

Investing in your water future at Knapp Mill Water Treatment Works

Bournemouth Water has a vital role to play today and every day, providing customers with safe and clean drinking water, with the importance that has on health and hygiene.

That's why we're investing in significant improvements at Knapp Mill Water Treatment Works (WTW), ensuring that Christchurch and its surrounding area has a state-of-the-art water treatment works designed to meet our future challenges, both locally and regionally.

Our overall goal is to ensure we deliver a **world-class drinking water supply** for our customers, while providing long-term water security for the region in the face of a changing climate.



Our investment of over £70 million to Knapp Mill will:

- Improve the region's drinking water quality
- Improve the security and resilience of the region's water supply against extreme conditions
- Create around 200 jobs during construction, supporting the local supply chain
- Use the latest technology in our water treatment process to reduce energy and carbon emissions
- Ensure the construction and operation meets the highest environmental standards
- Provide a solution for the local midge nuisance when the new treatment process comes on board

Background

Bournemouth Water has a statutory legal obligation to provide safe drinking water and is required to undertake all necessary infrastructure improvements necessary to ensure this obligation is met.

Parts of the existing works are approaching 100 years old, and it has been identified by the Drinking Water Inspectorate (DWI), the national regulator for drinking water, as an 'Aged Asset'. This means that, although still perfectly safe, the water treatment process used at Knapp Mill (slow sand filters) is outdated and now requires further investment to safeguard future water quality.



Since the works were first opened in 1897, they have grown as the town has expanded and the demand for water has increased. It also supplies the Fawley oil refinery, and this is by far the biggest consumer of water from the works.

The raw water entering the existing Knapp Mill WTW is pumped from the river Avon, where it undergoes treatment in the form of rapid gravity filtration and slow sand filtration, followed by ultraviolet (UV) disinfection, chlorination and de-chlorination. This is then supplied to our customers.

The upgraded Knapp Mill WTW will use an innovative membrane water treatment process with major benefits of enhanced water treatment, operational expenditure savings and improved environmental performance.

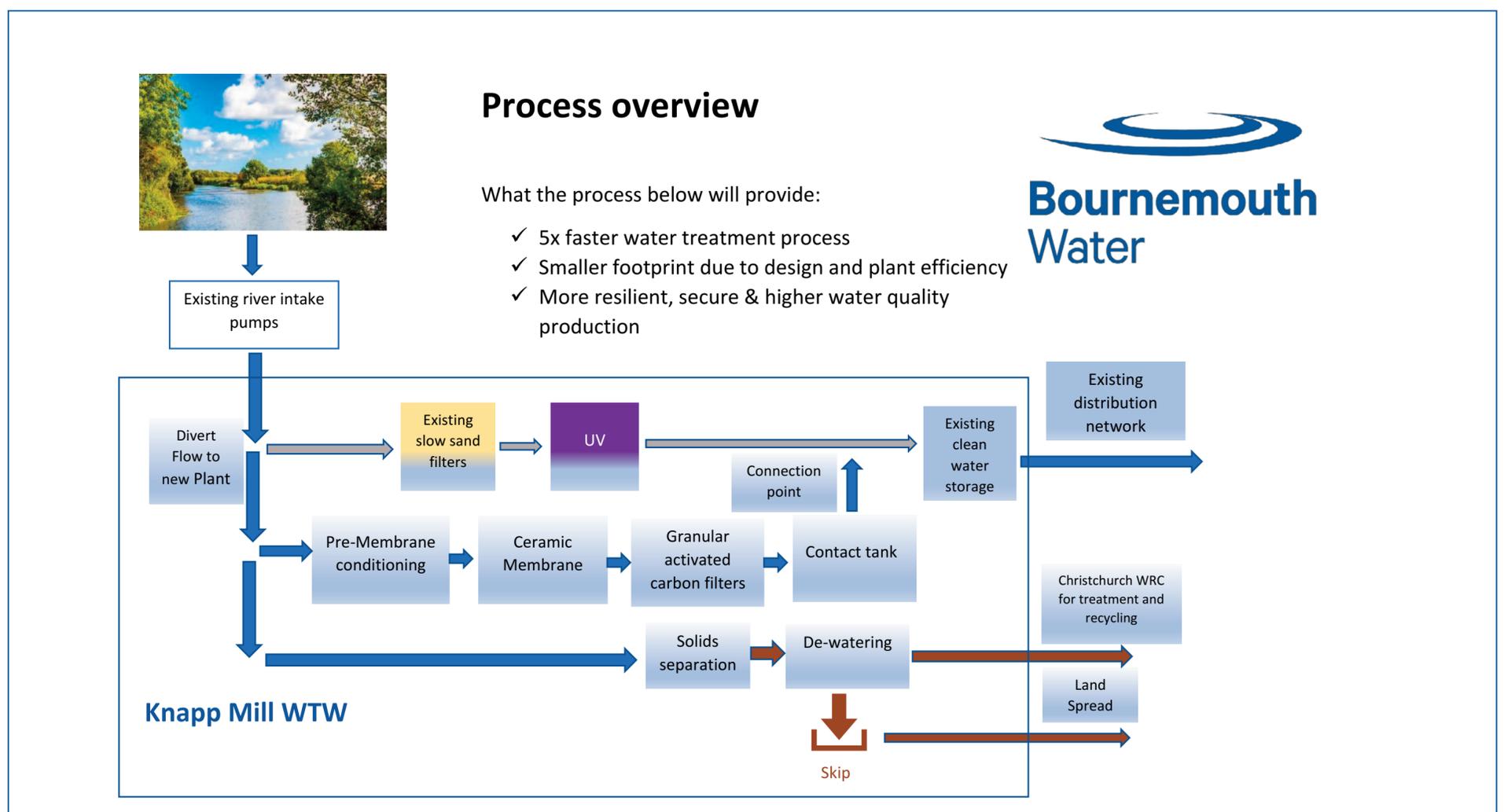


The Upgraded Treatment Process

A new state-of-the-art, enhanced membrane water treatment process is planned to be installed. The technology, which will mark a significant step away from traditional water treatment processes, will:

- Provide a more resilient method of water treatment
- Deliver improved water quality
- Reduce pollution risks
- Produce less waste
- Be more energy efficient to minimise carbon emissions and provide a more sustainable method of water abstraction and supply.

The new process technology will be capable of treating water five times faster than the existing process, whilst covering a smaller footprint due to a contemporary design and greater plant efficiency.



The existing WTW will continue to operate until after the new process improvements have been constructed, commissioned, and operated for a period, to ensure there are no disruptions or discernible differences in taste and odour to the drinking water supplied to customers.

The Site

The improved works will be located on available operational land situated at the northern end of the existing Knapp Mill site.

To ensure that the supply of drinking water to our customers is maintained, we need to keep the existing works operating fully, whilst the new works are built.

The northern part of the Knapp Mill site comprises undeveloped land or existing filter infrastructure that can be released without adversely impacting upon water supply capacity.



With the need to abstract water from the River Avon and connect to existing water infrastructure located at Knapp Mill, there are no other locations that could practicably be delivered.

Planning Considerations

The proposals have been developed to ensure they are fully compliant with both local and national planning policy. 2

They are:

- Consistent with the National Planning Policy Framework (NPPF) which sets out national sustainable development and resilient water supply objectives, and
- Compliant with planning policies in the local development plans that cover the Christchurch area
- The site comprises statutory 'operational land' associated with the existing WTW
- A significant part of the site comprises previously developed land, occupied by water treatment infrastructure
- There are very special circumstances to justify development in this location:
 - o a need to safeguard public water supply
 - o a need to safeguard supply to critical national infrastructure (Fawley refinery)
 - o a lack of alternative sites
 - o sustainability benefits related to water efficiency and climate change
 - o economic benefits for the local area

Our Proposals – Site Layout

Whilst the design of the proposed new treatment works is not yet finalised, it is likely the improvements will incorporate the following elements:

- Main treatment building
- Additional process buildings and tanks
- Treated water storage
- Below-ground pipelines to connect with the existing pumping station and reservoir in the south of the site
- Vehicular access from Mill Road, circulation roads, car parking and delivery areas
- Surface water drainage



- The existing slow sand filtration bed in the north of the site will be removed to accommodate the upgraded works.
- Building heights and footprints have been kept to a minimum
- Extensive trees and scrub planting will help screen and soften the appearance of the buildings and reduce views of the site from residential properties, Twynham primary school and the river Avon corridor.
- A field to the north east of the site will be used temporarily for the construction compound comprising site offices, stores and contractor parking. This will be reinstated post-construction.

Our Proposals - Landscaping

The proposals will change the existing appearance of land in the north of the site from a material stockpile area and sand filter bed to a site that is largely filled with new buildings and structures. We recognise that this will represent a significant landscape and visual change.

The landscape strategy includes:

- Retaining existing trees and vegetation where possible
- Introduction of new woodland and native scrub
- Introduction of meadow grassland
- Use of marginal plants in the surface water attenuation feature
- Changing the landform to provide mounds to increase effectiveness of landscape planting and reduce visual impact
- Planting varying size plants to provide screening on day one and provide potential for plants to mature over time

An appropriate mix of planting comprising native species will also contribute to biodiversity net gain.

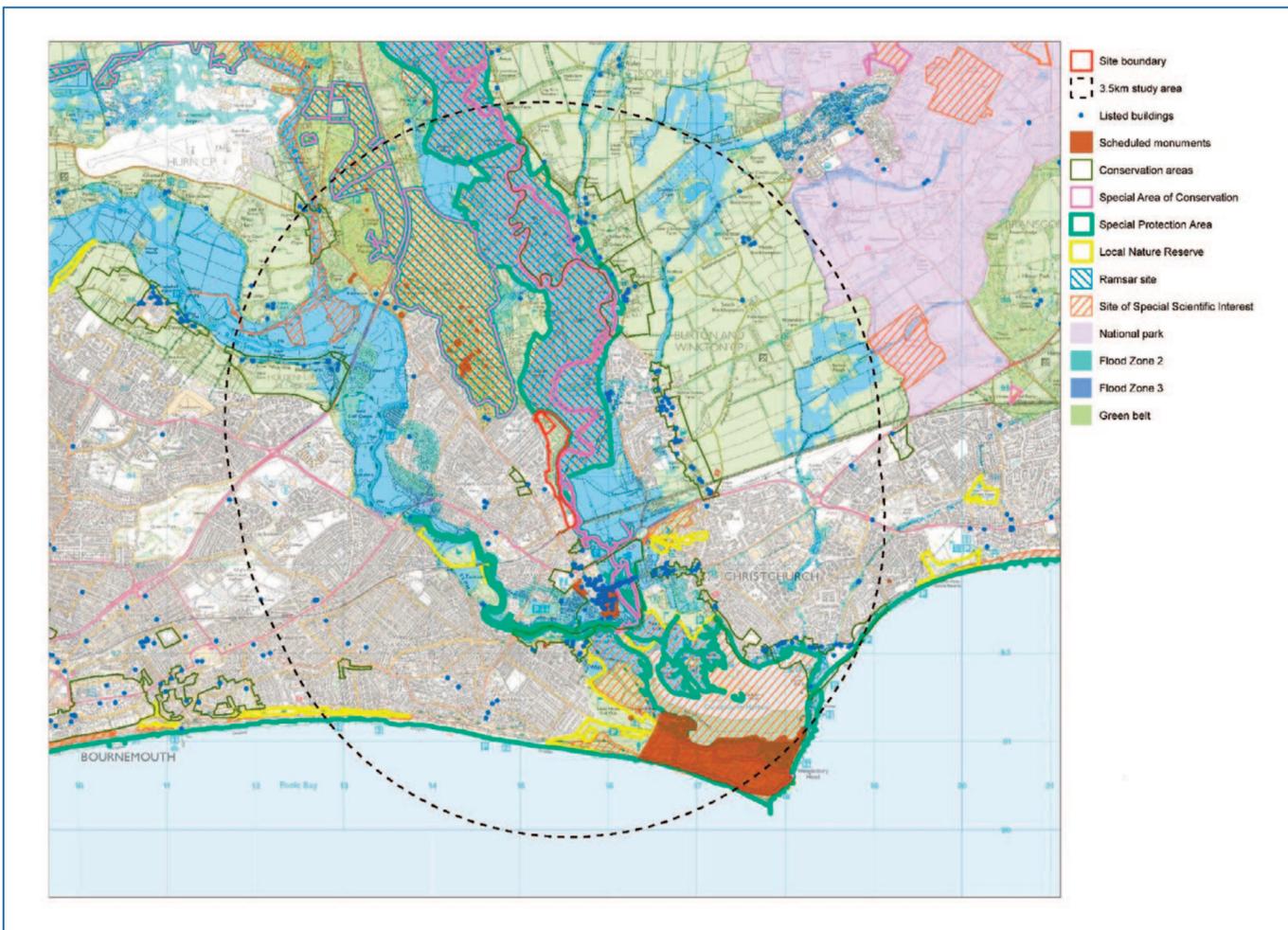


We are further developing our design proposals to consider the most appropriate external treatment and colour to apply to the buildings and tanks, to help blend the scheme into its environment.

Environmental Considerations

We recognise that careful consideration must be given to potential environmental effects of the development and safeguarding the amenity of our neighbours.

The proposed site and the wider area are subject to planning and environmental designations that need to be carefully considered and these are shown on the designations plan below.



Our project is subject to an Environmental Impact Assessment (EIA) and will be accompanied by an Environmental Statement (ES). In preparation for this, an EIA Scoping Request was submitted to BCP Council and other statutory consultees, setting out the proposed extent of environmental studies. At this stage the ES is expected to cover:

- Traffic and transport
- Landscape and visual effects
- Noise and vibration
- Ecology
- Ground conditions
- Water environment
- Archaeology

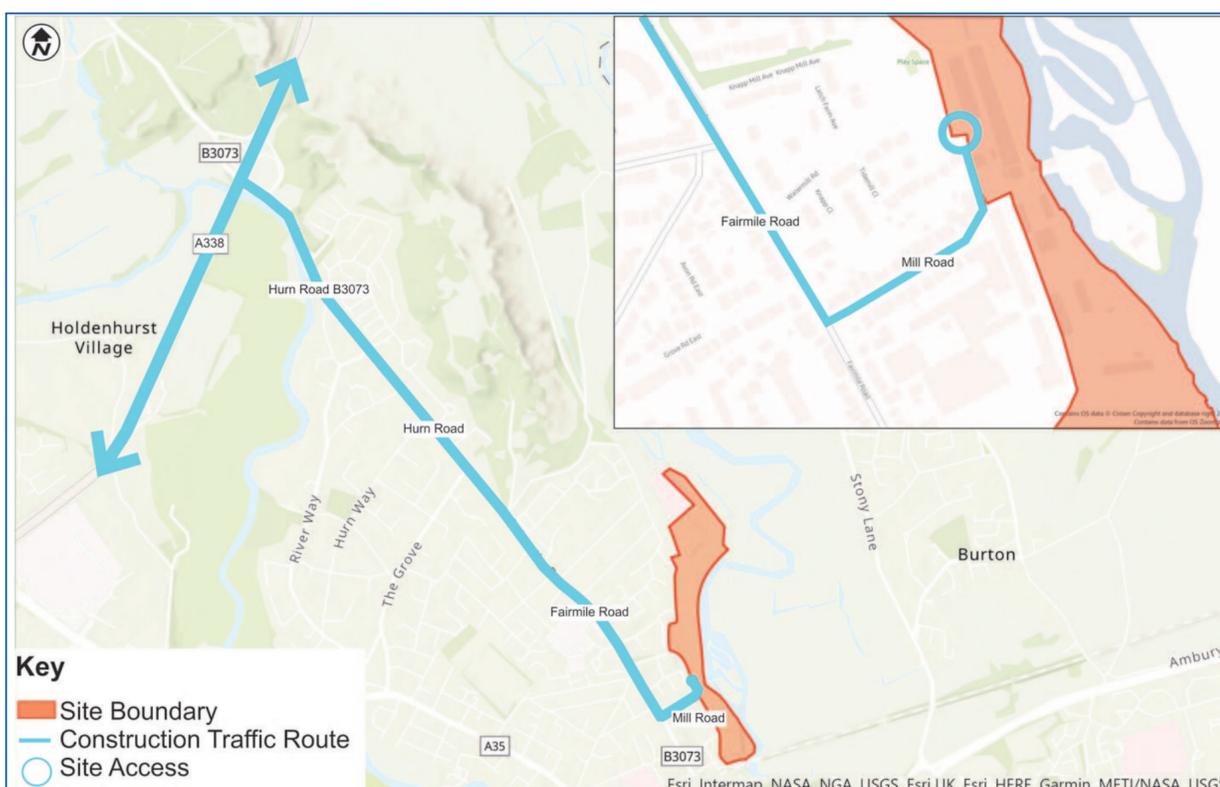
In addition to the ES, consideration is also being given to other environmental matters:

- Trees and hedgerows
- Lighting
- Dust and odour
- Daylight and shadowing
- Energy

The Knapp Mill site will continue to be served from its existing access off Mill Road. Operational traffic is expected to be in line with the level of traffic generated by the existing water treatment works. The main effect of the redevelopment of the site is anticipated to be in relation to traffic during the construction period, around three years.

Bournemouth Water is fully committed to implementing best practice and will try hard to minimise any inconvenience to residents during construction. A Construction Traffic Management Plan will be agreed with BCP Council prior to starting any construction work.

- Routing for HGVs travelling to the site, restricting construction traffic to using Fairmile Road to the north of Mill Road only.
- Use of a banksman and gatehouse for the management of HGV access / egress, ensuring two large vehicles will not interact in opposite directions along Mill Road.
- Encouragement of car sharing for construction workers and visitors to the site.
- Investigate the potential to provide alternative parking facilities at Knapp Mill and other measures to reduce on street parking on Mill Road during the construction period
- Discussions with Highways following completion of construction to improve Mill Road surfacing.
- Restriction of time periods for construction workers and HGV travel to and from the site to avoid interaction with school start and finish times.
- An internal site routing strategy to keep construction vehicles away from public rights of way, such as the Avon Valley Trail.



No construction vehicles will be permitted to use the retained access to Knapp Mill, via the Twynham Primary School access, or any of the associated local residential roads.

Bournemouth Water is committed to working in partnership with its neighbours such as Reid Steel to coordinate and minimise traffic impacts from its construction activities.

Our ecological survey work has shown that the undeveloped part of the site comprises various grasslands, tall ruderal and dense gorse scrub. Some of this grassland is considered a priority habitat. The site also supports some notable invertebrate species, populations of slow-worm and grass snake, and foraging habitat for some bat species including the scarce Nathusius' pipistrelle. Bird surveys have identified a range of notable species both on site and on the adjacent areas.



To address the potential impacts on natural heritage resulting from the development the proposals will include:

- Habitat creation and enhancement, either on-site or a combination of on-site and off-site measures.
- Landscape planting, including creation of new woodland, scrub and wildflower grassland.
- Measures during construction to ensure legal compliance with protected/notable species such as supervision and appropriate timing of vegetation clearance.
- The provision of ecological enhancement measures, bat and bird boxes for example.
- Delivery of biodiversity net gain.

Cultural Heritage

New development can affect cultural heritage assets, including buried archaeology, the historic landscape and built heritage features. There are no designated heritage assets at the proposed site, and whilst some scheduled monuments and listed buildings exist in the local area, these are some distance away.

River terrace gravel deposits are widely present across the site dating from 2,580,000 to 11,700 BC. Similar gravels within or very close to the site have yielded significant Palaeolithic (Old Stone Age) artefacts and may therefore provide important evidence for the early human occupation of Britain during this period.

It is not known to what extent historic works, such as the levelling / reprofiling of the site or the creation of the foundations of the existing filter beds, may have disturbed any below-ground archaeological remains on the site. However, given the finds from the surrounding area, there is the potential for some archaeology to remain. **We are likely to undertake targeted archaeological investigation work.**

We recognise that the introduction of new buildings and processes has the potential to give rise to noise and vibration, at the construction and operation phases of the project.

Potential impacts at construction stage will be managed by careful phasing of the construction works as well as controlling construction times and durations. Other measures which could be employed include:

- Ensuring the use of quiet working methods.
- Loading and unloading of plant vehicles and noisy plant and equipment to be located as far away from dwellings as reasonably possible.
- Screening plant to reduce noise if required
- Where practicable, use machinery or methods that result in lower levels of vibration and noise.



No significant operational noise effects are predicted from the operation of the works, but noise emissions will be monitored to ensure compliance with these standards. Noise impact from vehicles at the operational stage is not expected to be significant given the extremely low levels of traffic the proposed development will generate.

Ground Conditions and the Water Environment

The Knapp Mill site and the surrounding area has historically been subject to a range of potentially contaminating land uses. We are undertaking a detailed ground investigation to identify and assess any risks from potential sources of contamination. The results of the ground investigation will be included in the ES, together with any measures required to address any contaminants that may be found.

The existing WTW extracts raw water from, and discharges process wastewater back to the River Avon. The proposed development will continue to extract water from the River Avon, but the improved process will mean that there is a much more limited wastewater discharge.

Most of the site is at very low risk of surface water flooding. To demonstrate that the proposed development will not exacerbate flood risk a flood risk assessment and surface water drainage strategy with a sustainable drainage system will be submitted as part of the planning application.

Bournemouth Water is committed to working closely with its customers and a range of other stakeholders. The construction of new major water supply infrastructure at Knapp Mill represents a major investment and will bring many benefits to Christchurch.

However, we are mindful that such major construction projects have the potential, if not carefully managed, to cause disruption to the local community, during construction. We intend to work with local people and ensure that their concerns are heard and acted upon through a local community liaison forum, comprising representatives for residents and stakeholder groups.

We also recognise that such projects provide an opportunity to engage with young children and provide educational resource in respect to water, sustainability and climate change. We would welcome the opportunity to explore this with Twynham Primary School.

Programme of works and next steps

We are currently working on finalising our design proposals for the enhanced works and completing the various environmental and technical assessments necessary to support them. It is anticipated that our planning application will be submitted to BCP Council in April/May 2022. Our project programme is set out below.



We anticipate that our planning application would be considered by BCP Council in the Autumn of 2022, with construction commencing in Spring 2023. The Knapp Mill project is working to a challenging programme with completion of the works required by Spring 2026 to meet the DWI statutory date.

Bournemouth Water would be pleased to receive your feedback on its proposals and would be very happy to answer any questions that you may have now or in the future.

If you would like to be kept updated with progress please provide us with your email or visit our project website:

www.bournemouthwater.co.uk/knappmill