

UUWLGS_P3S1_01 Windermere

Windermere: Package 3

Submission 1 – Optioneering and Multi-Solution Decision Making

September 2026

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1. Executive Summary

- 1.1.1 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, it sits within a UNESCO world heritage site area of over 900 square miles, 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, rising awareness and supporting campaigns for increased regulatory scrutiny, tighter legislation and increased drive to improve water quality in the lake.
- 1.1.2 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 covers two of the schemes going through the gated process – "package three". Package three comprises a project to reduce phosphorus at Ferry House WwTW and a storm overflow reduction project at Grasmere, also part of the Windermere catchment.
- 1.1.3 UUW is also committed to the government's "only rainwater" vision for Windermere and following the completion of a feasibility study with partners is looking to progress this major project further. 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 effluent going into the Windermere catchment in the shorter term (notwithstanding the regulatory drivers) to deliver benefits for local residents, businesses and visitors to Windermere while longer term plans are formed.
- 1.1.4 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.
- 1.1.5 In line with the process set out in Ofwat's final determination, 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 (£million, 2022-23 CPIH prices)

Project	Preferred solution	Justification	Totex	Key risks
Submission chapter	3	4	4	5
Ferry House WwTW	Removal of surface water inflow and provision of a new storage tank to facilitate the transfer of flow to Ambleside WwTW by road tanker	Best value option	3.640	Land /access Working restrictions
Grasmere storm overflow (SO)	A 5000m3 below ground detention tank and network interventions to reduce inflow and infiltration	Best value option	38.365	Inflow and Infiltration Ground conditions

Source: Summarised from submission chapters

- 1.1.6 At Ferry House Wastewater Treatment Works (WwTW) the proposed solution is to remove surface water inflow and provide a new storage tank to facilitate the transfer of flow to Ambleside WwTW by road tanker, accounting for future growth from the hotel development.
- 1.1.7 The drivers at Grasmere storm overflow (SO) require more extensive work to deliver the outputs. Since our draft determination response, the solution for Grasmere has been optimised to balance a feasible level of catchment water removal with a constructable and operable storm storage volume. The

proposed solution is a 5000m³ below-ground detention tank and network interventions to reduce inflow and infiltration.

- 1.1.8 Prior to submission two, further work is required to reduce infiltration in the network to allow flow monitoring to take place, and complete further network modelling to inform design development and validate tank sizing. The Grasmere SO solution will also need to be aligned to the outcome of the EnvAct_INV4 investigation which is due to conclude in April 2027, and is described further in section 2. On completion of the latest surveys and model updates any additional solution scope (if required) above the solution for the EnvAct_IMP4 average ten spills driver will be assessed.
- 1.1.9 We have costed these solutions using UUW's cost estimation tool which draws on benchmarking data as well as early construction delivery partner engagement, with an estimated total cost of package three of £42m. The costs of the Ferry House scheme are broadly in line with Ofwat's £3.5m modelled allowance, whereas costs for Grasmere SO exceed Ofwat's £7.7m modelled allowance. This is driven by site-specific factors including groundwater levels and site location in one of the busiest parts of the Lake District National Park, which will create additional site complexities.
- 1.1.10 Estimates are subject to change as the schemes continue to develop. Cost estimates for submission one are stage AACE class 3, which suggests an accuracy range of +30 per cent to -20 per cent. For submission two we will provide a firmer cost estimate informed by further engagement with our supply chain and greater maturity of design, and provide evidence that explains the efficient costs of schemes where the cost is higher than the FD modelled allowance (i.e. for Grasmere SO).
- 1.1.11 Building on our extensive engagement 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 on our plans to shape our approach and support efficient delivery of the projects, and the Environment Agency is supportive of our approach to these schemes.
- 1.1.12 Subject to Ofwat feedback, we will continue to develop these projects for a second submission to Ofwat in spring 2027, which will set out a solution delivery plan and further developed costs, to form the basis of a funding decision. There are several design, constructability 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.

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.
- 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 above and beyond statutory requirements for locally significant issues. Following this approach and under EA guidance, nine wastewater treatment works enhancement schemes for Windermere were identified in AMP8, as part of a long-term plan to reduce nutrient load into Windermere under the non-statutory AMP8 WINEP driver 25YEP_IMP.
- 2.1.3 There are twelve identified enhancement schemes that have been split into three work packages for the split gated process. Package three comprises one scheme at a wastewater treatment works (WwTW) and one storm overflow (SO), as set out in Table 2 below.

Table 2: Windermere gated programme: package 3 projects

Project Name	Project Driver	Determinands	WINEP Date	Statutory / non statutory
Ferry House WwTW	25 year environment plan (25YEP_IMP)	0.5mg/l phosphorus (annual average)	31/03/2030	Non-Statutory
Grasmere storm overflow (SO) (017370027SO) ²	EnvAct_IMP4	Improvements to reduce storm overflows spills so they do not discharge above an average of 10 rainfall events by 2050.	AMP9	Statutory
	EnvAct_IMP5	Improvements to reduce storm overflow aesthetic impacts by installation of screens.		

Source: UUW Summary

- 2.1.4 Ferry House WwTW has been identified for enhancement to meet a new phosphorus limit. Grasmere SO has been identified for improvements to reduce storm overflows and reduce storm overflow aesthetic impacts by installation of screens. Grasmere SO was not previously profiled for completion until AMP9 but is being delivered earlier through this work.
- 2.1.5 There have been no changes in project drivers since we submitted our draft determination response. The EnvAct_INV4 investigation into Grasmere's SO is to determine the spill frequency needed to achieve no local adverse ecological harm. The overflow discharges direct to the lake and would require a very complex modelling approach to represent residence times, dispersion and stratification in the lake. There is no current EA guidance or methodology on lake modelling for the EnvAct_INV4 programme so the option currently proposed is to limit spills to one per summer. On completion of the latest surveys and model updates any additional solution scope (if required) above the solution for the EnvAct_IMP4 average ten spills driver will be assessed.

¹ UUW (2024), "UUWR_78 PR24 Draft Determination: Enhancement Case, Windermere – Enhancement case", August 2024

² Grasmere storm overflow (017370027SO) also has an EnvAct_INV4 driver (ecological harm assessment) in the AMP8 WINEP with a regulatory date of 30/04/2027.

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. We have followed a robust approach to decision-making to support best value for customers and the environment, tailored to the nature of the package three projects. To support the information in this section, we are submitting optioneering reports for Ferry House WwTW (UUWLGS_P3S1_13) and Grasmere SO (UUWLGS_P3S1_14).
- 3.1.2 The focus of our package three optioneering has been the delivery of the WINEP drivers as early as reasonably possible, rather than the wider set of options that will be considered in line with the longer-term “only rainwater” ambition for Windermere. The package three projects are needed to continue to improve the quality of effluent going into Windermere in the shorter term, to deliver benefits for local residents, businesses and visitors to Windermere.

3.2 Decision-making approach: Ferry House WwTW

Background

- 3.2.1 [REDACTED]. The adjacent road serves the chain ferry from Ferry Nab in Bowness on Windermere to Ferry House, east of Far Sawrey. For the past decade Ferry House WwTW has not discharged treated effluent under the permit to Lake Windermere. Following the completion of an effluent discharge report, the Environment Agency stated that it does not support the current discharge point at Ferry House WwTW (into Mitchell Wyke Ferry Bay) being reinstated and has requested other options to be considered.
- 3.2.2 [REDACTED]. Planning application for the hotel was approved with conditions in September 2025 by the Lake District National Park Authority (LDNPA). The planning application conditions require that the hotel “shall not be brought into use or occupied until permanent improvement works to (or in replacement of) Ferry House WwTW (as proposed in United Utilities’ PR24 Windermere Enhancement Case dated August 2024, ref. UUWR_78) have been constructed and brought into operational use” and that “surface water shall not be drained from the premises to the public sewer network” (and hence should discharge to the lake). The solution for Ferry House will take into account the future growth from the hotel development.

Optioneering Approach

- 3.2.3 The optioneering approach set out below addresses solutions to meet the 25 year environment plan (25YEP_IMP) driver (0.5mg/l phosphorus), accounting for future growth from the hotel development on Ferry House. A long list of solutions has been considered to address the driver at Ferry House WwTW. A subset of these options were assessed to be unsuitable (options five to twelve in Table 3) for the reasons described below. As a result they were not progressed further.

Table 3: Ferry House WwTW rejected options

Ref No.	Title	Brief description	Reason(s) for rejecting
5	Surface water separation and WwTW upgrade	Full surface water separation and upgrade works for new permit requirements	Surface water separation forms part of some options but does not resolve issue of discharging via existing outfall into Mitchell Wyke Ferry Bay.
6	WwTW enhancement	Asset performance enhancement at Ferry House WwTW	Does not resolve issue of discharging via existing outfall into Mitchell Wyke Ferry Bay.

Ref No.	Title	Brief description	Reason(s) for rejecting
7	Reduction in design horizon	Reduction in solution design horizon at Ferry House WwTW.	Does not resolve issue of discharging via existing outfall into Mitchell Wyke Ferry Bay.
8	Catchment nutrient balancing	Off-set phosphorus removal with catchment interventions	Does not resolve issue of discharging via existing outfall into Mitchell Wyke Ferry Bay.
9	Discharge to alternative watercourse	Relocation of Ferry House WwTW discharge to an alternative watercourse	No feasible alternative discharge points.
10	Working with trader effluent	Reduce investment required by modifying trade effluent inputs	Trade effluent not a significant driver on this project.
11	Innovative technology	Fujiclean unit	Fujiclean unit replacement of existing WwTW would discharge via existing outfall. Does not resolve issue of discharging via existing outfall into Mitchell Wyke Ferry Bay.
12	Grey solution only	No increase in flow to full treatment to WwTW	Not a spills driver

Source: UUW Summary

Developed solution optioneering assessment

- 3.2.4 Six remaining options (including variants of the two primary tenable solutions: treatment at Ferry House or transfer off site) were taken forward for further development and optioneering assessment. This process considered factors such as modelling, flow rates, integration with existing works, population data, topography, planning, land availability, access, and logistics. Further information on each of the developed options can be found in the Ferry House WwTW optioneering report UUWLGs_P3S1_13.
- 3.2.5 The six developed options were assessed against cost, carbon, environmental impact and planning criteria. A summary of the developed options assessment is provided in Table 4 below.

Table 4: Ferry House WwTW developed options

Ref No.	Title	Whole life cost (£m) ³	Environmental	Planning / approvals
1	Transfer pipe to Windermere WwTW catchment	7.3	High risk – Biodiversity Net Gain Medium risk – existing habitat impact	Medium risk – required for new assets
2	Treat at Ferry House	7.7	High risk – new discharge Medium risk – existing habitat impact	Medium risk – required for new assets
3a	Transfer pipe to Far Sawrey WwTW	N/A	Not assessed	High risk – existing site highly constrained
3b	Transfer pipe to Near Sawrey WwTW	18.0	Medium risk – existing habitat impact	Medium risk – required for new assets

³ Whole life cost values generated over a 30 year time horizon for the purpose of equal comparison in the value selection process and include allowances for complexity factors, risks and other variables. See 4.3.7 for further details.

Ref No.	Title	Whole life cost (£m) ³	Environmental	Planning / approvals
4a	Removal of surface water inflow and provision of a new storage tank to facilitate the transfer of flow to Ambleside WwTW by road tanker	3.8	None identified	Low risk – below ground assets and small kiosk
4b	Removal of surface water inflow and provision of a new storage tank to facilitate the transfer of flow to Windermere WwTW by barge	7.0	None identified	Medium risk – required for new assets

Source: UUV summary

- 3.2.6 For each of the developed options, excluding option 3a which was not progressed due to headroom constraints at the receiving WwTW, a value selection process was undertaken to select the best value solution. Key stakeholders including operations teams were kept up to date with developments through regular team meetings to gauge feedback.
- 3.2.7 Option 4a Removal of surface water inflow and provision of a new storage tank to facilitate the transfer of flow to Ambleside WwTW by road tanker has been assessed as the best value solution to meet the project requirements and is supported by the Environment Agency as the solution. This option has a cost benefit ratio of 3.78, which is significantly higher than the next closest option (option 1 transfer pipe to Windermere WwTW catchment with a cost benefit ratio of 1.48). Further information on the value assessment undertaken can be found in 4.3.
- 3.2.8 Option 4a will be developed as the single solution between submission one and two. The outline solution comprises:
- Provision of a new 25m³ storage tank and connecting pipework;
 - Modification of the existing WwTW feed pumping station to feed the new storage tank and to enable the existing 18m³ storage to act as emergency storage; and
 - Separation of the small area of roof drainage connected to the sewer network (and hence removal of surface water inflows) from the west side of Ferry House, which will drain to a new surface water outfall.
- 3.2.9 The solution for Ferry House will facilitate the transfer of flow to Ambleside WwTW. Flow received at Ambleside WwTW will be treated to a higher phosphorus standard (0.25mg/l) than required at Ferry House WwTW and in addition receive disinfection by UV radiation prior to discharge.

3.3 Decision-making approach: Grasmere SO

Background

- 3.3.1 Grasmere WwTW is located within the Lake District National Park, to the southeast of Grasmere village. It treats flows from the combined sewer network which serves Grasmere village and the surrounding area. The WwTW is in the immediate vicinity of numerous properties and landowners including a school, distillery and working farmlands. Grasmere WwTW discharges into Grasmere (lake) which flows into Windermere via the River Rothay.
- 3.3.2 During normal flow conditions, effluent is pumped from the combined sewer network into the inlet works for treatment within the WwTW comprising secondary treatment with nutrient removal. During storm conditions when flows exceed the capacity of the main inlet pumps, additional storm pumps operate to increase the pumping capacity at the WwTW. These storm pumps direct flows through storm screens and on to a separate side stream within the site. A spill event is triggered at the storm overflow when the total flows through the Grasmere WwTW exceed main inlet and side stream capacity, with flows discharging to Grasmere lake via the WwTW outfall.

Optioneering approach

- 3.3.3 The optioneering approach set out below addresses solutions to meet the EnvAct_IMP4 driver (improvements to reduce storm overflows spills so they do not discharge above an average of ten rainfall events by 2050) and the EnvAct_IMP5 driver (improvements to reduce storm overflow aesthetic impacts by installation of screens).
- 3.3.4 A long list of solutions has been considered to address the drivers at Grasmere SO. A subset of these options (options six to eight in Table 5) were assessed as unsuitable for the reasons described below, and as a result they were not progressed further.

Table 5: Grasmere SO rejected options

Ref No.	Title	Brief description	Reason(s) for rejecting
6	Detention tank (only)	Provide large above or below ground storm storage with no other works.	Not feasible due to excessive storage volume required to meet ten spills. Flows could not be returned to the treatment system following storm events within acceptable timescales.
7	Vacuum sewer system	Install low-pressure vacuum sewer system to reduce excavation depth.	Deemed unsuitable for the Grasmere catchment following specialist/manufacture advice.
8	SuDS (sustainable drainage systems) to completely remove surface water from combined system	Use of natural, low environmental impact SuDS solutions to handle surface water.	Insufficient space/land availability to implement SuDS at the scale required. Multiple land ownership constraints and environmental sensitivities (including heritage) limit applicability. Not capable of achieving required reduction in storm overflow spills as a standalone solution.

Source: Uuw summary

Developed solution optioneering assessment

- 3.3.5 The five remaining options were taken forward for further development and optioneering assessment. This process considered factors such as modelling, flow rates, integration with existing works, population data, topography, planning, land availability, access, and logistics. Further information on each of the developed options can be found in the Grasmere optioneering report UUWLGs_P3S1_14.
- 3.3.6 The five developed options were assessed against cost, carbon, environmental impact and planning criteria. A summary of the developed options assessment is provided in Table 6 below.

Table 6: Grasmere SO developed solutions

Ref No.	Title	Whole life cost (£m) ⁴	Environmental	Planning / approvals
1	Detention tank and network interventions to reduce inflow and infiltration	29.8	Low risk – minimal impacts	Low risk – below ground assets and minor modifications within WwTW site
2	New surface water network and interventions to repurpose the existing combined sewer network to be used for foul	28.9	High risk – new surface water discharges/outfalls and impact on existing habitat within areas of new network	Medium risk – agreements required for diversion of property connections and works in the highway

⁴ Whole life cost values generated over a 30 year time horizon for the purpose of equal comparison in the value selection process and include allowances for complexity factors, risks and other variables. See 4.3.7 for further details.

Ref No.	Title	Whole life cost (£m) ⁴	Environmental	Planning / approvals
3	New foul water network and interventions to repurpose the existing combined sewer network to be used for surface water	31.7	High risk – diversion of all existing foul connections into new network required and impact on existing habitat within areas of new network	Medium risk – agreements required for diversion of property connections and works in the highway
4	New foul and surface water networks	50.2	High risk – diversion of all existing foul connections into new network required, new surface water discharges/outfalls and impact on existing habitat within areas of new network	Medium risk – agreements required for diversion of property connections and works in the highway
5	New WwTW parallel to existing works and enhancement of existing combined sewer network	29.9	Medium risk – existing habitat and visual/landscape impact	High risk – required for new WwTW assets

Source:UUW Summary

- 3.3.7 For each of the developed options, a value selection process was undertaken to select the best value solution. Key stakeholders including operations teams were kept up to date with developments through regular team meetings to gauge feedback.
- 3.3.8 Option one has been assessed as the best value solution to meet the project requirements. This option has a cost benefit ratio of 0.71, which is higher than the next closest option (option two, with a cost benefit ratio of 0.63). Although it has slightly higher whole life cost than option two, option two has lower whole life value. Further information on the value assessment undertaken can be found in section 4.3.
- 3.3.9 Option one will be developed as the single solution between submission one and two. The solution comprises:
- Interventions on the existing combined sewer network to significantly reduce the volume of inflow and infiltration entering the combined system, thereby lowering peak flows to Grasmere WwTW and reducing the frequency of storm overflow discharges; and
 - Provision of a new 5000m³ below ground storm storage detention tank equipped with associated pumping infrastructure to return stored flows to the WwTW once capacity becomes available.
- 3.3.10 At this stage of solution development, the storage tank volume has been based on the preliminary hydraulic assessment to identify a storm storage volume that could:
- Reduce spill frequency to achieve the EnvAct_IMP4 target of no more than ten spills per annum;
 - Be physically deliverable at the site; and
 - Be returned to treatment within an operationally acceptable drain down period following storm events.
- 3.3.11 At outline design the identified storage volume is an indicative planning estimate, rather than a confirmed design requirement. The principal uncertainty is not the storage asset itself but the future hydraulic performance of the network following work to address inflow and infiltration. The solution to be progressed between submission one and two for Grasmere balances an operable solution with a feasible level of catchment water removal.
- 3.3.12 We will continue to undertake targeted interventions, flow modelling and model verification to verify the storm tank volume and develop the catchment water removal approach ahead of submission two. The Grasmere SO solution will also need to be aligned to the outcome of the EnvAct_INV4 investigation which is due to conclude in April 2027, and is described further in section 2. On completion of the latest

surveys and model updates any additional solution scope (if required) above the solution for the EnvAct_IMP4 average ten spills driver will be assessed.

3.4 Development of outline design

- 3.4.1 Table 7 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 7: Summary of preferred solutions

Project	Preferred solution	Justification
Ferry House WwTW	Removal of surface water inflow and provision of a new storage tank to facilitate the transfer of flow to Ambleside WwTW by road tanker	Best value option
Grasmere SO	A 5000m ³ below ground detention tank and network interventions to reduce inflow and infiltration	Best value option

Source: Summary of information included in this chapter

- 3.4.2 U UW is using its Enterprise delivery model, which brings together eight industry-leading partners, working as one team bringing together expertise in design, engineering and construction. An integrated, diverse project team within the Enterprise has allowed a range of technical experts, including supply chain partners, to be engaged throughout the design process. Close engagement with operations staff ensured that nuances of each site could be understood leading to better solution outcomes and investment of key stakeholders in the solutions.
- 3.4.3 The preferred solutions will be progressed between submission one and two and have been 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.

4. Solution costs and benefits

4.1 Introduction

4.1.1 This section:

- Sets out the solution cost estimates for the package three projects, underpinned by the costing methodology. We will submit detailed evidence of cost efficiency for schemes where our cost estimates are above the relevant enhancement benchmark's view of cost as part of submission two;
- 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.

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.

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

- (a) A change log covering the package three projects (UUWLGS_P3S1_05); and
- (b) Individual cost estimates for each project in package three, as part of the scheme-specific supporting documents (UUWLGS_P3S1_13 and UUWLGS_P3S1_14).

4.2 How we have developed and benchmarked our costs

UUW's estimating methodology

4.2.1 This submission has been priced using UUW's Investment Programme Estimating System (IPES), a bespoke parametric estimating tool, and refined using feedback from our construction delivery partners. The system provides a repository for cost data from schemes delivered in previous AMPs and quotations from our partners for future projects. This ensures that our estimates are in line with schemes we have previously delivered. 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 and allows us to challenge scope items where there is a significant difference.

4.2.2 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 scored 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 analysis is summarised by site in the figure below.

4.2.3 A risk provision has also been included as described in 205.2.3, and opex costs are derived from operating plans consistent with our PR24 methodology.

Figure 1: Package three complexity analysis

	Work force availability / cost	Working hours restrictions	Temporary traffic management	Local access	Wider Access	Utilities/ SU's impact	Tourism Stakeholder	Planning / permission / Stakeholder	Planning / stakeholder constraints	Temporary works technicalities	Standard Outputs	Weather	Ecology (flora/fauna)	Archaeology	Heritage	Complexity Factor	Total Complexity Factor	% Complexity Factor
Grasmere CSO	4	6	8	6	4	6	7	5	5	7	5	5	4	1	4	77		17.0%
Ferry House	7	6	4	5	6	2	6	1	2	5	4	6	4	1	2	61		10.0%

Source: UUW analysis

- 4.2.4 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 3, which suggests an accuracy range of +30 per cent to -20 per cent. We expect this to narrow as we develop the schemes.

Cost estimates

- 4.2.5 Table 8 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 significant uncertainty about the costs and we will work to mature our understanding of costs prior to submission two. More detailed cost breakdowns are provided in the cost estimates, included as part of the scheme-specific supporting documents (UUWLGS_P3S1_13 and UUWLGS_P3S1_14).

Table 8: Summary of totex costs (£million, 2022-23 CPIH prices)

	Ferry House WwTW	Grasmere SO
Estimate	3.640	38.365

Source: UUW Estimating

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

- 4.2.6 We have compared the costs for each project to modelled costs calculated using Ofwat's PR24 enhancement models and verified against Ofwat's PCD reconciliation 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.
- 4.2.7 The cost comparisons are set out in Table 9 below. We use '1' to show which enhancement models have been included in this calculation; the Grasmere SO modelled cost is based solely on storage.

Table 9: Costs for each project compared to modelled costs calculated using Ofwat's PR24 enhancement models (£million, 2022-23 CPIH prices)

Project name	P removal	Sanitary	Network storage	FFT	STW storage	Modelled allowance	Totex estimate
Ferry House WwTW	1					3.469	3.640
Grasmere SO					1	7.655	38.365
Total						11.124	42.005

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

- 4.2.8 We are expecting costs to be significantly above the modelled cost for Grasmere. This is because investigations have suggested that Grasmere has high groundwater levels, for which the construction method is more expensive. Grasmere is also located in one of the busiest parts of the Lake District National Park, which will create additional site complexities.

We will ensure our final cost estimates for these schemes exclude any element of base expenditure

- 4.2.9 The investment drivers for these projects are described in section 2. As we work to develop our understanding of costs at these sites, we will continue to review the scope and associated costs to ensure that our costs relate to enhancement expenditure only and customers are not paying twice.

We have updated our view of cost since Final Determination

- 4.2.10 Table 10 summarises the changes to totex 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 10: Summary of changes in totex since Final Determination (£million, 2022-23 CPIH)

Scheme	Original estimate	Updated estimate	Change
Ferry House WwTW	1.794	3.640	1.846
Grasmere SO	42.083	38.365	-3.718
Total	43.877	42.005	-1.872

Source: UUW analysis

4.2.11 The key changes in cost relate to design development across both sites leading to a change in solution:

- For Ferry House, the increase in cost reflects the need to redesign the scheme to deliver a solution that aligns with the Environment Agency's guidance not to reintroduce the outfall into Mitchell Wyke Ferry Bay. The revised design also incorporates forecast growth from the hotel development.
- For Grasmere this is due to the optimisation of the solution for the spills driver, including a balance between catchment water removal and an operable storm storage volume.

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 three schemes enhance final effluent standards from a wastewater treatment works and reduce spills from a storm overflow that discharges into the catchment. These enhancements offer benefits across 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.

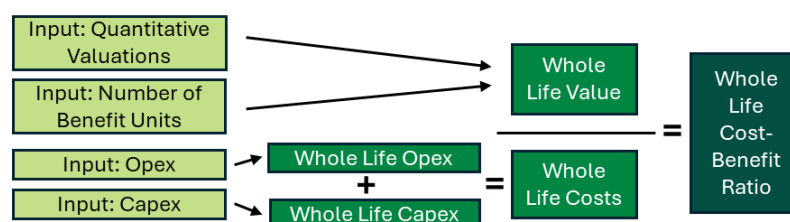
4.3.3 For each of the developed options a value selection process was undertaken to select the best value solution. We have used a cost-benefit tool that reflects our current thinking on valuing the benefits of investing at Windermere and demonstrates that the package three projects have selected the most beneficial option. This analysis draws on our work to develop a broader "six capitals" valuation approach to reflect changes in regulatory and government approaches to valuations of service, the environment and amenity values, and takes account of the unique context around Windermere.

Our approach

4.3.4 Our approach comprises three key steps, summarised in Figure 2 and described in further detail below:

- Calculating the whole life value;
- Calculating the whole life cost; and
- Comparing the whole life cost-benefit ratio across different solutions.

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

Figure 2: Cost benefit analysis flow diagram**Whole life value**

4.3.5 We calculate whole life value of an investment solution as the present value of the total benefits accrued over a 30-year assessment period. This is derived by:

- Multiplying the number of projected benefit units from the investment solution by the annual quantitative valuation; and
- Calculating the compounded value over the investment horizon and discounting it using the Social Time Preference Rate, in line with the HM Treasury Green Book.

4.3.6 Value-based decision making is informed by the six capitals framework, drawing from the internationally adopted Integrated Reporting and using a broad range of metrics that cover:

- Natural capital metrics based on the EA's Wider Environmental Outcomes to reflect values for society and the environment (e.g. water quality, air quality);
- Customers' preferences for service improvements and wider amenity values resulting from the investment solution;
- GHG emissions through the UK Government's cost of carbon;
- Risks (e.g. reduced accidents, customer complaints); and
- Health and safety.

Whole life cost

4.3.7 We calculate the whole life cost of an investment solution by adding the whole life capital expenditure and the whole life ongoing operating costs. Capital expenditure includes capital overheads but excludes the effect of taxation. The present value of capital expenditure has been converted to a stream of annual costs over a 30-year appraisal period. To calculate the present value of these costs, and associated operating costs, the Social Time Preference Rate was used for discounting, consistent with the HM Treasury Green Book. Costs are in 2022-23 price base, using the CPIH financial year average. As a result of discounting, whole life costs are in some cases less than totex, for example for Grasmere SO.

Cost benefit ratio

4.3.8 The cost benefit ratio is calculated by dividing whole life value by whole life cost.

Quantification of benefits

4.3.9 Table 11 summarises the quantified benefits for the five developed options at Ferry House WwTW, together with whole life cost and the benefit cost ratio. This analysis demonstrates that the selected solution for Ferry House WwTW option four (a) is the most cost-beneficial with a ratio greater than one.

Table 11: Summary of Ferry House WwTW developed options costs and benefits (£million, 2022-23 CPIH prices)

Benefit	Option 1	Option 2	Option 3b	Option 4a	Option 4b
Biodiversity	-1.9	-1.2	0.0	0.0	0.0
River water quality (phosphorus)	0.0	0.0	0.0	0.0	0.0
Permit compliance	6.7	5.3	6.6	7.5	6.3
Reduced spills	0.0	0.0	0.0	0.0	0.0
Reduced pollution incidents	6.4	6.4	3.2	7.3	0.0

Benefit	Option 1	Option 2	Option 3b	Option 4a	Option 4b
Carbon Impact	-0.4	-0.4	-1.0	-0.1	-0.5
Escalated contacts	0.0	0.0	0.0	-0.3	0.0
Whole Life Value	10.8	10.2	8.8	14.4	5.9
Whole Life Cost	7.3	7.7	18.0	3.8	7.0
Cost Benefit Ratio	1.48	1.32	0.49	3.78	0.84

Source: Windermere gated submission package three cost benefit analysis

- 4.3.10 Table 12 summarises costs and benefits for Grasmere SO. The options reflected in this submission show a comparatively modest level of quantified environmental improvement which is insufficient to offset costs and disbenefits. However, given the prominent location of Grasmere SO in a highly touristed area and iconic location, it is likely that the value used to monetise the benefit of reduced spills underestimates its value to customers. We set out the potential extent of wider societal value below. Relative to the alternatives, option one for Grasmere delivers the highest level of net benefit, and the scheme is being progressed to meet statutory WINEP drivers.

Table 12: Summary of Grasmere developed options costs and benefits (£million, 2022-23 CPIH prices)

Benefit	Option 1	Option 2	Option 3	Option 4	Option 5
Biodiversity	0.0	0.0	0.0	0.0	0.0
River water quality (phosphorus)	11.4	9.0	9.6	9.0	8.4
Permit compliance	6.7	5.3	5.7	5.3	5.0
Reduced spills	5.7	5.0	5.4	5.0	4.2
Reduced pollution incidents	0.0	0.0	0.0	0.0	0.0
Carbon Impact	-2.5	-1.0	-1.0	-1.6	-0.9
Escalated contacts	0.0	0.0	0.0	0.0	0.0
Whole Life Value	21.3	18.3	19.6	17.7	16.7
Whole Life Cost	29.8	28.9	31.7	50.2	29.9
Cost Benefit Ratio	0.71	0.63	0.62	0.35	0.56

Source: Windermere gated submission package three cost benefit analysis

- 4.3.11 For Grasmere, the largest of the benefits valued are associated with reducing phosphorus, which reduces the risk of eutrophication and algal blooms. We have valued phosphorus reductions using UUW's research to inform the Wonderful Windermere Outcome Delivery Incentive (ODI) (as set out in our business plan supplementary document UUW31). This research collated and triangulated the various sources of phosphorus valuation which ranged from £2.0- £25.4k per kg. We applied a systematic and robust approach to triangulating evidence to determine a marginal benefit rate of £13.6k per kg of phosphorus removed.⁶ The solutions for Ferry House WwTW do not have an associated benefit valued for phosphorus removal as the site does not currently discharge treated effluent under the permit to Lake Windermere.
- 4.3.12 We have estimated the benefits associated with compliance with tighter permits at both sites, valued using the PR19 ODI triangulated customer research valuation.⁷ For Grasmere SO this acts as a proxy for improvements in BOD, suspended solids and ammonia, for which we do not have direct valuations. For Ferry House, this captures benefits associated with the provision of new storage.

⁶ [UUW 31, Customer research triangulation, October 2023](#), para 3.2.31

⁷ See [Performance commitments technical document](#), page 164. We have used PR19 valuations instead of the PR24 ODI rate. PR19 quantitative customer research provides the most robust and recent bottom-up customer valuations for this performance area, including views on environmental and societal value. In contrast, PR24 ODIs were set using a top-down RoRE approach, which weakens the link between customer valuations and the rewards or penalties applied.

- 4.3.13 Benefits for reduced spills and pollution incidents have been valued using PR19 customer research and the Storm Overflows Evidence Project⁸, applied to the average baseline spill performance at each site to estimate the economic value of avoiding these events. We have also valued consequential carbon impacts and avoided customer complaints as part of this analysis, which make a relatively small contribution to the overall assessment.

Evidence of wider societal value of investment at Windermere

- 4.3.14 There is a wide range of evidence supporting the value of investment at Windermere. While these values overlap with the benefits valued above and cannot be applied in addition, together the evidence underlines the significant value attached to environmental improvements in the Windermere catchment.

Recreational value – in the context of the Windermere catchment as a tourist hotspot with exceptionally high levels of recreational activity.

- 4.3.15 There are many approaches to capturing recreational value, although many do not appropriately account for specific locations. The most widely used approach is the University of Exeter's tool "ORVal", which is funded by Defra and was used as part of the AMP7 Natural Capital ODI.⁹ ORVal suggests a present value of £48.6m across the Windermere catchment based on 750,000 visits per year. However as Cumbria Tourism / EA research suggests that actual visitor numbers could be closer to seven million per year, the recreational value could be significantly higher.

Tourism value

- 4.3.16 As well as a recreational hotspot, Windermere and the surrounding towns provide crucial economic value to the region through tourism. The EA and Cumbria Tourism's report "Windermere Catchment: Tourism Value, March 2021"¹⁰ estimates the indirect and direct economic impact of tourism across the Windermere Catchment is £753m. It also estimates that between £24m and £122m of this could be lost due to deteriorating water quality. This economic value supports an estimated 9315 jobs, between 303 and 2304 of which could be put at risk due to deterioration in water quality.

Impact on the local housing market

- 4.3.17 There are numerous studies which link local environmental quality with property values. The B£ST Tool¹¹ makes use of a study from the Royal Institute of Chartered Surveyors (RICS) on the Urban Parks, Open Space and Residential Property Values, which when inflated to 2025 values, places a value of £6,533 per home benefitting from improved natural environment and £1,064 per business benefitting from improved natural environment. We estimate that there are around 12,600 unique addresses in the Windermere catchment, leading to a valuation of between £13.4m and £82.3m for a one-off increase in property values.

Non-use value

- 4.3.18 In environmental economics, "non-use" value refers to the intrinsic worth or significance that individuals attribute to goods or services, regardless of direct engagement with them. This is likely to be significant for Windermere, which has an iconic status, embedded into the cultural heritage of Cumbria and the UK. Although no relevant willingness to pay study exists, given the importance of the lake across the UK, Windermere's non-use value could easily be in the region of tens of millions of pounds.

Conclusion

- 4.3.19 As described above, the schemes in the Windermere gated programme offer benefits across a range of areas including amenity value, biodiversity and wider environmental outcomes. Our analysis demonstrates that the selected solution for Ferry House WwTW is cost-beneficial and the selected solution for Grasmere SO is the most beneficial option to meet the statutory WINEP driver. While we

⁸ See Defra (2022), "Storm overflows discharge reduction plan: Impact assessment", para 185

⁹ <https://leap.exeter.ac.uk/orval/>

¹⁰ Windermere Catchment: Tourism Value March 2021

¹¹ www.ciriabest.com

have adopted a Windermere-specific phosphorus valuation, we use standard valuations for reduced spills and pollution incidents, which together with the evidence above around the value of investing in the environment at Windermere, suggests that these benefits may be valued conservatively.

5. Programme and Planning

5.1 Introduction

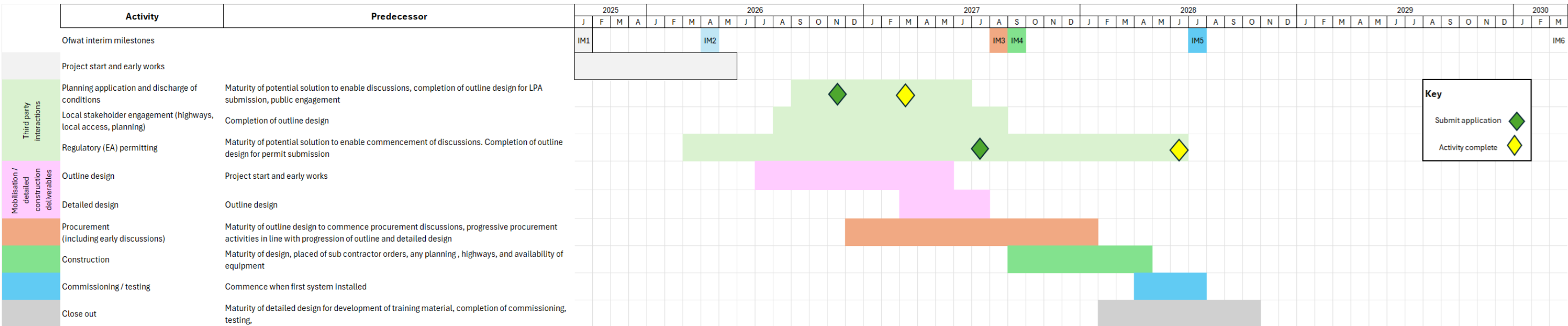
- 5.1.1 This section summarises the programme for each of the package three schemes, including for third party approvals and consents. It also describes UUW's approach to risk management and provides an overview of the key risks faced on the package three projects.
- 5.1.2 To support the information provided in this section we have provided;
- A P6 programme for each scheme, which sets out programme activities in more detail, as part of the scheme-specific supporting documents (UUWLGS_P3S1_13 and UUWLGS_P3S1_14);
 - A draft delivery plan, in the format required by Ofwat's delivery plan guidance, covering the package three projects (UUWLGS_P3S1_11); and
 - A risk register for each project, as part of the scheme-specific supporting documents (UUWLGS_P3S1_13 and UUWLGS_P3S1_14).

5.2 Summary of programme

- 5.2.1 We have developed programmes within Primavera P6 using a standard approach
- 5.2.2 Figure 3 and Figure 4 below summarise the key activities and milestones remaining for each project. These comprise:
- Feasibility design
 - Single solution paper;
 - 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 the duration of the project;¹²
 - Detailed design;
 - Site works – including commissioning and testing; and
 - Final handover and close out.

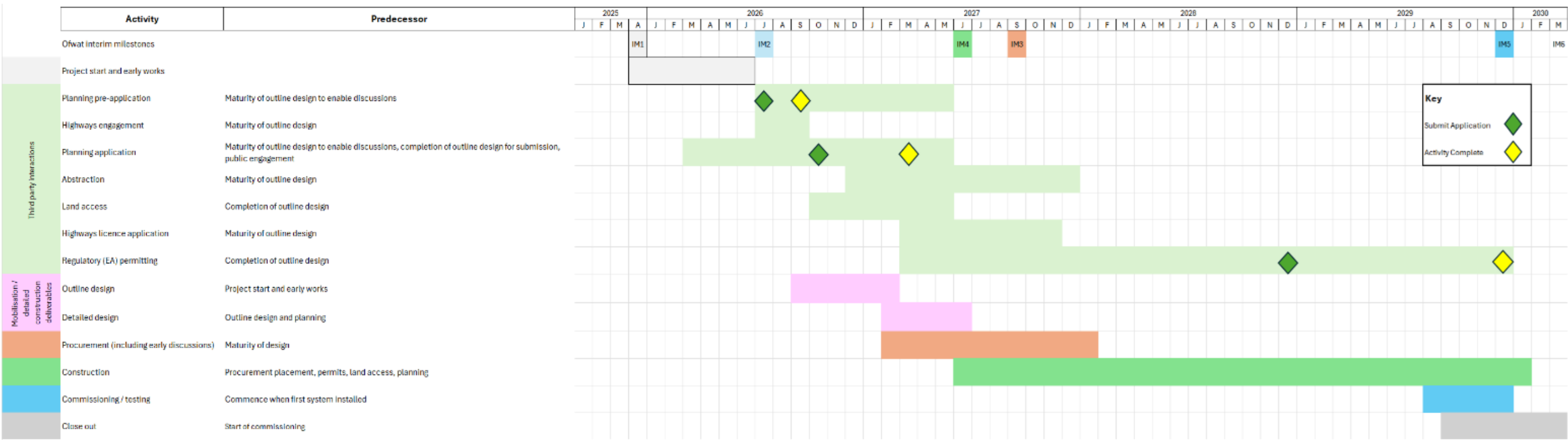
¹² As each project matures and key third party interfaces are identified, the P6 programme will be developed to include specific interface milestones.

Figure 3: High-level programme summary: Ferry House WwTW



Source: UUW systems

Figure 4 High-level programme summary: Grasmere SO



Source: UUW systems

- 5.2.3 We have developed the project plan and strategy for delivery based on the requirements of the gated process and U UW's ambitions to deliver benefits around Windermere as quickly as possible. We intend to make submission two for package three in spring 2027. This shows significant ambition in the timescales for the Grasmere scheme in particular, as this project address AMP9 WINEP drivers and there are several complex planning and stakeholder considerations.
- 5.2.4 We have included a time risk allowance against key activities on the critical path in each of the programmes (including for planning, shaft construction and excavation, mechanical and electrical works, and commissioning). The total critical path time risk allowance is seventeen weeks for Ferry House WwTW and Grasmere SO. Programmes allow thirteen weeks for planning determination and an additional seven weeks' time risk allowance.

5.3 Risk

- 5.3.1 Risks are managed in line with U UW'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 three 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 – planning permission will be required for the storage solution at Grasmere SO. There is a risk that extended lead times could cause significant delays, or that planning conditions could drive additional costs. We are engaging closely with the planning authority to mitigate any delays or additional costs, including submitting pre-applications.
 - Solution validation - the detention tank solution at Grasmere requires a significant reduction in the volume of inflow and infiltration entering the combined system, thereby lowering peak flows to Grasmere WwTW and reducing the frequency of storm overflow discharges. The solution is dependent upon successful interventions in the existing combined sewer network to reduce inflow and infiltration to required levels. Targeted investigations, flow monitoring and further network modelling will be progressed to inform design development between submission one and two.
 - Environmental permitting – upon delivery, sites will be required to have an updated environmental permit in place, so solutions are dependent upon the timely agreement of new or amended environmental permit conditions. Through our regular dialogue with the EA we expect to manage this risk through early engagement and initiation of the permitting process.
- 5.3.4 Constructability risks:
- Accessibility– access for construction is limited at sites in package three:
 - Access to Ferry House is extremely limited and at the point of a narrow road where the cross-lake ferry docks and passengers and vehicles queue. This is a significant constraint that will drive the specification of key equipment to minimise the size of the vehicles required for delivery.
 - [✂]

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- Access will be required to carry out interventions to reduce the volume of inflow and infiltration in the Grasmere combined sewer network. Interventions are anticipated to be required over a large area requiring communication and cooperation with multiple landowners and agents.
- Land availability and ground conditions
 - Additional land may be required for the solution beyond the current site boundary at Ferry House. There is limited land available for construction at Ferry House, with the potential for delays or costs should additional land be required. We are looking to design the solution to minimise the need for additional land and will engage early with landowners where land purchase or lease is unavoidable to mitigate any delay.
 - The construction of the new detention tank at Grasmere will require additional land beyond the current site boundary, within the field adjacent to Grasmere WwTW. Preliminary discussions have been held with the private landowner and will be progressed between submission one and submission two.
 - Grasmere SO is in an area of high groundwater. Construction of a below ground tank in this location is likely to be challenging and ground conditions could lead to delays. We plan to discuss mitigation with the contractor once appointed to minimise any impact.
- Environment - 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. Further ecology surveys will be undertaken prior to submission two to understand and manage these requirements.
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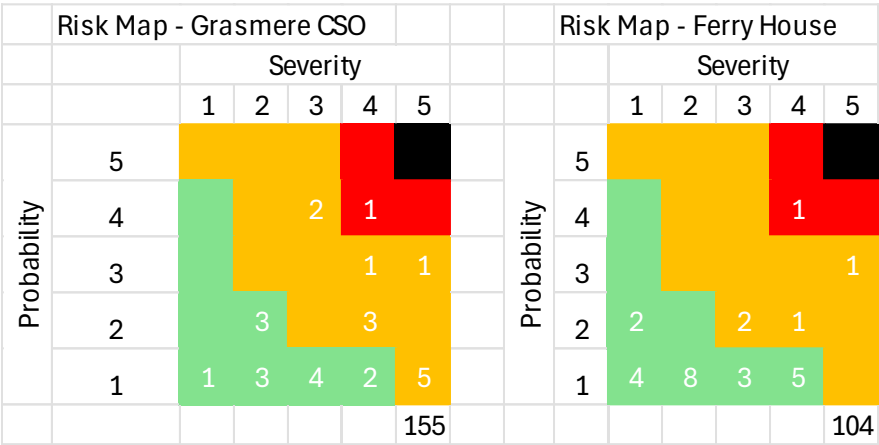
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5.3.5 Construction Risk:

- Weather –there is a risk that construction may be impacted by weather conditions, leading to delays and additional costs. To mitigate this, ground works will be planned for drier months where possible.
- 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 and will look to address specific challenges in design.
- Stakeholders - farmers, landowners or other third-party stakeholders could be adversely affected by the construction. Ferry House WwTW is located close to the Windermere ferry which operates from Ferry Nab to Far Sawrey approximately every 20 mins. Due to proximity of Ferry House WwTW to the Windermere Ferry, the project may be forced to work in off-season periods only, leading to additional costs and delays. We are engaging closely with local stakeholders and making plans to mitigate the impact of construction (e.g. traffic management planning).
- Public interest – there is significant interest in the projects and their delivery. We expect this will lead to a high number of contacts and requirement for engagement. To mitigate this, we are undertaking significant stakeholder engagement, will communicate information about construction works well in advance, and are looking to make arrangements to reduce the impact on customers and stakeholders.

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 a total risk score used to scale each risk provision (combining the assessment of both probability and severity). The risk maps below show, for each scheme, how the total risk score has been derived.

Figure 5: Risk maps for package three



5.3.7 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 and will be assessed by the project team for submission two.

5.4 Proposed submission two activities and timelines

5.4.1 The key activities prior to submission two fall into the outline design phase, with further detail provided in the optioneering reports (UUWLGs_P3S1_13 and UUWLGs_P3S1_14). This includes:

- the progression of outline design:
 - consideration of hazards and operability to ensure the solutions are safe to operate;
 - access, lifting and maintenance reviews, to ensure the solutions are safe to maintain;
 - further consideration of hydraulics for sizing of the new assets and safety considerations;
 - [✂]];
- 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 further pre-applications;
- the resulting revision of cost estimates for developments in design, and informed by engagement with the supply chain;
- 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 the remainder of 2026 and early 2027, followed by the production, review and assurance of submission two over February and March, prior to submission to Ofwat in the 1 March to 1 May 2027 window.

6. Customer protection and price control deliverables

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 and adopting most of Ofwat's 2026 cost change process draft determinations for UUW's package one and two Windermere large gated schemes.
- 6.1.2 The proposed PCDs will compensate customers if we fail to deliver or are late delivering our committed improvements. This section is supported by an Excel workbook (UUWLGS_P3S1_07 PCD workbook) which uses the structure and format of the PR24 cost change process draft determination UUW PCDs.
- 6.1.3 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 Ofwat has confirmed that it will create four new discrete large gated scheme 'Windermere' PCDs. These are for storm overflows, flow to full treatment, phosphorus removal and sanitary parameters. Package three will add a line each to the new PCDs for storm overflows and phosphorus removal.
- 6.2.2 The accompanying Excel workbook (UUWLGS_P3S1_07 PCD workbook) consolidates all lines from packages one, two and three. We have therefore included a tab for each of the four PCDs and copied Ofwat's cost change process draft determination file 'PR24CCP13' for the flow to full treatment and sanitary parameters tabs. We have denoted which package or submission each line relates to in column A of each of the four tabs. The accompanying workbook therefore presents a complete picture of what we propose to be the draft final large gated scheme PCDs for the Windermere schemes, subject to further update at package three submission two.
- 6.2.3 The PCDs included in this submission adopt the structure and requirements of the proposed large gated scheme PCDs which Ofwat included in UUW's 2026 cost change process draft determinations. We therefore do not propose on-time timing incentives on any of the four PCDs and propose a 12-month grace period on underperformance time incentives in line with our response to the 2026 cost change draft determination for Windermere large gated scheme PCDs (see section 4.4 of 'UUWR26-11').
- 6.2.4 The time incentive rates are calculated in line with the PR24 final determination and cost change process draft determination. The timing underperformance rate is based on the company wholesale weighted average cost of capital (WACC) of 3.97 per cent, multiplied by the unit allowance. For example, for phosphorus removal, the unit allowance is 'Population Equivalent'.
- 6.2.5 The allowances in the four large gated scheme PCDs are stated net of the six per cent development allowance for each scheme.
- 6.2.6 In the accompanying Excel workbook (UUWLGS_P3S1_07 PCD workbook) there is one line per site. Some sites have expenditure related to both PCDs; they are therefore added to both PCDs in the 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 cost change draft determination PCD column headed 'Allowance pre reconciliation (£m)', 'Allowance pre adjustments (£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 rigour to the methodology used by Ofwat to determine its cost allowance figures.
- 6.2.7 This proposal ensures customers remain protected against non- or late-delivery and provides regulatory alignment and clear and accountable reporting.

6.3 Proposed PCDs

Storm overflows

Approach to deliverable

- 6.3.1 We have followed the approach we proposed in packages one and two submission two and which Ofwat included in UUW's 2026 cost change process draft determinations.
- 6.3.2 The PCD will track delivery at the scheme level for the one additional storm overflow scheme in package three and claw back allowed investment in the event of non-delivery, in line with the payment calculations set out in the PR24 FD and 2026 cost change process draft determinations price control deliverables appendices.
- 6.3.3 We have included the proposed cost allowance for the additional scheme in the PCD, on a separate line underneath the package two schemes. The PCD will hold UUW to delivering the scheme and equivalent storage included in packages one to three.

Flexibility across deliverables

- 6.3.4 We intend to deliver the proposed scheme.
- 6.3.5 We propose that the scheme which we include in package three will also have the delivery flexibility applied by Ofwat in the PR24 FD and cost change process DD. This means, for example, that we will have the flexibility to substitute delivery of schemes via green to grey solutions / grey-green hybrid and vice versa. 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 ensure it is reflected in the updated WINEP.

Time incentives

- 6.3.6 We propose time incentives in line with the Ofwat's approach in the 2026 cost change process draft determinations with the addition of a 12-month grace period. This is outlined in section 6.2 above.

Phosphorus removal

Approach to deliverable

- 6.3.7 We have followed the approach we proposed in submissions 1 and 2 and which Ofwat included in UUW's 2026 cost change process draft determinations.
- 6.3.8 The PCD will track delivery at the scheme level for the one additional phosphorus removal scheme in package 3 and claw back allowed investment in the event of non-delivery, in line with the payment calculations set out in the PR24 FD and 2026 cost change process draft determinations price control deliverables appendices.
- 6.3.9 We have included the proposed cost allowance for the additional scheme in the PCD, on a separate line underneath the package one and two schemes. The PCD will hold UUW to delivering the scheme and equivalent storage included in packages one to three.

Flexibility across deliverables

- 6.3.10 We intend to deliver the proposed schemes. While we do not expect any significant changes to the enhanced consents, should these occur we will submit any such changes for approval through Ofwat's PCD change control process.

Time incentives

- 6.3.11 We propose time incentives in line with the Ofwat's approach in the 2026 cost change process draft determinations with the addition of a 12-month grace period. This is outlined in section 6.2 above.

7. Stakeholder and customer engagement

7.1 Introduction

- 7.1.1 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_P3S1_08).
- 7.1.2 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 of its activities. This engagement plan has been in place prior to business plan submission and underpins delivery throughout AMP8.

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; and
 - 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. 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.
- 7.3.5 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 (UUWLGS_P3S1_08) and specific examples are provided below.
- 7.3.6 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 WwTW's 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. That engagement is helping us to shape and adapt our plans and mitigate the impact on the community or sensitive locations:

Ferry House WwTW

- 7.4.2 As the solutions for Ferry House have been considered and developed, our priority has been to undertake a series of engagements with those most directly affected by the plans to share our thinking and keep them informed of next steps. This has included meetings with some of the residents at Ferry House to talk them through the optioneering work and the potential solutions, including explaining the criteria which then helps inform the preferred option.
- 7.4.3 We showcased the optioneering work at a public drop-in event in April where the community was invited to hear about our plans for Ferry House and nearby Far Sawrey. We committed to further meetings in September and October with the community and the residents of Ferry House and will attend a meeting of the local parish council to take questions and feedback.

- 7.4.4 We have held specific meetings with landowners associated with the Ferry House site. This included a positive discussion regarding the siting of the storage tank and permission to proceed with more detailed topographical and GPR surveys, then carried out in August, which is informing the next stage development of the plan. We have committed to continue this engagement as the plan matures and to discuss any potential impact on them.

Grasmere SO

- 7.4.5 Engagement to date has focused on landowners and those who have access to the track shared with the WwTW to explain what we need to achieve through the creation of a storm detention tank and its contribution to improving water quality in the catchment. At the most recent meeting in August, we discussed the potential location for the storm detention tank. We went through the proposed surveys and ground investigation works needed to inform the plan and no concerns were raised. Further meetings are planned to discuss the exact storm detention tank location once that investigative work is complete. Others with access to the track shared with the treatment works, have also been happy for the work to date to proceed and to work with us on a solution.
- 7.4.6 More broadly, we have kept the local community informed about why they may see us in the area as the survey work has got underway. This has included providing information to customers who might be directly impacted by the survey work, via the parish council and through broader updates in our community newsletters. As the plan develops, we will continue that engagement and public drop in events will be arranged. In the meantime, we have attended community events in Grasmere where we know there may be good footfall to share our plans. This has included events organised by the parish council and a popular event, Grasmere Sports, held over the August bank holiday weekend.

7.5 Third party approvals and consents

Planning engagement

- 7.5.1 We have been engaging with the 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. 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 and 2026 and this shapes our overall approach. Where required, due to changes in scope or requirements or additional information being known, we have arranged ad-hoc meetings with the planning teams. For example, this has covered topics such as the suitability of an above ground storm detention tank at Grasmere.
- 7.5.3 Following the feedback that an above ground tank at Grasmere would not be suitable (in response to a formal pre application enquiry in early June 2026), we submitted a further pre application enquiry for a below ground solution with some localised ground level changes and control building in July 2026. We expect LDNPA feedback in October 2026. The design development and estimates have therefore been progressed for a below ground storm detention tank.
- 7.5.4 [REDACTED]; while we do not expect a planning application to be required, an allowance has been made in the programme until this has been confirmed. Due to the location within a National Park an EIA screening opinion request will be submitted.
- 7.5.5 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. 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. We do not expect Habitats Regulations Assessments to be required at Grasmere or Ferry House.

- 7.5.6 We will engage with the EA from a planning perspective in relation to flood risk at Grasmere in advance of the submission of the planning application to agree the approach for modelling and the requirement for any compensatory flood storage.
- 7.5.7 There have also been regular meetings with Friends of the Lake District, which represents the national charity Campaign for the Protection of Rural England in Cumbria to discuss the Windermere programme. These update meetings have provided an opportunity to discuss any potentially contentious schemes.
- 7.5.8 In advance of the submission of planning applications we 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 within the CSEP (UUWLGS_P3S1_08).

Environment Agency engagement

- 7.5.9 In addition to customers, stakeholders, planning authorities and wider communities, UUW has clear plans in place to engage 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. 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.
- 7.5.10 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 for all projects within the Windermere gated programme as well as a review of proposed solutions for schemes in packages one, two and three. It generated a set of collective actions for projects that both organisations have been progressing to support the permitting process.
- 7.5.11 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 Ferry House WwTW was discussed in relation to the removal of surface water inflow and provision of a new storage tank to facilitate the transfer of flow to Ambleside WwTW by road tanker.
- 7.5.12 Our engagement session in July 2026 was the final review of the optioneering process that was undertaken for Ferry House and Grasmere, and the preferred options included in this submission.

Table 13: Summary of UUW engagement with the Environment Agency relevant to package three

Date	Meeting Overview
04/04/2025	EA response to Ferry House Environmental Modelling report issued in March 2025 by UU and request from EA for alternative discharge option to be explored including relocation of discharge out of Mitchell Wyke Bay and relevant permit variation.
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.
28/11/2025	Meeting with EA Integrated Environmental Planning Team to review status and options of Glebe Road and Grasmere schemes

Date	Meeting Overview
05/03/2026	Meeting with EA Integrated Environmental Planning Team to review tankering as a solution for Ferry House and confirm EA position
16/04/2026	Position statement received from EA regarding tankering away from Ferry House and designation of site, namely no longer a functional Sewage Treatment works. Hence for the specific case of Ferry House position statement is not applicable.
16/07/2026	Meeting with EA Integrated Environmental Team to provide general update on preferred options for Grasmere and Ferry House prior to Ofwat submission.

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_P3S1_02 and UUWLGS_P3S1_03, 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 will be provided by Jacobs in line with Ofwat's requirement for a third party assurance report.
- 8.1.4 Jacobs has provided technical and commercial reports, with no material issues. Key findings include:
- Technical assurance: Jacobs concludes that the proposed solutions continue to adequately address the needs and achieve the specified outcomes and that there has been appropriate engagement with stakeholders and the supply chain.
 - Commercial assurance: Jacobs considers the cost estimation methodology to be reasonable and fit for purpose at this stage of project development and that clear justification has been provided in cases where the most cost beneficial/ effective solution identified in the PR24 business plan is not to be progressed at design confirmation.
- 8.1.5 Further details of Jacobs' approach and findings can be found in UUWLGS_P3S1_02 Technical Assurance Report and UUWLGS_P3S1_03 Commercial Assurance Report.

9. Efficiency of expenditure to date

9.1 Introduction

- 9.1.1 This section sets out a breakdown of development costs incurred so far for package three. We provide an aggregated view of cost across the two package three 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 into 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 Overview of expenditure to date

- 9.2.1 Table 14 below shows submission one costs incurred to date for package three, disaggregated by cost type. In order to report only actual costs, the position below reflects the July month end position. August and September expenditure is included in the forecast expenditure for submission two in Table 14 below.

Table 14: Actual development costs (£million, 22-23 CPIH prices)

Ref	Scope item	Scope description	Ferry House	Grasmere
1	Main Contractor (Direct)	Contractor costs to complete project feasibility work to date	-	-
2	Resource	UUW staff costs to complete project feasibility work to date	0.146	0.709
3	Surveys	Surveys to determine the solution e.g. ground investigation and ecology surveys	0.024	0.123
4	Third party (other)	Planning / licences and legal fees (etc)	-	-
5	Risk	Risk events occurring	-	-
Total			0.170	0.832

Source: UUW finance data

9.3 Actual and forecast expenditure for submission 2

- 9.3.1 Table 15 below sets out the actual and forecast expenditure for submission two for package three, disaggregated by cost type.

Table 15: Total forecast development costs, including actuals to date (£million, 22-23 CPIH prices)

Ref	Scope item	Scope description	Ferry House	Grasmere
1	Main Contractor (Direct)	Contractor costs	0.375	3.447
2	Resource	UUW staff costs	0.220	2.466
3	Surveys	Surveys	0.024	0.123
4	Third party (other)	Planning / licences and legal fees	-	-
5	Risk	Risk events	0.043	0.0643
Total			0.662	6.679

Source: UUW estimating data

9.4 Comparison against development allowance

- 9.4.1 While at the time of this submission total development costs for these schemes are within the development allowance of £2.6m (£0.1m for Ferry House and £2.5m for Grasmere), by the end of the development phase we currently forecast costs to significantly exceed the development allowance.
- 9.4.2 The high proportion of development costs for Ferry House reflects that there is a fixed element of project development costs that does not vary with the size of the project, and for Grasmere site specific factors including groundwater levels and site location create complexities which will need to be accounted for during design development. The development phase forecast will be reviewed and updated ahead of submission two, and final development costs will depend on the profiling of activities between different phases of the scheme.

10. Conclusion and recommendations

- 10.1.1 U UW has developed and assessed options for the package three 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 on this basis we propose all schemes in package three should progress to submission two.
- 10.1.2 We have developed the project plan and strategy for delivery on the basis of the requirements of the gated process and U UW's ambitions to deliver benefits around Windermere as quickly as possible. The Grasmere SO scheme has AMP9 WINEP drivers; U UW is progressing the projects as quickly as possible to deliver benefits for customers.
- 10.1.3 The top risks to the progression of the package three projects fall into the categories of design, constructability and construction risk:
- Design
 - 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.
 - Design validation – the solution at Grasmere is dependent upon successful interventions in the existing combined sewer network to reduce infiltration and inflow to required levels. Targeted investigations, flow monitoring and further network modelling will be progressed to inform design development between submission one and two.
 - Constructability
 - Land – the need to acquire land means there is a risk of extended negotiations. We are working with landowners, looking to use existing land as far as possible to minimise any delays in land acquisition and avoid sensitive habitats.
 - Construction
 - Groundwater – Grasmere SO is in an area of high groundwater. Construction of a below ground tank in this location is likely to be challenging and ground conditions could lead to delays. We plan to discuss mitigation with the contractor once appointed to minimise any impact.
 - Stakeholders - Due to proximity of Ferry House WwTW to the Windermere Ferry, the project may be forced to work in off-season periods only, leading to additional costs and delays. There may also be working hours restrictions at some sites (e.g. Ferry House) due to the proximity to tourist sites, which could lead to additional costs and extended construction duration. We will work with local stakeholders and planning authorities to minimise risk and clarify requirements.

- 10.1.4 These risks are not considered to be barriers to scheme progression, they are well-understood and are 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 three schemes need to go ahead as quickly as possible. This will deliver 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.
- 11.1.2 These comprise:
- A glossary (UUWLGS_P3S1_09 Glossary of terms);
 - Schemes included within package three of the Windermere gated programme (UUWLGS_P3S1_10 Included Schemes);
 - Change log covering all package three projects (UUWLGS_P3S1_05 Change Log);
 - Draft delivery plan covering all package three projects (DPWW4) (UUWLGS_P3S1_11 Draft Delivery Plan);
 - Data table commentary covering all package three projects (UUWLGS_P3S1_12 Data Table Commentary).
 - PCD workbook covering package one, two and three projects (UUWLGS_P3S1_07 PCD workbook);
 - Customer and stakeholder engagement plan covering all package one, two and three projects (UUWLGS_P3S1_08 Engagement Plan);
 - Third party assurance reports (UUWLGS_P3S1_02 Technical Assurance Report and UUWLGS_P3S1_03 Commercial Assurance Report); and,
 - A package of site-specific documents for each scheme (Ferry House WwTW UUWLGS_P3S1_13 and Grasmere SO UUWLGS_P3S1_14) comprising:
 - Optioneering report;
 - Cost estimate;
 - Risk register;
 - P6 programme.

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