UUWLGS_P1S1_01

Windermere: Package 1

Submission 1

October 2025

United Utilities

Water for the North West

Contents

1. Executive Summary

Windermere, the largest lake in England, is an iconic site of significant importance to customers, communities and stakeholders. Located in the heart of the Lake District National Park, a UNESCO world heritage site area over 249 square kilometres abundant with wildlife and ecosystems. Windermere receives around seven million visitors per year and contributes over £750 million to the local economy. Due to the high societal value of its unique location, Windermere continues to be the subject of media focus, raising awareness and supporting campaigns for increased regulatory scrutiny, tighter legislation and increased drive to improve water quality in the lake.

UUW is investing at Windermere in AMP8. Several investments are already funded through Ofwat's final determination (FD) and a further 12 projects are going through Ofwat's large schemes gated process. This submission provides an update on six of those schemes going through the gated process – package one. Package one comprises a set of phosphorus and sanitary schemes to achieve tight phosphorus permits for WINEP drivers with 2030 regulatory dates. Four of these are at small treatment works (Troutbeck, Outgate, Near Sawrey and Far Sawrey), with phosphorus drivers also at Grasmere and Ambleside.

UUW is also committed to the government's "only rainwater" vision and together with partners is progressing a feasibility study. This is a more ambitious vision that will take longer to develop, plan and deliver than the investments that form part of the gated process. These projects need to continue to improve the quality of Windermere in the shorter term (notwithstanding the regulatory drivers) to deliver benefits for local residents, businesses and visitors to Windermere in the interim.

The Windermere gated projects were introduced into the WINEP in summer 2024 and the late inclusion in the price review process (between draft and final determinations) meant that the projects were at a relatively early stage of development, with indicative costs included in the FD based on early scoping but prior to a full options assessment. The resulting cost and scope uncertainty led these schemes to be included in the gated process as part of a Windermere programme.

In line with the process set out in the FD, UUW has been developing the schemes, taking them through optioneering to the point of having a preferred option for each scheme, summarised in the table below. Reflecting the stage of project development, the costs are still subject to some uncertainty as described below.

Table 1: Options summary (2022/23 CPIH prices))

Project	Preferred solution	Justification	Totex	Key risks
Submission chapter	*3*	*3*	*4*	*5*
Troutbeck WwTW – phosphorus and sanitary	Provide additional treatment with a Fujiclean system and Tertiary Solids Removal (TSR)	Chemical-free solution due to location	£3.8m	Restricted access Planning Power
Outgate WwTW – phosphorus (Additional sanitary requirements anticipated due to 'orphan P')	Provide additional treatment with a Fujiclean system and TSR	Chemical-free solution due to location	£3.5m	Constrained site Access and logistics Power
Near Sawrey WwTW – phosphorus and sanitary	Provide additional treatment with a Fujiclean system and TSR	Chemical-free solution due to location	£4.2m	Land acquisition and negotiations Planning Power
Far Sawrey – phosphorus and sanitary	Provide additional treatment with a Fujiclean system and TSR	Chemical-free solution due to location	£3.0m	Constrained site Power
Grasmere WwTW - phosphorus	Ferric dosing control enhancement	Deliverable with low cost control hardware upgrade	£0.04m	Coordination with other projects

Project	Preferred solution	Justification	Totex	Key risks
Submission chapter	*3*	*3*	*4*	*5*
Ambleside WwTW - phosphorus	Ferric dosing control enhancement	Deliverable with low cost control hardware upgrade	£0.1m	None

Source: Summarised from submission chapters

Two of the projects (Ambleside and Grasmere phosphorus) require relatively little intervention to meet the WINEP requirements, with control systems upgrades identified as the preferred option. Collectively, it is estimated to cost less than £150k to ensure that these wastewater treatment works (WwTW) reliably deliver the enhanced requirement for phosphorus removal.

The remaining four sites require changes to treatment processes to meet the tightened requirements, and UUW is proposing to deploy innovative technology to achieve the required outputs. These sites are subject to several constraints which limit the treatment options available. Firstly, the sites are in remote rural locations, close to tourist accommodation and/or visitor attractions, and in some cases remote from potable water supplies and power. Access is constrained by narrow lanes and in one case the site does not have road access. Land is constrained, through a combination of geography (e.g. steep gradients), ecology (e.g. ancient woodland) and stakeholder considerations.

For all these reasons, UUW needed to look beyond chemical dosing approaches and has identified the innovative Fujiclean technology for these sites, in line with the approach for its wider AMP8 programme for similar sites. Fujiclean is a self-contained wastewater treatment unit which UUW has tested to demonstrate its ability to deliver to the required phosphorus limit. The solutions developed for Troutbeck, Outgate, Near and Far Sawrey all use Fujiclean units, with the number, size and layout of units determined through site-specific feasibility studies taking account of factors such as flow rates, integration with existing works, land availability, access and logistics.

The costs of each scheme are less than Ofwat's modelled allowance, with an estimated total cost of package one of £15m. These estimates are subject to considerable uncertainty (+50%/-30%) and are therefore subject to change as the schemes continue to develop. For submission two we will provide a firmer cost estimate informed by engagement with our supply chain and greater maturity of design.

Building on our extensive engagement in Windermere to date, as we develop the schemes, we will continue to engage with communities across the Windermere catchment and particularly those affected by site-specific plans and activity. We are also engaging with wider stakeholder groups and the Environment Agency on our plans to shape our approach and support efficient delivery of the projects.

Subject to Ofwat feedback, we will continue to develop these projects for a second submission to Ofwat on 19 December 2025. While our programmes currently reflect proceeding to delivery following the conclusion of Ofwat's cost change process in December 2026, as these projects are relatively small we are keen to quickly realise the benefits to customers. As permitted by Ofwat's guidance, we are considering proceeding to delivery at risk on cost following submission two to Ofwat, which we will confirm in submission two. There are several land, planning and construction risks around delivery of these schemes which are described further in chapter 5. We are working to mitigate these risks and do not see any of them as a barrier to progressing to delivery.

This submission follows the template and meets the requirements provided in Ofwat's large schemes guidance. The Windermere programme is a collection of smaller projects rather than a single large scheme. Therefore, in line with the guidance, we have applied the requirements proportionately to the size of schemes to provide the evidence required for Ofwat to review the progress of the schemes but tailoring the approach set out in the detailed requirements. For the package one schemes, this is largely in relation to optioneering, where rather than carry out a full cost benefit analysis for each scheme, we have employed a decision-making approach that takes account of the constraints of the sites as set out above.

This submission and supporting documents will be published on our website. We will also publish our first submission for Windermere package two. A third package of schemes has been deferred and the first gated submission to Ofwat for package three will be 1 October 2026.

2. Background and Objectives

2.1.1 This section outlines the objectives of the Windermere programme, including statutory compliance requirements. The information aligns with UUW's draft determination response Windermere enhancement case (UUWR78)[1] except where highlighted. This section is supported by UUWLGS_S1_10 Included Schemes which sets out all Windermere package one and two projects and WINEP drivers in full.

2.1.2 The enhancement schemes for Windermere are driven by the Water Environment (Water Framework Directive) Regulations 2017 and Environment Act 2021 statutory drivers. In addition to these statutory drivers the Environment Agency (EA) has introduced a '25-year environment plan' non statutory driver. Where supported by customers, this allows companies to go beyond statutory requirements for locally significant issues. Under EA guidance, nine wastewater treatment works (WwTW) enhancement schemes for Windermere have been identified in AMP8, as part of a long-term plan to reduce nutrient load into Windermere under the AMP8 WINEP driver 25YEP_IMP.

2.1.3 The twelve identified enhancement schemes have been split into three packages for the gated process to align with project timelines; Table 2 sets out the six projects included in package one.

Table 2: Windermere gated programme: package one projects

Project Name	Project Driver	Determinands	WINEP Date	Statutory / Non statutory
Troutbeck WwTW	U_IMP1	30mg/l BOD, 45mg/l suspended solids, 20mg/l ammonia, 2mg/l phosphorus (annual average)	13/05/2030	Statutory
	25YEP_IMP	0.5mg/l phosphorus (annual average)	31/03/2030	Non statutory
Outgate WwTW	25YEP_IMP	0.5mg/l phosphorus (annual average), Orphan P additional requirements anticipated	31/03/2030	Non statutory
Near Sawrey WwTW	WFD_ND	8mg/l Ammonia, 2mg/l phosphorus (annual average)	31/03/2030	Statutory
	25YEP_IMP	0.5mg/l phosphorus (annual average)	31/03/2030	Non statutory
Far Sawrey WwTW	U_IMP1	30mg/l BOD, 45mg/l Suspended solids, 20mg/l ammonia, 2mg/l phosphorus (annual average)	13/05/2030	Statutory
	25YEP_IMP	0.5mg/l phosphorus (annual average)	31/03/2030	Non statutory
Grasmere WwTW	25YEP_IMP	0.25mg/l phosphorus (annual average)	31/03/2030	Non statutory
Ambleside WwTW	25YEP_IMP	0.25mg/l phosphorus (annual average)	31/03/2030	Non statutory

Source: UUW summary

2.1.4 All six WwTWs have been identified for enhancement to meet new or more onerous phosphorus limits, with two to meet the technically achievable limit of 0.25mg/l annual average, and four to meet 0.5mg/l annual average. Three of the WwTWs have also been identified for enhancement to meet additional final effluent permit requirements including BOD, suspended solids and ammonia (95th percentile). Since UUW's draft determinations response, a phosphorus requirement of 0.5mg/l annual average has been confirmed by the EA for Near Sawrey.

2.1.5 Following discussions with the EA and review of the PR24 WINEP driver guidance for nutrients and sanitary determinands in surface waters, it is now anticipated that Outgate WwTW, will also be required to meet additional sanitary requirements as a numeric environmental permit for Outgate WwTW containing an 'orphan' phosphorus limit is unlikely to be acceptable to the EA. We have begun to engage with the EA and further work is required to confirm the numeric limits of these additional sanitary

[1] UUW (2024), "UUWR-78 PR24 Draft Determination: Enhancement Case, Windermere – Enhancement case", August 2024

parameters. We will be submitting a pre-application for the permit to get EA direction on the enhanced sanitary determinands prior to submission two. We currently expect these requirements to be met by the solution described in section 3 without significant additional costs.

3. Optioneering and solution design

3.1 Introduction

3.1.1 This section describes the optioneering process, including work to explore the feasibility of potential options, and describes the chosen solution outline design.[2] We have followed a robust approach to decision-making to support best value for customers and the environment, tailored to the size and nature of the package one projects. To support the information in this section, we have shared single solution documents for each project as part of the scheme-specific supporting documents UUWLGS_P1S1_13 to UUWLGS_P1S1_18 inclusive.

3.1.2 The focus of our package one optioneering has been the delivery of the WINEP drivers by the regulatory dates, rather than the wider set of options that will be considered in line with the longer-term "only rainwater" ambition for Windermere. The package one projects are needed to continue to improve the quality of effluent going into Windermere in the shorter term (notwithstanding the regulatory drivers), to deliver benefits for local residents, businesses and visitors to Windermere.

3.2 Decision-making approach: Outgate, Troutbeck, Near and Far Sawrey

3.2.1 Our decision-making approach has been proportionate to the size of the package one projects, which have a total cost of around £15m, as permitted by Ofwat's large schemes guidance. Rather than carrying out cost-benefit analysis on a full set of unconstrained options (which would be disproportionately costly relative to the value of the schemes), we have first filtered down to a constrained list of feasible options and identified the best value option, a Fujiclean solution, for which we set out the rationale below. We have refined this solution further as part of outline design, as described in section 3.4.

Background

3.2.2 In previous investment cycles, phosphorus drivers in the UK have been predominantly achieved through chemical dosing. However, an increasing number of very small rural WwTWs (<500Pe) are attracting phosphorus drivers in AMP8, and due to their location and other permit requirements, chemical dosing is not a viable solution for many of these sites.

3.2.3 In readiness for AMP8 UUW has driven innovation for small rural treatment works with phosphorus drivers. This included the Ofwat Innovation Fund project – Alternative Approaches to Phosphorus Removal at Rural WwTWs and, working in partnership with UK licence holder Haigh Environmental, the development of Fujiclean technology for municipal WwTWs. Leveraging the modular approach of the innovation UUW has developed a standardised approach to design, to maximise efficiency in solution development, both from a time and cost perspective.

3.2.4 Within the Windermere catchment, four of the sites in package one of the gated process submission are very small with populations of less than 300 population equivalent: Near Sawrey, Far Sawrey, Outgate and Troutbeck. With the exception of Near Sawrey, the sites also have an existing requirement to Treat All Flows in their permits.

3.2.5 The following section sets out our decision-making process:

- We identified that there are significant constraints and challenges of chemical dosing on very small rural works; site access, dosing complexity with large flow variations, carbon emissions, potable water supplies and power requirements.
- We considered and ruled out alternatives such as:

[2] Given when the Windermere programme was added to the WINEP, limited optioneering was carried out as part of that process.

  - Pumping away (which is challenging due to topography, ground conditions, ecology, disruption during tourism seasons and considerable expense); and
  - Reed beds – which are not able to meet permits and require land which is not available, as well as not being consistent with landscape and ecology around Windermere.
- This determined that we needed to find a chemical-free treatment solution.

Limitations of chemical dosing

Site access

3.2.6 Chemical dosing requires regular chemical deliveries, usually via road tankers. It also generates large quantities of sludge, which needs to be removed frequently from site to ensure permit compliance. Sites in the Lake District, but particularly in the Windermere area, are accessed by very narrow country lanes and have extremely difficult access. While construction works will need to be planned with regard to access, this would need to be managed on an ongoing basis with use of chemical dosing.

3.2.7 **Outgate WwTW** is particularly challenging to access. It is situated at the bottom of a steep grassed hill, with no access road or path, and is inaccessible to road vehicles, as shown in Figure 1 below.

Figure 1: Location and access to Outgate WwTW

3.2.8 As illustrated in Figure 2 below, the entrance to **Far Sawrey WwTW** is on the crest of a hill at an acute angle to the road. Access is limited to narrow vehicles, and all vehicles are required to reverse down the access track, increasing health and safety risks for vehicles carrying chemicals or sludge.

Figure 2: Location and access to Far Sawrey WwTW

3.2.9 **Troutbeck WwTW** is located close to a number of properties down a steep narrow lane, as shown in Figure 3.

Figure 3: Location and access to Troutbeck WwTW

3.2.10 **Near Sawrey WwTW** is located near the National Trust property Hill Top, Beatrix Potter's farmhouse, as shown in Figure 4, which experiences significant tourist traffic. Access roads are narrow.

Figure 4: Location and access to Near Sawrey WwTW

Dosing complexity

3.2.11 Very small rural treatment works often experience low intermittent flows during dry weather due to the low population connected to the networks. Far Sawrey, Outgate and Troutbeck have a Treat all Flows requirement in their permits so are required to treat all flow variations up to a 1 in 30-year storm. The success of chemical dosing relies on a rapid, well-mixed environment, which is very challenging to provide for both low and high flow conditions. Achieving phosphorus permits while remaining compliant with iron permits in all conditions can be unworkable.

3.2.12 Table 3 shows the flow variations for the four sites. Conventional flow variations at WwTWs would be between three and six dry weather flow (DWF). The flow variations at Troutbeck, Outgate and Far Sawrey would likely result in under-dosing (compromising phosphorus permits) and over-dosing (compromising iron permits).

Table 3: Flow variations

WwTW	Population	Flow Range, l/s		DWF Multiplier	Treat all Flows
		DWF	Max		
Troutbeck	174	0.36	6.8	19	✓
Outgate	170	0.38	25.0	66	✓
Far Sawrey	183	0.40	27.6	69	✓
Near Sawrey	240	0.75	3.4	4.5	×

Source: Population data from Ofwat FD PCD model. Flow data from UUW Network models

Carbon emissions

3.2.13 The wastewater in the Windermere catchment is very soft and has very little buffering capacity for alkalinity. When chemicals such as ferric sulphate are dosed to remove phosphorus, alkalinity is consumed in the chemical reaction, lowering the pH, compromising treatment and potentially degrading concrete. Experience and understanding of chemical dosing for phosphorus removal at the larger treatment works in the Windermere catchment (Windermere, Ambleside, Langdale and Hawkshead WwTWs) is that caustic dosing is also necessary to provide alkalinity buffering. This ensures:

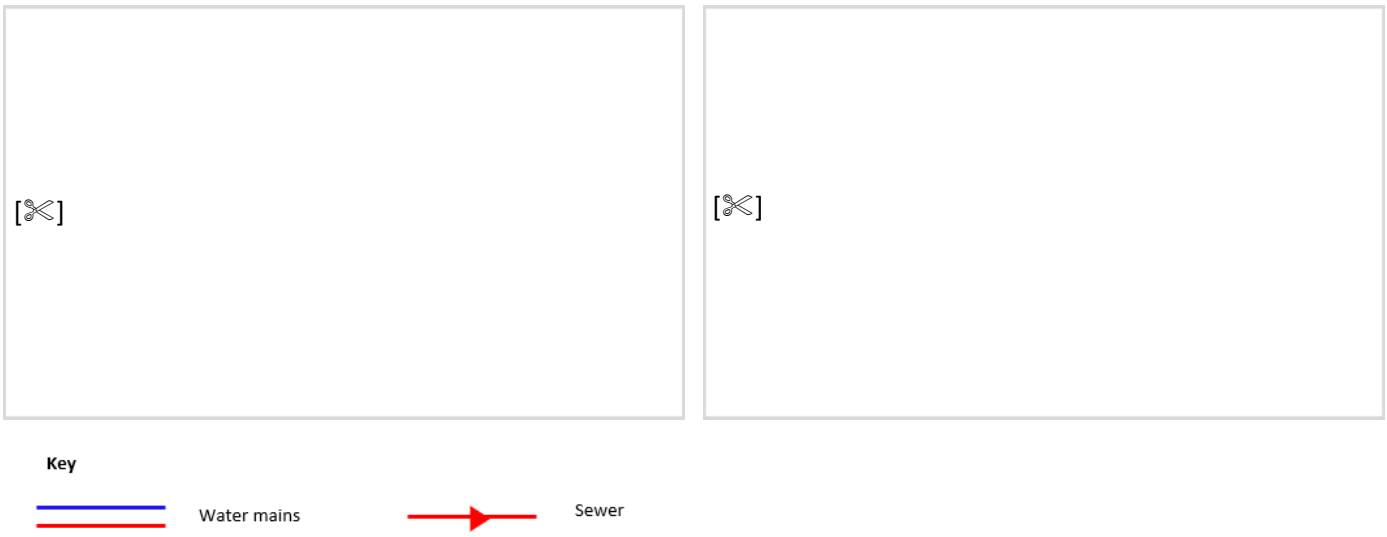
- pH remains within optimal limits;
- sufficient alkalinity is available for nitrification and ammonia removal; and
- no concrete degradation.

3.2.14 As well as the additional assets required for alkalinity dosing, on sites with very constrained land availability, the use of caustic dosing comes with significant operational carbon emissions.

Potable water supplies

3.2.15 UK health and safety regulations mandate emergency showers and eyewash stations local to chemical storage. Rural sites often lack access to a potable water supply. There is currently no potable water supply at any of the four sites. Near Sawrey and Outgate are especially remote from the nearest potable water supply available for connection. Providing connections to potable water supplies in the Windermere catchment would be especially disruptive for road users and also for the environment and ecology.

***Figure 5**: Maps indicating nearest potable water supplies for Near Sawrey and Outgate*



Source: United Utilities OneMap

Power requirements

3.2.16 Rural sites are often limited by power availability and reliability, and this is a particular issue in the Windermere catchment. The electrical supply is often single-phase systems and suffer from voltage fluctuations and occasional brownouts. The power requirements of chemical dosing systems usually require power upgrades which can have protracted delivery periods.

Summary

3.2.17 In summary, while chemical dosing is a commonly used conventional solution for removing phosphorus from wastewater, the constraints and challenges of very small rural treatment works can make it a non-viable solution.

Alternatives to chemical dosing

3.2.18 A review commissioned by EA in February 2025 to evaluate and compare the performance of different treatment technologies based on their phosphorus removal efficiency, operational costs and effluent quality in rural settings, concluded that Fujiclean was the only technology capable of achieving greater than 90 per cent phosphorus removal (<1mg/l phosphorus) without dosing chemicals.[3] The report also stated:

"This is the only system that offers an alternative to chemical usage for phosphorus removal."

UUW Fujiclean trial

3.2.19 Following discussions with Haigh Environmental, UUW funded a trial of the technology to establish the applications and benefits of the technology. The trial was operated over a period of nine months, which included periods of seeding, baseline performance and stress testing.

3.2.20 The results of the trial demonstrated that the Fujiclean technology achieved:

- excellent effluent quality for BOD (<10mg/l), ammonia (<5mg/l) and phosphorus (0.5mg/l) during baseline performance;
- minimal desludging requirements;
- low power consumption; and
- minimal maintenance requirements.

[3] WRc (2025), Low Phosphate PSTP Quick Scoping Review (UC 18626 V1), February 2025

UUW first installation and continued learning

3.2.21 During the AMP7 investment cycle Fujiclean was installed at Whitegate WwTW. This has enabled continued learning and development of the technology in a municipal setting on a treatment works with a Treat All Flows permit and large flow and concentration variations. This has informed modifications to the technology and design requirements for the Windermere projects to ensure the tight phosphorus permit and iron limits are achieved, as well as the improved BOD and ammonia drivers.

Benefits of Fujiclean in Windermere

3.2.22 Specific benefits of Fujiclean technology for the Windermere sites include,

- Solutions with **no requirements for chemical inventory** on site (reduced tanker movements, lower carbon emissions, reduced health and safety risk, no requirement for potable water);
- **Operational resilience** with no reliance on chemicals which can be variable in quality and effectiveness as well as being vulnerable to market conditions which have previously led to operational shortages;
- **No low alkalinity issues** so no requirement for caustic dosing, and removal of the associated chemical handling risks, costs and carbon emissions;
- **Modular approach to design** providing flexibility to meet different requirements;
- **Flexibility for construction** - installation can be above ground, below ground or partially buried offering design flexibility depending on site specific constraints;
- **Reduced desludging frequency** when compared to conventional treatment, reducing the impact on rural customers from road tankers; and
- **Low power requirements** in comparison to chemical dosing solutions.

3.2.23 This solution is also in line with UUW's programme-level optioneering approach for the AMP8 phosphorus programme.

Additional elements of preferred solutions

3.2.24 The installation of Fujiclean downstream of existing assets will provide sufficient treatment capacity to meet the phosphorus and sanitary drivers. However the EA will also implement iron permits at all four sites (confirmed during stakeholder discussions with EA). UUW has assumed a standard iron permit of 4mg/l (95th percentile) and 8mg/l (upper tier limit) will be implemented. This will be confirmed as part of the pre-application process for a new permit with EA.

3.2.25 To ensure that the four sites remain compliant with all anticipated permit conditions for phosphorus and iron, tertiary solids removal has been included in the design to removal residual iron and phosphorus attached to suspended solids.

3.3 Decision-making approach: Ambleside and Grasmere

3.3.1 Ambleside and Grasmere phosphorus schemes are very small (with an estimated total cost of less than £125k) with the ambition to achieve the technically achievable limits for phosphorus. In line with Ofwat's large schemes guidance, we have taken a proportionate approach to optioneering for these schemes and have identified preferred solutions which offer value for customers:

- **Ambleside WwTW** has an existing phosphorus permit of 0.5mg/l. The existing assets on site for chemical storage and dosing and tertiary solids removal are already sufficiently sized to meet the AMP8 phosphorus driver of 0.25mg/l. However, the current dosing control operation is not sophisticated enough to consistently achieve the tighter driver. Combined with an anticipated 19 per cent population growth to the design horizon in 2050 and the changes in operational management of the works following the implementation of the solution to meet the "not more than 10 spills per year on average" driver (a project funded through final determinations), it is necessary to replace the Program Logic Controller (PLC) and Human Machine Interface (HMI) to host an upgraded and

more mature control software. This solution is an enhancement to the existing works and offers exceptional value, therefore no further optioneering was completed.

- **Grasmere WwTW** has an existing phosphorus permit of 0.3mg/l. As for Ambleside, the existing assets at Grasmere for chemical storage and dosing and tertiary solids removal are already sufficiently sized to meet the AMP8 phosphorus driver of 0.25mg/l. However the current dosing control operation is not sophisticated enough to consistently achieve the tighter driver. There is also a driver at Grasmere to reduce storm spills to not more than 10 per year on average. The design of the solution for the spills driver is complex, therefore submission 1 will be provided, as agreed with Ofwat, in October 2026. The solution for the phosphorus driver therefore needs to be suitable and adaptable for the solution to meet the spills driver. It is necessary to enhance the dosing control regime to maintain compliance with the driver. This will be achieved by replacing the PLC and HMI to host an upgraded and more mature control software. This solution is an enhancement to the existing works and offers exceptional value, therefore no further optioneering was completed.

3.4 Development of outline design

3.4.1 Table 4 summarises the preferred high-level solutions and justification as set out above. For each project, we have undertaken initial feasibility studies and design has progressed sufficiently to enable engagement with the supply chain prior to submission two.

Table 4: Summary of preferred solutions

Project	Preferred solution	Justification
Submission chapter	*3*	*3*
Troutbeck WwTW – phosphorus and sanitary	Provide additional treatment with a Fujiclean system and Tertiary Solids Removal (TSR)	Chemical-free solution due to location, with Fujiclean being the only chemical-free solution
Outgate WwTW – phosphorus (Additional sanitary requirements anticipated due to 'orphan P')		
Near Sawrey WwTW – phosphorus and sanitary		
Far Sawrey – phosphorus and sanitary		
Grasmere WwTW - phosphorus	Ferric dosing control enhancement	Deliverable with low cost control hardware upgrade
Ambleside WwTW - phosphorus		

Source: Summary of information included in this chapter

3.4.2 Following the confirmation of the preferred high-level option for each project, UUW has undertaken feasibility studies to identify a single solution prior to progressing into outline design for the Fujiclean projects. For Ambleside and Grasmere phosphorus, this further design development was not required given the solutions identified.

3.4.3 UUW is using its "Enterprise delivery model": the Enterprise brings together eight industry-leading partners, working as one team bringing together expertise in design, engineering and construction. Development of outline design by the project team within the Enterprise has allowed a range of technical experts, including supply chain partners, to be engaged throughout the design process.

3.4.4 For Ambleside and Grasmere phosphorus, this further design development was not required given the solutions identified. For Troutbeck, Outgate, Near Sawrey and Far Sawrey, the design process has identified the size and number of Fujiclean units required and optimum layouts. Through this process we have considered factors such as modelling, flow rates, integration with existing works, population data, topography, planning, land availability, access and logistics.[4] We have also engaged with Fujiclean

[4] Population data is based on the latest WEF annual returns dataset as a baseline and a growth model for the forecast to the end of the AMP and the design horizon 2050. The growth model used is from Edge Analytics, and includes growth data from Local Plans and planning applications submitted to local authorities.

and its UK supplier and distributor to review options, as well as consider logistics for delivery, construction and installation at each site.

3.4.5 Having developed the preferred option for each location a single solution paper was prepared for/and reviewed by the Technical Assurance Group, which includes a mixture of process, technical, design, engineering and assurance expertise. The review covered risks and opportunities, dependencies, whether the technology selected will deliver the required outcome and whether the requirements and basis of design are clear. Each SSP has also undergone commercial and programme assurance.

3.4.6 We have provided single solution papers for each project as part of the following supporting documents: UUWLGS_P1S1_16 Troutbeck WwTW, UUWLGS_P1S1_15 Outgate WwTW, UUWLGS_P1S1_17 Near Sawrey WwTW, UUWLGS_P1S1_18 Far Sawrey WwTW, UUWLGS_P1S1_13 Grasmere WwTW and UUWLGS_P1S1_14 Ambleside WwTW.

4. Solution costs and benefits

4.1 Introduction

4.1.1 This section:

- Sets out the solution cost estimates for the package one projects, underpinned by the costing methodology. We demonstrate cost efficiency by evidencing that the cost of package one is within the cost allowance that would be generated using Ofwat cost models;
- Describes UUW's approach to best value assessment and solution benefits; and
- Summarises the key changes from the solutions and costs set out in UUWR78. Changes in benefits are not described as we did not quantify benefits in UUWR78 given the early stage of development of the projects.

4.1.2 We are at the feasibility stage of project development, meaning that cost estimates will continue to change as project details become clearer and designs are finalised. We will communicate any further changes to Ofwat through future submissions.

4.1.3 All costs in this submission are provided in 2022-23 CPIH-adjusted prices.

We have attached supporting evidence to this submission

4.1.4 We also attach the following supporting documents to this submission:

(a) A change log covering the package one and two projects (UUWLGS_S1_05 Change Log); and

(b) Individual capital cost estimates for each project in package one as part of the scheme-specific supporting documents UUWLGS_P1S1_13 to UUWLGS_P1S1_18 inclusive.

4.2 How we have developed and benchmarked our costs

UUW's estimating methodology

4.2.1 This Windermere submission has been priced using UUW's Investment Programme Estimating System (IPES) - a bespoke parametric estimating tool which we used to provide costs for the Price Review. The system provides a repository for cost data from schemes delivered in previous AMP periods and quotations from our partners to inform estimates for future projects. This ensures that our estimates are in line with schemes we have previously delivered.

4.2.2 The estimates for each scope item are compared against other water companies' estimates using Mott MacDonald's estimating database. This gives us confidence that our costs are in line with industry patterns. This process allows us to highlight and challenge scope items where there is a significant difference.

4.2.3 Given the nature of the Windermere sites, a complexity uplift has been applied to contractor costs. This will be replaced by site-specific estimation for submission two. The uplift has been calculated by assessing each scheme against a range of factors that will affect the norms contained within our estimating models. Each project was given a score against factors such as access, weather and planning considerations to generate an overall complexity factor that was scaled and used to generate a percentage uplift to contractor costs. This forms part of the capex estimates described below. This analysis is summarised by site in the figure below.

4.2.4 A risk provision has also been included as described in section 5.3, and opex costs are derived from operating plans consistent with our PR24 methodology.

Figure 6: Package one complexity analysis

	Work force availability / cost	Working hours restrictions	Temporary traffic management	Local access	Wider Access	Utilities/ SU's	Tourism impact	Planning permission / Stakeholder	Planning / stakeholder constrainsts	Temporary works technicalities	Stanadard Outputs	Weather	Ecology (flora/fauna)	Archaeolgy	Heritage	Total Complexity Factor	% Complexity Factor
Near Sawrey	6	4	5	1	5	3	6	3	5	3	5	7	5	1	5	64	12.5%
Far Sawrey	6	4	1	5	5	7	2	3	3	7	7	7	6	1	2	66	12.5%
Outgate	7	2	1	7	5	7	3	3	3	7	7	7	6	1	2	68	12.5%
Troutbeck	7	5	7	7	5	5	4	3	3	7	7	7	4	1	2	74	15.0%
Ambleside P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15	5.0%
Grasmere P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15	5.0%

Source: UUW analysis

4.2.5 The Association for Advancement of Cost Engineering (AACE) provides a framework to define estimates based upon project maturity. At this stage, our estimates are at stage AACE class 4, which suggests an accuracy range of +50 per cent to -30 per cent. We expect this to narrow as we further develop our programme.

Cost estimates

4.2.6 Table 5 below summarises our emerging view of totex costs at each site. As set out above, given these projects remain at the feasibility stage, there remains uncertainty about the costs.

Table 5: Summary of totex costs (2022-23 CPIH prices)

	Troutbeck WwTW phosphorus and sanitary	Outgate WwTW - phosphorus	Near Sawrey WwTW – phosphorus and sanitary	Far Sawrey WwTW – phosphorous and sanitary	Grasmere WwTW – phosphorus	Ambleside WwTW - phosphorus
Capex	£3.7m	£3.4m	£4.1m	£2.9m	£0.04m	£0.1m
Opex	£0.1m	£0.1m	£0.1m	£0.1m	-	-
Totex	£3.8m	£3.5m	£4.2m	£3.0m	£0.04m	£0.1m

Source: UUW Estimating

External benchmarking: comparison to Ofwat's Final Determination enhancement models

4.2.7 We have compared the costs for each project to modelled costs calculated using Ofwat's PR24 enhancement models. We have maintained all elements of Ofwat's PR24 methodology for this submission. For example, we retain the reconciliation adjustment that corrected for differences between CWW3 and scheme level business plan data tables. We have also rebased the frontier shift efficiency challenge to the current year. We will consider whether these adjustments are necessary to include in future submissions.

4.2.8 This is set out in Table 6 below. Some schemes are delivering against multiple enhancement drivers. Where this is the case, we have summed the allowance from each separate enhancement model to calculate the total modelled allowance. We use '1' to show which enhancement models have been included in this calculation.

Table 6: We are in line with Ofwat's FD models at a programme level

Project name	P removal	Sanitary	Modelled allowance (£m)	Totex estimate (£m)
Troutbeck WwTW	1	1	5.8	3.8
Outgate WwTW	1		3.8	3.5
Near Sawrey WwTW	1	1	5.9	4.2
Far Sawrey WwTW	1	1	5.9	3.0
Grasmere WwTW	1		3.6	0.04
Ambleside WwTW	1		4.1	0.1
Total			**28.9**	**14.6**

Source: UUW analysis based on Ofwat's PR24 Final Determination

4.2.9 Overall, our current cost estimates are expected to fall within Ofwat's modelled allowances. While there is estimating uncertainty and costs will likely rise as projects develop, our analysis to date indicates that the estimates are reasonable and efficient.

4.2.10 Future submissions will contain further evidence on cost efficiency to justify the costs of schemes where our view of cost is higher than the FD modelled allowance.

We have not included any element of base expenditure within our cost estimates

4.2.11 The investment drivers for these projects (as described in section 2) will require a step-change in performance at each site. As reflected in the summary cost estimates above, the solution scope items relate to the installation of new assets rather than maintenance of existing assets. As such, we are clear that our costs relate to enhancement expenditure only and therefore customers are not paying twice.

We have updated our view of cost since Final Determination

4.2.12 Table 7 summarises the changes to costs since Final Determination. These are indicative only as we are still at an early stage of project development. As such, there is potential for these costs to change in future submissions as designs and understanding of site risks mature.

Table 7: Summary of changes since Final Determination (2022/23 CPIH)

Scheme	Original estimate	Updated estimate	Change
Troutbeck	2.2	3.8	1.5
Outgate	3.0	3.5	0.5
Near Sawrey	5.3	4.2	-1.1

Scheme	Original estimate	Updated estimate	Change
Far Sawrey	1.7	3.0	1.3
Grasmere	0.3	0.04	-0.3
Ambleside	0.8	0.1	-0.7
Total	**13.3**	**14.6**	**1.3**

Source: Original estimate: Final determination documentation; Updated estimate as Table 5

4.2.13 The key changes in cost relate to:

- A change in approach to Fujiclean sizing based on evolving knowledge of this new technology, including the addition of tertiary solids removal, leading to an increase in cost;
- A reduction in cost at Near Sawrey as UV system changes no longer required to meet final drivers;
- A revised indirect cost percentage to align to the delivery method leading to a reduction in cost;
- For Ambleside and Grasmere phosphorus schemes, design development allowing the drivers to be delivered with a significantly smaller scope;
- Inclusion of opex costs for Troutbeck, Outgate, Near Sawrey and Far Sawrey due to output in use date of schemes ahead of original date of 31 March 2030.

4.2.14 We provide further commentary on these differences in our supporting document UUWLGS_S1_05 Change Log.

4.3 Best value assessment and solution benefits

4.3.1 The schemes in the Windermere gated programme all protect and enhance Windermere, England's largest lake and an iconic site of significant importance to customers, communities and stakeholders. The package one schemes will both final effluent standards from six wastewater treatment works that discharge into the Windermere catchment. These enhancements offer benefits across a range of areas including amenity value, biodiversity and wider environmental outcomes.

4.3.2 The value derived by society from these enhancements is central to our approach to developing them. There is strong qualitative evidence underpinning the value placed by customers and communities on the health of Windermere, with support for maintaining the health of the lake, preventing future deterioration and reducing the impacts on plants and wildlife.[5] This support underpins going beyond statutory requirements at Windermere. While a best practice approach to value assessment captures a wide range of benefits, the particular stakeholder focus on Windermere reflects an extremely high value that is placed on this unique location. Not all of this may be easily captured by a standard approach to value assessment.

4.3.3 We are currently developing our "six capitals" based value tool to reflect the latest regulatory and Government approaches to valuations of service, the environment and amenity values, including considering its application to the unique context around Windermere. We currently expect the update to be complete and assured in time for the outputs and approach to be included in submission two.

[5] Bespoke Performance Commitments Research Report, 12 September 2023, page 53

5. Programme and Planning

5.1.1 This section summarises the programme for the package one schemes, including for third party approvals and consents. It also describes UUW's approach to risk management and provides an overview of the key risks faced on the package one projects.

5.1.2 To support the information provided in this section we have provided;

- A P6 programme for each scheme, which sets out programme activities in more detail;
- A draft delivery plan, in the format required by Ofwat's delivery plan guidance, covering each of the package one projects. We expect this to align to UUW's November delivery plan update.
- A risk register for each project

5.2 Summary of programme

5.2.1 We have developed programmes within Primavera P6 using a standard approach. Planning is used as a tool to identify issues and potential risks early and proactively mitigate or escalate them.

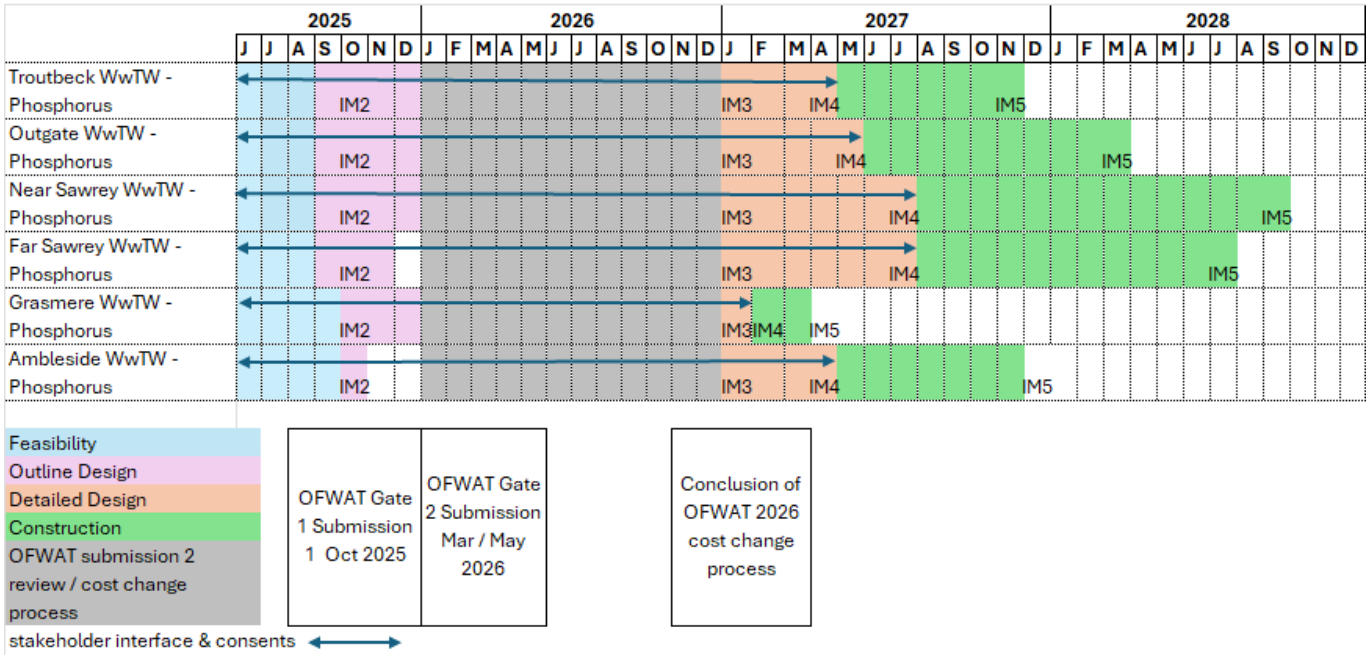
5.2.2 The programme in Figure 7 below provides a high-level summary of the key activities remaining for each of the six package one projects. These comprise:

- Outline design;
- Revision of cost estimates;
- Preparation of contract(s);
- Continuing discussions with third party stakeholders (i.e. local planning, landowners and the EA), which will take place over a period time primarily prior to start on site, as indicated by the arrows;[6]
- Detailed design;
- Site works – including commissioning and testing; and
- Final takeover and close out.

5.2.3 The programme currently assumes that UUW proceeds to the detailed design phase following the conclusion of the Ofwat cost change process in December 2026. UUW is seeking to accelerate delivery of these schemes and, in line with Ofwat guidance, is considering proceeding to delivery on package one projects prior to the conclusion of the cost change process. The proposed delivery timings will be updated in submission two.

[6] As each project matures and key third party interfaces are identified, the P6 programme will be developed to include specific interface milestones.

Figure 7: High-level programme: package one



Source: UUW systems. IM6 is in March 2030 for all projects in package 1.

5.3 Risk

5.3.1 Risks are managed in line with UUW's risk management procedure, which includes identifying and scoring risks for probability and severity of impact, assigning owners and developing risk mitigation plans. An assurance process is in place to assure that risks are being identified and managed effectively to allow the project to progress through the phases of delivery.

5.3.2 Given the projects in package one are at the feasibility stage, the project risk registers are at a relatively low level of maturity and will be developed further as the projects progress through the delivery lifecycle. There are three key categories of risk at this stage of project development: design risk, constructability risk and construction risk. These are set out in more detail below.

5.3.3 Design risks:

- Planning – we currently expect to require planning permission at Near Sawrey and potentially for the access road at Outgate, and there are risks of extended lead times on planning applications, or that conditions could be more restrictive than assumed. We are engaging closely with planning authorities to mitigate any delays or additional costs.
- Solution design – at Far Sawrey, Outgate and Troutbeck WwTw, there is a risk that flow surveys indicate more Fujiclean units are required, leading to additional costs and/or delays. To manage this risk, conservative assumptions have been used in modelling and flow surveys will return results during outline design.

5.3.4 Constructability risks:

- Accessibility – access for construction is limited at many of the sites in package one as described in section 3. Where access is particularly challenging, we are working with stakeholders (including landowners) to mitigate the risk of delay.
- Land availability and topography –as described in section 3, Troutbeck , Outgate , Near Sawrey and Far Sawrey WwTW have limited land availability, and there is a risk that current land provision is insufficient for project delivery and extra land may be required to accommodate new assets. We are looking to design the solutions to minimise the need for additional land, and engaging early with landowners where land purchase or lease is unavoidable to mitigate any delay.

- Environment –parts of the Windermere catchment are a SSSI, project sites may require special protections for environmental habitats which will require assessment for relocation, avoidance and potentially set up of new habitats, this could lead to additional cost and time. Our current assessment of probability is low to medium, and we are undertaking ecology surveys to understand and manage these requirements.
- Power- power requirements for the new equipment may exceed the available supply, requiring a power upgrade, which could have a significant lead time. For example, a power upgrade will be required at Far Sawrey which is "end of line" on the distribution grid, and back-up generation is also likely to be required due to the lack of resilience in the power network in the Lake District. To address this, we are looking to identify and procure additional power requirements as early as possible in design, and use generators where required until power supplies are in place.

5.3.5 Construction Risk:

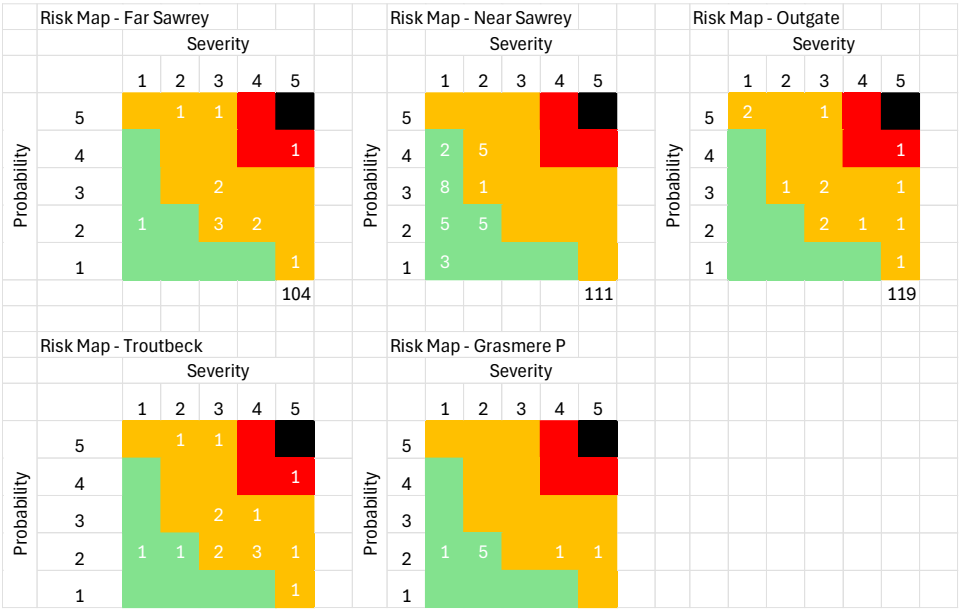
- Weather – weather conditions in the Lake District can be particularly challenging and will be a factor throughout construction. – construction may be impacted by weather conditions, leading to delays and additional costs. To mitigate this, we will start on site during the drier months.
- Ground conditions - unforeseen or bad ground conditions could be encountered, resulting in difficulties during construction, increased programme delay and construction costs. We are undertaking ground investigation surveys to manage this risk
- Stakeholders – farmers, landowners or other third-party stakeholders could be adversely affected by the construction. Near Sawrey WwTW is located close to the National Trust property Hill Top, Beatrix Potter's farmhouse, which experiences large numbers of tourist traffic and accessed by narrow lanes. Far Sawrey WwTW is located close to ancient woodland and Troutbeck WwTW has an existing public right of way and is located close to homes and holiday properties. We are engaging closely with local stakeholders and making plans to mitigate the impact of construction (e.g. traffic management planning for Near Sawrey).
- Public interest – campaigners and or protesters that could cause delays to the projects, which we have identified as a particular risk at Near Sawrey. This could also pose both a security and health and safety risk to the site and staff and could impact the project cost, schedule and reputation. We are monitoring activity round the sites, maintaining a high level of site security and engaging with the community.

5.3.6 The risks summarised above and captured in the project risk registers have been used to inform the risk provision in the cost estimate, with the total risk score used to scale the risk provision (combining the assessment of both probability and severity).7 Each risk map below captures the number of risks in the risk register with each combination of probability and severity, with the score for Ambleside phosphorus following that for Grasmere phosphorus given the similar scope. However, in line with the stage of development of the projects, the risk provision is not a bottom-up calculation based on statistical analysis of the risks. The costs associated with the risks in the risk register have been generated using a standard methodology based on likelihood and severity; these costs will be assessed by the project team on a project-specific basis for submission two.

5.3.7 Within the programmes, several of the activities allow for risk. For submission two, each of the programmes will be updated and we plan to run quantitative schedule risk analysis.

[7] As the risk registers are live documents the risk registers included within the scheme-specific supporting documents UUWLGS_P1S1_13 to UUWLGS_P1S1_18 inclusive do not fully align to the versions used to inform the risk provision in the cost estimate, which was prepared at an earlier point in the preparation of this submission. Any discrepancies will be updated as part of submission two.

Figure 8: Risk maps for package one



5.4 Proposed submission two activities and timelines

5.4.1 The key activities prior to submission two fall into the outline design phase. This includes:

- the progression of outline design, including site layout, informed by:
  - hazard and operability studies to ensure the solutions are safe to operate;
  - access, lifting and maintenance reviews, with involvement from the supply chain to ensure the solutions are safe to maintain;
  - further consideration of hydraulics for sizing of the new assets and safety considerations;
  - power workshops to consider options for power resilience;
- consideration of the designs for specific construction challenges for each site such as retaining walls and locations of welfare facilities for sites with limited access;
- assessing planning status including environmental screening and the need for pre-applications;
- revision of cost estimates for design developments and informed by supply chain engagement;
- updating risk registers for emerging risks and individual risk costing considering site-specific factors;
- continuing discussions with third party stakeholders (i.e. local planning, landowners and the EA as applicable to each project); and
- any other consequential updates including to the programme.

5.4.2 These activities will take place over September and October, followed by the production, review and assurance of submission two over November and December, prior to submission to Ofwat on 19 December 2025.

6. Customer protection

6.1 Introduction

6.1.1 To safeguard customers and uphold confidence in delivering the Windermere enhancement schemes, we propose a set of Price Control Deliverables (PCDs) aligned with Ofwat's PR24 final determinations for similar areas of expenditure. They will compensate customers if we fail to deliver or are late delivering the stated improvements to customers. This chapter is supported by an Excel workbook with the new lines added to the bottom of these PR24 FD UUW PCDs (UUWLGS_S1_06 PCD workbook).

6.1.2 These proposals are draft and conditional on the proposed solutions set out in this submission; any changes may require consequential changes to the proposed PCDs.

6.2 Approach

6.2.1 Rather than creating four discrete "Windermere" PCDs, we recommend extending the existing PR24 PCDs. These are:

- Storm Overflows (PCDWW5),
- Flow to Full Treatment (PCDWW4),
- Phosphorus removal (PCDWW10) and
- Sanitary Parameters (PCDWW12).

6.2.2 This approach is preferred because it:

- Simplifies **reporting** by consolidating all comparable scheme costs and deliverables. For example, Windermere site development allowances are already included in the FD Phosphorus removal and Sanitary Parameters PCDs;
- Preserves the **flexibility** envisioned by Ofwat's PR24 PCD methodology, enabling efficient delivery within final determination parameters; and
- Retains granular **visibility**: Delivery Plans will track progress against each site-specific line, ensuring transparency for regulators and stakeholders.

6.2.3 As a result, we therefore propose to add the six schemes in package one into the following PR24 FD PCDs: Phosphorus removal (PCDWW10) and Sanitary Parameters (PCDWW12).

6.2.4 Where the scheme is part of an expenditure area where Ofwat has applied time incentives in PR24 final determinations we also set out time incentives for the PCD. The timing incentive rates are calculated in line with the FD:

- The timing underperformance rate is based on the company wholesale weighted average cost of capital (WACC) of 3.97%, multiplied by the unit allowance. For example, for Phosphorus removal, the unit allowance is "Population Equivalent".
- The timing outperformance rate is set as one third of the underperformance rate, multiplied by minus 1.

6.2.5 We have provided an accompanying Excel workbook (UUWLGS_S1_06 PCD workbook) with the new lines added to the bottom of these PR24 FD UUW PCDs. There is one line per site. Some sites have expenditure related to multiple PCDs; they are therefore added on to all relevant PCDs in the Excel workbook with the relevant proposed cost allowance for that PCD. For simplicity, we have included our proposed totex estimate (£m) in the Excel workbook in the standard PCD column headed "Allowance post adjustment (£m)" or "Reconciled post adjustments and FS and RPEs allowance (£m)" but have not renamed the column header. Our proposed totex allowance has undergone an appropriate cost estimation process for the level of maturity of each scheme, detailed in section 4.2 of this document,

which is equivalent in rigor to the methodology used by Ofwat to determine their "Allowance post adjustment (£m)" or "Reconciled post adjustments and FS and RPEs allowance (£m)" figures.

6.2.6 Due to the addition of the new sites, the PCD non-delivery and timing incentive rates must be re-calculated. We have included the re-calculated rates in the Excel workbook for each of the PCDs. For reference, we have used the PCD workbooks published by Ofwat as of 13 June 2025 as the starting point for the FD PR24 PCD. All amendments for the Windermere sites proposed in this submission are highlighted in orange.

6.2.7 For the Phosphorus removal PCD and the Sanitary parameters PCD there are sites added from package one and package two. For the Storm Overflows and FFT PCDs, there are sites added from package two only.

6.2.8 This proposal ensures customers remain protected against non- or late-delivery, delivers regulatory alignment, and maintains clear, accountable reporting.

6.3 Proposed PCDs

6.3.1 Phosphorus removal

Approach to deliverable

6.3.2 The PCD proposed is in line with that applied in PR24 final determinations for similar areas of expenditure, related to achieving enhanced permits (consents) for phosphorus removal schemes (PCDWW10). The PCD will track delivery at the scheme level for the six phosphorus projects in package one and claw back allowed investment in the event of non-delivery, in line with the payment calculations set out in the FD Price control deliverables appendix.

6.3.3 We have included the proposed cost allowance for each scheme in the PCD, on a separate line for each scheme. The PCD will hold UUW to delivering the schemes included in package one to meet tightened permit conditions (consents) for the enhanced permit of phosphorus removal schemes.

Flexibility across deliverables

6.3.4 We intend to deliver the proposed schemes. If we identify the need to substitute any of the agreed schemes, we will obtain the approval of the Environment Agency for this substitution and explain the reasons for any significant substitutions in our annual regulatory reporting. Regular programme updates will also be provided to Ofwat in our delivery plan submissions.

Time incentives

6.3.5 We propose time incentives on the cumulative PE (population equivalent) served in the same way as at final determinations, i.e. applied at an aggregate level across the whole programme. The whole programme comprises those schemes included in the FD PCD with the addition of these proposed Windermere schemes. Applying timing incentives at an aggregate level provides flexibility and the management of delivery risks across UUW's phosphorus removal programme.

6.3.6 We propose a delivery profile for the draft PCD that reflects the planned timing of the Windermere schemes as reflected in Figure 7 (noting that this will be updated for submission two). Ofwat's PR24 final determination applied a standardised profile for Phosphorus schemes, assuming around two-thirds of cumulative Population Equivalent (PE) served would be delivered by year 4 (2028–29). This assumption is not appropriate for Windermere, where schemes will start later than most AMP8 Phosphorus programmes due to Windermere's inclusion in the gated process. Accordingly we have proposed a Windermere-specific delivery profile, detailed in the accompanying Excel spreadsheet UUWLGS_S1_06 PCD workbook, and incorporated into the PR24 FD delivery profile in PCDWW10 Excel line 20 ("Population equivalent served"). This is detailed in the table below.

Table 8: Proposed PCDWW10 delivery profile for Windermere packages one and two

PCD outputs (cumulative)	Unit	2025-26	2026-27	2027-28	2028-29	2029-30
Population equivalent served – Package 1	000s	0.00	0.00	0.00	0.00	10.40
Population equivalent served – Package 2	000s	0.00	0.00	0.00	0.95	2.00
Population equivalent served – Packages 1 and 2 total	000s	0.00	0.00	0.00	0.95	12.40
Population equivalent served – FD PCDWW10 line 20	000s	0.00	15.13	762.28	1,829.48	3,049.14
Population equivalent served – Revised PCDWW10 (FD plus Packages 1 and 2)	**000s**	**0.00**	**15.13**	**762.28**	**1,830.43**	**3,061.54**

Source: accompanying Excel spreadsheet UUWLGS_S1_06 PCD workbook

6.3.7 Sanitary parameters

Approach to deliverable

6.3.8 The PCD proposed is in line with that applied in PR24 final determinations for similar areas of expenditure, related to delivery of sanitary parameters enhancement schemes (PCDWW12). The PCD will track delivery at the scheme level for the three sanitary projects in package one and claw back allowed investment in the event of non-delivery, in line with the payment calculations set out in the FD Price control deliverables appendix.

6.3.9 We have included the proposed cost allowance for each scheme in the PCD, on a separate line for each scheme. The PCD will hold UUW to delivering the schemes included in Package one to tightened permit conditions for one or more sanitary parameters.

6.3.10 The deliverables for the schemes (measured by Population Equivalent) are already included and measured in the FD PCD (Excel cells I37 to I41). This relates to the development allowance. To avoid counting the same deliverable twice, we have not included the Population Equivalent again for these accelerated schemes in the revised PCD (see Excel cells I50 to I54).

Flexibility across deliverables

6.3.11 We intend to deliver the proposed schemes. If we identify the need to substitute any of the agreed schemes, we will obtain the approval of the EA for this substitution and explain the reasons for any significant substitutions in our annual regulatory reporting. Regular programme updates will also be provided to Ofwat in our Delivery Plan submissions.

Time incentives

6.3.12 We do not propose time incentives for these schemes. This is in line with the FD PCD, PCDWW12.

7. Stakeholder and customer engagement

7.1 Introduction

7.1.1 United Utilities has a clear stakeholder and community engagement plan and dedicated resources within the community to execute that engagement across the Windermere catchment, with the objective of being a trusted partner, demonstrating it is delivering on the community's priorities, understands the community's needs and expectations and is able to work effectively and constructively with others to mitigate the impact of any its activities. This engagement plan has been in place prior to business plan submission and will underpin delivery throughout AMP8.

7.1.2 This section outlines the approach to stakeholder engagement for the Windermere programme. To support the overview provided in this section, we provide our Customer and Stakeholder Engagement Plan (CSEP) (UUWLGS_S1_07 Engagement Plan).

7.2 Principles for engagement

7.2.1 Customers across the North West supported UUW's business plan proposals and where it had strengthened its commitments in issues of high concern, such as pollution. Notwithstanding that support and its importance to delivering on those improvements in Windermere for communities and visitors, it is important we can deliver on those commitments in a way which minimises the disruption to the daily lives of all who live, work or visit the catchment. Demonstrating progress against those plans and benefits being realised is also key. Therefore, core principles which underpin the engagement strategy overall and through the lifecycle of each project include:

- **Raising awareness** of what we are planning and are doing among the community and how this will support their priorities in terms of the service they expect and pay for from United Utilities and how improvements will contribute to the broader health and wellbeing of Windermere
- **Supporting those customers and communities** throughout the lifecycle of a project with help and information and opportunities for them to raise their concerns and issues directly with us
- **Executing a proactive programme of contact** with key stakeholders, community campaigners and the local MP
- **Being visible among the community**, through our physical presence with an information centre in Windermere, at community events and through open access for them to come and see for themselves how we treat and manage wastewater at our site
- **Gathering feedback in order to adapt and improve** what we do and how we do it, underpinned by a Windermere specific brand survey conducted on a quarterly basis with households and businesses in the catchment

7.2.2 The team leading that engagement includes a dedicated area engagement lead who manages stakeholder relationships with key local authorities, MPs and other strategic bodies across Cumbria and in Windermere; a Windermere specific catchment manager responsible for the liaison and consultation with regulators; and a third party and communications team who work within the local communities where we are making the investment and carrying out the work to consult, inform, support and help mitigate any risks caused by that work. This team works closely with broader colleagues accountable for planning and land management and the capital delivery and construction teams to ensure there is a cohesive and proactive programme of engagement.

7.3 Engaging our communities

7.3.1 The approach to engaging the community across the Windermere catchment and those with a particular interest in Windermere is driven by an 'always on' element to our wider communications – so alongside

having a physical presence in Windermere where updates and information are available, we have, since 2023, produced a regular newsletter which is issued to residents which highlights our ongoing work and the colleagues delivering that and our future plans, as well as demonstrating examples of how we are working with others to improve water quality in Windermere.

7.3.2 We run monthly tours of Windermere WwTW so the community, wider public and stakeholder groups can see how we treat wastewater and to highlight improvements to be made in future. A dedicated education programme specifically tailored for schools in the catchment is also being trialled with a Windermere primary school and being delivered in partnership with the Lake District National Park.

7.3.3 The 'always on' activity includes regular attendance at community led events across the calendar year where there is an opportunity to engage with the public, alongside use of other channels such as social media, to share updates and information. We use partner channels to expand the reach, for example, we use the Love Windermere partnership which has representatives from organisations such as Westmorland and Furness Council, the Lake District National Park Authority, Cumbria Tourism, businesses, the National Trust and Lake District Foundation to help inform, update and gather feedback.

7.3.4 In addition, we have an Action Windermere multi-media campaign running which highlights the investment and improvements we are committed to delivering and examples of how that is to be delivered and achieved. Alongside this we run a quarterly brand survey with residents and business in the Windermere catchment to measure sentiment of United Utilities and awareness of and feedback on information promoted to them to help drive improvements in our activities.

7.3.5 In terms of wider stakeholder engagement, there is an ongoing schedule of updates and meetings held with key organisations, elected members and officials and the local MP, which, for example, has most recently included a visit (in August) by the MP to our Windermere WwTW where we discussed the investment plan, its intended outcomes and its timelines.

7.3.6 Engagement also extends to interested bodies and campaigning groups, such as Love Windermere, Save Windermere and Ambleside Action for a Fairer Future and groups like the Lake District Hoteliers Association and a business sub-group of the Love Windermere partnership with whom we have had regular meetings. Details can be found in the CSEP and specific examples are provided below.

7.3.7 Future engagement plans will include continuation of the 'always on' approach, with an ongoing physical presence in our Windermere information centre, regular newsletters to the community, attendance at community led events, scheduled stakeholder updates, and tours of our WwTWs all forming how we intend to actively engage customers throughout delivery of the programme.

7.4 Examples of executing our engagement strategy in Windermere

7.4.1 When it comes to executing our engagement with those affected by site specific plans and activity, more detailed stakeholder mapping is undertaken to ensure we are liaising with all those affected or interested in a particular location. This includes reaching out to existing stakeholders and community groups to sense check we are including everyone that will have an interest.

7.4.2 That engagement is helping us to shape and adapt our plans and mitigate the impact on the community or sensitive locations:

- **Ambleside** – where the plans include phosphorus removal (package one) as well as creating extra stormwater storage capacity (which is not part of the Windermere gated programme). While the Ambleside phosphorus removal project is a relatively small part of work at Ambleside, it forms part of our overall engagement in relation to this site. In addition to direct communication to the residents and attendance at community events, there have been two public exhibitions to date and face-to-face meetings with the parish council and local authority, a meeting with local MP Tim Farron and with an active citizen science community group, Ambleside Action for a Fairer Future. This has been to communicate changes to our plans and explain why that has been needed. In addition, we have established regular engagement with two groups – the well supported and

popular ParkRun and the local football club directly affected by the plans for the Ambleside site. In understanding their needs, we have been able to discuss a way of allowing their activities to continue while any construction work takes place on the land which is helping foster those positive relationships. We will continue to meet with these groups and update the local community as work progresses and as we step forward into the more impactful construction of stormwater storage at a later stage.

- **Near Sawrey** – this is another sensitive location as the site is close to and can be seen from the nationally and internationally popular National Trust owned property, Hilltop, the home of Beatrix Potter. The environmental planning team has held several meetings with the landowner to discuss how to deliver the improvements as sensitively as possible, including a semi-submerged Fujiclean solution, the changes to the colour of the proposed tank and level of screening. A face-to-face meeting was also held with Claife Parish Council, and attended by other members of the community, at which we explained the need for the work, the benefit it would deliver and how we are working to mitigate its impact. That engagement will continue as we move through each stage of the project.
- **Troutbeck** – letters and information were sent to the community to explain that enabling works are beginning within our treatment works in the village, ahead of the installation of a Fujiclean system. The parish council was informed, as were other stakeholders, such as Save Windermere, and details shared of a drop-in session which was held in the local village hall in September. We asked for feedback on how best to ensure the village and its residents could be best kept informed. The September drop-in session was well attended and key contacts from among the community who were willing to help us keep the community informed as we progress with the scheme and share information. The session also supported a broader discussion on the private septic tanks, what could be done to improve them and the process for and feasibility of connection to the main sewer. This engagement is continuing.

7.4.3 The approach above is being replicated across each location where investment and work is being undertaken. A full list of all the interactions to date is set out by scheme in the CSEP.

7.5 Third party approvals and consents

Planning engagement

7.5.1 We have been engaging with the Lake District National Planning Authority (LDNPA) and its officers on the Windermere programme since June 2023, firstly on the accelerated schemes and since then on the full programme of works across the catchment. In these meetings we have provided a general overview of the scope of each of the schemes, the programme of works and agreed next steps. This has ranged from sites such as Near Sawrey wastewater treatment works where we have submitted a formal planning pre-application enquiry to other sites where LDNPA has not expressed any particular concerns. We have then worked towards submission of either an Environmental Impact Assessment Screening Opinion or planning application.

7.5.2 We have continued with this engagement throughout 2025, providing updates on programme and scope, discussing any concerns and agreeing next steps. Where required, due to changes in scope or requirements or new information , we have also arranged ad-hoc meetings with the planning teams, for example this has covered topics such as the suitability of the above ground tanks at the Glebe (part of package two).

7.5.3 We have programme level agreements for a paid pre application advice service with Natural England and the Environment Agency. This includes for regular update meetings on programme and scope of works. A recent example of this (for package two) is where we discussed the need for a Habitat Regulations Assessment for site investigation works on the existing sewer network at Langdale and sought approval for the works. We have also carried out a review with Natural England to determine the requirement for Habitat Regulations Assessment across the programme where there is the potential to

impact designated sites and also for any surveys or other information required to support these applications. Where applicable, we seek a formal written pre-application response.

7.5.4 There have also been regular meetings with Friends of the Lake District, a well-known body which represents the national charity Campaign for the Protection of Rural England in Cumbria to discuss the Windermere programme. These meetings have provided them with updates as well as an opportunity to discuss any potentially contentious schemes.

7.5.5 As described in other areas of this document, in advance of submitting planning applications we have and will continue to undertake engagement with the relevant parish council and local community via attendance at meetings and organisation of public drop in events. Examples can be found in the CSEP.

Environment Agency engagement

7.5.6 In addition to customers, stakeholders, planning authorities and wider communities, UUW has clear plans in place to engage the key organisations, such as the Environment Agency, on our plans. We have established a fortnightly EA liaison meeting to facilitate discussions with the Cumbria area team. These meetings have been used to confirm project drivers, provide an overview of outline solutions and discuss the progress of individual schemes and as a programme overall. These meetings are also an opportunity to support risk management through early identification of challenges to enable us to work constructively with the EA to manage and resolve locally where possible.

7.5.7 For points that require broader governance or escalated challenges requiring national EA support or sign off, UUW has used the existing water quality sub-group meetings as a further engagement mechanism.

7.5.8 In addition to these regular meetings, in early September 2025, UUW facilitated an extended 'deep dive' session with the EA to review the programme in detail, discuss solution designs and outline proposed way forward for securing required permits. The meeting covered a review of requirements and proposed solutions for schemes in packages one and two.

7.5.9 The review was attended by a range of teams and included permitting teams from both the EA and UUW. As such, we have been able to discuss proposed permitting approaches for schemes. As an example, the scheme at Outgate WwTW was discussed in relation to 'Orphan P', UUW confirmed the assumptions for additional sanitary determinands (BOD, suspended solids, and ammonia) and have actions in place to progress confirming these through the pre application process.

7.5.10 We plan to sustain engagement with the EA and will use the existing fortnightly review meetings to progress actions and ensure the EA is sighted on developments. During the 'deep dive' we developed a set of collective actions for projects that both organisations will progress to support with the permitting process. We will monitor through our regular engagement sessions.

Table 9: Summary of UUW engagement with the Environment Agency (up to and including 18/09)

Date	Meeting Overview
09/04/2025	UUW and EA Directors, introduction to the Windermere programme and Gated submission process.
06/08/2025	UUW senior leaders, to initiate fortnightly meeting. Overview of the Windermere programme and review of specific requirements, such as regulatory commitments.
21/08/2025	Recurring fortnightly session with key leads from organisations. Review of the Windermere programme and introduction to proposed solutions. Planning for 'deep dive' session on 04/09.
04/09/2025	Extended deep dive session with key teams from UUW and EA. Detailed review of individual projects including requirements, proposed solutions and permitting approach.
08/09/2025	Session with EA – summary of 04/09 session and discussion on next steps and actions.
18/09/2025	Recurring session with EA to discuss progress and confirm actions.

Source: UUW records

8. Assurance

8.1.1 This section summarises UUW's approach to assuring this submission and the outcomes of the third party assurance. It is supported by UUWLGS_S1_03 Technical Assurance Report and UUWLGS_S1_04 Commercial Assurance Report, our third party assurance reports.

8.1.2 Ofwat requires gated submissions to include a third-party assurance report in line with the requirements set out in PR24 final determinations: Expenditure allowances - assurance requirements for delivery of enhancement schemes appendix. This includes technical and commercial assurance across the content of the gated submission, including assurance of material change included in the change log.

8.1.3 Since confirmation of the gated submission requirements in the June 2025 large schemes guidance (refined in August 2025), UUW has developed an approach to meeting these requirements and assuring each element of the submission. This includes risk assessing each chapter of the submission and each supporting document to determine assurance requirements. We are following our standard three lines of assurance approach to produce, review and sign off each element of the gated submission. The third line assurance has been provided by Jacobs in line with Ofwat's requirement for a third party assurance report.

8.1.4 Jacobs has provided two final reports covering its technical and commercial assurance:

- **Technical assurance**: Jacobs concluded that the packages met the criteria with only non-material concerns remaining regarding specific schemes and solution maturity. In relation to package one, Jacobs noted that most assurance criteria have been met and its assessment did not identify any material concerns with the programme;
- **Commercial assurance**: Jacobs did not identify any material issues and only made non-material improvement recommendations.

8.1.5 Further details of Jacob's approach and findings can be found in UUWLGS_S1_03 Technical Assurance Report and UUWLGS_S1_04 Commercial Assurance Report.

9. Efficiency of expenditure to date

9.1 Introduction

9.1.1 This section sets out a breakdown of costs incurred so far in the development phase of submission one, in respect of package one. We provide an aggregated view of cost across all six package one projects and a forecast of the development costs we will incur as part of submission two.

9.1.2 We have been careful to ensure that there is no overlap between the reported costs for submission one and submission two – given submission one is a progress update on the same workstreams that will feed in to submission two, we have not recorded any early submission two expenditure and see all expenditure to date as being in support of submission one.

9.2 Actual and forecast expenditure

9.2.1 Table 10 below shows submission one costs incurred to date for package one, disaggregated by cost type. In order to report only actual costs, the position below reflects the August 2025 month end position, and September 2025 expenditure will be reported in submission two. The final column sets out forecast expenditure to submission two.

Table 10: Actual and forecast development costs aggregated across all six package one projects (22/23 CPIH prices)

Ref	Scope item	Scope description	Cost incurred to date (£m)	Forecast costs
1	Main Contractor (Direct)	Contractor costs to complete project feasibility work to date	0.65	0.57
2	Resource	UUW staff costs to complete project feasibility work to date	0.48	0.09
3	Surveys	Surveys to determine the solution e.g. ground investigation and ecology surveys	0.07	0
4	Third party (other)	Planning / licences and legal fees (etc)	0.01	0
	Total		**1.21**	**0.66**

Source: Actuals - UUW finance data, forecasts - UUW estimating data

9.3 Comparison against development allowance

9.3.1 UUW's costs for submission one of £1.21m exceed the total development allowance for package one of £0.81m, and including costs to complete submission two are likely to be more than double the development allowance. However, this expenditure is captured within the overall totex estimate for package one, which as described in section 4.2 are significantly below Ofwat's cost models overall.

9.3.2 The high proportion of development costs relative to package one totex reflects that there is a fixed element of project development costs that does not vary with the size of the project, and package one projects are small relative to the larger package two projects.

9.3.3 Overall, the combined costs for packages one and two are currently well within the combined development allowance, and currently forecast to remain within the development allowance at submission two.

10. Conclusion and recommendations

10.1.1 UUW has developed and assessed options for the package one schemes as described in this submission, reaching a preferred option for each scheme. Outline design has been developed for these options based on a series of feasibility considerations, and the resulting solutions have been costed. All schemes will deliver the required outputs and show net benefits to customers. On this basis we propose all schemes in package one should progress to submission two.

10.1.2 We have developed the project plan and strategy for delivery based on the requirements of the gated process and UUW's ambitions to deliver benefits around Windermere as quickly as possible. We have notified Ofwat of our intention to make submission two for package one in December 2025 to support our delivery ambitions, and are considering proceeding to delivery following Ofwat feedback on this submission (recognising that certainty of funding will not be available prior to the conclusion of the cost change process in December 2026). We will confirm our position on this in submission two.

10.1.3 The top risks to the progression of the package one projects fall into the categories of land, planning, power and construction risk:

- Land – ground conditions on the sites (namely hard rock in the area) generate a risk that construction is more difficult than anticipated, leading to delays in completion. We are factoring this into the construction programme to allow additional time. There is also a risk that working in close proximity to RAMSAR and SSSI sites may impose additional constraints on the approach to construction leading to extra costs. We are looking to use existing land as far as possible to avoid sensitive habitats.

- Planning – there is a risk that given the sensitive locations of the sites, there are planning conditions imposed which are more onerous than we currently anticipate, leading to delays and additional costs. As described in section 7.5, we are engaging regularly with planning authorities to mitigate this risk.
- Power- there is a risk that power requirements for the new equipment may exceed the available supply, resulting in need for a power increase, which could have a significant lead time. We are engaging with Electricity North West on power requirements and putting in place temporary power supplies using generators to avoid any delay in proceeding to construction.
- Construction – given the location of the sites, there is a risk that adverse weather conditions delay or extend construction and lead to additional costs. We are addressing these risks by planning to begin construction in drier months. However, for Near Sawrey in particular, this leads to a risk around traffic management due to tourist volume, which we will manage using traffic management planning and stakeholder engagement where required.

10.1.4 These risks are all well-understood and being managed to mitigate any risk to the completion of the projects.

10.1.5 There is a wider strategic risk around the political and media focus on Windermere, and the potential for longer term goals to distract from the short-term benefits being delivered by these projects. As described above, UUW is committed to the government's "only rainwater" vision, but as this will take significantly longer to deliver than the short-term improvements described in this submission we strongly believe the package one schemes need to go ahead as quickly as possible. This will maximise benefits for residents, businesses and visitors to Windermere while longer term plans are formed.

11. Supporting Documentation

11.1.1 To support this submission, we are providing several documents as indicated in the chapters above.

- A glossary (UUWLGS_S1_09 Glossary of terms);
- Schemes included within package one and two of the Windermere gated programme (UUWLGS_S1_10 Included Schemes);
- Change log covering all package one and two projects (UUWLGS_S1_05 Change Log);
- Draft delivery plan covering all package one, two and three projects (UUWLGS_S1_11 Draft Delivery Plan);
- PCD workbook covering package one and two (UUWLGS_S1_06 PCD workbook);
- Customer and stakeholder engagement plan covering all package one and two projects (UUWLGS_S1_07 Engagement Plan);
- Third party assurance reports (UUWLGS_S1_03 Technical Assurance Report and UUWLGS_S1_04 Commercial Assurance Report);
- Submission requirements clarification (UUWLGS_S1_08 Requirements Clarification); and
- A package of site-specific documents for each scheme (Troutbeck, Outgate, Near Sawrey, Far Sawrey, Grasmere and Ambleside) comprising:
  - Single solution paper;
  - Cost estimate;
  - Risk register;
  - P6 programme.

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