South West Water

Par desalination project

Frequently Asked Questions

Par desalination project

Thank you for expressing an interest in our proposals to deliver a new desalination project in Par.

We have received a high volume of questions in recent weeks and have been reviewing these so that we can provide you with as many answers as we can.

This Frequently Asked Questions booklet covers a range of our key considerations and reflects the questions that have been asked of us recently. These include:

- Why desalination?
- Environmental and marine considerations
- Considerations for pipeline route and plant location
- Energy and sustainability considerations
- Planning process, public engagement and consultation

We do hope that the answers that we have provided in this booklet are helpful.

This is the start of the conversation and we are committed to bringing our customers and stakeholders on this journey with us.

For those questions that are not included in this booklet, we are holding public information events in December. This will be an opportunity to view our plans in more detail, and to ask our dedicated specialists any additional questions you may have.

In the meantime, should you have any further questions, please do not hesitate to get in contact with us at **info@swwdesalination.co.uk**

About South West Water

South West Water provides water for 2.2 million people living and working in Cornwall, Devon and parts of Somerset and Dorset, as well as in the Bournemouth area and the Isles of Scilly.

Introduction

South West Water is investing to improve the security of Cornwall's water supply to ensure it has sustainable, resilient and climate independent water sources in the future.

The 2022 drought presented us with one of the most significant water resources management challenges the South West region has faced. Throughout this period, we have been closely monitoring and looking at forward projections, making plans to act responsibly and quickly.

Last summer's lack of rain and extreme heat, combined with the unusually dry start to the year, has triggered a series of drought resilience intervention measures. These interventions include Hawks Tor, which is able to provide up to 4 million litres of water per day into our Colliford reservoir. We're also fixing more leaks, quicker than ever before. Our teams are working around the clock to conserve our water resources and are fixing up to 2,500 leaks each month.

Actions we have taken and recent rainfall means our reservoirs are fuller than this time last year and the hosepipe ban has now been lifted. But we need to do more to secure the region's water supplies for the future.

A climate independent desalination plant is just one of the solutions we are using to tackle droughts and water shortages.

Why desalination?

Q: What is desalination?

A: Desalination is a process that removes salt and other impurities from seawater, making it safe and suitable for human consumption, irrigation or industrial use. The primary goal of desalination is to provide a clean, safe source of freshwater in locations where traditional water resources may, at certain times, be insufficient.

There are two main methods of desalination: **distillation processes**, which use evaporation and condensation to separate freshwater from saltwater, and **membrane processes,** such as reverse osmosis (RO) which uses a semi-permeable membrane to separate salt and impurities from water, allowing only freshwater to pass through. We are planning to use a membrane process in our proposed desalination plant.

The use of desalination has been growing around the world, driven by increasing water demand, population growth and climate change impacts on water availability.

Desalination can provide a vital source of freshwater during periods of water stress and advances in desalination technology continue to improve efficiency and reduce environmental effects.

Our aim is to add this source of water to our supply network, so that it is available to us during periods when our traditional water resources are under pressure and may not be sufficient to meet demand.

Q: Is water produced by desalination wholesome and safe?

A: Yes, water produced using desalination is safe for consumption. Desalination processes effectively remove salts and impurities from seawater, providing a source of freshwater that meets drinking water standards.

In the UK, the production of drinking water is closely regulated by the Drinking Water Inspectorate (DWI), and desalination plants (like any water treatment works in the UK) must adhere to tight regulatory standards and guidelines to ensure the produced water is wholesome and safe for consumption.

Both desalination methods, membrane and distillation, are effective at removing contaminants, including salt, bacteria and other dissolved solids. In addition, the post-treatment remineralisation and conditioning processes ensure that the water is wholesome and meets our strict drinking water quality standards.

Q: Why are you proposing a desalination plant? Why have you chosen this approach rather than other solutions?

A: It is a statutory duty on all water companies in England and Wales to produce a Water Resources Management Plan (WRMP) and update it every five years. Our WRMP is a strategic document which sets out our long-term plans to balance the supply and demand for water in the communities that we serve, while also addressing the impacts of population growth, drought, our environmental obligations and climate change uncertainty.

Although our WRMP is updated on a five-year cycle, we continually monitor and assess the water resources situation across the region and are always working proactively to identify and develop solutions that both reduce the demand for water and provide new sources of water so they are ready when we need them.

As an example of this, we have been working hard to ensure that we fix as many leaks as possible in Cornwall and across the region more widely. As part of this work to date, we have fixed over 22,000 leaks between 2022 to 2023 across our supply area.

Desalination is another part of our proposed solution to providing additional sources of water.

Desalination is an effective and reliable way to add additional climate independent capacity to our water network. This will be further enhanced with other projects to ensure a wholesome and plentiful supply of water for the future.

All potential sources of water we identify are subjected to comprehensive and detailed feasibility, cost, carbon and environmental appraisals before they can be considered for use.

Q: Are you looking at other solutions in addition to desalination?

A: Yes, we have explored a wide array of possible water resources solutions to help ensure we are meeting future challenges and building the resilience of our water-supply system.

An area where we have had some success over recent years has been our engagement with quarry owners (especially in Cornwall and more recently in Somerset) to explore the potential to purchase disused quarry pits for conversion into new water sources. This approach has been successful on several occasions (e.g., Park and Stannon Pits in Cornwall) and we are continuing to develop further opportunities of this nature.

In 2022, we purchased Hawks Tor pit in order to use it as an additional water resource. When operational, Hawks Tor will provide up to 4 million litres of water per day into our Colliford Reservoir. We are currently working with the Environment Agency to agree the required licenses to ensure that this valuable water resource becomes operational as soon as possible.

In addition, we are looking at a range of other potential sources of water that we can utilise to further enhance our region's water resilience.

Q: How will the Par desalination work in practice?

A: The proposed desalination plant will work by extracting seawater from St Austell Bay. It follows this process:

1. Seawater is abstracted from St Austell Bay via a screen mechanism to prevent marine life and debris from entering the system
2. The water is then transferred to the proposed desalination plant to be located near Par Docks
3. The abstracted water then undergoes a range of pre-treatment measures to remove solid matter and to filter the water to acceptable levels
4. Further treatment is undertaken to remove salts using a membrane process
5. The water is then conditioned to add vital minerals back into the water so it is safe for human consumption
6. Waste from the treatment process is then carefully recycled and managed. The remaining seawater (brine) is returned to St Austell Bay
7. The treated water is then transferred to our Restormel Treatment Works via a treatment wetland. It is then mixed with our wider raw water supply and further treatment is undertaken.

   This is a widely used process that would be carefully monitored by our regulators.

Q: What percentage of water supply will the proposed plant provide?

A: Our Restormel Water Treatment Works (WTWs) near Lostwithiel takes water from the lower reaches of the River Fowey and supplies up to an average of 80million litres per day (Ml/d) of drinking water to people and businesses in Cornwall (~80% of the total drinking water supplied to Cornwall).

To ensure that there is sufficient water in the River Fowey to meet this demand and to protect the ecological health of the river, we release water into the headwaters of the river from Colliford, Sibleyback and other smaller reservoirs at key times. Due to the impacts of climate change, increasing environmental requirements and increases in demand, there will be times in the future when the water resources in the River Fowey will come under severe pressure.

At full operating capacity, during times of need, the proposed desalination plant will supply approximately 25% of the Restormel Water Treatment Works total flow. However, it is important to understand that the plant will not be operating continually, but rather only during times when it is needed to help meet demand and protect the environment. The desalination plant forms part of our wider ambition to build resilience and ensure that our customers and the environment have a plentiful supply of water at all times.

Environmental and marine considerations

Q: How are you minimising the impact on the environment?

A: Protecting and enhancing the environment and minimising the impact of this project on the local area is a key priority. We will comply with the Environmental Impact Assessment (EIA) process. One of the most important functions of the EIA process is to identify ways to mitigate any adverse environmental impacts.

We have already started to do detailed surveys and these continue. Surveys have helped inform our plans so far and will continue to do so.

These include:

- Ecological, e.g. birds, bats, otters, great crested newts, repitles and dormice
- Archaeology
- Acoustic
- Landscape
- Arboricultural
- Ground investigations
- Landscape
- Marine
- Lighting

The data will help shape our plans and minimise environmental impacts.

The whole process is closely monitored by regulatory authorities, including Cornwall Council and the Marine Management Organisation.

Q: How, where and when is South West Water conducting the required marine environmental impact assessments as part of its proposed desalination project?

A: We are committed to protecting local marine and wildlife. We have already started to do environmental surveys, which have helped to inform our plans so far and will continue to do so. We are working closely with statutory consultees to define the scope of our survey requirements and have appointed a specialist marine ecological consultant who will carry out extensive studies to understand any potential impacts on marine life.

Q: How will your filters prevent microscopic marine life entering the system?

A: Whilst this will be fully resolved at detailed design stage, we are committed to providing a solution installed either at the abstraction point or the intake pump to give the best possible protection to marine life.

Q: How will marine species native to St Austell Bay (such as seagrass) be affected?

A: Both the abstraction and discharge pipelines will be horizontally directionally drilled (HDD) from the abstraction pump chamber, 200m from the coastline, under the seabed to a point approximately 600m from the coastline to avoid the seagrass beds. The abstraction pipeline will then continue for a further 800m (total length 1600m) to the abstraction point and the discharge pipeline will continue for 2,200m (total length 3000m) to the discharge point.

From the end of the HDD section, both pipelines will be laid in a dual trench to the abstraction point. From this point, the discharge pipe will be laid in a single trench to the discharge point. It is anticipated that the trenches will be dredged with localised excavation.

Engineering design is ongoing and subject to change. However, consultation with key stakeholders including the Environment Agency, Natural England, Cornwall Council and the Marine Maritime Organisation will be critical.

We will also explore applying Marine Net Gain to this project as the environmental assessment progresses.

Q: What is the salinity level of the brine when it re-enters the sea?

A: The brine will be re-entering the seabed at a greater salinity (58psu) than the water around it (35psu). We have undertaken modelling which demonstrates that at point of discharge, salinity levels will return to existing levels within 70m. We will be undertaking more extensive 3D modelling over the coming months to further our understanding of any potential impact of released brine.

Q: How will the proposals affect farmland and native land species?

A: Building on our preliminary assessments, we are carrying out more detailed assessments that we will need to provide as part of our planning application. This includes an assessment of potential impact on wildlife, which is actively ongoing and will inform mitigations such as minor modifications to the route of the pipeline (within our red line boundary).

A comprehensive arboricultural survey is underway and full consideration will be taken to avoid habitats where possible.

Q: I've heard you talking about a treatment wetland for this project - what is that for and where will it be located?

A: As part of our proposals, we will provide a new treatment wetland which is used to condition the desalinated water prior to it arriving at Restormel for further treatment.

We will be providing several open planted lagoons and integrated constructed wetlands where the water will be collected and continue down to the Restormel Water Treatment Works via a buried pipeline. A section of this pipeline will be installed using horizontal directional drilling (HDD) underground along a length of approximately 350m to avoid high-pressure gas mains and protected trees.

Considerations for pipeline route and plant location

Q: Why Par? Have you considered other areas?

A: We have invested a considerable amount of time in the process of identifying the best and most viable solutions to deliver this important project. This includes ensuring that we identify the most suitable location that minimises impacts on our environment and local communities.

We have explored alternative sites across Cornwall including from Bude to Falmouth Docks – but Par has been chosen as the most suitable location for this specific project.

This is for a number of reasons, including proximity to the sea, proximity to the existing Restormel Treatment Works and to avoid environmentally sensitive and designated areas.

Q: Will South West Water be publishing the pipeline route?

A: Yes. We have provided a high-level map showing the route of our proposed 13km pipeline at the stakeholder briefing on Tuesday 24 October 2023. We are also liaising closely with local landowners as part of our engagement process.

We will provide more detailed information on the proposed pipeline route and the mitigation measures we propose to undertake at our future stakeholder briefings and public events which are being held this winter.

Q: Will the desalination plant be noisy?

A: Plants like these are not usually noisy but we are in the process of undertaking a noise evaluation assessment that is required as part of the planning application. The assessment will be made publicly available once it is completed.

Q: What will the desalination plant look like? Will there be any visual impacts?

A: We have carefully considered the visual impact of the proposed desalination plant and where necessary, we will put in place mitigation measures to reduce its visual impact.

Once we have arrived at a detailed layout of the desalination plant, we will be preparing 'visuals' and proposals for any screening deemed necessary for submission with the planning application.

We anticipate there will be a minimal visual change from Polmear. We will investigate potential landscaping and screening should this be required.

Q: The existing lights over the Imery buildings are intrusive. Will the proposed desalination plant make light pollution worst?

A: We have appointed a specialist consultant to assess lighting conditions. We will ensure through detailed design that any light from the desalination plant does not result in any unacceptable intrusion.

Q: How much will the maintenance of the plant cost?

A: We are currently in negotiations with prospective operation and maintenance contractors for both the plant and the pipelines.

Energy and sustainability

Q: Is desalination an energy intensive process?

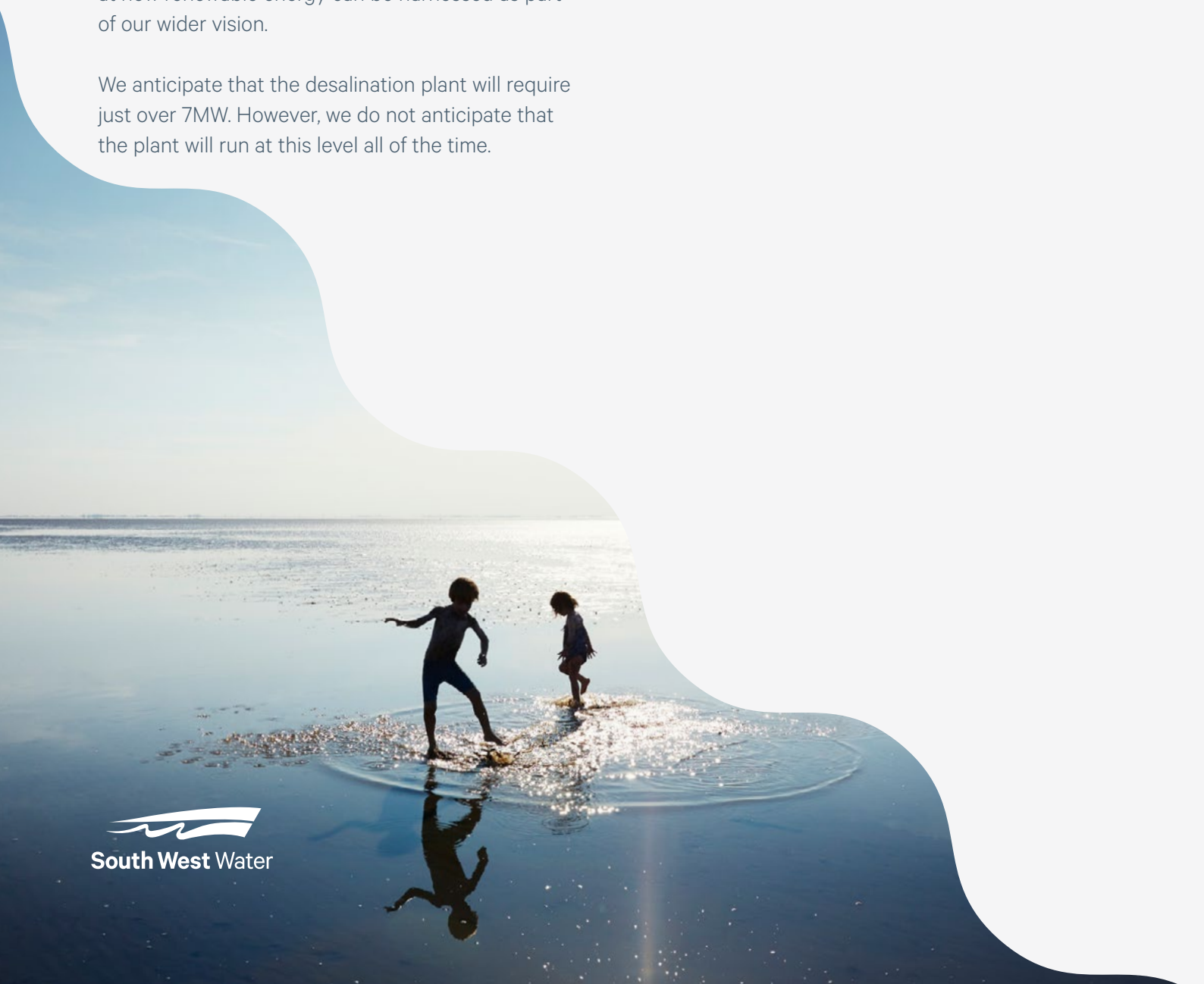
A: Whilst desalination is an energy intensive process, it's important to understand that the plant will not be operating 24/7. The desalination plant forms part of our wider ambition to provide resilience and ensure that our customers have a plentiful supply of water at all times.

We are currently considering how an increase in energy use can be offset by interventions elsewhere, including energy recovery systems at the proposed desalination plant and at Restormel. We will also look at how renewable energy can be harnessed as part of our wider vision.

We anticipate that the desalination plant will require just over 7MW. However, we do not anticipate that the plant will run at this level all of the time.

Q: What energy sources will power the plant?

A: The plant will be powered by electricity supplied by National Grid Electricity Division. South West Water has a 100% REGO renewable energy supply contract which is supported by Renewable Energy Guarantees of Origin (REGO). It is envisaged that by 2028, South West Water will have 50% organic renewable electricity and 50% REGO. All the energy used on site will be either electric, hydro-electric and solar (where possible) to align with South West Water's net zero commitment by 2030.



South West Water

Planning process, public engagement and consultation

Q: Will you be consulting with the local community before the submission of a planning application?

A: We are in the very early stages of this process and this is just the start of the conversation. We want to bring local residents and our customers on this journey with us and ensure that we are addressing any concerns and taking on board feedback where possible.

We have arranged public events and online stakeholder briefings where you will have an opportunity to view our high level plans in more detail and provide feedback. This will include a dedicated project team being on hand to answer any questions you should have.

As the project progresses, we intend to hold a further public consultation on the details of the planning application sometime in the new year, prior to the submission of an application.

Q: When do we anticipate the submission of a planning application?

A: We are aiming to submit the formal full planning application in 2024. At this time, we will also apply to government bodies, such as the Environment Agency, for the necessary approvals, licenses and permits.

South West Water will need to acquire planning consent and other regulatory consents and licenses prior to any works being undertaken. This process is ongoing and we will provide regular updates as the project progresses. We intend for the plant to be fully operational by the end of 2024.

In addition to our own public exhibitions and consultation, Cornwall Councill will be required to undertake its own statutory consultation on the planning application, which will be another opportunity for residents to provide their feedback.

Q: How can I give feedback on the project?

A: You can write to us at any time by contacting the email address **info@swwdesalination.co.uk**. In addition, feedback forms will be provided at our public events where you will be able to provide your thoughts.

We also have a Freepost address for those who do not have access to emails or the internet:
FREEPOST – SWW DESALINATION
(no stamp required)