PR24

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# OPTIONEERING AND COST EFFICIENCY ON WINEP – NIDP, INVESTIGATIONS AND BIODIVERSITY

## NES81

## 1. INTRODUCTION

1. Ofwat's draft determination (DD) challenged us to provide further evidence on optioneering and cost efficiency for three areas of WINEP – our NIDP programme (in PR24-DD-WW-25-year-environment-plan); our wastewater investigations (in PR24-DD-WW-investigations); and our biodiversity programme (in PR24-DD-W-Biodiversity).

2. For each of these, we have not changed our programme in response, as these are the programmes agreed under WINEP and we are confident that these costs are efficient and the optioneering under WINEP has been considered fully and carefully. Instead, we have provided further evidence to show how we have done this, including some elements that we have been able to build on since the business plan submission.

3. We note that there are a few minor changes in WINEP since October 2023, and some minor inconsistencies compared to the EA's spreadsheet (these are errors in the EA spreadsheet, not ours).

## 2. NIDP PROGRAMME

4. Ofwat raised some minor concerns in their DD about optioneering and cost efficiency, which meant a 20% reduction to these costs. Since then, we have discussed this with the Environment Agency and provide some more evidence about how this would be governed and how we can have confidence that the third party funding is reliable and that our costs are robust.

### 2.1. BEST OPTION FOR CUSTOMERS

5. Ofwat said that they had minor concerns as to whether the investment is the best option for customers:

> "The company presents an itemised and cost-estimated list of schemes that will be funded under the partnership scheme, with additional spend for 2030-2035 investigations. It also states that benefits assessments have been carried out for each improvement. However, there is incomplete evidence of the combined cost and benefit assessment, meaning the evidence that this represents a best option for customers is not sufficient and convincing.
>
> "There is some uncertainty about match-funding being secured, and it is not clear whether failure to achieve match-funding will jeopardise scheme delivery. The NIDP is a partnership working initiative, however, the company does not provide sufficient and convincing evidence or detail on the level and breakdown of third party funding contributions. We have minor concerns that the third party funding is reliable. In addition, as the programme of investment is collaborative and iterative, there is some risk to the certainty of delivery in terms of scheme cost."[1]

6. The NIDP is a long standing (+10 year) mature programme which has delivered award winning schemes and gained national recognition for its partnership working. All schemes proposed on the NIDP programme go through a staged approach for assessing risk and benefits associated with the areas affected.

7. At stage 2, a detailed diagnostic report is produced which confirms each risk area under consideration, a long list and preferred set of options to reduce risk, the benefits that the preferred options will lead to and a full cost breakdown of the total scheme cost, including the likely Flood and Coastal Erosion Risk Management Grant in Aid funding (FCERM GiA) available. The report also includes any additional funding that may be required to make up any identified shortfalls.

8. Benefits assessed as part of the project include:

- Properties with reduced flood risk
- Reduced storm overflow spill and spill volume per annum

[1] PR24-DD-WW-25-year-environment-plan model, "Deep Dive NES" sheet

- New habitat and improved biodiversity
- Surface water removed from catchments.

9. The following tables shows illustrated the typical outputs from a stage 2 report:

## FIGURE 1 – TYPICAL BENEFITS ASSESSMENT FOR NIDP PROJECTS

**Benefits**

| | | |
|---|---|---|
| | 1198 | Properties with reduced flood risk |
| | 485 | Properties moved EA Flood Risk Category |
| | 22 | Properties that have reported flooding with reduced flood risk |
| | 0.67 ha | New habitat and improved biodiversity |
| | 9 ha | Runoff area reduction, that no longer drains to treatment |
| | 16 | Dual manholes separated to reduce surface water to treatment and flooding from the foul network |
| | 13 No. | Reduced CSO spills per year |
| | 13,600 $m^3$ | Reduced CSO spill volume per year |
| £ | £41M | Property Flood Damages Avoided |
| | £7M | Additional Benefits Identified |
| | 5 schemes | Included in the EA's Medium Term Plan |
| | 4:1 | Benefit Cost Ratio |
| | Regeneration | Investment in an area with planned redevelopment and potential to align works |
| | Green Infrastructure | New assets that support flood risk reduction while offering opportunities for education, health, and well being |
| | Partnership Project | Funding Potential from EA's FCERM GiA, EA's Local Levy, Council Investment, NWG Investment |

## FIGURE 2 – TYPICAL COST SUMMARY FOR NIDP PROJECTS

**Costs**

| Opportunity Area | Cost Estimate | Potential Funding via FCERM GiA | Additional Funding Required |
|---|---|---|---|
| Balkwell Avenue | £1.5M | £1.8M | - |
| Langley Road | £1.3M | £2.8M | - |
| Redesdale Road | £1.6M | £1.8M | - |
| Mindrum Terrace | £882k | £970k | - |
| Howdon Road | £968k | £870k | £98k |

10. We have included examples of these stage 2 reports as part of this submission (as **NES81A** and **NES81B**). These show the level of detail in practice for each project.

11. A cost benefit ratio for all projects has been identified, typically ranging from 10 to 1.5 which confirms that each project is cost beneficial and represents best value for customers.

### FIGURE 3 – EXAMPLE OF COST BENEFITS RATIOS FROM NIDP PROJECTS

| NPN | Project name | Benefit Cost Ratio |
|---|---|---|
| NOC501E/000A/255A | NIDP - Chirton (Balkwell Avenue & Langley Road) Flood Alleviation Scheme | 10.20 |
| NOC501E/000A/257A | NIDP - Chirton (Redesdale Road and Mindrum Tce) Flood Alleviation Scheme | 6.30 |
| NOC501E/000A/213A | NIDP - Sedgefield (The Leas) Flood Alleviation Scheme | 5.00 |
| NOC501E/000A/231A | NIDP - South Stanley (Park Road) Flood Alleviation Scheme | 4.60 |
| NOC501E/000A/253A | NIDP - Chirton (Howdon Road) Flood Alleviation Scheme | 4.40 |
| NOC501E/000A/284A | NIDP - Wallsend (Wallsend High St) Flood Alleviation Scheme | 3.70 |
| NOC501E/000A/279A | NIDP - Easington (Dixon Rise) Flood Alleviation Scheme | 3.60 |
| NOC501E/000A/281A | NIDP - Easington (Yoden Way) Flood Alleviation Scheme | 3.40 |
| NOC501E/000A/202A | NIDP - Whickham South (Gateshead Road) Flood Alleviation Scheme | 3.40 |
| NOC501E/000A/259A | NIDP - South Stanley (The Middles) Flood Alleviation Scheme | 3.20 |
| NOC500E/000A/094A | NIDP - Whickham South (Hole Lane) Flood Alleviation Scheme | 2.90 |
| NOC501E/000A/283A | NIDP - Ushaw Moor (Scripton Gill) Flood Alleviation Scheme | 2.80 |
| NOC501E/000A/080A | NIDP - Annfield Plain and Stanley (New Front Street) Flood Alleviation Scheme | 2.30 |
| NOC501E/000A/214A | NIDP - South Stanley (Avon Rd) Flood Alleviation Scheme | 2.20 |
| NOC501E/000A/016A | NIDP - Whickham South (Broom & Whaggs Lane) Flood Alleviation Scheme | 2.10 |
| NOC501E/000A/278A | NIDP - Annfield Plain and Stanley (West Kyo) Flood Alleviation Scheme | 1.80 |
| NOC500E/000A/034A | NIDP - South Stanley (Cookson Place) Flood Alleviation Scheme | 1.40 |

12. All schemes proposed as part of this enhancement case are subject to governance and approval process of the NIDP. This governance includes:

    a. **NIDP Board** (EA NIDP lead, NWG NIDP lead, Lead Local Flood Authority (LLFA) Lead). Its purpose is to:

        i. Review current programme delivery and any emerging risks.

        ii. Make recommendations for adjustments to the programme in response to changes in funding availability or other factors.

        iii. Make recommendations on general funding principles (i.e. funding apportionment).

    b. **NIDP Technical Panel** (NIDP board + engineering and project team support). Its purpose is:

        i. To drive an investment programme that optimises outcomes for all members of the partnership.

        ii. To determine if there are likely alternative solutions.

        iii. Provide challenge and audit to the optioneering phases.

13. In addition to the reporting and governance process of the NIDP described above, for schemes to progress into delivery and to secure GiA funding, a FCERM business case is required to be developed which is reviewed and approved at the Environment Agency. Projects greater than £3m are reviewed by an independent assurance board.

14. The purpose of the business case process is to enable the Environment Agency and other stakeholders to ascertain that proposals:

- Optimise value for money
- Are supported by a robust case for change
- Are commercially viable
- Are financially affordable
- Can be delivered successfully.

15. For NIDP schemes a partnership agreement is also required as part of the OBC from all parties which includes a funding commitment to the scheme.

16. In response to our draft determination, the Environment Agency have also responded with further information on partnership projects undertaken by the NIDP that are jointly funded from the FCERM Investment Programme (see "EA to NWL Letter Aug 24 – NIDP", attached as an annex to the submission).

17. The Environment Agency manage the government's investment to reduce flood and coastal erosion risk in England. The programme is now in year 4 of the current 6-year programme, which runs from 1 April 2021 to 31 March 2027. During this programme period, the Environment Agency are investing £5.2 billion in projects to reduce the impacts of flood and coastal erosion risk across England.

18. The letter confirms that whilst governance and assurance is still ongoing, the Environment Agency confirmed that they have been in communication with the national PMO about funding for NIDP projects. The Environment Agency's national PMO are keen to support the NIDP programme of works but has to prioritise bids from across the country. Early indications suggest there is likely to be an indicative GiA funding allocation over the next two years towards the progress of projects within the NIDP.

19. All indicative funding allocations will be subject to business case assurance approvals, as per the FCRM Grant Memorandum.

20. For the reasons we have outlined we believe that there is sufficient evidence, governance and assurance for all NIDP projects which mitigates the risks and concerns that Ofwat have identified around the reliability of funding, benefits to customers and delivery risks.

## 2.2. COST EFFICIENCY

21. Ofwat said that they had some minor concerns whether the investment is efficient:

> "While the company provides evidence on its cost estimation approach, benchmarking and external assurance, there are limitations and gaps in that evidence,
>
> "Northumbrian Water state that there are several ways in which they have built cost efficiency into their programme, including joint training and timely sharing of data and information between parties. However, the detail given is not very specific as to how this has been completed and is not sufficient and convincing.
>
> "The company provides a description of the costing methodology and third-party benchmarking. The company states that the initiative is over-programmed so projects can be swapped where one is no longer cost beneficial.
>
> "The company also states that securing resources at a fair rate has been identified as a risk, raising minor concerns as to the accuracy of costs presented. In addition, evidence of external assurance for this element of the programme is not sufficient and convincing."[2]

22. The costs submitted for the NIDP projects proposed in this enhancement case have been developed from the experience and lessons learnt over a 10 year+ partnership working programme that is mature both in its delivery and in its governance.

23. The costs have been completed using the iMOD estimating system which utilises actual cost data in a common work breakdown structure.

24. The governance for the NIDP programme is thorough and independent (but complimentary) of NWG's own governance and assurance procedures. This governance, which is described in Section 2.1 includes senior representatives from the Environment Agency, LLFA's and NWG.

25. The Northumbria Regional Flood and Coastal Committee (NRFCC) also play an important role in helping protect communities from the impact of flood risk and coastal erosion. The NRFCC coordinates the activities of the Risk Management Authorities (EA. NWG and LLFAs) tasked with mitigating these risks in the Northumbria region.

26. The NRFCC therefore by definition and under its own Terms of Reference provide an additional layer of scrutiny and external assurance on investments made via GiA applications in the North East and therefore those covered by the NIDP schemes included in this enhancement case.

[2] PR24-DD-WW-25-year-environment-plan model, "Deep Dive NES" sheet

27. Regarding our evidence relating to training, the NRFCC made funding available via Local Levy (£25k) to support the region's RMAs in building capacity for their roles in flood risk management. Northumbrian Water matched the Local Levy contribution, enabling a total investment of £50k to improve knowledge and skills throughout the region.

28. A Capacity Building Plan was developed to sets out the approach for developing skills across RMAs, namely the Environment Agency, Northumbrian Water and the region's thirteen Lead Local Flood Authorities (LLFAs). The objective of this plan, which reflect the competencies required to effectively deliver Flood Risk Management and recognise the key challenges faced by professionals in the medium term, include:

- Ensure a base knowledge of technical understanding.
- Deliver projects more efficiently and safely.
- Improve partner working.

29. Other examples of joint training delivered include:

- Outline Business Case (2 Day course); Improve the quality of funding applications for a greater chance of securing partnership funding for flooding and drainage projects.
- Introduction to InfoDrainage (1 Day course); Ensure a base knowledge of technical understanding.
- InfoDrainage Checking and Auditing (1 Day course); Ensure proposals are technically viable.
- Sustainable drainage systems (SuDS) for Lead Local Flood Authorities (1 day course); Better understanding of the role of SuDS in reducing flood risk; through planning, maintenance and implementation.

30. It is for these reasons that we believe the costs and deliverability of the NIDP projects to be accurate, efficient and sufficiently convincing to justify all the investment we have proposed.

31. Ofwat have included the Ouseburn Catchment Partnership in our overall PCD for NIDP improvements. We do not believe this is appropriate as the investment is small (<£100k) and is to support the delivery of a catchment improvement plan. It is not related to the 60 schemes we have proposed under the NIDP investment and as such the PCD proposed by Ofwat is not proportional to investment proposed. Ofwat should therefore remove the Ouseburn catchment from any PCD.

## 3. WASTEWATER INVESTIGATIONS

32. Ofwat raised some concerns about the need, optioneering, and cost efficiency of our wastewater investigations, which meant a 50% reduction to these costs – as applied in the PR24-DD-WW-Investigations model.

### 3.1. NEED FOR ENHANCEMENT INVESTMENT

33. Ofwat raised some concerns about their ability to reconcile the business plan with the September 2023 WINEP programme held by the EA:

> "We could not fully reconcile the company's submission for the investigation enhancement lines with the September 2023 Water Industry National Environment Programme (WINEP). Subsequent information from the company explains that the WINEP incorrectly excluded some schemes and that it will be updating its submission further as part of its ongoing process agreed with the Environment Agency (EA).
>
> "The company does not provide sufficient and convincing evidence that the scale of investment is fully justified as it could not be reconciled with WINEP."[3]

34. Investigations are very varied, and so cannot be appropriately assessed within 3 categories (as Ofwat has done in their modelling). We explain this below, as well as the option and cost efficiencies for each driver for investigations.

35. The current version of WINEP held by the EA is not accurate and doesn't reflect the known number of scale of investigations. We have asked the EA to update the WINEP, but this is still a work in progress. We hope that this will be complete by the Final Determination – but it might not, as the scale of some of the drivers has not yet been decided by the EA and or DEFRA.

36. The scope of the investigations has also not yet been finalised with the EA, as none of our current Action Specification Forms have been signed by the EA and we have not yet received any feedback from the EA on the specifics included for each investigation.

37. There are different driver leads at the EA for each of the investigations in our business plan. It seems as though any correspondence between Ofwat and the EA on investigations has not covered the wide variety of teams that make up those reviewing our investigation scopes (which are covered differently for each driver).

38. In particular, Ofwat have appeared to only assess the storm overflow investigations and not assessed all of the other investigation types listed within the data tables. We explained our investigations in each of our enhancement cases for each driver, but we list these in the sections below for easier reference.

[3] PR24-DD-WW-investigations, "Deep dive NES" sheet

39. In our response to query OFW-OBQ-NES-065 we provided a breakdown of types and costs of schemes covered by investigations lines. We also included an increase of £25m of costs to storm overflow harm investigations under ENVACT_INV4. This additional funding in WINEP would have allowed us to design our proposed AMP9 solutions for storm overflows, with the design and survey work required at each site and the design and scope of solutions (to allow a more robust cost for the PR29 business plan). Based on the draft determination, we have removed this funding from the data tables.

40. However, we do not think this is the right answer. It seems reasonably clear that storm overflows proposed for AMP9 should be investigated before work starts, and so we would now expect this activity to happen in AMP9. In section 10.1 of our main response, we note that more investigations into storm overflows are likely to be needed to tackle faster and further action in the future – and that these are currently not funded through WINEP or DD. Ofwat's feedback on investigations into storm overflows seems to be contradictory to the future standards implied by the recent enforcement case in this area. Ofwat should consider this carefully before describing these complex investigations as not being required.

**WFD Investigations:**

41. We will carry out these investigations within the catchment area which our assets discharge into. The investigation scope covers the impact of water quality and potential impact on ecological quality status from any impacts to water quality. The investigations will involve water quality sampling, at various locations, river flow gauging to assess the quantity of flow in a catchment area, updates to the SAGIS SIMCAT model where required, and inputs from catchment partners, as well as catchment walkovers, to identify all sources of pollution in a catchment. The investigation will assess what improvements will be required to restore the catchment back to good status or assess the risk of the catchment not achieving or maintaining good status. The investigation will design the improvement solution where appropriate and cost these solutions for inclusion within PR29 where appropriate.

42. In addition to this, and with agreement of the EA national team, three investigations will specifically assess the possible reduction or removal of potential pollution occurrences related to extreme weather events or noncompliant agriculture practices associated with the deployment of our biosolids to land. These investigations will be a combination of feasibility studies and actual pilot trials confirming viable alternative biosolid outlets other than agriculture, removal of nutrients from the biosolid product prior to agriculture deployment and insights into understanding the dispersion and characteristics of microplastics throughout the different stages of the Advanced Anaerobic Digester (AAD) process identifying possible points of removal.

**Habitats Directive Investigations:**

43. The Habitats directive investigation scope covers determining the impact of our assets on the European designated sites. All of these assets are based in a marine environment which means that the majority of water quality samples which are collected to calibrate and validate our 3D marine hydrodynamic model are collected via

boat alongside hydrodynamic surveys of the area. Sediment samples are also proposed to be collected as well as sampling using sondes and autosamplers from a large storm overflow per protected area investigation.

44. For the Tees there is overlap with the Chemicals Investigation Programme, where 199 different chemicals will be assessed. Since the draft determination was published, we received a notice from the EA to significantly expand the number of substances to be assessed as part of this investigation. Our costs have increased significantly to accommodate fulfilling the notice and we have included these in the Chemicals Investigation Programme Costs (so, these costs now appear in the Chemicals Investigations lines in our revised business plan).

**SSSI investigations:**

45. These investigations take place on the Coquet freshwater river, and follow the same scope as our WFD investigations, there is also overlap with our HD_INV driver for the Coquet as all the numeric STWs will be tested for both phosphorus and nitrogen to enable the loading and source apportionment to be loaded into the Hydrodynamic 3D marine model.

**MCZ Investigations:**

46. The Marine Conservation Zone investigations interact with the habitat investigations, despite these being classed as simple the cost for these is lower due to cost efficiencies with the Habitats investigations which are complex, only the additional material relevant to MCZs has been costed in this category.

**Bathing Water Investigations:**

47. Bathing water investigations are split into different categories depending on the current classification of the bathing waters and if there is a risk of deterioration. Like the habitats investigation, this will involve multiple samples collected to calibrate and validate a hydrodynamic model to determine source apportionment.

**Shellfish Water Investigations:**

48. We have only one area where a shellfish water investigation will take place this also interacts with the Lindisfarne Habitats investigation. So, we have considered where sampling and modelling can be shared between both investigations and applied this efficiency to our costs. Although this is a complex investigation, the cost in our business plan is less than another comparable complex investigation because of the cost efficiency already applied.

**Continuous Water Quality Investigations:**

49. The CWQM investigations focus on actual Estuarine and Coastal monitoring and will exclude Inland complex waterbodies. Different solutions will be deployed to assess their functionality, reliability, data accuracy and

installation challenges across our different asset classes. These deployments will include common solutions in conjunction with proven innovative deployments addressing key challenges acknowledged by Defra and the EA.

**25 YEP investigations:**

50. Two types of investigations are included in the wastewater tables, and others are included in the water tables. There are 30 NIDP studies, although only 1 line is in the WINEP programme to deliver the overall study programme. The scope of these investigations identifies the source of all types of flooding places a risk and then identifies the outline solution and cost with the identified benefits. Cost beneficial studies would then progress to improvements in following AMPs.

**Storm overflow Harm investigation:**

51. As previously explained, we consider all of the storm overflow harm investigations to be in the complex category under the WINEP driver EnvAct_INV4.

52. We asked the EA about the feedback they had provided Ofwat and they said:

> "Ofwat sought our views on the complexity of the EnvAct_INV4 investigations. We provided a general view that we would not expect all EnvAct_INV4 investigations to be complex, as it could reasonably be expected that several overflows will be screened out of a complex investigation and a further number will be able to utilise previous studies to meet their EnvAct_INV4 requirements at a low cost/complexity. The complexity of investigations would need to be determined by water companies on a site-by-site basis; we could not provide Ofwat with a steer on how many this may be per company."

53. We note that this discussion was not specific to our own investigations and that this would be undertaken on a site-by-site basis.

54. Concerning the utilisation of previous studies mentioned in the EA's feedback above. We confirm that unlike other water companies, we have not had to undertake complex Urban Pollution Management (UPM) studies to inform the ecological impacts of storm overflows to industry standards, such as Fundamental Intermittent Standards (FIS) or 99 percentile standards. Therefore, we have no previous detailed UPM studies to draw upon in undertaking our AMP8 WINEP storm overflow ecological harm investigations. (REF: **UPM Manual Version 3 (fwr.org)**)

55. A methodology for conducting EnvAct_INV4 has been developed by the Environment Agency with technical input from water company experts. This covers the ecological harm investigations for inland waters only and a separate methodology is to be written for transitional (estuarine) and coastal waters. This methodology is considered as a '*proposal in draft'* as agreed by the Strategic Water Quality and Waste Planning Group (SWQWPG) in May 2024, a joint Environment Agency and Water UK industry group. A formal review will take place in the future to inform a final methodology that makes sure it is fit for purpose and delivers the required outcomes.

56. The methodology for harm investigations under EnvAct_INV4 is currently focused on determining an adverse ecological impact. It is unclear as to the interactions with the proposed revision of guidance under the Urban Wastewater Treatment Regulations (UWWTR) focused on limiting pollution from storm overflows, including the Storm Overflows Assessment Framework and BTKNEEC assessment.

57. Given the above status of the methodology for harm investigations and potential interactions with the forthcoming revision of UWWTR related guidance, we have concluded that these types of investigations are complex as they will require detailed water quality modelling under UPM standards. It is also not possible to screen out overflows with certainty at this time as they have not been through the recently agreed draft methodology.

58. There are also interactions with other investigations into water quality, such as urban pollution investigations, WFD investigations, SSSI investigations and habitats investigations. Findings from both the storm overflow harm investigations and those investigations will need to be combined and compared to ensure there is no contradiction of conclusions and solution development, which adds extra complexity to both investigations.

## 3.2. COST EFFICIENCY

In the DD response, Ofwat says:

> "We have some concerns that the company has not provided sufficient and convincing evidence that its costing and benchmarking approach is accurate.
>
> "The company has provided a high-level description of its costing approach, which consists of cost curve analysis. However, the approach is based on a range of assumptions and has a wide-range confidence levels (-50% to +100%).

59. We have not used cost curves for any of our investigation costs. The cost has been built up from bottom-up costs, utilising the monitoring equipment, lab testing, and staff/ external resources (modelling report writing desk-based assessments, walkovers) required to fulfil the scope of the investigations. The descriptions about our costing approach using "cost curve analysis" come from other areas of our enhancement cases, where we describe our full approach to costing. So, this statement is not correct.

> "In addition, for the storm overflow investigations, the company's summary of direct unit rates and numbers of investigations per type of UPM study presented in its enhancement business case varies significantly to the data submitted in its data tables. Linked to our concerns on best option, it is unclear whether the company has presented its programme accurately in its data tables.
>
> "The company provides some evidence of its external assurance and benchmarking, but this does not appear to cover benchmarking of the investigations themselves, only the costs to address the storm overflow improvement works.
>
> "The company does not provide sufficient and convincing evidence that its cost estimation approach and activity breakdowns are appropriate for the required complexity of the investigations, which impacts our assessment of cost efficiency."[4]

60. As we explain above, we class all of our storm overflow harm investigations to be complex in nature.

61. However, this does **not necessarily** mean these are more expensive in nature. Other investigations, such as our habitats investigations are more expensive per investigation than the storm overflow harm investigations. This means that using a direct comparison between complex investigations is inappropriate. It would be more appropriate to compare costs of the same **driver type and scope** between companies, to assess cost efficiency.

[4] PR24-DD-WW-Investigations model, "Deep Dive NES" sheet

62. Our business plan tables do match our enhancement case costs, with our storm overflow investigations following the description set out in Table 4 of NES27. The issue seems to be that: (1) Ofwat has assumed that all complex investigations have the same cost; and (2) we included additional costs in response to OFW-OBQ-NES-065 and so these no longer match Table 4 of NES27.

63. For storm overflow investigations, our unit costs are based on estimates directly from our strategic technical partner – based on similar work they have carried out across the sector for many years. This is the appropriate approach in this area, as there is no benchmarking information available for INV4 investigations. The unit rate for this matches between the enhancement case costs and business plan tables.

64. In our revised tables with our response to the DD, we have removed the costs we included for our storm overflow harm investigations to develop our AMP9 schemes. These would drive better value for customers as we might have seen more efficient costs in AMP9 as a result, with more green solutions and optional solutions as there would have been time to develop these further and consider partnership options. However, we have now removed these additional costs as this brings us back into parity with other water companies – and so our costs for investigations will now appear efficient.

65. The numbers of storm overflow harm investigations will also match the EA's WINEP spreadsheet once the EA has made those changes to WINEP, too. We have started a change log which the EA is progressing - we are depending on them to make those changes to their spreadsheet and provide this to Ofwat before the Final Determination.

66. In previous AMPs, WINEP has included low numbers of investigations for the Northumbrian wastewater WINEP. Our principle for AMP8 has been to make sure we investigate any risk which has been identified by the EA, so that we can ensure there is a direct link between our assets and environmental impact. Without these investigations we will be forced by the EA to undertake improvements in AMP9, which may not be required, and would not be best value for customers.

## 4. BIODIVERSITY

67. Ofwat raised concerns about the approach and cost efficiency of our biodiversity investments under WINEP, leading to a 40% cost reduction in the PR24-DD-W-Biodiversity model. Much of the planning for these investments was conducted during our AMP7 WINEP, with new obligations being developed for AMP8. Many actions, especially those linked to potential sustainability reductions under the Habitats Directive driver, require us to conduct both investigations and options appraisals (HD_INV) as well as likely interventions (HD_IMP) within AMP8. The scheduling of the HD_INV actions, within the AMP8 WINEP, for delivery by April 2027, means there remains uncertainty about the exact scope of the schemes that will follow.

68. Given that this uncertainty is driven by the Environment Agency (EA) and Natural England's (NE) timelines and decisions within WINEP, we ask Ofwat to reconsider how this is factored in. We have incorporated the most likely outcomes into the WINEP program and acknowledge that a 40% cost-sharing rate will apply to this investment.

69. Reducing the cost allowance by 20% due to uncertainty - rather than any genuine expectation of achieving greater efficiency - introduces unnecessary downside risk instead of promoting cost efficiency. A more balanced approach might be to implement a Price Control Deliverable (PCD) that allows adjustments to the investment once the investigation and options appraisal are complete. This is particularly relevant for the investments described in 4.11 and 4.12.

70. Ofwat raised some concerns about whether the investment is the best option for customers:

> "Evidence of alternative options being considered was provided for only a limited number of schemes and the company does not provide sufficient and convincing evidence of optioneering to demonstrate that the chosen option is the right solution.
>
> "The company provides evidence that most of planned works are derived from investigations in the 2020-2025 period. An options appraisal report (OAR) has been provided for each action. However, there is little evidence to demonstrate that the proposed schemes are the most cost beneficial and best value for customers. In some cases, the benefit is well described, however limited comparative cost-benefit analysis data is presented. Whilst the enhancement case sets out the optioneering process, only one option has been presented for most schemes. Some investigations are yet to be completed, and one scheme (08ES100020) has been included as a holding line pending the outcome of a bathymetric survey. Therefore, scheme scope, costs and benefits are uncertain in some cases. The company has provided evidence that third-party assurance has been carried out on the company's PR24 WINEP programme, to assess if the company has followed the WINEP Options Development Guidance.
>
> "The company has not provided sufficient and convincing evidence to demonstrate that the proposed schemes are the most cost beneficial and best value for customers. The company has not provided

evidence to support the decision for preferred solutions, and little evidence has been provided of cost-benefit or best value analyses."[5]

71. Ofwat raised some concerns about whether the investment is efficient:

"The company does not provide sufficient and convincing evidence that the proposed costs are efficient.

"The company has provided a high-level explanation of its costing approach, stating benchmarking has been conducted in line with the Infrastructure and Projects Authority's best practice guidance. However, for most elements of its Biodiversity programme, the company was not able to make direct comparisons with industry benchmarks due to the lack of equivalent comparator data. Therefore, for most of its biodiversity options, costs were determined as a result of PR19 investigations and options appraisals, some of which are currently incomplete. These processes are described, but no evidence has been provided in the submission. The company has provided third-party assurance of its benchmarking process; however, only some biodiversity-specific schemes have been included in this report.

"The company therefore does not provide evidence to show that it has considered the efficiency of costs for its biodiversity schemes. It is unclear how the company has arrived at its option costs for its biodiversity specific schemes or whether these costs can be deemed efficient."[6]

72. The schemes that we proposed within the Biodiversity section of our WINEP (drivers HD_IMP, SSSI_IMP and NERC_IMP) are diverse. Where we have additional information to support how we identified our preferred options and how we developed our costs and their efficiency, we present this below for specific WINEP actions. We address the concerns about both optioneering and costs together for each WINEP action.

73. We note that in general, benchmarking information about these schemes is not available as these are mostly partnerships rather than engineering solutions (which are easier to compare). However, we have provided the relative costs from actual tender processes where possible to show why the costs of the selected options are efficient. Wherever possible, we have selected partnership options and we show that these are lower cost as well as better value options. Reducing our funding through a deep dive challenge will simply reduce the amount of work that can be delivered through these partnerships – it would be unreasonable to apply a stronger challenge to partnership schemes simply because they are more difficult to benchmark, and this introduces a significant barrier to partnership working and nature-based solutions in this case.

[5] PR24-DD-W-Biodiversity model, "NES" sheet
[6] PR24-DD-W-Biodiversity model, "NES" sheet

## 4.1. NERC_IMP - 08ES100006 – BIODIVERSITY ENHANCEMENTS ON ESW GRASSLAND SITES

### 4.1.1. Best option for customers

74. This scheme originated from an investigation conducted during AMP7, which demonstrated that modifying the grass-cutting regime on operational sites can enhance biodiversity. Following discussions with the EA and NE, the project was expanded to include hedgerow enhancements and improvements to a peatland area. However, options for grassland management are limited to cutting and grazing. Grazing was ruled out due to the risk of cryptosporidium contamination from livestock on treated water sites. Similarly, hedgerow management options are restricted to wildlife-friendly cutting, more severe trimming, or leaving them untouched.

75. This means that we considered alternative options during these discussions, but these were ruled out at an early stage as these would not meet the need. For this WINEP action, the EA and Natural England have discussed and agreed the right option to use here.

### 4.1.2. Cost efficiency

76. The costs for implementing the new management regime at operational sites are based on existing contractor rates. These rates reflect a cut-and-collect approach used to enhance or maintain biodiversity at similar sites. During a tender process in 2021, local contractors offered bids that were over 50% lower than those of national contractors – and we have used these rates to estimate AMP8 costs. These costs are efficient because they are based on a tender process, with local contractors used to reduce costs.

77. Reducing the budget available would impact the forecast Wider Environmental Outcomes, reducing the number of Biodiversity Units that this work will deliver.

## 4.2. NERC_IMP - 08ES100007 - BIODIVERSITY METRICS – ESW

### 4.2.1. Best option for customers

78. Given the growing need to report on the biodiversity value of our landholdings to Ofwat and other stakeholders, developing a bespoke system fully integrated with our corporate GIS is the most effective solution for managing the large volumes of data our activities generate. This system will consolidate existing databases, streamline data management, and eliminate the need for multiple data handling to produce various reporting outputs.

79. We considered an alternative option of purchasing a pre-developed system from a provider like AIDash, but this did not meet the requirements as this would be a standalone system that did not integrate with our existing corporate data.

### 4.2.2. Cost efficiency

80. We developed costs for both options. Initial quotes for the external system were at least £50k per year, whereas developing an in-house solution would involve a one-time cost of £78k, offering better long-term value and seamless integration. This meant that these costs would be efficient compared to using an external contractor.

## 4.3. NERC_IMP - 08ES100008 & 08NW104005 - LANDSCAPE SCALE CONNECTIVITY

### 4.3.1. Best option for customers

81. We looked at three options: doing nothing, working in partnership with others for delivery, or directly delivering the outcomes ourselves.

82. We selected the partnership option because this offers additional benefits to our customers. Projects supported through our Priority Habitat scheme in AMP7 have already logged 1,950 volunteer hours and engaged 86,964 members of the public, clearly demonstrating the added value this collaborative approach can deliver.

83. Applying a 40% cost efficiency reduction to this line would force us to scale back our ambitious goals of enhancing, restoring, or creating 500 hectares of priority habitat and/or enhancing 500 hectares to support priority species.

### 4.3.2. Cost efficiency

84. Our experience has shown us that collaborating is key to maximising benefits for the environment. By working together, we can achieve far greater results for biodiversity at a lower cost. Not only can we improve wildlife habitats; we can also enhance water quality, reduce flooding risk, and improve public access to bluespaces. We have a proven track record of success. Historical grant schemes have been used as match funding for heritage lottery grants, enabling the delivery of millions of pounds of investment into the natural world in our areas. In partnership we can share expertise and knowledge and truly deliver against the ambitions of the Environment Act.

85. We have seen with our Priority Habitat scheme in AMP7, where our current investment of £350k has helped to lever an additional £4.6m investment in projects to create or restore priority habitats in our regions.

86. We looked at the costs of using an alternative option of using direct labour to achieve the same outcome. The costs compared to our preferred option are as follows:

- 08ES100008: direct delivery - £312.5k partnership delivery - £250k
- 08NW104005: direct delivery - £468.75k partnership delivery - £375k

87. Direct delivery is significantly more expensive – some 25% higher than our preferred partnership approach. Coupled with the knowledge that partnerships offer numerous additional benefits, we made an early decision to focus on collaboration rather than pursuing direct labour as an option. This is the most efficient approach.

## 4.4. NERC_IMP - 08MU100302 & NERC_IMP - 08MU100398 - MIGRATORY SPECIES RECOVERY

### 4.4.1. Best option for customers

88. Migratory species such as swifts, swallows and martins are under increasing pressure and working collaboratively on this project will provide a great opportunity to work with our customers and deliver benefits at a local level. Working on and off our sites to benefit these iconic species will provide real opportunities to engage with our customers and promote the delivery of local actions to help meet national species targets.

89. Working in partnership, across the industry, is the best option to provide multiple benefits for our customers. We considered direct delivery rather than partnership delivery, but direct delivery is more expensive and has fewer wider benefits.

### 4.4.2. Cost efficiency

90. Collaboration will enable regional benefits to be realised, and we can help local partners build on their current successes and expand their work into new areas.

91. For example, our previous 'Water for Wildlife' project demonstrated the effectiveness of partnership working. By collaborating, we achieved additional benefits such as increased public engagement and awareness, making it a highly cost-effective approach.

92. The option of our people carrying out the work directly rather than in partnership was costed as an alternative, figures provided below:

- 08MU100302: direct delivery - £49.14k partnership delivery - £30.04k
- 08MU100398: direct delivery - £98.28k partnership delivery - £80.04k

93. This shows that partnership delivery is the efficient approach.

## 4.5. NERC_IMP - 08ES100013 - HALL FARM MEADOW ECOLOGICAL IMPLEMENTATION

### 4.5.1. Best option for customers

94. Following the submission of our draft PR24 Business Plan we received the report of an ecological survey of Hall Farm Meadow, carried out in July 2023, which repeated the survey carried out in July 2019. We have shared this report with local contacts at the EA and NE.

95. The survey indicates significant changes to the site's vegetation. This makes off-site habitat improvement a more viable alternative if restoring Hall Farm Meadow proves unfeasible. This approach aligns with our proposed strategy outlined in the draft PR24 Business Plan.

96. We are required by the EA and NE to carry out both the investigation and options appraisal (NERC_INV) and the likely intervention (NERC_IMP) for this site within AMP8. Scheduling the NERC_INV action, which will include an options appraisal based on the recommendations from the 2023 ecological survey report, within the AMP8 WINEP for delivery by April 2027, introduces some uncertainty regarding the exact scope of the scheme to be implemented afterwards.

97. The approach carried out for our AMP8 WINEP submission considered various types of habitat enhancement and restoration that would be appropriate to the size of Hall Farm Meadow and its landscape and hydrological context. Following the investigation and options appraisal, conducting habitat improvement on an equivalent off-site area was deemed an inappropriate objective, as Hall Farm Meadow is privately owned and not under our control.

#### 4.5.2. Cost efficiency

98. The costs put forward for this action within our draft PR24 Business Plan considered different means of delivering the preferred option, including comparing direct in-house delivery with working with catchment partners. Our experience has shown us that by working in partnership we can achieve greater benefits for biodiversity and other objectives. For this scheme, partnership delivery is considered the most cost-efficient way of delivering the likely required outcomes and this was the delivery mechanism included in our draft PR24 Business Plan.

### 4.6. NERC_IMP - 08ES100111 - ROMAN RIVER - RIVER RESTORATION

#### 4.6.1. Best option for customers

99. The approach for this action was carried out as part of an AMP7 WINEP investigation and options appraisal. Based on catchment walkovers carried out as part of the investigation, six potential options were considered: improving shading and light conditions in the Roman River, diversifying in-channel flow, implementing riparian mitigation, installing eel and fish passes, monitoring flow, and improving shading and light conditions in the Layer Brook tributary. Some of these options were combined into packages for cost benefit analysis within the AMP7 WINEP.

100. To address all the issues identified in the AMP7 WINEP investigation, two options packages were required. The first is included in the AMP8 WINEP under the WFD_IMP_PHYSHAB driver and involves installing an eel and fish pass with flow monitoring at the Roman River weir. This is to address the need to provide fish passage at this location. The second package of options selected was river restoration along the Roman River to address the biodiversity driver. This option was selected under the NERC_IMP driver as it achieved the required biodiversity outcome and was the most cost beneficial of the options considered to address that issue.

101. This means that a full options assessment has taken place for this WINEP action.

#### 4.6.2. Cost efficiency

102. Catchment walkovers conducted during the AMP7 WINEP investigation identified the locations and measures needed to achieve the biodiversity outcomes. We then derived the costs for this river restoration option were from standard unit costs for individual elements of the package, including tree removal or canopy management to reduce channel shading and promote macrophyte growth, increasing channel shading to regulate macrophyte growth and water temperature, and introducing large woody debris, berms or flow deflectors to enhance flow diversity in over-wide or deep sections of the channel.

## 4.7. NERC_IMP - 08NW104006 - NORTH TYNE FINE SEDIMENT

### 4.7.1. Best option for customers

103. As outlined in the Options Development Report for the NERC driver, a longlist of potential options for schemes were initially developed, and then screened using the following criteria:

- Does the option meet Statutory Requirements?
- Is it technically feasible and deliverable?
- Is it expected to contribute to wider environmental outcomes?

104. The aim for this scheme is to continue to develop the partnership approach to addressing fine sediment inputs to the River Tyne system that had been successfully used in the AMP7 South Tyne Holistic River Management project. As a result, only two options met the criteria: to follow and develop the same approach as the AMP7 scheme, or to do nothing.

105. The AMP7 scheme has been very successful, using a partnership approach to deliver holistic improvements for the South Tyne River. Individual projects delivered by partners have been assessed for their potential to address fine sediment inputs, wider biodiversity benefits, and climate change benefits. Our funding has enabled partners to bring in additional funding and volunteer activity, hugely increasing the wider environmental benefits of the scheme far beyond simply addressing the fine sediment issue.

### 4.7.2. Cost efficiency

106. As set out above, this scheme is set to replicate a successful AMP7 scheme focusing on addressing fine sediment issues through a holistic improvement of the South Tyne river catchment. As of July 2024, the AMP7 scheme has invested £372,000 of customers' money, with a further £165,000 forecast to be spent on delivery before the end of the scheme. Partners have co-contributed £270,000 in funding and 500 volunteer hours, representing a significant increased return on our customers' investment.

107. Delivering this work without partner involvement, for example through contractors, would only give a one-to-one return on our customers' investment. It is more efficient to do this in partnership, because of the additional funding that can be used.

## 4.8. NERC_IMP - 08NW104007 - REDESDALE SEDIMENT

### 4.8.1. Best option for customers

108. This scheme aims to address the historic impact of cleaning out the pipeline that transports water from Catcleugh Reservoir down the Rede Valley to various water treatment works and then into domestic supply. These historic operations have adversely affected the River Rede, a designated Special Area of Conservation that supports several designated species including the critically endangered Freshwater Pearl Mussel.

109. Because of the protected nature of the river environment and the species it supports, carrying out mitigation activities needs to be done carefully and following strict species and habitat guidelines.

110. As outlined in the Options Development Report for the NERC driver, a longlist of potential options for schemes were initially developed, and then screened using the following criteria:

- Does the option meet Statutory Requirements?
- Is it technically feasible and deliverable?
- Is it expected to contribute to wider environmental outcomes?

111. Only one option was found to meet all three requirements: the preferred option included in the draft PR24 Business Plan. This option involves conducting catchment management activities, such as habitat and river restoration, while collaborating with partners and landowners. This approach offers the greatest potential for achieving broader environmental benefits beyond the immediate scope of the scheme.

### 4.8.2. Cost efficiency

112. We have an excellent track record of developing partnerships and working with catchment stakeholders and partners to deliver river restoration schemes and address diffuse pollution risks, particularly from agricultural sources. This scheme is expected to be implemented alongside the North Tyne Fine Sediment scheme (see section 4.7 above) due to their shared objectives and overlapping partners. The River Rede, a major tributary of the North Tyne River system, creates a natural synergy between the two projects.

113. Our experience of delivering the South Tyne Holistic River Management scheme in AMP7 and developing this approach for AMP8 delivery will allow us to maximise the environmental benefits for a relatively small investment of our customers' money. Again, a partnership approach is the efficient way to deliver this.

## 4.9. NERC_IMP - 08NW104011 - COQUET WEIR FISH PASSAGE

### 4.9.1. Best option for customers

114. The options included doing nothing, adapting the weir to improve fish passage, removing the weir, or adapting the weir and carrying out additional work on upstream weirs (adaptation and/or removal).

115. The options were fully appraised by our consultants, Fishtek, and a full report of the benefits and disbenefits of each option were included in the final report, which was signed off by the EA.

116. The preferred option was to remove the weir as this provided the required improvement for fish passage with additional benefits of a better ecological functioning of the river in the weir's vicinity, without increasing the work to be carried out beyond the scheme's initial scope of work. As this was the option agreed by the EA, it is the only option included in the draft PR24 Business Plan.

#### 4.9.2. Cost efficiency

117. The costs of the various options (see above) were considered broadly in the Options Appraisal carried out at the investigation stage. Detailed costs weren't ascribed to each option, but the costs of each scheme were considered relative to each other.

118. The weir removal option was costed up for the purposes of the draft PR24 Business Plan. Other options were not costed because they had been ruled out at the AMP7 Investigation stage. Therefore, only two costs were put forward in the draft Business Plan – weir removal and 'do nothing' at £0.

### 4.10. SSSI_IMP - 08NW104010 - UPPER TEES AND WEAR PEAT RESTORATION

#### 4.10.1. Best option for customers

119. The options included: doing nothing; carrying out peat restoration in collaboration with partners; or carrying out peat restoration directly through contractors.

120. The preferred option for customers was to carry out the work in collaboration with partners. This is because this approach allows the partnership (The North Pennines Peat Partnership, a long-established multi-party peat restoration collaboration) to use our investment to lever additional funding from multiple sources to scale up the restoration work, with commensurate benefits for water quality, the wider environment, and customers.

121. The option of using contractors had fewer benefits because for the same investment they wouldn't be able to deliver to the same scale as the partnership approach, requiring longer mobilisation times and not having the ability to lever additional funding.

#### 4.10.2. Cost efficiency

122. Of the three options considered for delivery of this scheme the most efficient is the preferred option, of delivering through an established partnership. The North Pennines Peat Partnership continually delivers a programme of

peat restoration, has the expertise and equipment at hand, already has landowner agreements in place, and brings in volunteers to help deliver the work where possible.

123. If contractors were used then the same budget would deliver less, due to the start-up and mobilisation costs, the need to obtain landowner agreement, and no access to a volunteer work force. In order to deliver the same amount of biodiversity improvement, and associated improvement in water quality, a higher budget would be needed. It would also mean we wouldn't be supporting and investing in partners delivering wider environmental improvements.

124. Again, a partnership approach is the efficient way to deliver this.

## 4.11. HD_IMP - 08ES100020 - POSSIBLE MUD PUMPING SOLUTION AT TRINITY BROADS

### 4.11.1. Best option for customers

125. In its Draft Determination, Ofwat noted that this action has been included as a holding line pending the outcome of a bathymetric survey. This survey was completed in July 2023 and the outputs are now available (they were not at the time of the business plan submission in October 2023).

126. The bathymetric survey conducted by Randall Surveys LLP in July 2023 revealed that the areas of the Trinity Broads dredged in 2017 have largely maintained their dredged depth. There are no significant areas where reaching the threshold depth of 300mm (with the water level at -0.44mAOD) is at risk. Furthermore, the survey found no significant re-sedimentation between the 2015 and 2023 surveys.

127. We have submitted the maps and summary report from the 2023 bathymetric survey to the Environment Agency (EA) and Natural England (NE). We are currently awaiting their response to determine if this action should continue as an obligation within our AMP8 WINEP.

128. If it does remain a requirement, then the scope for optioneering is limited, as the scheme design put forward in our draft PR24 Business Plan was based on best practice and the methodology as consented by NE for the mud pumping carried out in 2017 on the same site.

### 4.11.2. Cost efficiency

129. The costs put forward in our draft PR24 Business Plan were based on replicating the methodology of the previous scheme and removing the same volume of sediment.

130. Given the 2023 bathymetric survey indicated that there had been no significant detectable re-sedimentation between the 2015 and 2023 surveys, we are currently awaiting a response from the EA and NE to determine if this action should remain as an obligation within our AMP8 WINEP.

131. If the scheme remains required, it would be to the same scope as previously. If the scheme allowance is reduced by 40%, following the cost efficiency challenge from Ofwat, this would result in a reduced scope by area of Broad and / or by volume of mud removed.

132. If feedback from the EA and NE is that the scheme is not required during AMP8, then the cost allowance for this individual WINEP action would no longer be required. We would then want to return these costs to customers through a PCD.

## 4.12. HD_IMP - 08ES100019 A-L AND 08ES100057 A-C - HABS REGS SUSTAINABILITY CHANGE - IMPLEMENT ACTIONS FROM THE OPTIONS APPRAISAL

133. These 15 WINEP lines are for the implementation of the actions identified in options appraisals (08ES100018 a-l and 08ES100056 a-c) in respect of delivering obligations (e.g., sustainability reductions) related to abstraction impacts on Habitats Directive sites for 12 abstraction licences associated with the Broads SAC, and three actions for two abstractions associated with the Waveney & Little Ouse Valley Fens SAC.

134. The EA has asked that we make any confirmed Habitat Regulations sustainability reductions by 2027/28. However, this will not be possible as our new supply schemes will not be in supply until either later in AMP8 or for some, in AMP9. Consequently, we already know that we will need to apply to the EA for a Regulation 64 (Reg 64) derogation under the Habitat Regulations to defer the sustainability reductions until our new supply schemes are operational. This means that there is a high likelihood of compensatory measures being required.

### 4.12.1. Best option for customers

135. In our draft PR24 Business Plan submission this work area covered nine abstraction licences associated with the Broads SAC, each as an individual action within our AMP8 WINEP.

136. Since we submitted our draft PR24 Business Plan, the EA has added a further six HD_IMP actions to our AMP8 WINEP, corresponding to an additional three licences associated with the Broads SAC and three actions for two licences associated with two different SSSIs within the Waveney and Little Ouse Valley Fens SAC.

137. We discussed Ofwat's comments on the Best Option for Customers from the Draft Determination with our company representative at the EA. We received this response[7]*: "We appreciate the Habitats Directive investigations in East Anglian Area are being undertaken by the Environment Agency and until these investigations have been concluded the specific implementation measures cannot be confirmed. However, these HD implementation schemes are statutory obligations required in order to meet the Conservation of Habitats and Species Regulations, 2017."*

[7] Email to Will Robinson from Roger Martin Principal Account Officer (Northumbrian Water) & Account Manager (Essex & Suffolk Water) 19/07/2024

138. As noted above, the EA is currently carrying out its own investigations into the impact of abstraction on protected sites within the Broads SAC and the Waveney and Little Ouse Valley Fens SAC. These investigations are unlikely to be completed until 2025. Until these investigations have concluded, the scale and location of abstraction licence changes, and other compensatory or mitigation measures, required to meet the obligations of the Habitats Directive, remain uncertain. The EA stated in a letter on 12 July 2024[8]: *"Depending on future modelling outputs, further licence changes may be required to any of the licences detailed…."*

139. Following the conclusion of the EA's own investigations in 2025, we are required by the EA and NE to carry out both the options appraisals (HD_INV) and the likely interventions (HD_IMP), to address the identified impacts, within AMP8. The scheduling of the HD_INV options appraisals within the AMP8 WINEP, set for completion by April 2027, introduces some uncertainty about the exact scope of the schemes that will need to be implemented afterward. We cannot avoid this ongoing uncertainty entirely.

140. Since we submitted our draft PR24 Business Plan we have been able to carry out a more site-specific assessment of the SAC features of the constituent SSSIs, which our abstractions may be affecting. This information is presented in tables in Appendix 1 and 2.

141. We have used information published by NE[9] and the JNCC[10], as well as expert judgement, to develop a broader range of options than were feasible within the timeframe for our WINEP and draft PR24 submission. These options aim to address potential abstraction impacts, by improving the resilience or quality of specific water dependent features of the designated sites.

142. The options now considered include:

- Mud pumping
- Compensation discharge
- Creation of scrape(s)
- Creation of a ditch management plan
- In-channel water attenuation – flood plain
- In-channel water attenuation (i.e., stop logs / leaky dams)
- Fen restoration
- Reedbed restoration
- Scrub control (removal and grazing)
- Dispersal drains

[8] FINAL ESW Broads info and guidance July 24.pdf
[9] Views About Management (English Nature) and European Site Conservation Objectives: Supplementary advice on conserving and restoring site features (Natural England) 2019
[10] Site Improvement Plans (JNCC)

- Lake restoration
- Catchment swales
- Off-line ponds

143. We have conducted an assessment to determine the most suitable options for each constituent SSSI, as well as the appropriate scale of intervention. This evaluation considers factors such as the distance of each SSSI from our abstraction point, the volume of the abstraction, and the potential reduction in abstraction outlined in our Water Resources Management Plan (WRMP). In most cases, a package of options is likely to be required, which is specific to each site. This information is presented in Appendix 3.

### 4.12.2. Cost efficiency

144. In our draft PR24 Business Plan this work area covered nine abstraction licences associated with the Broads SAC, each as an individual action within our AMP8 WINEP (HD_IMP - 08ES100019 a-i). The cost submitted for these actions in our draft Business Plan was £5.123m totex across Years 2-5 of AMP8.

145. Since we submitted our draft PR24 Business Plan, the EA has added a further six HD_IMP actions to our AMP8 WINEP. In its most recent letter (12 July 2024), the EA stated that *"we…. expect you to reflect these requirements within your response to Ofwat's draft determination."*

146. Applying the same costing methodology to these additional obligations as per our draft Business Plan submission means that the total funding requirement for the HD_IMP Sustainable abstraction WINEP obligations as they now stand has increased to £8.111m totex across Years 2-5 of AMP8.

147. We have therefore amended data table lines CW 3.1, 3.2 and 3.3 to add costs for these additional obligations, on the same basis as our draft PR24 submission. This is included in the business plan tables alongside our response to DD.

148. Given the likelihood of needing to deliver the Habitats Regulations compensatory measures and the additional work we have carried out to identify specific site schemes and costs, there is a strong case for an £8.111m enhancement expenditure allowance. This figure may even understate the actual funding required and so anything less than this would mean we would be proceeding at significant risk.

*149.* We consulted with local representatives within NE about the funding allowance for these schemes as outlined in our draft determination and received the following response[11]: "*Natural England are working with Ofwat at a national level via the draft determination consultation process. Natural England are preparing our response to*

[11] Email to Will Robinson from Nik Bertholdt Senior Advisor (Water) Norfolk & Suffolk Area Team 29/07/2024

*OFWAT and will use this to highlight the necessity of delivery of environmental requirements with due regard to quality of solution and timeliness of delivery."*

150. We discussed the funding allowance for these schemes in our draft determination with our company representative within the EA and received the following response[12]*: "We appreciate the Habitats Directive investigations in East Anglian Area are being undertaken by the Environment Agency and until these investigations have been concluded the specific implementation measures cannot be confirmed. However, these HD implementation schemes are statutory obligations required in order to meet the Conservation of Habitats and Species Regulations, 2017."*

151. As described above we have been able to use information published by NE[13] and the JNCC[14], to develop a broader range of options for consideration. We have also identified which of the potential options may be most appropriate at each constituent SSSI and the scale of the intervention that may be appropriate. In most cases, a package of options is likely to be required, which is specific to each site.

152. The costs for each option have been meticulously calculated from the ground up. We have used published cost data where available, such as the specified costs for fencing and pond creation in government ELMS documents, based on unit area or length. Additionally, we have applied average standard rates for other expenses, such as land agent fees. We would therefore consider that these costs are efficient.

153. Bringing together the unit costs for each intervention with the estimated type, size and number of interventions required at each component SSSI of the SACs, gives the total funding requirement for the HD_IMP Sustainable abstraction WINEP obligations as they now stand at £16m, as shown in Appendix 3, which further confirms the requested budget of £8m is cost efficient.

154. We refer back to the comments in paragraphs 67 and **Error! Reference source not found.** regarding how Ofwat might choose to deal with the uncertainty about the scope of actions actually likely to be required compared to the cost efficiency of the most likely option packages presented.

[12] Email to Will Robinson from Roger Martin Principal Account Officer (Northumbrian Water) & Account Manager (Essex & Suffolk Water) 19/07/2024
[13] Views About Management (English Nature) and European Site Conservation Objectives: Supplementary advice on conserving and restoring site features (Natural England) 2019
[14] Site Improvement Plans (JNCC)

**Appendix 1** – HD_IMP - 08ES100019 a-l: Broads SAC features on the SSSI component sites with the potentially associated abstraction.

| Potentially associated abstraction | | Northern Central 5&8, Ormesby & Bure | | | | | | | | | | | | | Ormesby & Bure | | | | | | | | | | | | | | | | | | | | | | | | | Ormesby & Bure | Ormesby & Bure | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SSSI component of the Broads SAC | | Bure Broads and Marshes SSSI | | | | | | | | | | | | | Trinity Broads SSSI | | | | | | | | | | | | | | | | | | | | | | | | | Hall Farm Fen, Hemsby SSSI | Burgh Common and Muckfleet Marshes SSSI | | | | | | | | |
| | | Units | | | | | | | | | | | | | Units | | | | | | | | | | | | | | | | | | | | | | | | | Unit | Units | | | | | | | | |
| The Broads SAC Features | | 001 | 002 | 003 | 004 | 005 | 006 | 008 | 009 | 010 | 011 | 012 | 013 | 014 | 001 | 002 | 004 | 005 | 006 | 007 | 008 | 009 | 010 | 011 | 012 | 013 | 014 | 015 | 016 | 017 | 018 | 019 | 020 | 021 | 022 | 023 | 024 | 001 | 001 | 002 | 003 | 004 | 005 | 006 | 007 | 008 | 009 |
| Size of unit (ha) | | 77.8 | 203.3 | 183.3 | 9.1 | 43.3 | 42.4 | 9.0 | 87.2 | 32.0 | 4.5 | 29.0 | 5.4 | 3.7 | 35.5 | 1.2 | 54.0 | 3.5 | 2.8 | 1.6 | 3.0 | 1.6 | 20.7 | 8.5 | 2.1 | 3.6 | 6.6 | 0.7 | 1.5 | 4.6 | 0.2 | 0.5 | 39.7 | 8.2 | 52.1 | 38.1 | 26.3 | 9.2 | 22.4 | 58.6 | 7.8 | 1.2 | 9.3 | 11.3 | 4.2 | 5.3 | 1.3 |
| H3140 | Hard oligo-mesotrophic waters with benthic veg of Chara spp. | | | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | UN | UR | UR | UR | UR | | | | | | | | | | |
| H3150 | Natural eutrophic lakes with Magnopotamion or Hydrocharition | | UR | F | | F | UR | UR | F | | | | UR | | | | F | | | | | | F | | | F | | | | | | | UN | UR | UR | UR | UR | F | F | UR | F | F | UR | UR | UN | UR | F |
| H6410 | Molinia meadows on calcareous, peat or clay-silt soil | | | | | | | | | | | | | | | | | UR | | | | | | | | | | | | | | | | | | | | | | UR | | | | | | | | |
| H7140 | Transition mires and quaking bogs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H7210 | Calcerous fens with C. mariscus and species of C. davallianae | | UR | F | | F | UR | UR | UR | | | | | | | | F | UR | | | | | | | | | | | | | | | | | | | | | | UR | | | | UR | | | | |
| H7230 | Alkaline fens | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H91E0 | Alluvial woods with A. glutinosa, F. excelsior | F | F | F | | | F | UR | UR | | | | | | F | F | F | | F | F | F | | F | F | F | F | F | F | F | UR | UR | F | | | | | | | F | | | | | UR | | |
| S1016 | Desmoulin's whorl snail, Vertigo moulinsiana | F | F | F | | F | F | F | F | | | | | | F | F | F | F | | F | F | F | | | | | | F | | F | F | F | | | | | | | F | | | F | | | | | |
| S1355 | Otter, Lutra lutra | F | F | F | F | F | F | F | F | F | UN | UN | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| S1903 | Fen orchid, Liparis loselli | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S4056 | Little ram's-horn whirlpool snail, Anisus vorticulus | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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|---|---|
| F | Favourable |
| UR | Unfavourable recovering |
| UN | Unfavourable no change |
| UD | Unfavourable declining |
| ? | Not recorded |

| Potentially associated abstraction | | Northern Central: 13, 4, 12, 10, 2, 1, 9 Waveney intake Hartismere: 1, 2, 3, 4, 5, 7 | | Northern Central: 12, 10, 1, 2, 9 Waveney intake Hartismere: 1, 2, 3, 4, 5, 7 | | | Lound | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SSSI component of the Broads SAC | | Geldeston Meadows SSSI | | Stanley and Alder Carrs, Aldeby SSSI | | | Halvergate Marshes SSSI | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Units | | Units | | | Units | | | | | | | | | | | | | | | | | | | | | | | | | |
| The Broads SAC Features | | 001 | 002 | 001 | 002 | 003 | 001 | 003 | 004 | 005 | 006 | 008 | 009 | 011 | 013 | 015 | 016 | 017 | 018 | 019 | 020 | 023 | 024 | 026 | 027 | 028 | 029 | 032 | 033 | 034 | 035 | 037 |
| Size of unit (ha) | | 13.6 | 0.4 | 19.4 | 8.3 | 15.0 | 0.6 | 0.4 | 4.3 | 55.9 | 1.1 | 1.8 | 210.4 | 40.5 | 9.0 | 8.0 | 4.3 | 21.7 | 5.7 | 11.5 | 24.6 | 11.8 | 2.5 | 284.0 | 3.0 | 7.5 | 6.5 | 13.0 | 0.8 | 7.3 | 8.8 | 4.6 |
| H3140 | Hard oligo-mesotrophic waters with benthic veg of Chara spp. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H3150 | Natural eutrophic lakes with Magnopotamion or Hydrocharition | UN | UD | | | | ? | F | ? | F | ? | ? | UR | UR | ? | UN | UR | UR | ? | ? | ? | ? | UR | F | ? | ? | UR | UR | ? | ? | ? | UR |
| H6410 | Molinia meadows on calcareous, peat or clay-silt soil | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H7140 | Transition mires and quaking bogs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H7210 | Calcerous fens with C. mariscus and species of C. davallianae | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H7230 | Alkaline fens | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H91E0 | Alluvial woods with A. glutinosa, F. excelsior | F | | UR | UR | UR | | | | | | ? | F | | | | | | | | | | | F | | | | | | | | |
| S1016 | Desmoulin's whorl snail, Vertigo moulinsiana | F | | F | F | F | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S1355 | Otter, Lutra lutra | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| S1903 | Fen orchid, Liparis loselli | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S4056 | Little ram's-horn whirlpool snail, Anisus vorticulus | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| F | Favourable |
| UR | Unfavourable recovering |
| UN | Unfavourable no change |
| UD | Unfavourable declining |
| ? | Not recorded |

**Appendix 2** - HD_IMP - 08ES100057 a-c: Waveney & Little Ouse Valley Fen SAC features on the SSSI components with the potentially associated abstraction.

| Potentially associated abstraction | | Hartismere: 2, 3, 4, 5, 6, 7 | | | | Hartismere: 6 | | |
|---|---|---|---|---|---|---|---|---|
| SSSI compenent of the SAC | | **Redgrave and Lopham Fens SSSI** | | | | **Blo'Norton and Thelnetham Fens SSSI** | | |
| | | Units | | | | Units | | |
| **The Waveney & Little Ouse Valley Fens SAC Features** | | 001 | 002 | 003 | 004 | 001 | 002 | 003 |
| **Size (ha)** | | 25.2 | 42.5 | 26.4 | 32.9 | 3.2 | 1.9 | 2.4 |
| H6410 | Molinia meadows on calcareous, peat or clay-silt soil | UR | UR | UR | UR | | UR | UR |
| H7210 | Calcerous fens with C. mariscus and species of C. davallianae | UR | UR | UR | UR | F | UR | UR |
| S1016 | Desmoulin's whorl snail, Vertigo moulinsiana | | | | | | | |

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|---|---|
| F | Favourable |
| UR | Unfavourable recovering |
| UN | Unfavourable no change |
| UD | Unfavourable declining |

**Appendix 3** – Options packages for the SSSI Components of the Broads SAC and the Waveney and Little Ouse Valley Fen SAC

| | Options | Mud Pumping | Compensation Discharge | Creation of Scrapes | Creation of a ditch management plan | In-channel Water Attenuation - Flood Plain | In-channel Water Attenuation - LDW | Fen Restoration | Reedbed Restoration | Scrub Control (Removal and Grazing) | Dispersal Drains | Lake Restoration | Catchment Swales | Offline Ponds | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unit | / project | / project | / 5 ha | / 2 km | / 2 km | / 50 structures | / 5 ha | / 5 ha | / 5 ha | / project | / 1 km | 100 swales in a catchment | 10 ponds of 10m2 each | |
| | Cost* | £ 7,506,772 | £ 5,790,085 | £ 722,222 | £ 546,637 | £ 2,502,964 | £ 438,621 | £ 1,015,523 | £ 1,012,694 | £ 827,061 | £ 277,272 | £ 1,066,241 | £ 633,274 | £ 560,475 | Total |
| Potentially Assocaited SSSI Components of the Braods SAC | Bure Broads and Marshes | | | | ✓ | | | | ✓ | | | ✓ | ✓ | ✓ | £ 3,819,321 |
| | Trinity Broads | | | | | | | ✓ | | | ✓ | | | | £ 1,292,795 |
| | Hall Farm Fen, Hemsby | | | ✓ | ✓ | | | | | | | | ✓ | | £ 1,902,133 |
| | Burgh Common and Muckfleet Marshes | | | ✓ | ✓ | | | | | | | | ✓ | | £ 1,902,133 |
| | Geldeston Meadows | | | ✓ | ✓ | | | | | | | | ✓ | | £ 1,902,133 |
| | Stanley and Alder Carrs, Aldeby | | | | | ✓ | | | | | | | | ✓ | £ 3,063,439 |
| | Halvergate Marshes | | | | | | | | | | | | | | £ - |
| Potentially Assocaited SSSI Components of the Waveney and Little Ouse Valley Fen SAC | Redgrave and Lopham Fens | | | ✓ | | | ✓ | | | | | | | ✓ | £ 1,721,318 |
| | Blo' Norton and Thelnetham Fens | | | | | | | | | | | | | ✓ | £ 560,475 |
| | | | | | | | | | | | | | | Grand Total | £ 16,163,747 |

*Costs are not linear i.e., creating 1ha of scrapes does not equate to a fifth of the shown cost. This is due to a large proportion of costs being asoociated with the design, enviornmental assessments, ecological surveys, permitting, landowner engagement and land agent or legal fees relating to compensation or land purchase.