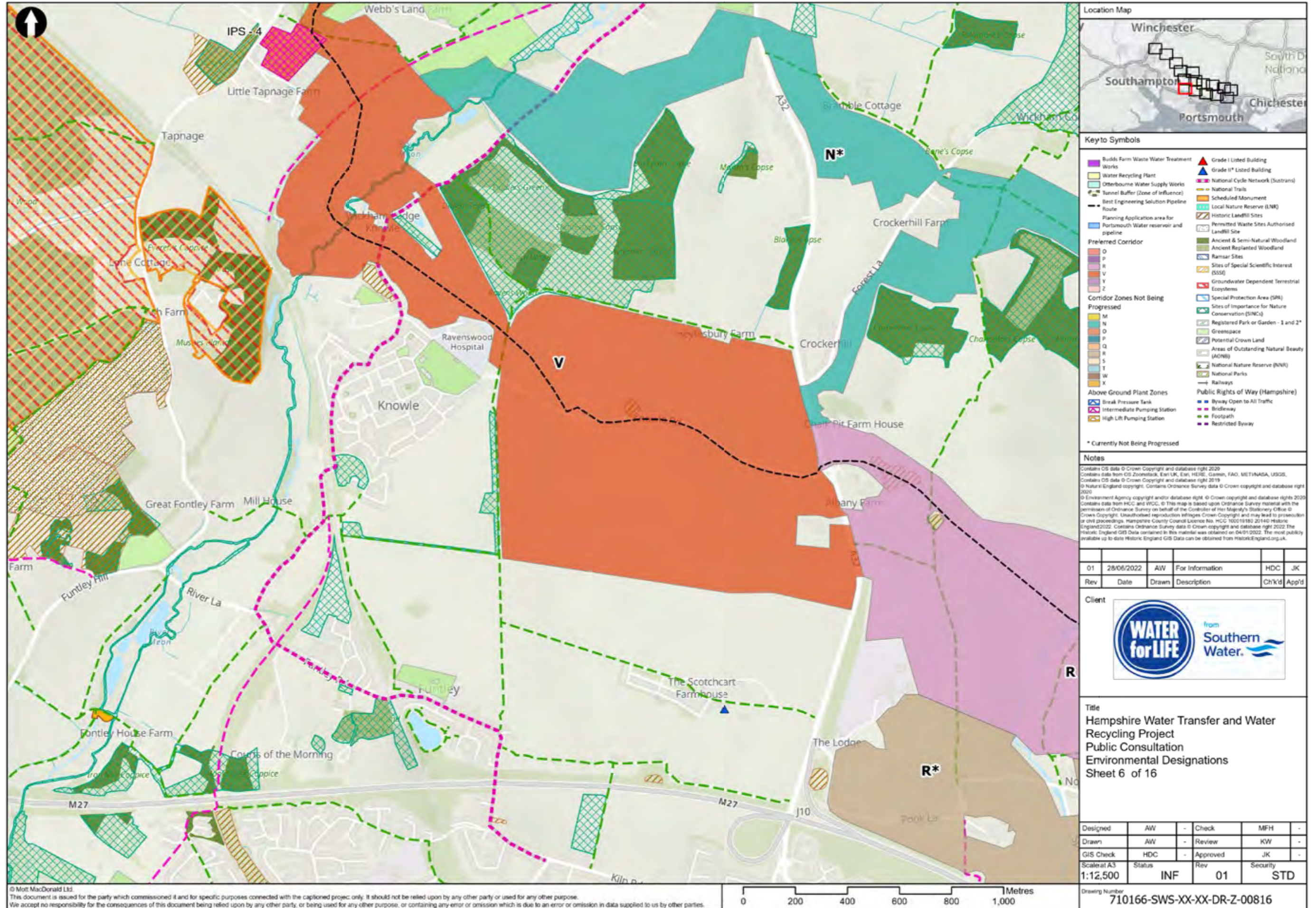


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 5 of 16

|             |        |     |          |     |          |
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| GIS Check   | HDC    | -   | Approved | JK  | -        |
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**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline

**Preferred Corridor**

- O
- P
- R
- V
- Y
- Z

**Corridor Zones Not Being Progressed**

- M
- N
- D
- P
- Q
- R
- S
- T
- W
- X

**Above Ground Plant Zones**

- Break Pressure Tank
- Intermediate Pumping Station
- High Lift Pumping Station

- Grade I Listed Building
- Grade II\* Listed Building
- National Cycle Network (Sustrans)
- National Trails
- Scheduled Monument
- Local Nature Reserve (LNR)
- Historic Landfill Sites
- Permitted Waste Sites/Authorised Landfill Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ramsar Sites
- Sites of Special Scientific Interest (SSSI)
- Groundwater Dependent Terrestrial Ecosystems
- Special Protection Area (SPA)
- Sites of Importance for Nature Conservation (SINC)
- Registered Park or Garden - 1 and 2\*
- GreenSpace
- Potential Crown Land
- Areas of Outstanding Natural Beauty (AONB)
- National Nature Reserve (NNR)
- National Parks
- Railways
- Public Rights of Way (Hampshire)
- Byway Open to All Traffic
- Bridleway
- Footpath
- Restricted Byway

\* Currently Not Being Progressed

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|     |            |       |                 |       |       |
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| 01  | 28/06/2022 | AW    | For Information | HDC   | JK    |
| Rev | Date       | Drawn | Description     | Ch'kd | App'd |

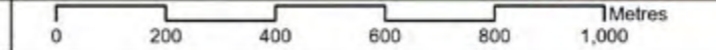


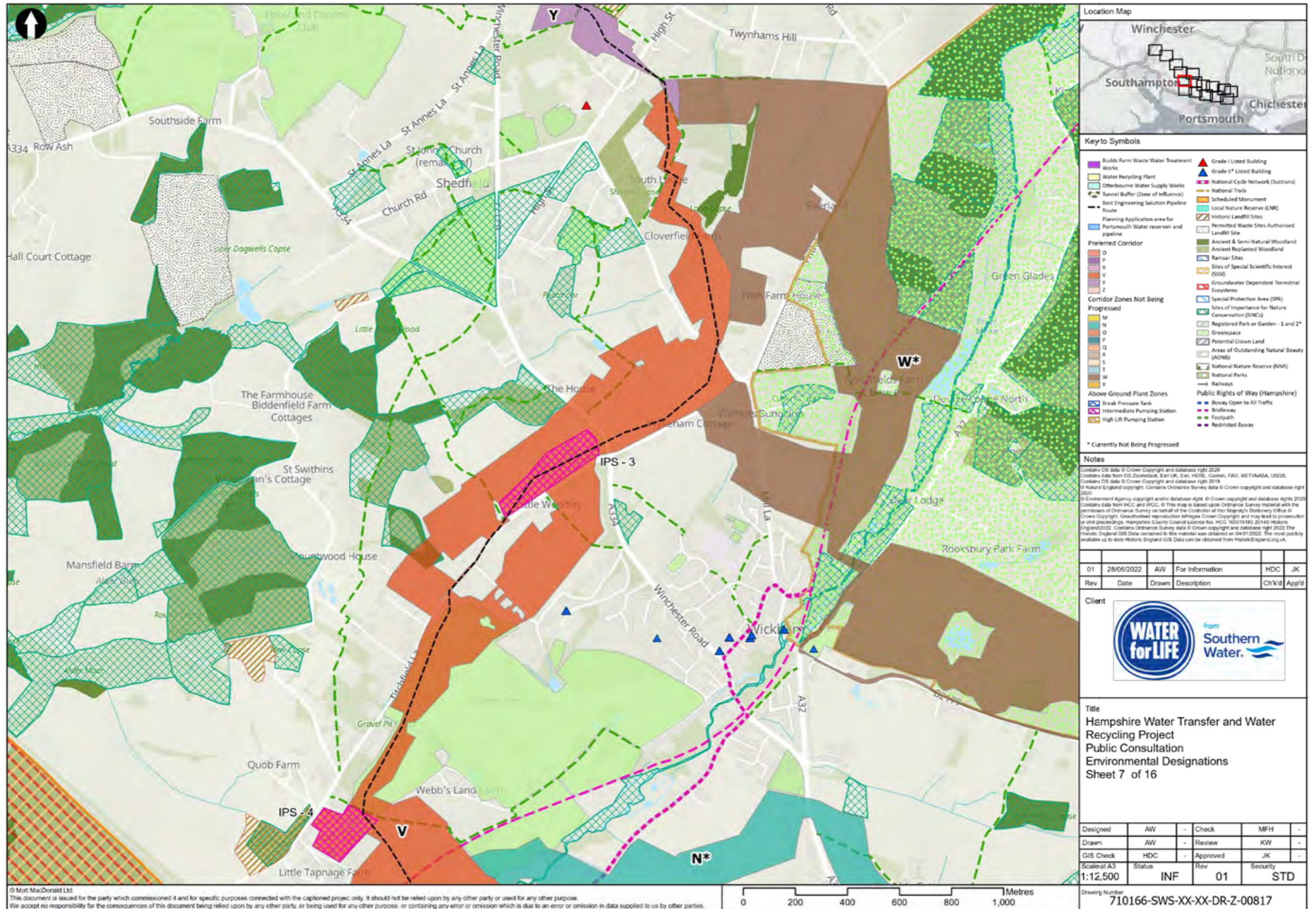
**Title**  
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 Public Consultation  
 Environmental Designations  
 Sheet 6 of 16

|             |        |     |          |     |   |
|-------------|--------|-----|----------|-----|---|
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| Drawn       | AW     | -   | Review   | KW  | - |
| GIS Check   | HDC    | -   | Approved | JK  | - |
| Scale at A3 | Status | Rev | Security |     |   |
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**Key to Symbols**

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- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline

**Preferred Corridor**

- O
- P
- R
- V
- Y
- Z

**Corridor Zones Not Being Progressed**

- M
- N
- D
- P
- Q
- R
- S
- T
- W
- X

**Above Ground Plant Zones**

- Break Pressure Tank
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- High Lift Pumping Station

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- Potential Crown Land
- Areas of Outstanding Natural Beauty (AONB)
- National Nature Reserve (NNR)
- National Parks
- Railways
- Public Rights of Way (Hampshire)
- Byway Open to All Traffic
- Bridleway
- Footpath
- Restricted Byway

\* Currently Not Being Progressed

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| Rev | Date       | Drawn | Description     | Ch'kd | App'd |
|-----|------------|-------|-----------------|-------|-------|
| 01  | 28/06/2022 | AW    | For Information | HDC   | JK    |

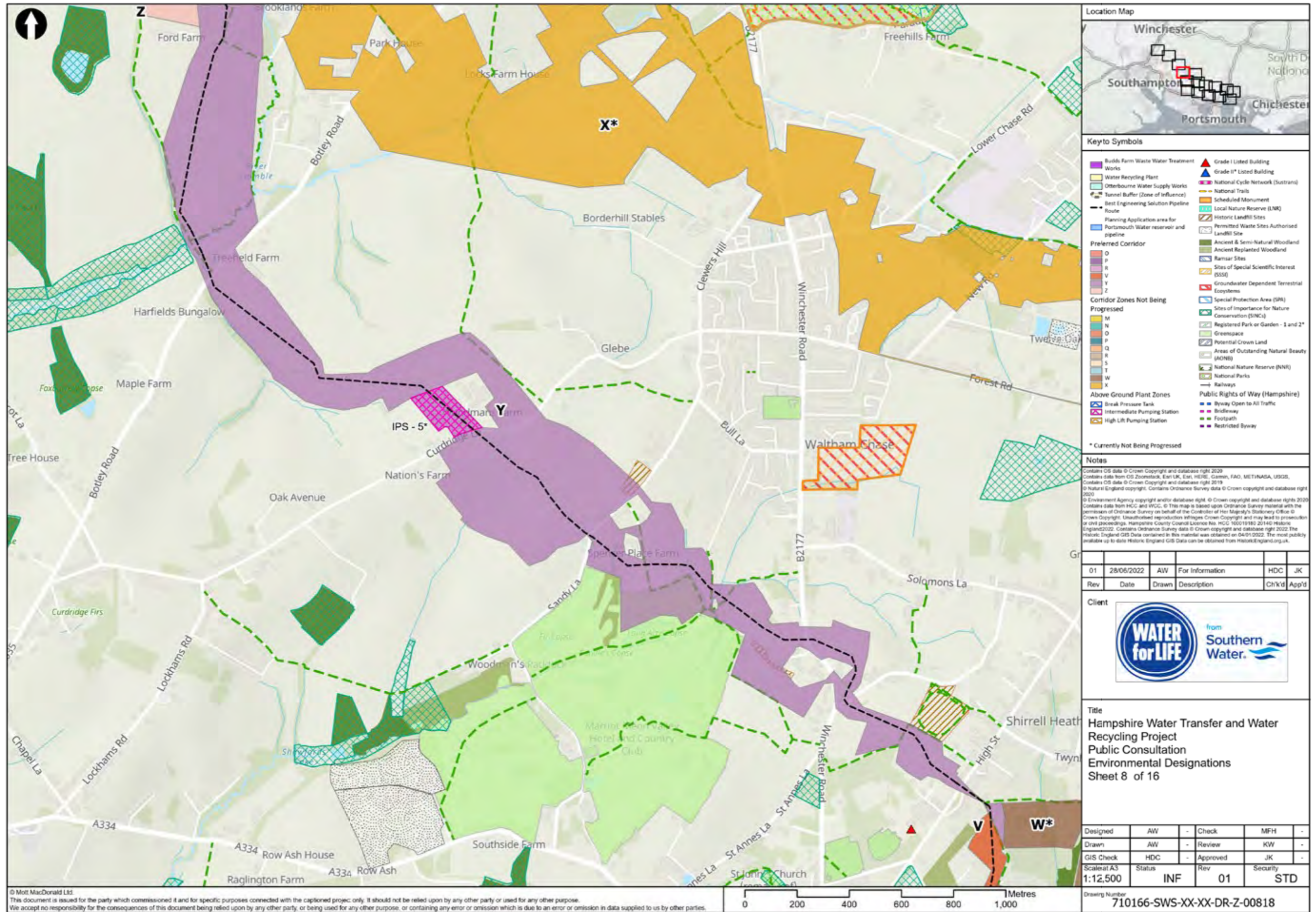


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 7 of 16

|             |        |     |          |     |          |
|-------------|--------|-----|----------|-----|----------|
| Designed    | AW     | -   | Check    | MFH | -        |
| Drawn       | AW     | -   | Review   | KW  | -        |
| GIS Check   | HDC    | -   | Approved | JK  | -        |
| Scale at A3 | Status | INF | Rev      | 01  | Security |
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**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline
- Preferred Corridor
- Corridor Zones Not Being Progressed
- Above Ground Plant Zones
- Grade I Listed Building
- Grade II\* Listed Building
- National Cycle Network (Sustrans)
- National Trails
- Scheduled Monument
- Local Nature Reserve (LNR)
- Historic Landfill Sites
- Permitted Waste Sites Authorised Landfill Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ramsar Sites
- Sites of Special Scientific Interest (SSSI)
- Groundwater Dependent Terrestrial Ecosystems
- Special Protection Area (SPA)
- Sites of Importance for Nature Conservation (SINC)
- Registered Park or Garden - 1 and 2\*
- GreenSpace
- Potential Crown Land
- Area of Outstanding Natural Beauty (AONB)
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- Railways
- Public Rights of Way (Hampshire)
- Byway Open to All Traffic
- Brideway
- Footpath
- Restricted Byway

\* Currently Not Being Progressed

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|-----|------------|-------|-----------------|-------|-------|
| 01  | 28/06/2022 | AW    | For Information | HDC   | JK    |

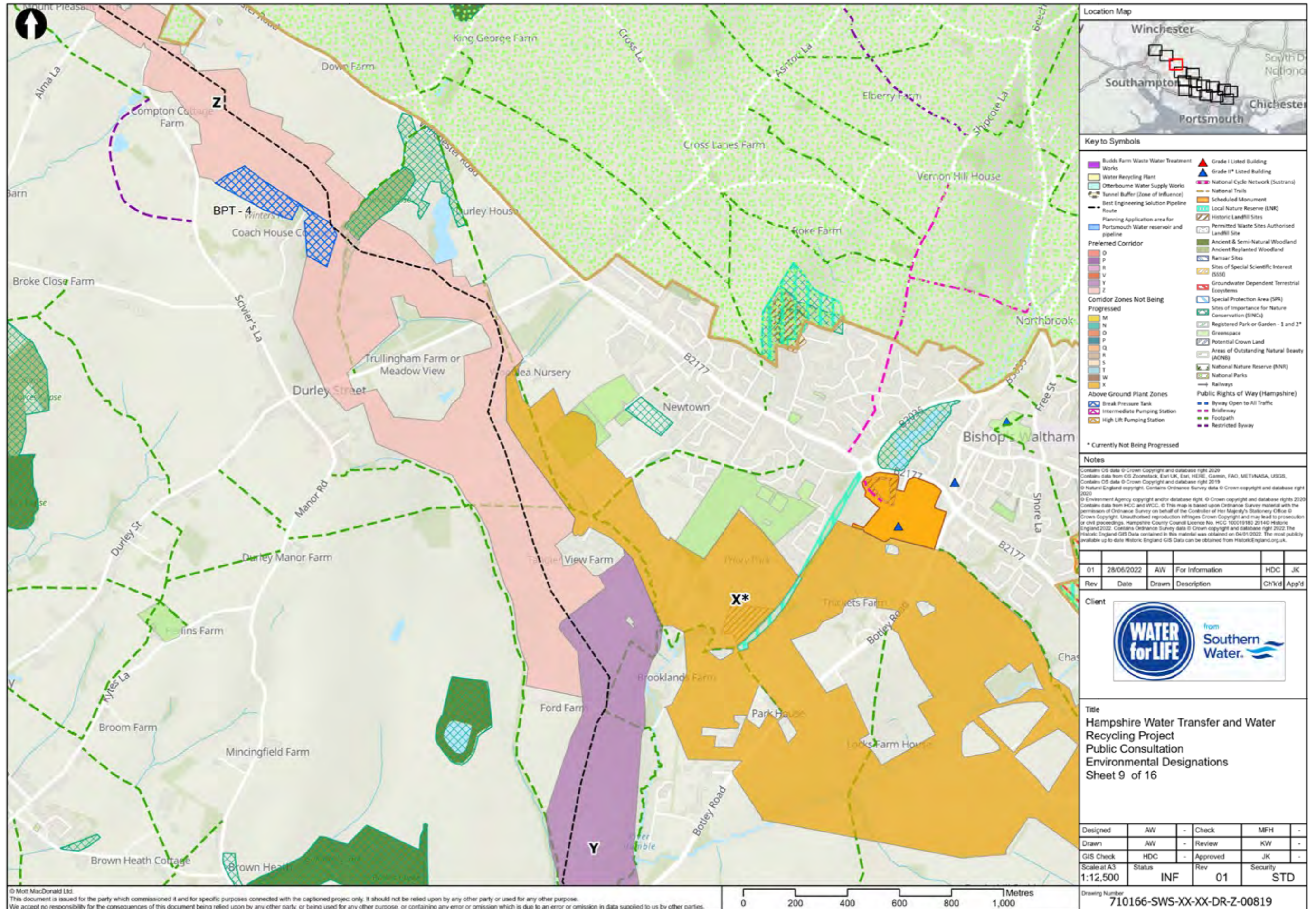


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 8 of 16

|             |        |     |          |     |   |
|-------------|--------|-----|----------|-----|---|
| Designed    | AW     | -   | Check    | MFH | - |
| Drawn       | AW     | -   | Review   | KW  | - |
| GIS Check   | HDC    | -   | Approved | JK  | - |
| Scale at A3 | Status | Rev | Security |     |   |
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**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline
- Preferred Corridor
- Corridor Zones Not Being Progressed
- Above Ground Plant Zones
- Grade I Listed Building
- Grade II\* Listed Building
- National Cycle Network (Sustrans)
- National Trails
- Scheduled Monument
- Local Nature Reserve (LNR)
- Historic Landfill Sites
- Permitted Waste Sites Authorised Landfill Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ramsar Sites
- Sites of Special Scientific Interest (SSSI)
- Groundwater Dependent Terrestrial Ecosystems
- Special Protection Area (SPA)
- Sites of Importance for Nature Conservation (SINC)
- Registered Park or Garden - 1 and 2\*
- Greenpace
- Potential Crown Land
- Areas of Outstanding Natural Beauty (AONB)
- National Nature Reserve (NNR)
- National Parks
- Railways
- Public Rights of Way (Hampshire)
- Byway Open to All Traffic
- Bridleway
- Footpath
- Restricted Byway

\* Currently Not Being Progressed

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|-----|------------|-------|-----------------|-------|-------|
| 01  | 28/05/2022 | AW    | For Information | HDC   | JK    |

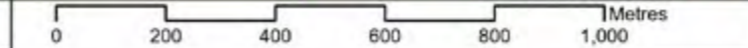


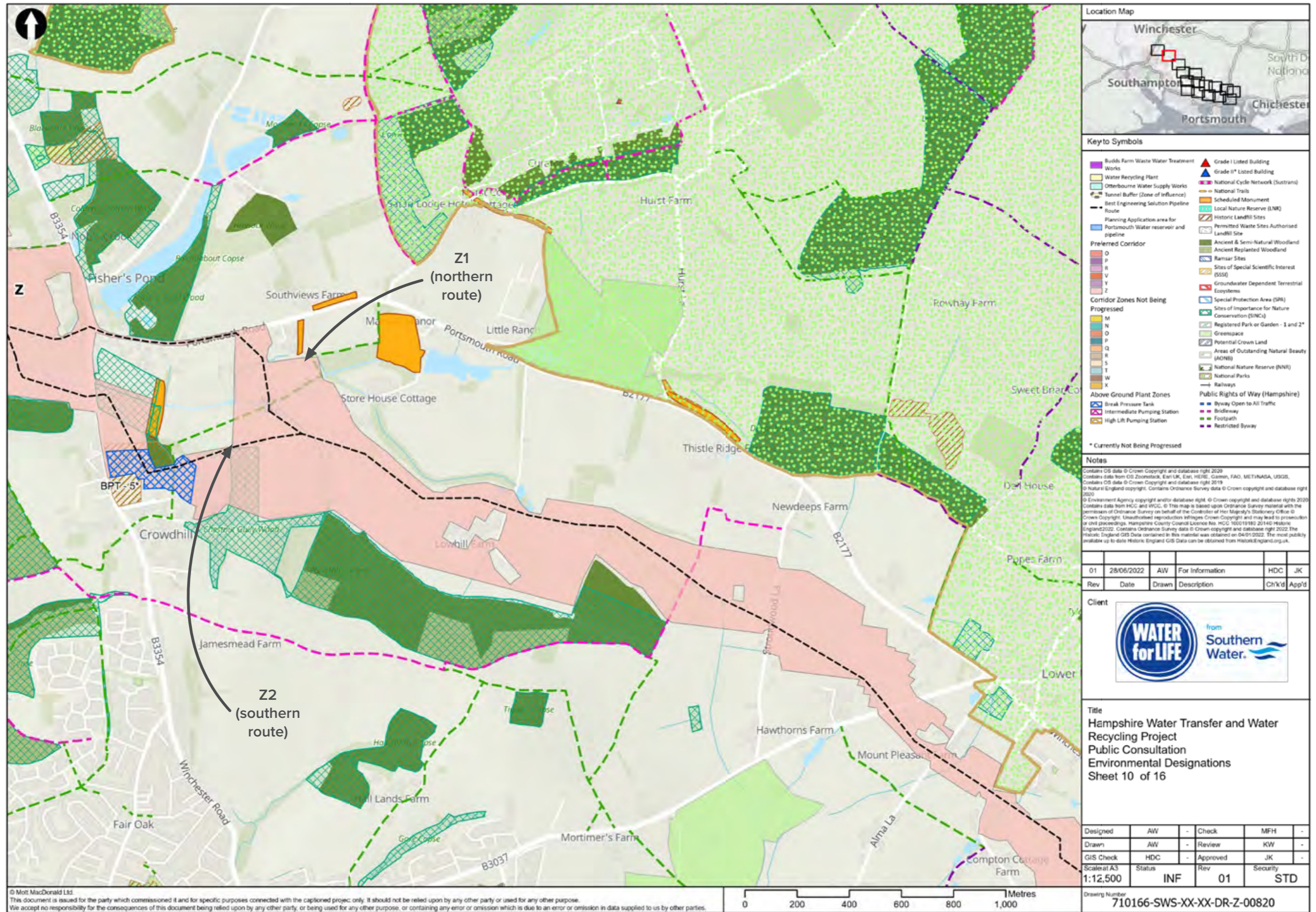
**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 9 of 16

|             |        |     |          |     |   |
|-------------|--------|-----|----------|-----|---|
| Designed    | AW     | -   | Check    | MFH | - |
| Drawn       | AW     | -   | Review   | KW  | - |
| GIS Check   | HDC    | -   | Approved | JK  | - |
| Scale at A3 | Status | Rev | Security |     |   |
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**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline
- Preferred Corridor
- Corridor Zones Not Being Progressed
- Above Ground Plant Zones
- Grade I Listed Building
- Grade II\* Listed Building
- National Cycle Network (Sustrans)
- National Trails
- Scheduled Monument
- Local Nature Reserve (LNR)
- Historic Landfill Sites
- Permitted Waste Sites Authorised Landfill Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ramsar Sites
- Sites of Special Scientific Interest (SSSI)
- Groundwater Dependent Terrestrial Ecosystems
- Special Protection Area (SPA)
- Sites of Importance for Nature Conservation (SINC)
- Registered Park or Garden - 1 and 2\*
- GreenSpace
- Potential Crown Land
- Area of Outstanding Natural Beauty (AONB)
- National Nature Reserve (NNR)
- National Parks
- Public Rights of Way (Hampshire)
- Byway Open to All Traffic
- Brideway
- Footpath
- Restricted Byway

\* Currently Not Being Progressed

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|-----|------------|-------|-----------------|-------|-------|
| 01  | 28/06/2022 | AW    | For Information | HDC   | JK    |

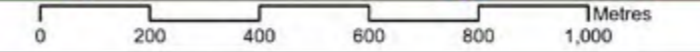


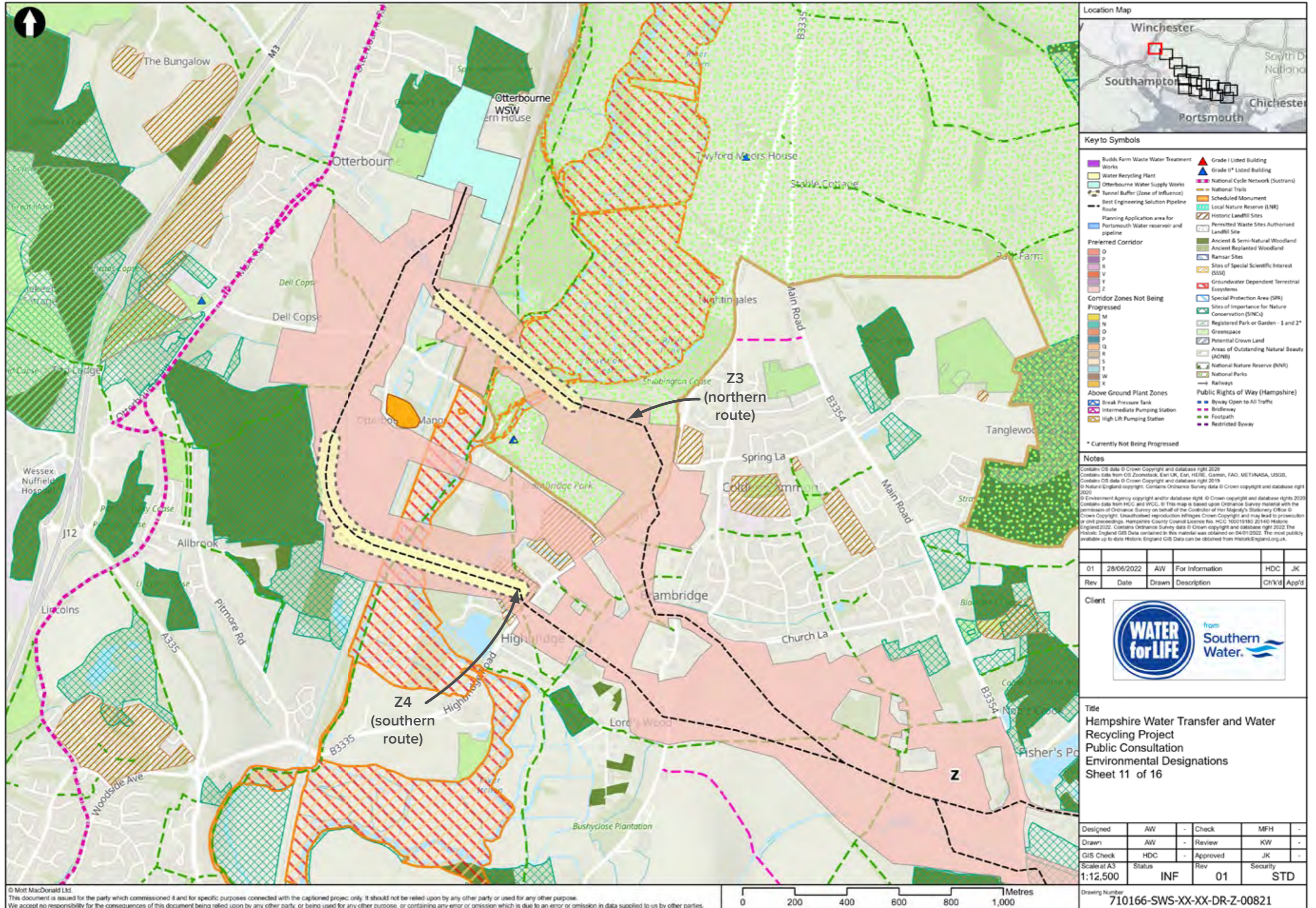
**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 10 of 16

|             |        |     |          |     |          |
|-------------|--------|-----|----------|-----|----------|
| Designed    | AW     | -   | Check    | MFH | -        |
| Drawn       | AW     | -   | Review   | KW  | -        |
| GIS Check   | HDC    | -   | Approved | JK  | -        |
| Scale at A3 | Status | INF | Rev      | 01  | Security |
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**Key to Symbols**

|   |  |
|---|--|
| Budds Farm Waste Water Treatment Works                                | Grade I* Listed Building                           |
| Water Recycling Plant   | Grade II* Listed Building                          |
| Otterbourne Water Supply Works  | National Cycle Network (Sustrans)                  |
| Tunnel Buffer (Zone of Influence)                                     | National Trails                                    |
| Best Engineering Solution Pipeline                                    | Scheduled Monument                                 |
| Route   | Local Nature Reserve (LNR)                         |
| Planning Application area for Portsmouth Water reservoir and pipeline | Historic Landfill Sites                            |
| Preferred Corridor  | Permitted Waste Sites Authorised Landfill Site     |
| D   | Ancient & Semi-Natural Woodland                    |
| R   | Ancient Replanted Woodland                         |
| V   | Ramsar Sites                                       |
| Y   | Sites of Special Scientific Interest (SSSI)        |
| Z   | Groundwater Dependent Terrestrial Ecosystems       |
| Corridor Zones Not Being Progressed                                   | Special Protection Area (SPA)                      |
| M   | Sites of Importance for Nature Conservation (SINC) |
| W   | Registered Park or Garden - 1 and 2*               |
| D   | GreenSpace   |
| P   | Potential Crown Land                               |
| Q   | Areas of Outstanding Natural Beauty (AONB)         |
| R   | National Nature Reserve (NNR)                      |
| S   | National Parks                                     |
| T   | Railways   |
| W   | Public Rights of Way (Hampshire)                   |
| X   | Byway Open to All Traffic                          |
| Above Ground Plant Zones  | Bridleway  |
| Break Pressure Tank   | Footpath   |
| Intermediate Pumping Station  | Restricted Byway                                   |
| High Lift Pumping Station   |  |

\* Currently Not Being Progressed

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| 01  | 28/06/2022 | AW    | For Information | HDC   | JK    |
| Rev | Date       | Drawn | Description     | Ch'kd | App'd |

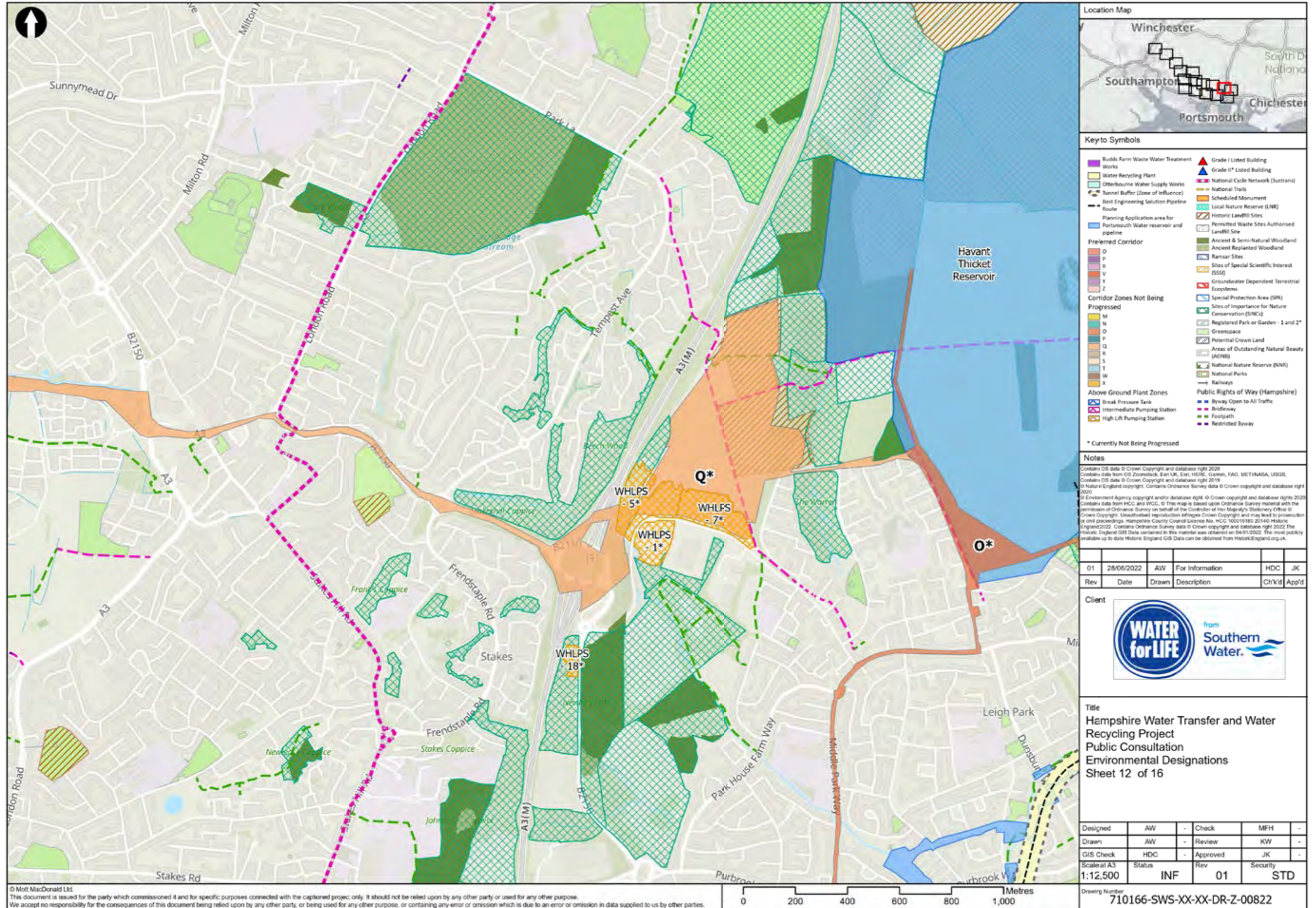


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 11 of 16

|             |        |     |          |     |   |
|-------------|--------|-----|----------|-----|---|
| Designed    | AW     | -   | Check    | MFH | - |
| Drawn       | AW     | -   | Review   | KW  | - |
| GIS Check   | HDC    | -   | Approved | JK  | - |
| Scale at A3 | Status | Rev | Security |     |   |
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**Key to Symbols**

|   |  |
|---|--|
| Budds Farm Waste Water Treatment Works                                | Grade I Listed Building                            |
| Water Recycling Plant   | Grade II* Listed Building                          |
| Otterbourne Water Supply Works  | National Cycle Network (Sustrans)                  |
| Tunnel Buffer (Zone of Influence)                                     | National Trails                                    |
| Best Engineering Solution Pipeline Route                              | Scheduled Monument                                 |
| Planning Application area for Portsmouth Water reservoir and pipeline | Local Nature Reserve (LNR)                         |
|   | Historic Landfill Sites                            |
|   | Permitted Waste Sites Authorised Landfill Site     |
| <b>Preferred Corridor</b>   | Ancient & Semi-Natural Woodland                    |
| O   | Ancient Replanted Woodland                         |
| P   | Ramsar Sites                                       |
| R   | Sites of Special Scientific Interest (SSSI)        |
| V   | Groundwater Dependent Terrestrial Ecosystems       |
| Y   | Special Protection Area (SPA)                      |
| Z   | Sites of Importance for Nature Conservation (SINC) |
| <b>Corridor Zones Not Being Progressed</b>                            | Registered Park or Garden - 1 and 2*               |
| M   | Greenspace   |
| W   | Potential Crown Land                               |
| D   | Areas of Outstanding Natural Beauty (AONB)         |
| P   | National Nature Reserve (NNR)                      |
| Q   | National Parks                                     |
| R   | Railways   |
| S   | Public Rights of Way (Hampshire)                   |
| T   | Byway Open to All Traffic                          |
| W   | Brideway   |
| X   | Footpath   |
| <b>Above Ground Plant Zones</b>                                       | Restricted Byway                                   |
| Break Pressure Tank   |  |
| Intermediate Pumping Station  |  |
| High Lift Pumping Station   |  |

\* Currently Not Being Progressed

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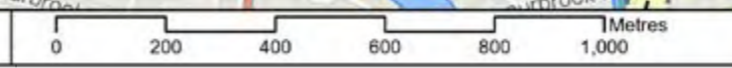
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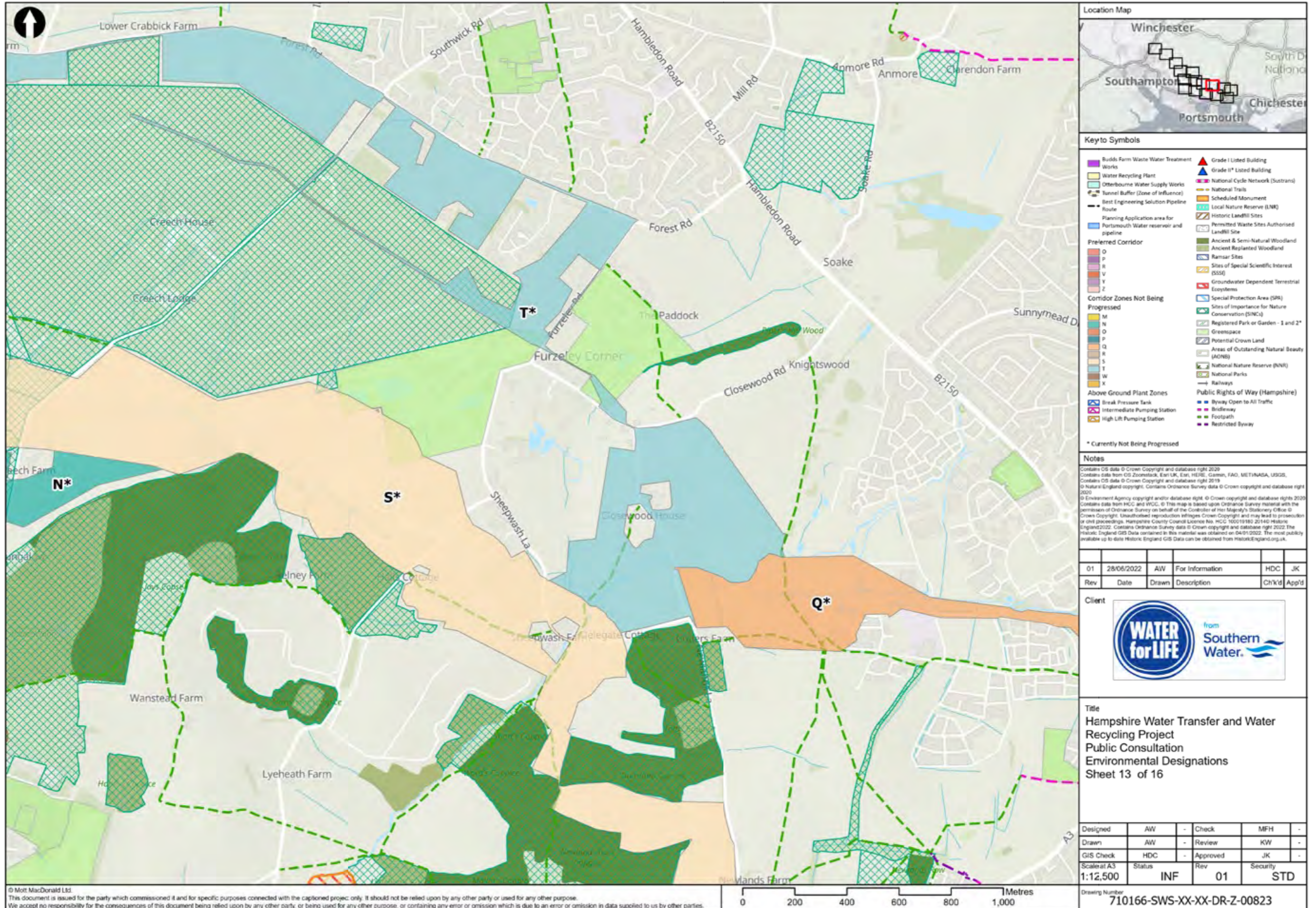


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 12 of 16

|   |        |     |          |     |   |
|---|--------|-----|----------|-----|---|
| Designed                                      | AW     | -   | Check    | MFH | - |
| Drawn   | AW     | -   | Review   | KW  | - |
| GIS Check                                     | HDC    | -   | Approved | JK  | - |
| Scale at A3                                   | Status | Rev | Security |     |   |
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**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline
- Preferred Corridor
- Corridor Zones Not Being Progressed
- Above Ground Plant Zones
- Grade I Listed Building
- Grade II\* Listed Building
- National Cycle Network (Sustrans)
- National Trails
- Scheduled Monument
- Local Nature Reserve (LNR)
- Historic Landfill Sites
- Permitted Waste Sites Authorised Landfill Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ramsar Sites
- Sites of Special Scientific Interest (SSSI)
- Groundwater Dependent Terrestrial Ecosystems
- Special Protection Area (SPA)
- Sites of Importance for Nature Conservation (SINC)
- Registered Park or Garden - 1 and 2\*
- GreenSpace
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- Areas of Outstanding Natural Beauty (AONB)
- National Nature Reserve (NNR)
- National Parks
- Railways
- Public Rights of Way (Hampshire)
- Break Pressure Tank
- Intermediate Pumping Station
- High Lift Pumping Station
- Byway Open to All Traffic
- Brideway
- Footpath
- Restricted Byway

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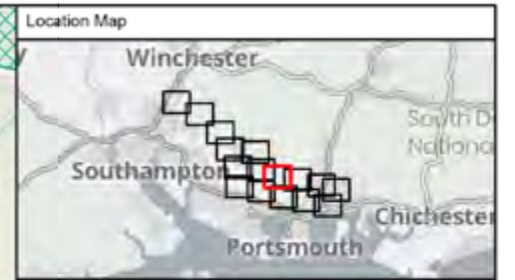
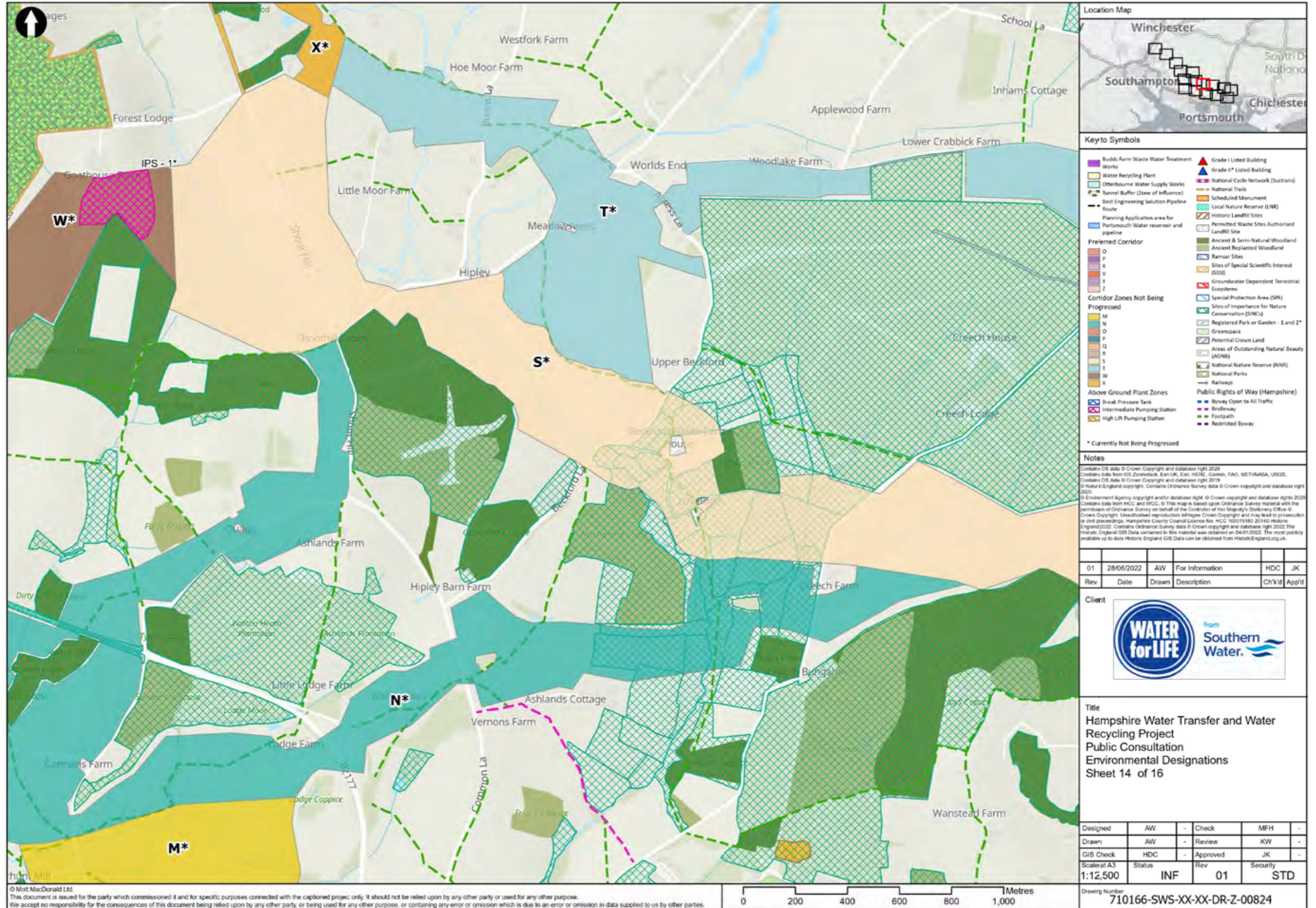
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**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 13 of 16

|   |        |     |          |     |   |
|---|--------|-----|----------|-----|---|
| Designed                                      | AW     | -   | Check    | MFH | - |
| Drawn   | AW     | -   | Reviewed | KW  | - |
| GIS Check                                     | HDC    | -   | Approved | JK  | - |
| Scale at A3                                   | Status | Rev | Security |     |   |
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**Key to Symbols**

|   |  |
|---|--|
| Budds Farm Waste Water Treatment Works                                | Grade I Listed Building                            |
| Water Recycling Plant   | Grade II* Listed Building                          |
| Otterbourne Water Supply Works  | National Cycle Network (Sustrans)                  |
| Tunnel Buffer (Zone of Influence)                                     | National Trails                                    |
| Best Engineering Solution Pipeline                                    | Scheduled Monument                                 |
| Route   | Local Nature Reserve (LNR)                         |
| Planning Application area for Portsmouth Water reservoir and pipeline | Historic Landfill Sites                            |
| Preferred Corridor  | Permitted Waste Sites Authorised Landfill Site     |
| O   | Ancient & Semi-Natural Woodland                    |
| P   | Ancient Replanted Woodland                         |
| R   | Ramsar Sites                                       |
| V   | Sites of Special Scientific Interest (SSSI)        |
| Y   | Groundwater Dependent Terrestrial Ecosystems       |
| Z   | Special Protection Area (SPA)                      |
| Corridor Zones Not Being Progressed                                   | Sites of Importance for Nature Conservation (SINC) |
| M   | Registered Park or Garden - 1 and 2*               |
| W   | GreenSpace   |
| D   | Potential Crown Land                               |
| P   | Areas of Outstanding Natural Beauty (AONB)         |
| Q   | National Nature Reserve (NNR)                      |
| R   | National Parks                                     |
| S   | Railways   |
| T   | Public Rights of Way (Hampshire)                   |
| W   | Byway Open to All Traffic                          |
| X   | Brideway   |
| Above Ground Plant Zones  | Footpath   |
| Break Pressure Tank   | Restricted Byway                                   |
| Intermediate Pumping Station  |  |
| High Lift Pumping Station   |  |

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| Rev | Date       | Drawn | Description     | Ch'kd | App'd |
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| 01  | 28/05/2022 | AW    | For Information | HDC   | JK    |

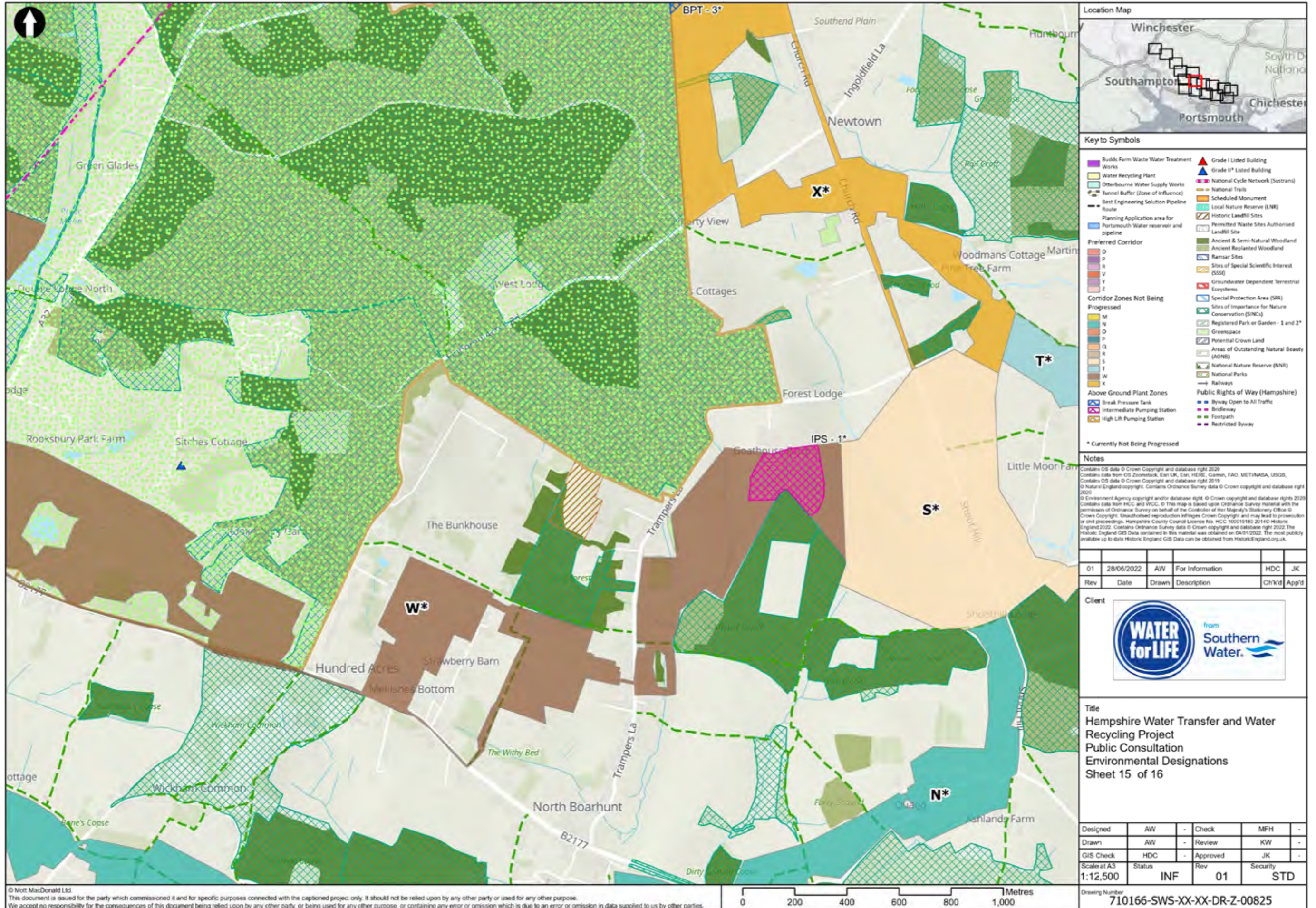


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 14 of 16

|             |        |     |          |     |   |
|-------------|--------|-----|----------|-----|---|
| Designed    | AW     | -   | Check    | MFH | - |
| Drawn       | AW     | -   | Review   | KW  | - |
| GIS Check   | HDC    | -   | Approved | JK  | - |
| Scale at A3 | Status | Rev | Security |     |   |
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**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline
- Route
- Planning Application area for Portsmouth Water reservoir and pipeline
- Preferred Corridor
- Corridor Zones Not Being Progressed
- Above Ground Plant Zones
- Grade I Listed Building
- Grade II\* Listed Building
- National Cycle Network (Sustrans)
- National Trails
- Scheduled Monument
- Local Nature Reserve (LNR)
- Historic Landfill Sites
- Permitted Waste Sites/Authorised Landfill Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ramsar Sites
- Sites of Special Scientific Interest (SSSI)
- Groundwater Dependent Terrestrial Ecosystems
- Special Protection Area (SPA)
- Sites of Importance for Nature Conservation (SINC)
- Registered Park or Garden - 1 and 2\*
- GreenSpace
- Potential Crown Land
- Area of Outstanding Natural Beauty (AONB)
- National Nature Reserve (NNR)
- National Parks
- Railways
- Public Rights of Way (Hampshire)
- Byway Open to All Traffic
- Brideway
- Footpath
- Restricted Byway

\* Currently Not Being Progressed

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| Rev | Date       | Drawn | Description     | Ch'kd | App'd |

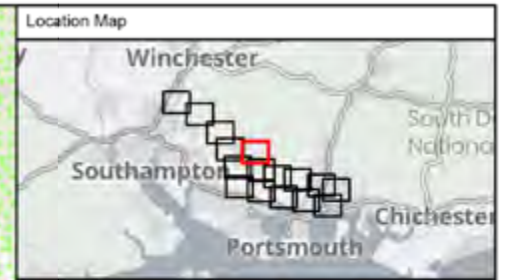
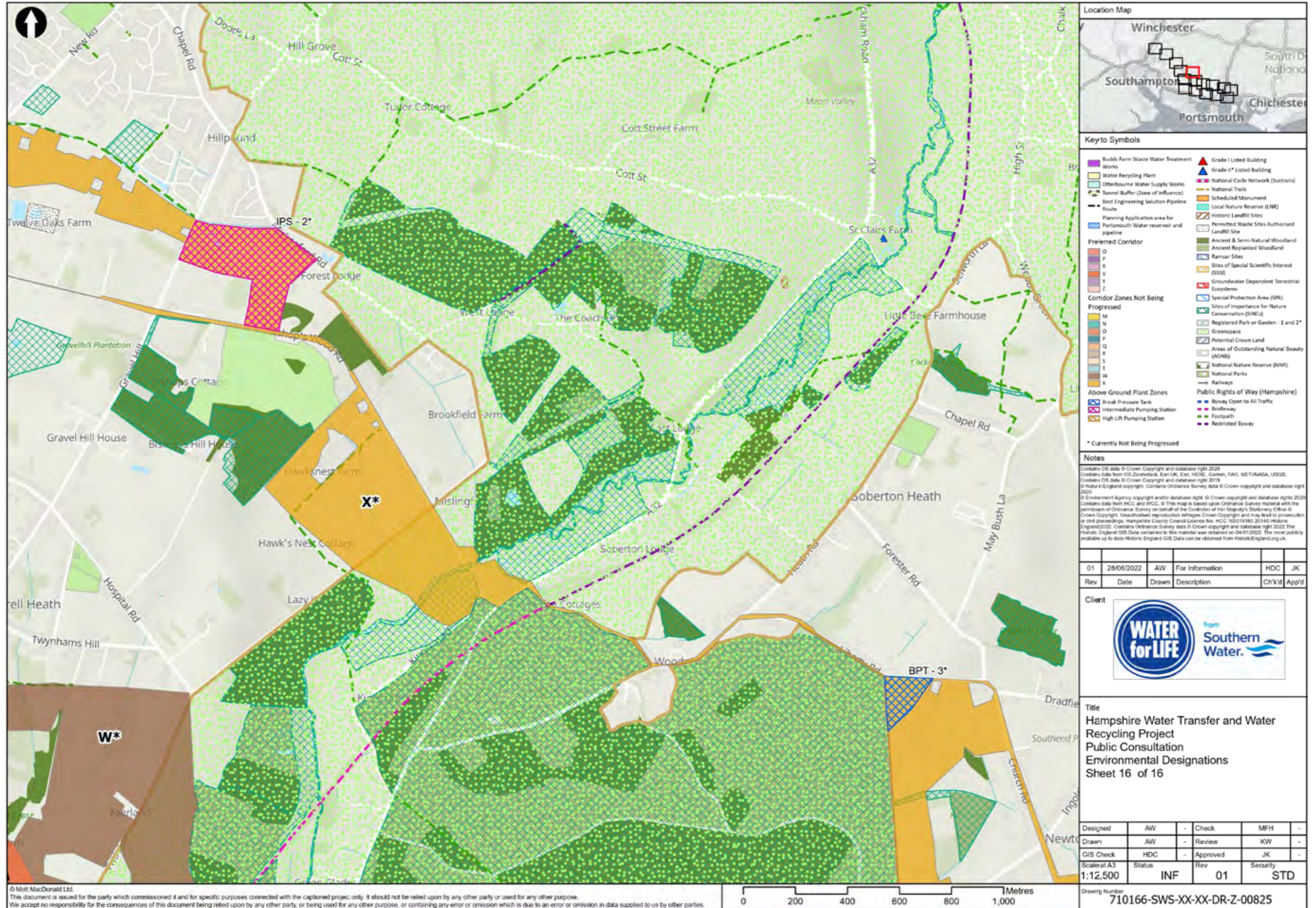


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 15 of 16

|             |        |     |          |     |          |
|-------------|--------|-----|----------|-----|----------|
| Designed    | AW     | -   | Check    | MFH | -        |
| Drawn       | AW     | -   | Review   | KW  | -        |
| GIS Check   | HDC    | -   | Approved | JK  | -        |
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**Key to Symbols**

|   |  |
|---|--|
| Budds Farm Waste Water Treatment Works                                | Grade I Listed Building                            |
| Water Recycling Plant   | Grade II* Listed Building                          |
| Otterbourne Water Supply Works  | National Cycle Network (Sustrans)                  |
| Tunnel Buffer (Zone of Influence)                                     | Scheduled Monument                                 |
| Best Engineering Solution Pipeline Route                              | Local Nature Reserve (LNR)                         |
| Planning Application area for Portsmouth Water reservoir and pipeline | Historic Landfill Sites                            |
| Preferred Corridor  | Permitted Waste Sites Authorised Landfill Site     |
| Corridor Zones Not Being Progressed                                   | Ancient & Semi-Natural Woodland                    |
|   | Ancient Replanted Woodland                         |
|   | Ramsar Sites                                       |
|   | Sites of Special Scientific Interest (SSSI)        |
|   | Groundwater Dependent Terrestrial Ecosystems       |
|   | Special Protection Area (SPA)                      |
|   | Sites of Importance for Nature Conservation (SINC) |
|   | Registered Park or Garden - 1 and 2*               |
|   | GreenSpace   |
|   | Potential Crown Land                               |
|   | Areas of Outstanding Natural Beauty (AONB)         |
|   | National Nature Reserve (NNR)                      |
|   | National Parks                                     |
|   | Railways   |
|   | Public Rights of Way (Hampshire)                   |
|   | Byway Open to All Traffic                          |
|   | Bridleway  |
|   | Footpath   |
|   | Restricted Byway                                   |

\* Currently Not Being Progressed

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| Rev | Date       | Drawn | Description     | Ch'kd | App'd |



**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Environmental Designations  
 Sheet 16 of 16

|  |        |     |          |     |   |
|--|--------|-----|----------|-----|---|
| Designed                                   | AW     | -   | Check    | MFH | - |
| Drawn                                      | AW     | -   | Review   | KW  | - |
| GIS Check                                  | HDC    | -   | Approved | JK  | - |
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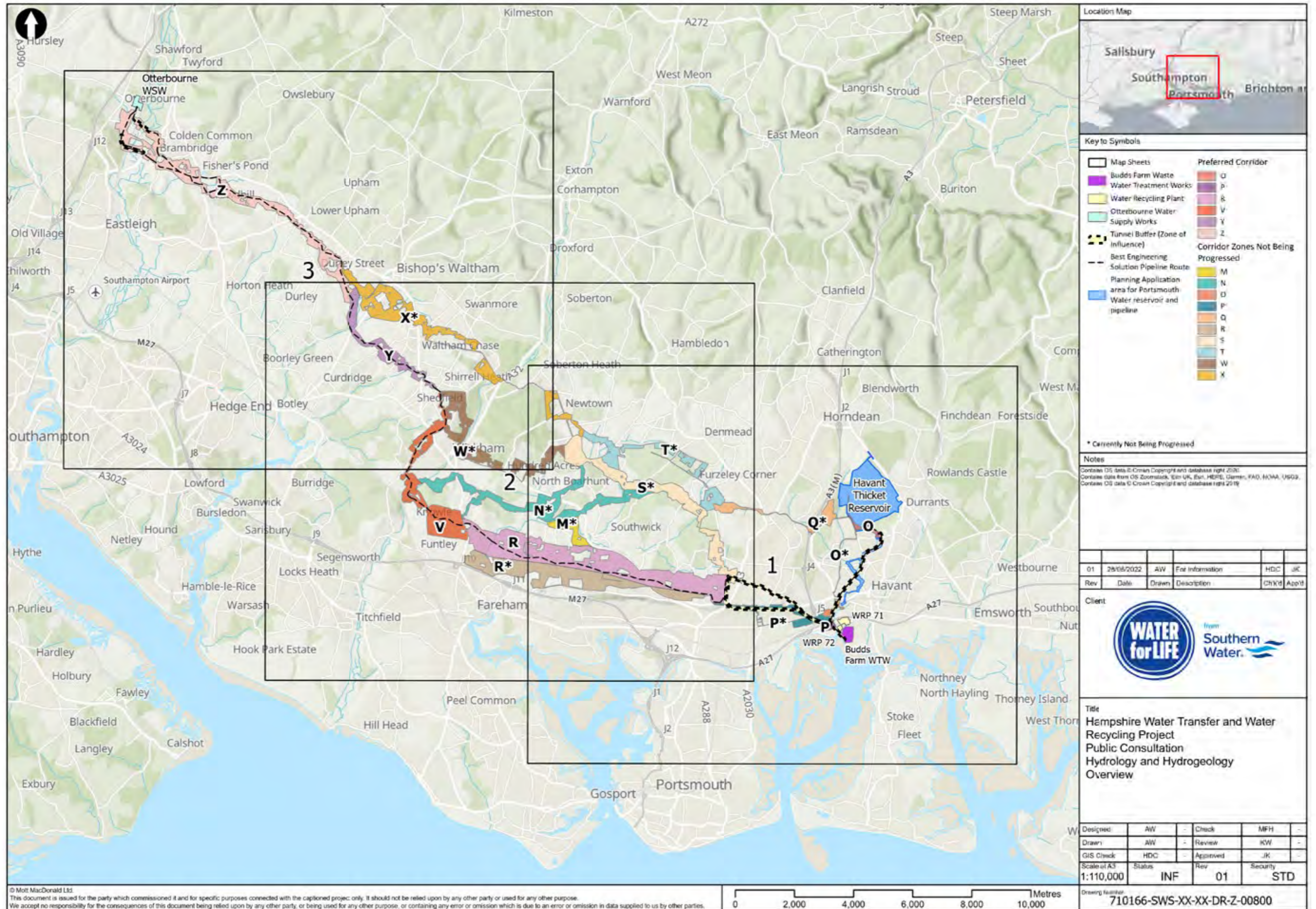


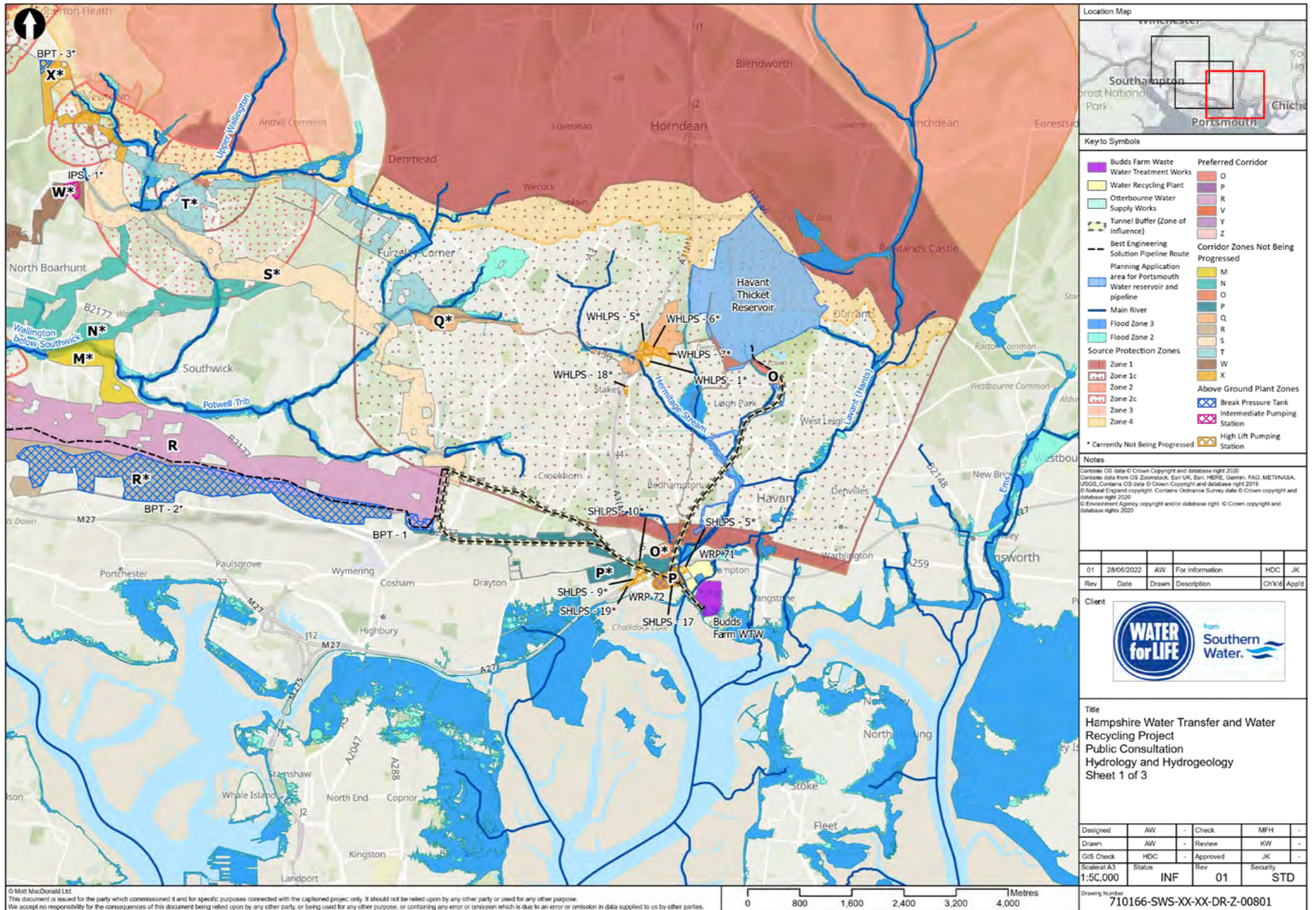


# Hydrology and Hydrogeology



from  
**Southern  
Water** 





**Key to Symbols**

|  |  |
|--|--|
| Budds Farm Waste Water Treatment Works   | Preferred Corridor O                       |
| Water Recycling Plant                    | Preferred Corridor P                       |
| Otterbourne Water Supply Works           | Preferred Corridor R                       |
| Tunnel Buffer (Zone of Influence)        | Preferred Corridor V                       |
| Best Engineering Solution Pipeline Route | Preferred Corridor Y                       |
| Planning Application area for Portsmouth | Preferred Corridor Z                       |
| Water reservoir and pipeline             |  |
| Main River                               |  |
| Flood Zone 3                             | <b>Corridor Zones Not Being Progressed</b> |
| Flood Zone 2                             | M  |
| <b>Source Protection Zones</b>           | N  |
| Zone 1                                   | O  |
| Zone 1c                                  | P  |
| Zone 2                                   | Q  |
| Zone 2c                                  | R  |
| Zone 3                                   | S  |
| Zone 4                                   | T  |
|  | W  |
|  | X  |
|  | <b>Above Ground Plant Zones</b>            |
|  | Break Pressure Tank                        |
|  | Intermediate Pumping Station               |
|  | High Lift Pumping Station                  |

\* Currently Not Being Progressed

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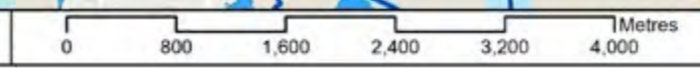
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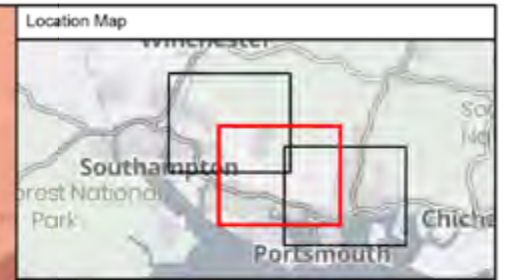
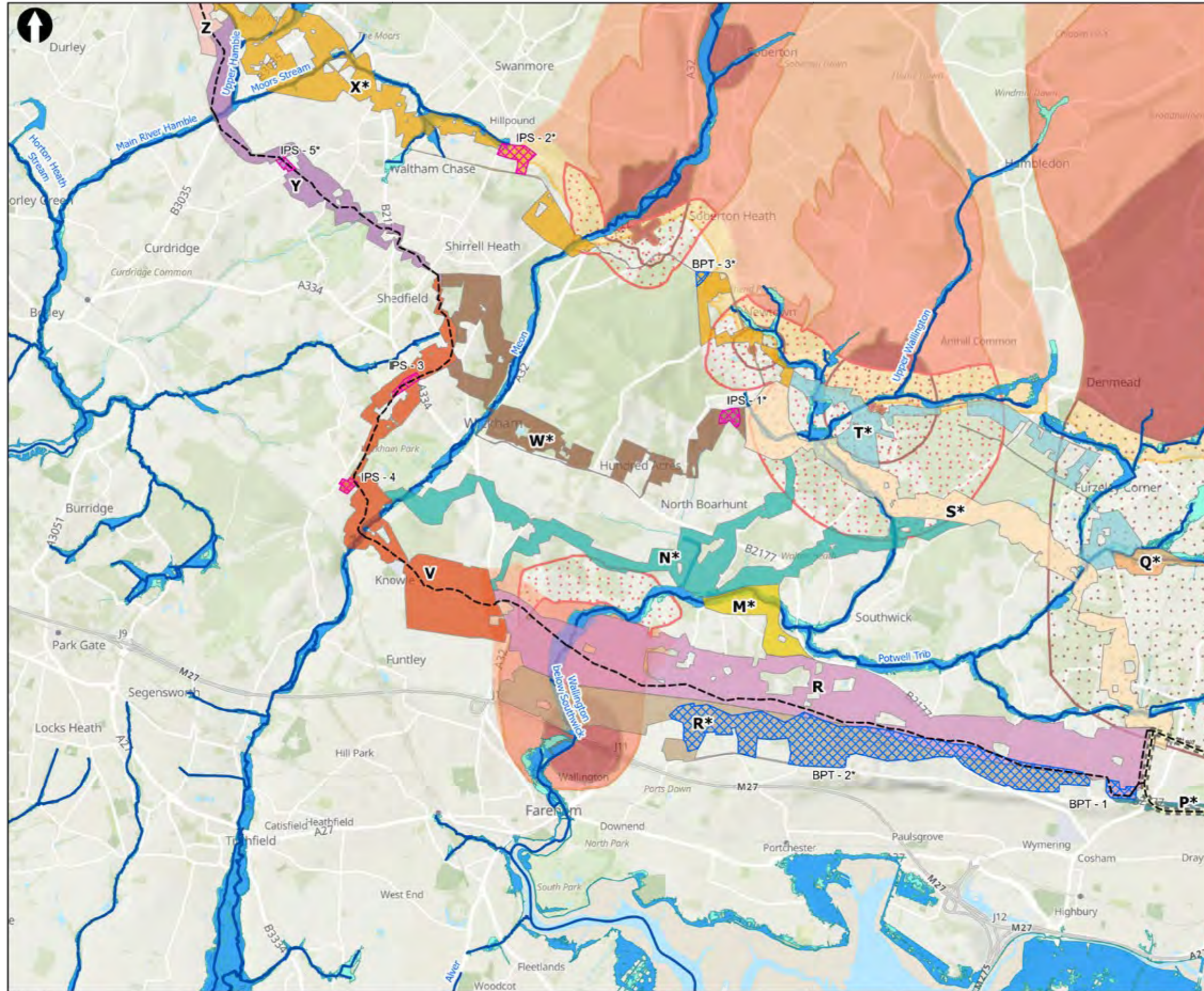


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Hydrology and Hydrogeology  
 Sheet 1 of 3

|   |        |     |          |     |          |
|---|--------|-----|----------|-----|----------|
| Designed                                    | AW     | -   | Check    | MFH | -        |
| Drawn                                       | AW     | -   | Review   | KW  | -        |
| GIS Check                                   | HDC    | -   | Approved | JK  | -        |
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**Key to Symbols**

|   |  |
|---|--|
| Budds Farm Waste Water Treatment Works                                | Preferred Corridor O                         |
| Water Recycling Plant   | Preferred Corridor P                         |
| Otterbourne Water Supply Works  | Preferred Corridor R                         |
| Tunnel Buffer (Zone of Influence)                                     | Preferred Corridor V                         |
| Best Engineering Solution Pipeline Route                              | Preferred Corridor Y                         |
| Planning Application area for Portsmouth Water reservoir and pipeline | Preferred Corridor Z                         |
| Main River  |  |
| Flood Zone 3  |  |
| Flood Zone 2  |  |
| Source Protection Zone 1  | Corridor Zones Not Being Progressed M        |
| Source Protection Zone 1c   | Corridor Zones Not Being Progressed N        |
| Source Protection Zone 2  | Corridor Zones Not Being Progressed O        |
| Source Protection Zone 2c   | Corridor Zones Not Being Progressed P        |
| Source Protection Zone 3  | Corridor Zones Not Being Progressed Q        |
| Source Protection Zone 4  | Corridor Zones Not Being Progressed R        |
|   | Corridor Zones Not Being Progressed S        |
|   | Corridor Zones Not Being Progressed T        |
|   | Corridor Zones Not Being Progressed W        |
|   | Corridor Zones Not Being Progressed X        |
|   | Above Ground Plant Zones Break Pressure Tank |
|   | Intermediate Pumping Station                 |
|   | High Lift Pumping Station                    |

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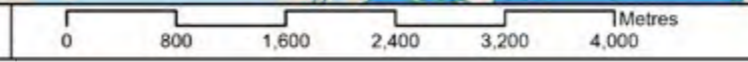


**Title**  
 Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Hydrology and Hydrogeology  
 Sheet 2 of 3

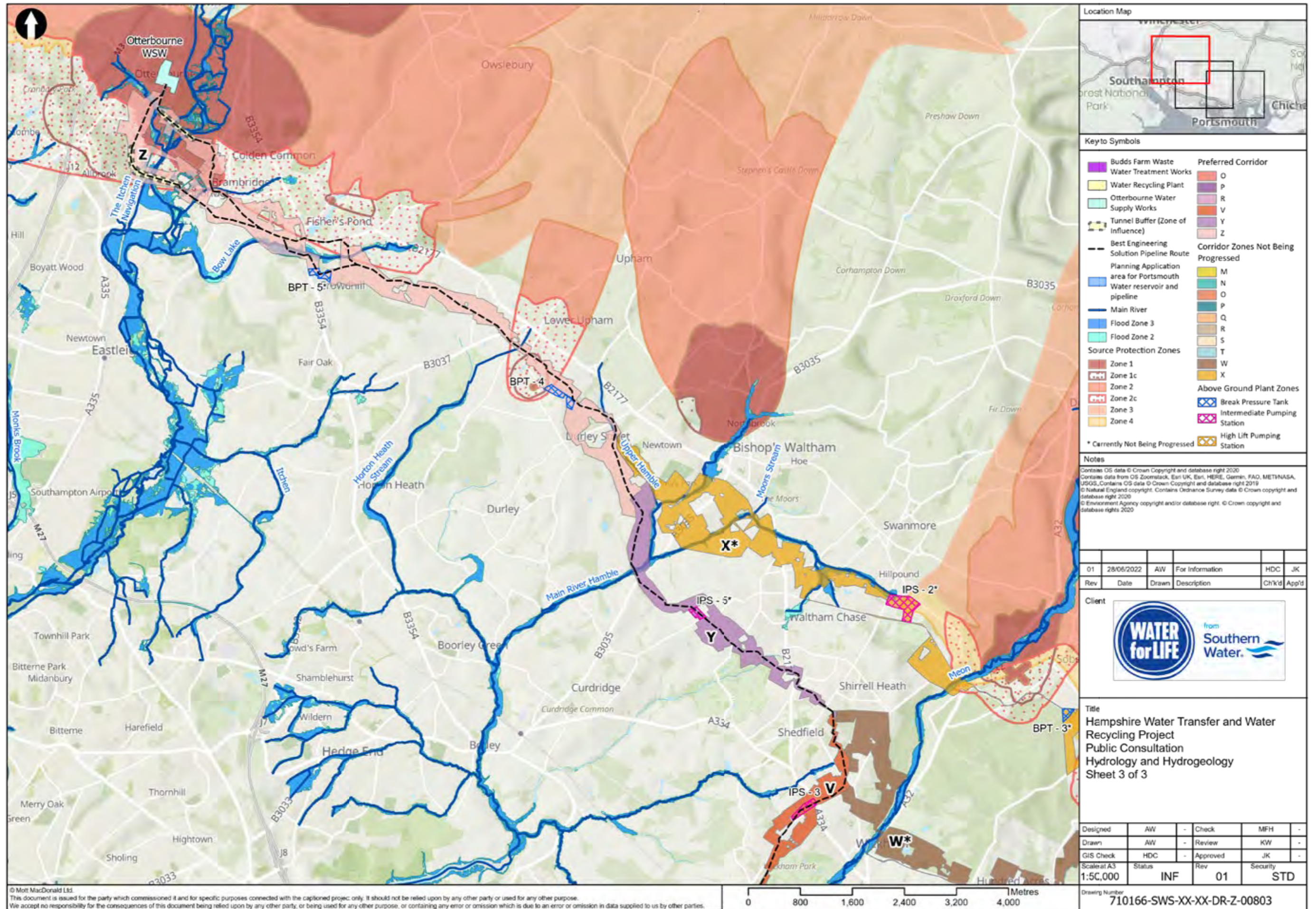
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Sheet 3 of 3



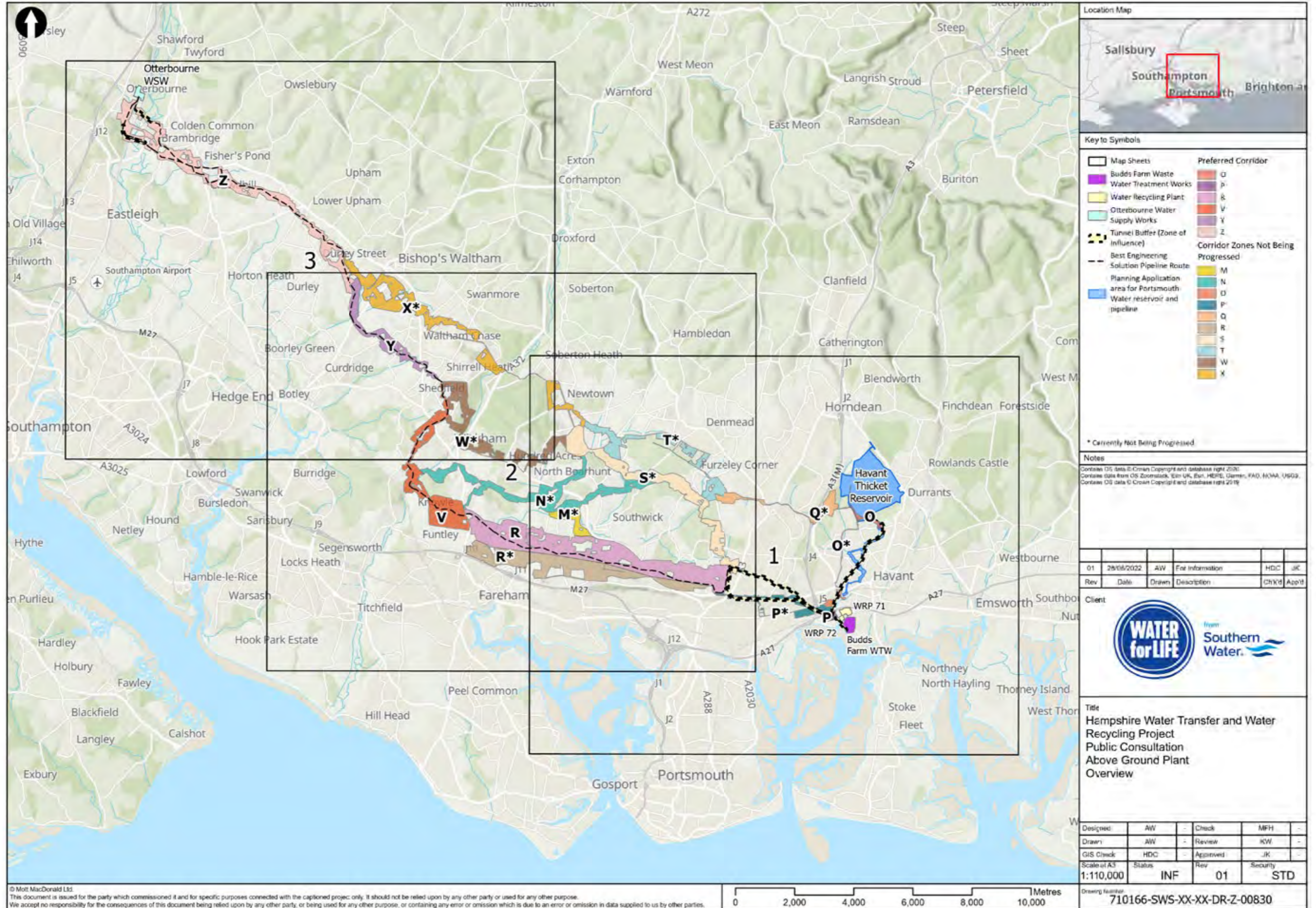


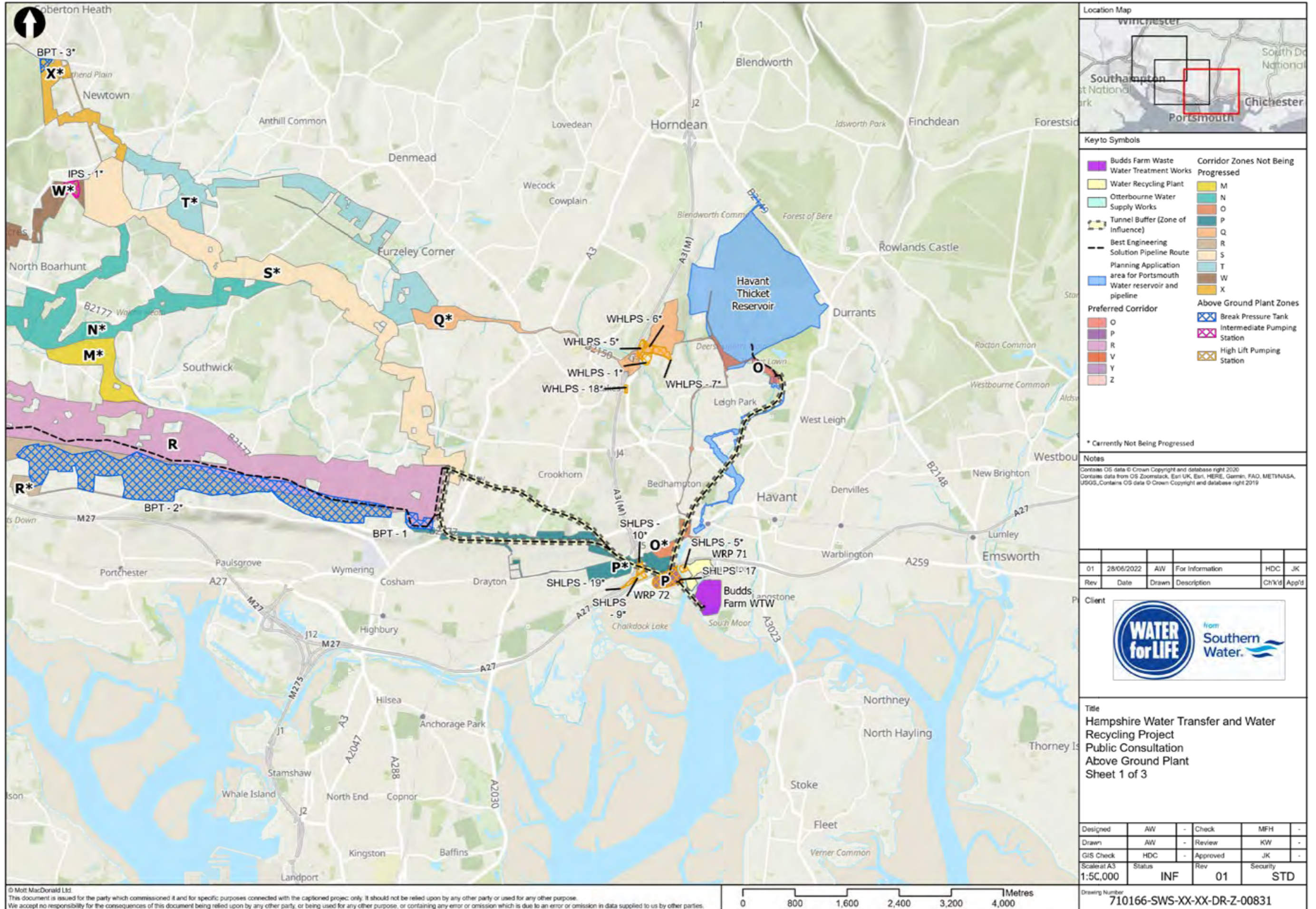
# Above ground plant



from  
**Southern  
Water** 

The Southern Water logo graphic consists of three stylized, white, wavy lines that resemble water waves, positioned to the right of the word 'Water'.





**Key to Symbols**

- Budds Farm Waste Water Treatment Works
- Water Recycling Plant
- Otterbourne Water Supply Works
- Tunnel Buffer (Zone of Influence)
- Best Engineering Solution Pipeline Route
- Planning Application area for Portsmouth and pipeline
- Water reservoir and pipeline

**Corridor Zones Not Being Progressed**

- M
- N
- O
- P
- Q
- R
- S
- T
- W
- X

**Preferred Corridor**

- O
- P
- R
- V
- Y
- Z

**Above Ground Plant Zones**

- Break Pressure Tank
- Intermediate Pumping Station
- High Lift Pumping Station

\* Currently Not Being Progressed

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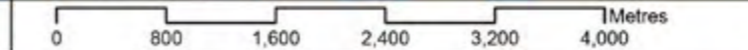
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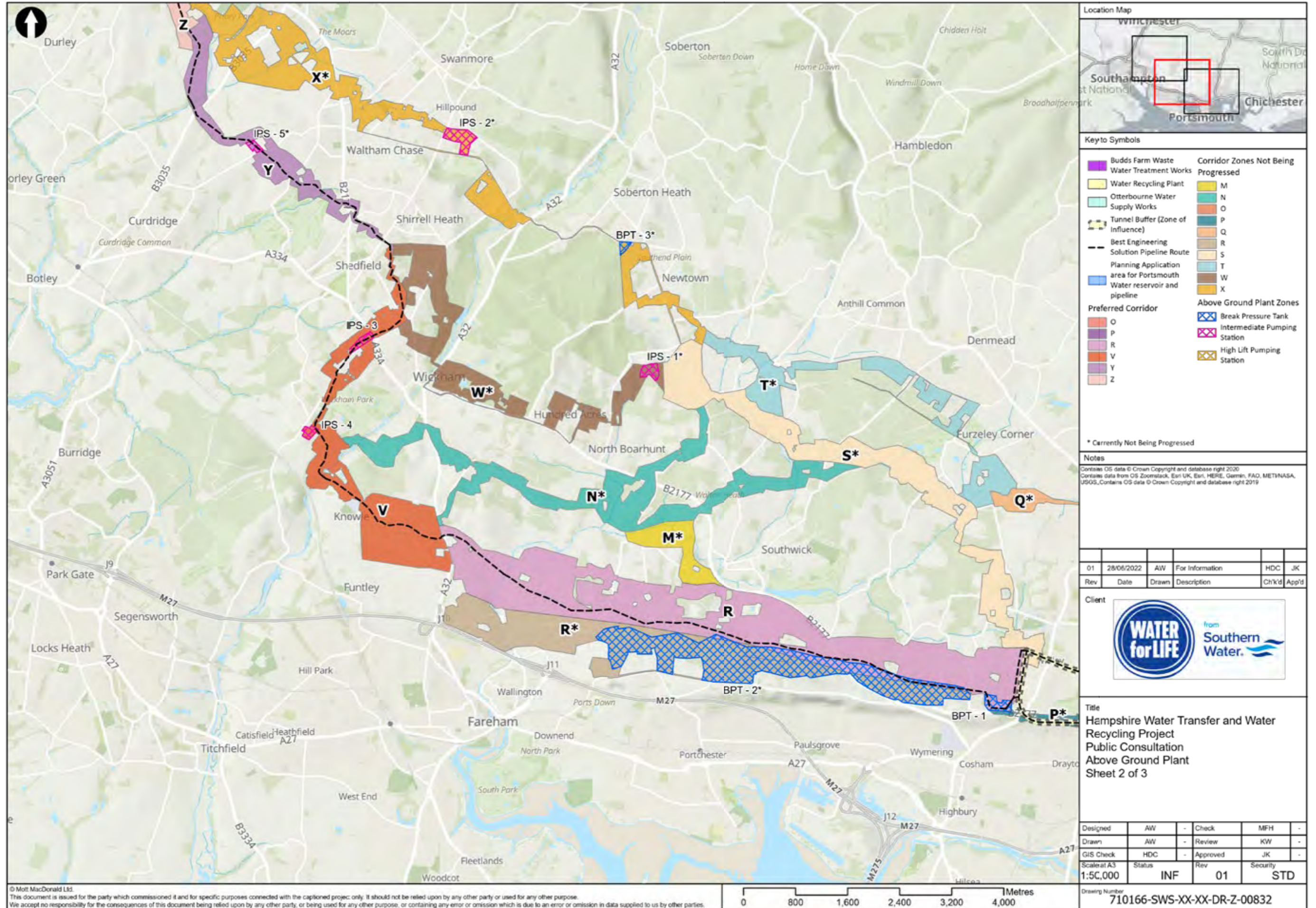
Hampshire Water Transfer and Water Recycling Project  
 Public Consultation  
 Above Ground Plant  
 Sheet 1 of 3

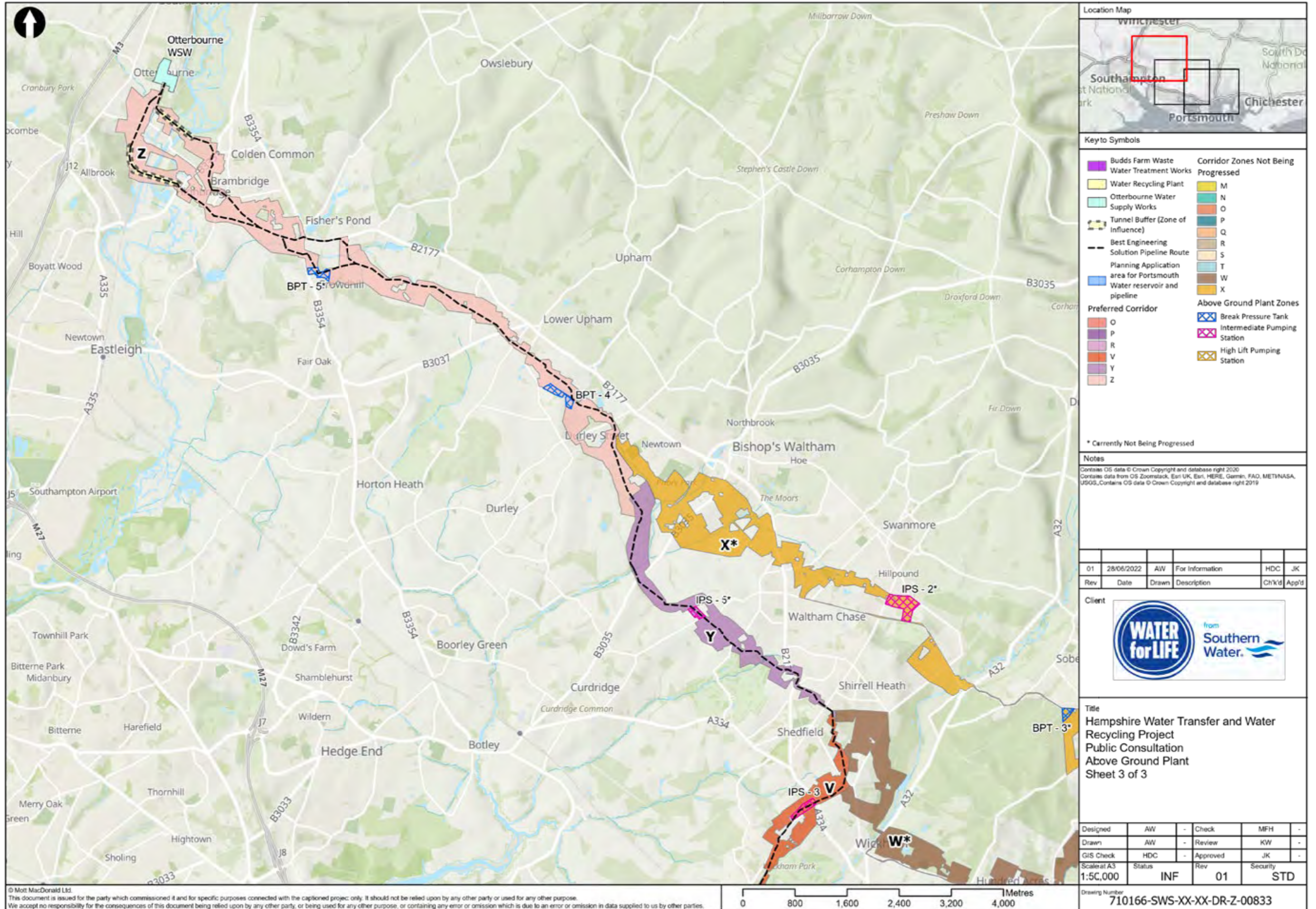
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| GIS Check   | HDC    | -   | Approved | JK  | - |
| Scale at A3 | Status | Rev | Security |     |   |
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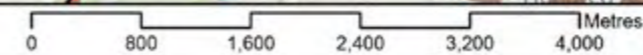
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| GIS Check   | HDC    | -   | Approved | JK  | - |
| Scale at A3 | Status | Rev | Security |     |   |
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from  
Southern  
Water. 

The Southern Water logo icon consists of three stylized, white, wavy lines that resemble water waves, positioned to the right of the word "Water.".