



Enhanced Investment
Case:
WSH72-PE07 –
Avoiding a High-
Consequence Event at
Laugharne Wastewater
Treatment Works

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Executive Summary

This investment will improve the resilience of our wastewater assets, specifically to respond to an emerging environmental threat.

We have structured this document using the enhancement assessment criteria set out in Ofwat's PR24 Final Methodology, Appendix 9 (Setting Expenditure Allowances), Section A1. The enhancement assessment criteria are divided into four groupings:

- Need for enhancement investment (5 sections). Best option for customers (3 sections).
- Cost efficiency (2 sections). Customer protection.

Need: At Laugharne WwTW (Wastewater Treatment Works) the unstable cliff located above the asset is presenting a risk. Rockfalls have been recorded and, despite interventions in AMP7 aimed at stabilising the cliff, the safety hazard and the risk of collapse and subsequent loss or significant damage to the asset remains. The works is in a popular high amenity area, at the confluence of the Afon Coran with the Taf estuary, in front of Laugharne Castle and the Dylan Thomas boathouse.

In addition to the risks highlighted above, in July 2023 it was identified that the population equivalent at this site has exceeded the 2,000-threshold due to growth and tourism. As such, the Urban Wastewater Treatment (England and Wales) Regulations 1994 (UWWTR) now applies to this asset and introduces new, tightened standards with which the WwTW will have to comply. The preferred solution to address the risk to the resilience of this asset would also address this new requirement. Discussions are ongoing with Natural Resources Wales (NRW) regarding the inclusion of this need within the National Environment Programme (NEP) under the PR24 UWWTR Driver W_U_IMP1 but it is not currently included in our business plan submission under a NEP driver.

Options: We have assessed nine options, taking the viable options forward for cost-benefit assessment using our standard model. Our chosen option is to decommission Laugharne WwTW and pump flows to, and upgrade, the St Clears WwTW. This option has the highest benefit to cost ratio and addresses the identified risks. This solution is also integrated with another scheme driven by the NEP.

What We Will Deliver: This Enhancement Case will decommission the Laugharne WwTW, pumping flows through 6.7km of new mains to St Clears WwTW, which is to be upgraded (inlet screening handling and dewatering, grit removal, primary sedimentation, bio-filters, secondary sedimentation, sludge handling and appurtenant works). A new SPS to intercept Laugharne catchment flows not located within the existing site.

Efficient Costing: We will invest £8M CapEx and £0.5M OpEx (post efficiency, 22/23 price base) to pump away to St Clears WwTW and upgrade St Clears WwTW.

Customer Protection: The investment value is relatively low and, as such, a bespoke Price Control Deliverable (PCD) has not been suggested. It is also likely that the obligation will be added to the NEP which will give additional regulatory oversight from Natural Resources Wales (NRW).

Benefits: The proposed option involves a relocation of the WwTW, and as such eliminates the risk of the destruction of the site and any potential for injury or fatality to Welsh Water Colleagues because of cliff collapse.

Our approach has been independently assessed by Jacobs (Engineering and Costs) and Economic Insight (CBA).

1. Introduction

The aim of this enhancement investment is to avoid a high-consequence event occurring at Laugharne WwTW that has the potential to significantly damage the WwTW and to injure or potentially cause serious injury, or fatality, for our operation and maintenance teams.

The existing assets at Laugharne WwTW are vulnerable to several factors including rock falls, tree falls and coastal change. In addition to these environmental threats, the population equivalent being treated at the WwTW has now exceeded the threshold for the UWWTR, bringing tighter effluent standards that must be complied with (this exceedance was confirmed in summer 2023 after solution development for this case had been completed). Key considerations are summarised as follows:

- The works backs onto cliffs which are degrading (see Figure 1) – rock is falling onto the site and there is wider concern regarding overall cliff stability.
- The site is surrounded by coastal mudflats (see Figure 2) which, when flooded during high tides, are introducing saline water into the network and subsequently the biological treatment units. The high tides also makes the site more difficult to access for Welsh Water operations.
- We have observed increased demand on the works. This is primarily linked to a significant increase in the number of tourists in this area. With a large holiday resort of 200 lodges opening in 2019, this trend is likely to continue. The population has exceeded the 2,000 PE threshold for discharges to freshwaters and estuaries and the site will now be required to achieved more stringent permit conditions. This change needs to be considered when responding to the risks posed by cliff instability, and further investment being required on the site to comply with the tighter standards. The situation of the current asset restricts the capability to expand or enhance the asset to meet tighter environmental standards.
- The works is in an area popular with visitors: with Laugharne Castle and the boathouse (the location where Dylan Thomas wrote many of his famous works) both within sight of the WwTW.

Interventions have been made in AMP7 under Base Maintenance to manage these risks, but a long term solution is required that is beyond the scope of maintenance activity.



Figure 1: View from Tidal Flats looking towards the Works – Existing Tidal Tanks and Cliff above Works



Figure 2: Plan View of Laugharne Works, local landmarks and the vicinity of the Tidal Estuary and access road

Our optioneering process, described in this investment case, concludes that a pump-away solution will address these issues, allowing subsequent abandonment of Laugharne WwTW. The AMP8 enhancement CapEx cost is £8M (post efficiency, 22/23 price base). Although, due to the very recent identification of the likely inclusion on the NEP under the UWWTR driver, this has not yet been assessed for the best value solution to meet the revised permit conditions, it is likely that this would be the preferred option to meet that obligation due to the relatively small CapEx cost, and the potential issues with enhancing the current asset.

NB: This solution also links to a separate enhancement project at Pendine WwTW which is driven by the NEP under a groundwater protection driver and is covered in Enhancement Case WSH71-PE10. Both schemes would be carried out in conjunction with one another to maximise efficiency in delivery.

1.1 Structure of this Document

We have structured this investment case using the enhancement assessment criteria set out in Ofwat's PR24 Final Methodology, Appendix 9 (Setting Expenditure Allowances), Section A1.1:

ID from Appendix 9	Abbreviated Assessment Criterion	Addressed in
A1.1.1 Need for enhancement investment	a Is there evidence that the proposed investment is required?	Section 2.1
	b Is the scale and timing of the investment fully justified?	Section 2.1
	c Does the proposed investment overlap with base activities?	Section 2.2
	d Does the need and/or proposed investment overlap/duplicate with previously funded activities or service levels?	Section 2.3
	e Does the need clearly align to a robust long term delivery strategy within a defined core adaptive pathway?	Section 2.4
	f Do customers support the need for investment?	Section 2.1
	g Have steps been taken to control costs, including potential cost savings?	Section 2.5
A1.1.2 Best option for customers	a Have a variety of options with a range of intervention types been explored?	Section 3.1
	b Has a robust cost-benefit appraisal been undertaken to select the proposed option?	Section 3.1
	c Has the carbon impact, natural capital and other benefits that the options can deliver been assessed?	Section 3.2
	d Has the impact of the proposed option on the identified need been quantified?	Section 3.2
	e Have the uncertainties relating to costs and benefit delivery been explored and mitigated?	Section 3.3
	f Where required, has any forecast third party funding been shown to be reliable and appropriate?	Not applicable for this case
	g Has Direct Procurement for Customers (DPC) delivery been considered?	Please refer to WSH50-IP00 Our Approach to Investment Planning
	h Have customer views informed the selection of the proposed solution?	Please refer to Stepping up to the Challenge: Business Plan 2025-30
A1.1.3 Cost efficiency	a Is it clear how the company has arrived at its option costs?	Section 4.1
	b Is there evidence that the cost estimates are efficient?	Section 4.2
	c Does the company provide third party assurance for the robustness of the cost estimates?	Section 4.1
A1.1.4 Customer protection	a Are customers protected if the investment is cancelled, delayed or reduced in scope?	Section 5.1
	b Does the protection cover all the benefits proposed to be delivered and funded?	Section 5.1
	c Does the company provide an explanation for how third-party funding or delivery arrangements will work for relevant investments?	Not applicable for this case

2. Need for Enhancement Investment

This section will set out the drivers behind the Enhanced Investment Case and describe the context within which it has arisen.

The threat from the cliff has emerged in recent years with rock falls recorded on to the site.

It is also only recently that the site PE has increased above the UWWTD threshold. The site is maintained to the required standard and has not been subject to previous enhancement funding. The proposed investment aligns with our Long Term Delivery Strategy – responding to the need for long term stewardship, resilience and improvement in service.

2.1 Evidence that Enhancement is Needed in AMP8

***Is there evidence that the proposed enhancement investment is required?
Is the scale and timing of the investment justified?
Where appropriate, is there evidence that customers support the need for investment?***

– Ofwat’s final methodology for PR24, Appendix 9, A1.1.1a, A1.1.1b and A1.1.1f

Laugharne is at risk from the unstable cliff above the works (see Figure 1 above). It is also now above the 2,000 PE UWWTR threshold and will have tighter consents imposed upon it which the current works in its location could not meet.

Maintenance has been undertaken to reduce the risk of rockfall onto the works, including the removal of several trees. However, the interventions have left a significant residual risk around the instability of the cliff face and further long-term intervention is now required.

As a result of the location and issues faced at this asset, our operators often have difficulty accessing the site for general maintenance and operation. This poses a risk to compliance as well as the safety of employees.

In addition, Laugharne is a high tourist area, and in peak periods, the compliance risks are elevated as the WwTW struggles to manage the higher flows and loads it is now seeing from increases in tourism over the last few years. In 2019, a very large development of 200 holiday lodges was completed and therefore we are likely to continue to see an upward rise in tourism in the area. This growth has resulted in the agglomeration crossing the UWWTR population threshold of 2,000 PE for discharges to freshwaters and estuaries and therefore more stringent permit limits will be imposed. Although this has not been the primary driver to date, it is an important change as it is unlikely there would be a viable solution for this level of enhanced treatment within the current site boundary.

The works cannot be expanded as it is confined within old concrete tidal tanks. Planning is unlikely to be granted to build outside of these as the adjacent land is within the Aber Taf / Taf Estuary SSSI, and the site is bounded by the national coastal tourist path. The current site is subject to continued scrutiny by the local community and, following complaints, we have had to ‘disguise’ the process units on site to make them less visible from the footpaths. These constraints have significantly limited the range of options that could be developed and would impact any planning process for expansion.

In summary, the following drivers for investment apply to this WwTW:

- **Health and safety (H&S):** The cliff above the works is overhanging and unstable. Several near-miss reports have been logged on our H&S reporting system. Rock falls could destroy or disrupt process structures as well as presenting an injury, or potentially a fatality, to our operational and maintenance personnel when carrying out their activities on site.

- **Compliance:** The overhanging cliff above the works is unstable. If process structures are damaged or disrupted by rockfalls, this would leave the site vulnerable to non-compliance with permit conditions. There is a safe system of work in place at the site to mitigate the risk to our colleagues to allow some access to the site but during periods of bad weather we must prevent access on safety grounds. This can lead to an increase in our risk to final effluent compliance if we cannot attend site to deal with telemetry alarms or process issues. Compliance will also be at risk with higher flows and loads from increased tourism as the current units cannot be expanded within the confines of the existing tidal tanks.
- **Access:** The access road is underwater at high tides. This has always been the case but is expected to worsen as sea levels rise and climate change drives more severe storms. In addition, the tidal flooding causes sea water to overflow into the wastewater network, which deteriorates biological treatment on site and can overwhelm the process with high flows. This will exacerbate the risk of non-compliance with tighter permit standards under the UWWTR.
- **Growth:** The works cannot expand beyond the existing compound due to planning restrictions. Options are therefore limited to increase the works' capacity to accommodate the population increase.

Whilst several drivers have coincided for this site, we have developed this case based on the risk of asset damage, or temporary loss of the asset, and a risk to our teams due to the instability of the cliff. This ongoing and increasing risk requires a response. Despite maintenance interventions being implemented to provide short-term mitigation (we continue to carry out vegetation control and remove trees to mitigate the risk of them falling onto the works), for the site to be viable in the longer term, we must intervene to provide resilience for future operation.

In addition to the needs set out above, we have identified an opportunity to build an integrated solution with the Pendine WwTW Enhancement Scheme required under the NRW PR24 NEP, removal of discharges to ground (W_WFD_GW_NDIMP1), which is discussed in Enhancement Case WSH71-PE10. The Pendine WwTW scheme is required due to a need to implement actions to protect and improve groundwaters where water company assets are causing an impact and, to comply with the NRW driver, the site requires significant upgrading or a pump-away solution. The selected, most cost-beneficial option for that site is to pump away from the works to a larger nearby site in St Clears for treatment. Alignment with the scheme in Laugharne will mean the flows from Pendine are pumped to Laugharne and then all flows pumped to St Clears WwTW, where there is sufficient room for expansion to accommodate flows from both sites.

2.1.1 Evidence of Customer Support

Our approach to customer engagement is set out in Stepping up to the Challenge: Business Plan 2025-30 (Section 2.2). While we have not consulted customers on this issue specifically, we know that customers are supportive of delivering our work safely. This site is subject to high level of interest and scrutiny from the local community.

2.2 Overlap with Activities to be Delivered through Base

Does the proposed enhancement investment overlap with activities to be delivered through base?

– *Ofwat's final methodology for PR24, Appendix 9, A1.1.1c*

We have a routine, ongoing, risk-based programme to maintain our WwTW assets, ensuring effective operation and compliance with existing legislation. At Laugharne WwTW, with the known risk around the cliff face, we have, and continue to, intervene where possible to stabilise the cliff by ensuring vegetation is cleared and by removing trees. We also have risk assessments in place for our onsite operations.

The investment set out in this case is entirely separate from any ongoing Base Maintenance. It requires a significant response to manage an external threat, with a proposed solution involving the construction of new assets which will replace the existing one.

The solution described below will create new assets which will then require maintenance. The Base Maintenance requirements for the existing site have been reviewed and are judged to be immaterial. We have not made an adjustment to the enhancement cost for overlap.

2.3 Overlap with Funding from Previous Price Reviews

Does the need and/or proposed enhancement investment overlap with activities or service levels already funded at previous price reviews?

– Ofwat’s final methodology for PR24, Appendix 9, A1.1.1d

This Enhanced Investment Case is in response to an emerging and increasing environmental threat (cliff fall) which has not featured in previous price reviews.

The proposed investment does not overlap or duplicate activities which have previously been funded.

There is an overlap with a separate PR24 Enhancement Case under the NRW PR24 Groundwater NEP Driver for Pendine WwTW. The optioneering for that scheme considered several options which included pumping wastewater to Laugharne for treatment or pumping to Laugharne for onward pumping of both agglomeration’s flows to St Clears for treatment. The selected Pendine scheme includes the pumping to Laugharne and the additional CapEx/OpEx for pumping on to St Clears WwTW but does not include the investment proposed under this case.

There is also a link to investment required to meet tighter standards at this site as it now falls under the UWWTR requirements as stated in Section 2.1.

2.4 Alignment with the Long-Term Delivery Strategy

Is the need clearly identified in the context of a robust long term delivery strategy within a defined core adaptive pathway?

– Ofwat’s final methodology for PR24, Appendix 9, A1.1.1e

There is a clear need to treat the wastewater which currently enters Laugharne WwTW – this is a long-term requirement. We need to ensure that the necessary standards of treatment can be achieved and in accordance with its current and future discharge permits, and we need to be able to operate and maintain the asset safely, and as such we must respond to the risks posed by the instability of the cliff. There is no investment identified within the Long-Term Delivery Strategy that is specific to Laugharne WwTW, as the requirement to act sits within the AMP8 period.

2.5 Management Control of Costs

Is the investment driven by factors outside of management control? Is it clear that steps been taken to control costs and have potential cost savings been accounted for?

– Ofwat’s final methodology for PR24, Appendix 9, A1.1.1g

The cliff above the works is collapsing because of weathering creating a significant risk to the site and our teams.

High/storm tides are also preventing access to the site.

The works is located inside an existing concrete tidal tank structure and the works cannot be expanded outside of this to accommodate the growth we are experiencing in the catchment. This is

exacerbated by the WwTW now exceeding the UWWTR population threshold that requires tighter standards to be met than the site is currently required to do so; this change will require the site to be expanded to achieve the new permit limits.

We have invested Base Maintenance and continue to do so to mitigate the risk of rock and tree fall and maintain compliance with the discharge permit. These interventions through Base Maintenance will however only alleviate small elements of the immediate risk but will not address the root cause of the issue which is the actual instability of the cliff face and growth.

In addition to the preferred solution for Laugharne WwTW that is being put forward, we are looking to realise an efficient and holistic solution that will also benefit another scheme already within the NEP.

3. Best Option for Customer

In this section, we will describe how we have developed options for addressing the need identified above.

3.1 Identification of Solution Options

Has the company considered an appropriate number of options over a range of intervention types to meet the identified need?




– Ofwat’s final methodology for PR24, Appendix 9, A1.1.2a


Our approach to options development is set out in WSH50-IP00 Our Approach to Investment Planning (Section 4.3).

For this Enhancement Case we have considered a range of options to address the need and reduce the risks faced, from a high consequence event at Laugharne WwTW. These options are set out in the table below.

Table 1: Longlist of Options Considered

Option	Type of Option	Brief Description of Option and Comments	Potentially Viable, i.e., progress to shortlisting?
1	Eliminating, reducing or delaying the need for change: <i>Manage demand</i>	Not Viable: No alternative treatment works is available from the current network to accept flow currently processed at Laugharne WwTW. There is no realistic route to reduce flow to the site by modifying customer behaviour. H&S risks at the site are not linked to demand.	X
2	Eliminating, reducing or delaying the need for change: <i>Manage operation or use of the existing asset or service</i>	Not Viable: Managing operation would not address the growth, UWWTR compliance, site flooding and stability of the cliff above the WwTW.	X
3	Eliminating, reducing or delaying the need for change: <i>Maintain the existing asset or service</i>	Not Viable: Maintaining existing assets would not address risks related to growth, UWWTR compliance, site flooding and stability of the cliff above the WwTW. Delaying this investment increases risk to the asset and our colleagues.	X
4	Maintaining the effective risk controls already in place: <i>Replace the existing asset like-for-like</i>	Not Viable: Replacing existing assets like-for-like would not address risks related the growth, UWWTR compliance, site flooding and most significantly the stability of the cliff above the WwTW.	X

Option	Type of Option	Brief Description of Option and Comments	Potentially Viable, i.e., progress to shortlisting?
5a	<p>Enhancing existing or adding new resources: <i>Enhance/upgrade the existing asset or service.</i> Maintain and modify existing works.</p>	<p>Enhance and defending the existing site. Not Viable: A protective 'roof' would be difficult to engineer given the potential range of rock fall scenarios. The option would not address future growth or UWWTR compliance linked to a lack of room on site for the required expansion. In addition, the construction programme would be challenging consisting of significant temporary works as assets are decommissioned for the build of new ones. The site is in a highly visible area, popular with many tourists visiting West Wales with Laugharne castle and the Dylan Thomas Boathouse (located directly across the water). It is likely there would be planning restrictions imposed for landscaping due to the high amenity of the area which would not be possible due to the location and site constraints. This option would not address the flooding during high tides.</p>	
6a	<p>Maintaining the effective risk controls already in place: <i>Mothball/dispose of the existing asset or service</i> Pump away to Pendine WwTW</p>	<p>Decommission Laugharne WwTW and install a pumping station for conveyance of all incoming flow to Pendine WwTW. To include a pipeline between the works and process upgrades at Pendine WwTW. Not viable: Pendine has an NEP requirement to stop discharging the effluent to an inland pond. Pendine WwTW is situated on a live MOD site, which makes access difficult. Upgrades to Pendine WwTW would be significant and there is a very high likelihood that permission for any construction works would not be obtained.</p>	
6b	<p>Maintaining the effective risk controls already in place: <i>Mothball/dispose of the existing asset or service</i> Pump away to St Clears WwTW and upgrade St Clears WwTW.</p>	<p>Decommission Laugharne WwTW and install a new pumping station off site for conveyance of all incoming flow to St Clears WwTW. To include a pipeline between the works and process upgrades at St Clears WwTW. Viable: Consolidates risk from 2 sites into 1 site, with no UV treatment needed at St Clears WwTW.</p>	

Option	Type of Option	Brief Description of Option and Comments	Potentially Viable, i.e., progress to shortlisting?
6c	Maintaining the effective risk controls already in place: <i>Mothball/dispose of the existing asset or service</i> Pump away to a new greenfield site	Decommission Laugharne WwTW and install a new pumping station off site, for conveyance of all incoming flow to a new works to be constructed on purchased land. Install a new treatment process chain. Viable: The solution addresses most of the drivers and risks.	
7	Enhancing existing or adding new resources: <i>Create/acquire a new asset or service</i>	Considered in options above. Decommissioning of Laugharne WwTW 6c includes creation of a new asset elsewhere.	N/A

3.1.1 Assessment and Selection of Solution Options

Is there evidence that the proposed solution represents best value for customers, communities, and the environment over the long term?

– Ofwat’s final methodology for PR24, Appendix 9, A1.1.2b

Our approach to cost benefit appraisal and its role in decision making is set out in WSH50-IP00 Our Approach to Investment Planning (Section 4.3). This includes a cost benefit analysis (CBA) tool, which comprises of a detailed analysis of benefit to costs for all proposed options. The proposed solutions include quantification of risk and benefit over the long term via service measure framework (SMF) values, including valuation of the following criteria: natural capital; social capital; human and intellectual properties.

Two viable options were progressed to CBA:

- Option 6b: Pump away to St Clears WwTW and upgrade St Clears WwTW.
- Option 6c: Pump away to a new greenfield site on top of the cliff.

No other options satisfactorily address the risk of cliff collapse (option 6c does not eliminate it completely).

We have identified Option S1: pump away to St Clears WwTW and upgrade St Clears WwTW as the preferred option as it has the highest benefit to cost ratio and adequately addresses the identified risks, as well as producing a much higher overall benefit compared to the alternative.

The table below shows the CBA for this enhancement investment. All monetary values are expressed in 2022/23 prices and are prior to portfolio adjustments for corporate overheads and efficiency challenge. Welsh Water ref: SMF version 5. This is the total price for the scheme but £2.641M has been apportioned to the growth element.

Table 2: Benefit to cost ratio analysis for Laugharne WWTW.

Solution Option	Option Name	CapEx	Present Value Whole Life Costs (WLC)	Present Value Whole Life Benefits (WLB)	Benefit/Cost Ratio	Net Present Value (=WLB - WLC)
Option S1	Pump away to Saint Clears	£11.170M	£13.973M	£93.890M	6.719	£79.917M
Option S2	Pump away to a new greenfield site in Laugharne	£6.055M	£8.146M	£21.378M	2.624	£13.232M

A point of note on the above calculation is that the risk of a fatality has not been included as part of the pre risk score to calculate the benefit valuation. Whilst the risk of a fatality is present, the site is unmanned, and the cliff runs the full length of the site – any rock fall could therefore occur anywhere along the site boundary at a time when operational colleagues are at the site or not. For this assessment, we took a conservative approach that a fatality would not occur – this was done for both options to be comparable. Obviously had this been included the benefit/cost ratio would be increased.

Benefits are considerable given the risks of staying at the current site.

Third-party technical assurance of cost–benefit appraisal has been completed by Economic Insight who have confirmed that our approach is robust and in line with Ofwat expectations. Full details are given WSH50-IP00 Our Approach to Investment Planning (Sections 4.3 and 6).

3.2 Quantification of Benefits

Has the company fully considered the carbon impact, natural capital and other benefits that the options can deliver?
Has the impact of the proposed option on the identified need been quantified, including the impact on performance commitments where applicable?
 – Ofwat’s final methodology for PR24, Appendix 9, A1.1.2c and A1.1.2d

The preferred option in this Enhancement Case splits benefits from categories contained within our Service Measure Framework (SMF), with a decreased environmental impact accounting for 96% of this overall amount.

This value is based on the treatment works being damaged by cliff fall and becoming non-compliant. There are a range of other smaller benefits which have also been quantified. The benefits also incorporate the UWWTD benefits.

Table 3: Benefits from AMP8 spend in Laugharne WwTW

Scenario	Benefits from AMP8 Spend relative to baseline						
	Environmental Impact	Health & Safety	Greenhouse Gas Emissions Reduction	Pollution Incidents	Final Effluent Quality	Other*	Total
Preferred –	95.6%	1.9%	0.7%	0.7%	0.5%	0.6%	100%
* Final Effluent Quality, Nuisance - Noise, Avoidable Costs, Staff Productivity, Network / Storm Storage Consent Compliance, Flow Compliance DWF, Customer Contacts.							

For this case the primary risk is cliff fall destroying the works or injuring operators, the proposed viable options directly address this need by moving the treatment location.

We have not prepared this case based on improving performances against specific performance commitments.

3.3 Uncertainties relating to cost and benefit delivery.

Have the uncertainties relating to costs and benefit delivery been explored and mitigated? Have flexible, lower risk and modular solutions been assessed – including where forecast option utilisation will be low?

– Ofwat’s final methodology for PR24, Appendix 9, A1.1.2e

Our methodology is set out in WSH50-IP00 Our Approach to Investment Planning (Sections 4.10 and 4.3). This includes commentary on our approach to optioneering, costing and cost benefit analysis.

For this Enhanced Investment Case we have evaluated a wide range of options in line with our TotEx hierarchy approach, the viable options are set out above.

We have highlighted areas in which the calculation of costs or benefits are unusual or uncertain and how we have mitigated for this in our evaluation. The uncertainty is similar across the two viable options, and as such will not impact on the decision-making process.

Investments in this area are well known by the company and covered by its cost models, so the cost has good confidence. Given the certain nature of the benefit being provided (i.e., the mitigation of a known failure) the benefits are also certain. The specific options regarding mitigation of delivery risks and cost increases are outlined in the table below.

Table 4: Options considered for Laugharne WwTW

Option	Description	Risks associated with costing this option	Mitigation
Option 6b	Pump away to St Clears WwTW and upgrade St Clears WwTW	The risk associated with costing relates to commissioning aspects which can only be determined at detailed design stage, with respect to management of interface between new transfer SPS and current operation. This may involve a requirement for temporary treatment provision.	In case a temporary treatment provision was required, we would finance it. The risk will be held by Welsh Water.

Option	Description	Risks associated with costing this option	Mitigation
Option 6c	Pump away to a new greenfield site	The risk associated with costing relates to the commissioning aspects can only be determined at detailed design stage, with respect to management of interface between new transfer SPS and current operation. This may involve a requirement for temporary treatment provision.	In case a temporary treatment provision was required, we would finance it. The risk will be held by Welsh Water.

A key assumption is that this scheme will go ahead otherwise this will impact the scheme at Pendine WwTW which is included within our WSH71-PE10 Protecting the environment – “Enhancing the environment through WINEP/NEP driven activities” case. Some of the investment for the construction of assets in this case, will be required for both schemes which will send flows to St Clears WwTW. It has been costed in this way so that there is no overlap in the two schemes.

4. Costing Efficiency

In this section, we give specific details on our approach to costing and benchmarking. Our overarching approach to developing efficient costs is set out in WSH50-IP00 Our Approach to Investment Planning (Section 7).

4.1 Developing a cost for Laugharne WwTW Risk Reduction

Is it clear how the company has arrived at its option costs? Is there supporting evidence on the calculations and key assumptions used and why these are appropriate?

– Ofwat’s final methodology for PR24, Appendix 9, A1.1.3a and A1.1.3c

The costing approach for this project was using the like-for-like (top down) cost modelling through our Unit Cost Database (UCD) Cost & Carbon Estimating Tool (C&CET) as described in ‘Overview: How we have developed our investment plan Section 5 Costing Methodology.

The costing was carried out by Welsh Water costing team. The governance procedures, as outlined in Section 5 of the costing methodology were adhered to with the appropriate use of cost models being confirmed and any manual allowances verified prior to providing sign offs throughout the different iterations of the costings.

The scope contains items of work which have been constructed throughout previous AMPs, and therefore we have a rich source of historical cost data. For these items of work, we have developed cost models based on the dominant cost drivers, e.g., the most influential driver to cost for a tank is volume. This costing approach forms the direct works and site-specific costs. We apply construction indirect costs and project oncosts based on the work stream. In this instance this is Wastewater Non-Infrastructure, which applies modelled percentages to the cost of the direct works and site specifics.

The scope is aligned to our Work Breakdown Structure (WBS), which was developed to support our data capture process of historical project cost against delivered assets, into a scope input sheet. Within this, sizing of the assets based on the relevant yardstick, which is dictated by the WBS, is provided following calculation in the previous engineering stages. Our costs models are developed in line with our WBS and this allows us to input this information into the C&CET and generate a project estimate. WBS details the inclusions and exclusions of works under each cost model and the limitations of the model, so we can ensure all project costs are captured and there is also no over costing.

The estimate for Laugharne WwTW lists out the scope items such as pipework, with their location, diameter and length, wells and tanks with their volume, pumps with power in kW, inlet works with the flow in m³/d and Motor control centres in kW, etc. With the relevant quantities against these, the C&CET calculates the costs for each item using the cost models. With the workstream selected the C&CET applies the correct models to the direct works and site-specific costs, to cost the contractor indirect and project oncosts, associated with delivering the project.

Along with our overall costing strategy being reviewed and assured by Jacobs, we have also employed third party consultants to review single Enhanced Investment Cases to provide confidence that the estimates within them are robust, efficient, and deliverable. Please refer to WSH50-IP00 Our Approach to Investment Planning (Section 6) for more information regarding the review and assurance undertaken.

4.2 Benchmarking our approach

Is there evidence that the cost estimates are efficient?

– *Owat's final methodology for PR24, Appendix 9, A1.1.3b*

We have engaged Independent Consultants to undertake a Project Level Benchmark of our preferred solution for the works at Laugharne WwTW.

This industry benchmark was a review of our cost efficiency for delivering this project based on a like for like scope.

The benchmark findings report shows that our costs are in line with the industry and suggest that our pre-efficiency costing is already in an efficient position and achieving within the upper quartile.

Table 5: Extract from Project Benchmarking Report (pre-efficiency position in 2021/22 prices)

Scheme	Welsh Water Costing	Upper Quartile	Average	Lower Quartile
Laugharne STW	£10.269 M	£10.722 M	£11.433 M	£12.284 M

5. Providing Customer Protection

In this section, we set out how we propose to protect customers.

The sub-section below corresponds to the three criteria set out in Ofwat's PR24 Final Methodology, Appendix 9 (Setting Expenditure Allowances), Section A.1.1.4. There is no third-party funding for this Enhancement Case.

5.1 Proposed Protection

Are customers protected if the investment is cancelled, delayed or reduced in scope?

– Ofwat's final methodology for PR24, Appendix 9, A1.1.4a

Does the protection cover all the benefits proposed to be delivered and funded?

– Ofwat's final methodology for PR24, Appendix 9, A1.1.4b

At £8M this scheme is below the materiality threshold for a bespoke PCD.

However, its construction is required to allow delivery of the Pendine NEP scheme under discharges to ground. That scheme, including the funds allowed for this case, will have oversight from NRW.

As stated in Need, we expect that this site will also include an obligation in the final NEP. As such, it will receive additional oversight from NRW within that mechanism.

6. Appendix A

The table below shows the total TotEx enhancement costs in AMP 8 for this Enhancement Case. The Ofwat driver this Enhancement Case maps to is:

- Resilience; enhancement wastewater TotEx- CWW3b.168 & CWW3b.169

Table 6: Allocation of Costs in the Data Tables

Driver Ref	Year in AMP8					Grand Total
	1	2	3	4	5	
CWW3b.168 – CapEx	£0.816M	£0.805M	£3.218M	£3.238M	£0.000M	£8.077M
CWW3b.169 - OpEx	£0.000M	£0.000M	£0.000M	£0.226M	£0.226M	£0.452M
TotEx	£0.816M	£0.805M	£3.218M	£3.464M	£0.226M	£8.529M

No other Enhancement Cases contribute to this driver.

TotEx in AMP8 Plan in 2022/23 prices

What We Will Deliver: This Enhancement Case will decommission the Laugharne WwTW, pumping flows through 6.7km of new mains to St Clears WwTW, which is to be upgraded (inlet screening handling and dewatering, grit removal, primary sedimentation, bio-filters, secondary sedimentation, sludge handling and appurtenant works). A new SPS to intercept Laugharne catchment flows not located within the existing site.