HAFREN DYFRDWY COST ADJUSTMENT CLAIMS

Introduction

Following the acquisition of Dee Valley Water (DVW) by Severn Trent Water (STW), the two companies propose to realign their boundaries to the national boundary between England and Wales. The Welsh company, comprising the parts of DVW and STW lying in Wales, will be known as Hafren Dyfrdwy (HD). HD and STW are preparing Business Plans (BPs) consistent with the new boundaries.

To assess allowable costs for water companies in the PR19 period, Ofwat will use a statistical modelling approach. Ofwat accepts that this cannot take into account all relevant factors for each company and they will allow companies to raise cost adjustment claims (CACs) for unique or atypical material costs which the companies consider are not reflected in Ofwat cost baselines. Ofwat requires that the CAC process be used responsibly and has requested early sight of proposed CACs in the May 2018 submission to assist their review process, while accepting that CAC costs may not have been fully developed at that stage.

We reviewed and challenged:

- The overall process used by the company to identify potential CACs and to assess which of them should be put forward for consideration by Ofwat
- The justification for each proposed CAC

Our conclusions are given below. We were not asked to cover CACs which are common to both HD and STW.

Key Points

1. We met the staff responsible for identifying and justifying CACs. We reviewed the process used to identify and assess potential CACs and reviewed those currently proposed
2. The company has identified lessons to be learned from its PR14 experience and incorporated them into its PR19 methodology
3. An effective process has been used to identify potential challenges justifying CACs which meet Ofwat criteria and are material
4. The methodology checks supporting evidence against the Ofwat methodology and assessment criteria, up to the current stage of

development. Further work will be required to develop and cost options. Arrangements for governance and challenge, including customer and other stakeholder challenge, are in place.

5. We concluded that the CAC methodology had been followed for each of the proposed CACs. The potential for Direct Procurement had been considered and rejected as either inappropriate, or falling below the DPC threshold
6. The **Reservoir Safety** CAC is justified on the grounds of the faster pace of implementation of mandatory reservoir safety legislation in Wales, the age and design features of the company's dams and the likely spike in PR19 investment, compared with previous periods, given the company's limited ability to absorb peaks in spending. Costs are still being firmed up, but are likely to significantly exceed the allowance made in Ofwat's cost modelling.
7. The CAC for **reducing lead in Welsh drinking water** is justified due to Welsh Government's policy to reduce lead exposure as far as reasonable practicable, a legislative driver which is more ambitious and immediate in Wales than in England. This is a new obligation and the required standard is more rigorous than currently funded by customers. Customers have indicated support for lead reduction through the willingness to pay research, but further customer research is continuing. Ofwat's Totex model is unlikely to reflect the cost of this obligation.
8. There is a legislative requirement and strong customer support for a **Welsh language service**. This only applies to companies serving customers in Wales and is unlikely to be adequately covered by Ofwat's cost modelling. This CAC is justified, provided that it meets the cost materiality threshold.
9. There is a legislative requirement and customer support for **National Environmental Programme and biodiversity improvements**. This is unlikely to be adequately covered by Ofwat's cost modelling, which Ofwat has stated does not include any enhancements. This CAC is justified and appears to easily meet the materiality threshold.
10. The **Supply Resilience** CAC is justified on the grounds of the faster pace of implementation of mandatory reservoir safety legislation in Wales, the disproportionately large service reservoir stock in HD, and HDs limited ability to absorb spikes in investment, due to its small size. First order costs appear to be of the right order and to be material.
11. A CAC may be proposed for **SEMD**. This had not been progressed at the time of the assurance meeting and we did not cover it.

Board Statement

For Cost Adjustment Claims we understand that the Board wishes to make the following statement:

Large investment proposals are robust and deliverable, a proper assessment of options has taken place, and the option proposed is the best one for customers.

During our checks we saw evidence to demonstrate that:

- An effective process had been used to identify potential CACs and check their viability
- In our view the CACs for Reservoir Safety, Reducing Lead in Drinking Water, Welsh Language Service, NEP & Diversity and Supply Resilience were justified
- A robust approach had been taken to the justification of need
- For all potential CACs costs were still being firmed up. These do not need to be provided for the May 2018 submission. It will be necessary to check costs against the materiality threshold for each claim.
- It was too early in the process to make any comment on the assessment of options

Our Approach to the Audit

To carry out this audit we met members of the team responsible for identifying and justifying CACs. We reviewed the overall process used to identify and assess potential CACs, which is contained in a methodology statement. For each potential CAC we checked that the methodology statement had been followed with respect to: alignment with the Ofwat methodology; lessons learned from the PR14 experience; the evidence required to justify the claim; engagement with customers; arrangements for governance and challenge; and the process used to define and cost each CAC.

For the May submission, it is expected that this process will have been followed as far as the justification of need and the identification of potential solutions. Proposals and costs will be developed at a later stage.

We compared the process used with the guidance provided by Ofwat. We commented on compliance with guidance and also whether the proposed CACs

were justifiable and well-supported. As requested by the company we challenged the following areas:

- The approach taken to identifying potential claims and ensuring responsible use of the special cost factor process
- That the supporting evidence was in line with the Ofwat methodology and specifically the assessment criteria
- That lessons had demonstrably been learned from PR14
- That the company was sufficiently responding to the challenges as they arose

CAC Methodology

The methodology for developing CACs follows a four-stage process:

1. Identify potential big challenges
2. Develop outline business cases
3. Develop detailed business cases
4. Outline design and costing

The work is currently at stage 3 and information submitted to Ofwat for the May 2018 submission will reflect this.

Lessons Learned From PR14

The company began by considering lessons learned from PR14. At PR14 un-modelled enhancements valued at around 20% of Totex were added to modelled costs in the Final Determination for DVW. This compared with an industry average addition of around 3%. The company views this as a clear indication that the model did not work well for a small company. This is a reasonable conclusion and we note that, with the loss of Chester and the addition of Powys, HD will also be almost entirely rural. It is possible that the economic models adopted by Ofwat will better recognise this, but the final model selection has not yet been published.

Following a review by staff of both STW and DVW, the company has summarised the lessons learned from PR14 about the process as follows:

- Encourage both internal and independent challenge during development
- Involve customers, stakeholders and regulators throughout the process
- Closely follow Ofwat guidance
- Ensure clear accountability for the strategic and technical development of the proposal
- Put appropriate governance in place from the beginning of the project
- Fully integrate CACs with the rest of the Price Review processes.

The following lessons were also learned about the quality of supporting evidence:

- Start with the need rather than a possible solution
- Ensure that assumptions are well evidenced and stand up to scrutiny.
- Current capabilities and network and asset limitations need to be well understood
- The assessment of risk should focus on customer outcomes.
- Business Cases should be of appropriate size and not aggregate too many issues

<u>Identifying Future Challenges</u>

The company took a four-pronged approach to identifying these:

1. Employees views on the biggest challenges to continuing to meet to deliver service to customers.
2. Challenges from statutory drivers, from a desktop review of relevant legislation and policy statements
3. The key factors important to our customers and stakeholders
4. How well equipped the company is to respond to changes from 1 and 2 and expectations from 3.

These were assessed using internal workshops, stakeholder meetings, qualitative and quantitative research with customers, an internal review of legislative challenges and a review of the guidance documents.

Assessing Potential CACs

The resulting challenges were logged, grouped and assessed in terms of eligibility for CACs, considering:

- Whether the company or others in the industry had already invested to meet this challenge
- Whether the problem could be addressed in the current AMP
- Whether the required investment was likely to be material

At each stage of development, the process included the consideration by the company of whether a potential claim remained sufficiently compelling and material, or whether it should be retired.

Following this analysis, which included consultation with CCG and the Wales Water forum and also internal challenge from the 'Red Team' (which included some former Ofwat employees) some potential CACs were retired and the company proposed the following CACs for further development

- Reservoir safety
- Working towards a lead-free Wales
- Supply resilience
- Retail (Welsh language)
- NEP and biodiversity
- SEMD (may be proposed, but not yet developed)

The company may also propose a CAC covering scale factors and rurality, reflecting the nature of the HD area. This is being separately assessed by economic modelling and is outside the scope of this assurance exercise.

The May 2018 submission is expected to reflect progress up to this stage in the process. The development of detailed proposals and costs and the testing of assumptions will follow, during the preparation of the BP.

We reviewed arrangements for two further elements, which are relevant to all stages of the development of CACs.

Governance and Challenge

The company has set up an internal governance process for the development of HD's PR19, with the following stages:

- Working level peer review
- Programme Board (Wales)
- PR19 STEC
- Full STEC
- Wales Board

CCG and Other Stakeholder Challenge

The process also includes consultation with and challenge from the company CCG and Wales Water forum at a number of stages. The company has collected and logged the challenges resulting from this process. We viewed this log and saw that challenges were being considered and the action taken to address them recorded.

Conclusions – CAC Methodology

It is the company's view that the PR19 cost model did not work well for a small company. This is a reasonable conclusion and we note that, with the loss from the former DVW area of Chester and the addition of Powys, HD will also be almost entirely rural. It is possible that the economic models adopted by Ofwat will better recognise this, but these have not yet been published.

We concluded from our review of the CAC methodology that:

- The company had reviewed the PR14 experience, identified lessons to be learned and incorporated them into its PR19 methodology
- The company had used an effective process to identify potential challenges justifying CACs which met Ofwat criteria and were material

- The methodology checked that supporting evidence was in line with the Ofwat methodology and assessment criteria, up to the stage of development reached to support the May 2018 submission. Further work will be required to develop and cost options, customer protection and affordability

- Arrangements for governance and challenge, including customer and other stakeholder challenge were in place

Comments on Individual CACs

Each of the proposed CACs is considered in more detail below:

Reservoir Safety

The company has 14 reservoirs in Wales which either fall under the requirements of the Reservoirs Act 1975, or which will come under the requirements of the Floods and Water Management Act 2010 (FWMA 2010), when it is implemented. This number includes impounding, pumped storage and service reservoirs. FWMA 2010 will impose the Reservoirs Act 1975 standards and inspection requirements, which currently apply only to reservoirs storing 25000 or more cubic metres of water, on all those storing 10000 or more cubic metres. New requirements for emergency planning will also apply to all reservoirs storing 10000 or more cubic metres.

Reservoirs storing 25000 or more cubic metres are currently subject to a strict inspection regime and following their 10-yearly Reservoirs Act, Section 10 inspections, Inspecting Engineers may require safety work to be carried out. Their recommendations have statutory force and work must be carried out within 3 years.

In England, Defra has initiated a review and plans a phased introduction of the Water Management Act requirements, but Welsh Government plans to implement them without delay for reservoirs in Wales. This means that work is likely to be needed on HD reservoirs at a faster pace than companies in England, which it is believed provide the basis for Ofwat's cost model. This faster pace is one basis for this CAC.

The average age of the company's reservoirs is greater than the industry average. A number of the dams have central puddle-clay cores and some have draw-off pipes passing through the embankment which are valved only at the downstream end. These design features are out-moded and are recognised as increasing the risk of dam failure. Analysis carried out for the company by Mott MacDonald as part of the process for the acquisition of DVW by STW indicated that this type of construction increased the risk factor by a factor of 10, when applying the developed risk methodology.

These features increase the likelihood of safety work being needed and were recognised by the management of DVW during the planning for PR14, but work on water treatment works was assessed as being of greater priority for that period, within the finance available and the capacity of the company to carry out investment work. Recognising the risk due to pressure pipes passing through dams, during the PR14 period DVW installed a number of flap-valves at the upstream ends of these pipes to provide a means of stopping flow in an emergency. These have proved unreliable and cannot be relied on to ensure safety.

It is likely that significant safety work will be required during the PR19 period and it is the company's view that the age and features of the dams imply disproportionately greater expenditure than in the remainder of the industry, which Ofwat's cost models will not recognise. This is the second basis for the CAC.

The number of reservoirs per head of population is the highest in the industry. The very small size of the company, when compared with others having large numbers of dams per customer (Welsh, North-west and Yorkshire), reduces its ability to absorb peaks of investment into the smoothed investment profiles which larger companies can achieve. It is the company's view that this scale effect is not recognised by Ofwat's cost models. This is the third basis for the CAC. Analysis of reservoir expenditure in DVW shows that, after a peak in expenditure during 1990-95, very little has been spent since then.

For the reasons given in the previous paragraphs, the company believes that Ofwat's Totex model will underestimate the future cost of meeting safety legislation in HD.

Work required on reservoirs following Inspecting Engineers' inspections is mandatory, but the company has also consulted customers, who support the work, effectively taking it for granted that the company will protect its assets to preserve public safety and the continuity of service. The company has maintained a dialogue with NRW.

For reasons of safety, a number of reservoirs have had reduced top water levels imposed. Others have reduced storage due to silting. The proposed investment will also address these issues, thus increasing available storage, increasing resilience and potentially reducing the company's reliance on abstractions from the River Dee.

The company has taken a risk-based approach to assessing the likely cost of measures required in PR19. This covered information from previous inspections, interviews with key staff including Supervising Engineers, and a gap analysis to identify information and studies which are likely to be needed to support statutory 10-year inspections by Inspecting Engineers. This identified a number of shortcomings in available information.

From our review of the Business Case, we concluded that this CAC was justified on three grounds:

- The faster pace of implementation of reservoir safety legislation in Wales
- The age and particularly the design features of the company's dams
- The likely size of the PR19 investment programme for reservoirs, compared with previous periods, combined with the small scale of the company, which reduces its ability to absorb peaks in spending

For these reasons we support the company's view that Ofwat's Totex model is likely to underestimate the PR19 cost of meeting safety legislation in HD, justifying a CAC.

Remediation costs were estimated by Mott MacDonald at £9m, based on inspections of the reservoirs concerned. The company's current estimate is £5m - £10m, reflecting scope options. These costs are now being firmed up by Atkins. The company estimated the implicit allowance (the allowance for this work included in Ofwat's cost model, which is yet to be published) as £0.42m. This is based on the current annual average cost for inspections and routine maintenance. The materiality threshold is 1% of Totex, which is likely to be approximately £1m for water supply.

We noted that first- and second-line assurance had been carried out. Comprehensive second-line assurance was carried out in the form of challenge by the Red Team, composed of ex-Ofwat employees.

Working Towards a Lead-free Wales

The situation with respect to lead in drinking water in Wales differs from that in England, due to Welsh Government's (WG's) policy which aims to reduce lead exposure as far as reasonable practicable. This is not a statutory driver, but a policy aim and it does not apply to England. The current statutory standard for lead in England and Wales is 10 ug/litre and the European Commission is consulting on a tightening of this standard to 5 ug/litre by 2030. Medical research shows that there is no safe standard for lead.

Compliance with the 10 ug/l standard is currently maintained by dosing with Orthophosphate. This is successful in achieving the 10 ug/l standard, and DVW performance is industry-leading, but the company has shown that it will not be able to meet the 5 ug/l standard. To meet the lower standard, it will be necessary to remove lead pipework. This is challenging. Lead can occur in the communication pipe (comm pipe), which is owned by the company, and in the supply pipe and

internal plumbing which are owned by the customer. When consulted, customers support, and are willing to pay for, the reduction of lead in drinking water, but experience shows that individual householders are reluctant to meet the cost of replacing lead pipe which is their responsibility, even when the company has replaced the communication pipe and the potential health effects have been pointed out. This is due to both the cost and the disruption involved.

In addition, at the current estimated cost of £2000 to replace the comm and supply and current willingness to pay, total replacement would take over 100 years.

WG is considering the benefits of the adoption by water undertakers of supply pipes in Wales. This Business Case does not assume a decision either way and it is assumed that if adoption went ahead, it would be the subject of a separate cost claim at a later date. However, if supply pipes were adopted by water companies in Wales, this would at least allow them to control the pace of replacement, rather than being reliant on customers to do so.

The reduction of lead in drinking water would also contribute to WG's Wellbeing of Future Generations Act, which will place mandatory duties on Ofwat and NRW and other public services in Wales, leading to a healthier, more equal, resilient and more prosperous Wales.

It is the company's view that this service enhancement will not be sufficiently covered by Ofwat's cost modelling as:

- The legislative driver is more ambitious and immediate in Wales than England. Only 2 of 18 companies are affected and this is a new obligation
- The required standard is more rigorous than currently funded by customers
- The approach needs to look beyond lead pipe in the company's ownership

The company is considering a range of options to reduce lead, including;

- Continuing to optimise dosing
- Identifying hot-spots for removal of lead comm. pipes, focussing on nurseries and schools and encouraging affected customers to remove their lead pipe
- Working with housing authorities, estate agents, kitchen suppliers and plumbers
- A grant system to support vulnerable customers

- Finding more affordable solutions, including lining lead pipes

As it has taken some time to analyse sample data and understand the scale of the problem, cost estimates were not available at the date of the assurance meeting. These are now being progressed.

From our review of the Business Case, we concluded that this CAC was justified due to:

- Welsh Government's (WG's) policy to reduce lead exposure as far as reasonable practicable, consistent with its Wellbeing of Future Generations aims, and supported by customers

- The legislative driver being more ambitious and immediate in Wales than England. This is a new obligation and the required standard is more rigorous than currently funded by customers

For these reasons we support the company's view that Ofwat's Totex model is unlikely to reflect the PR19 cost of the lead obligation for HD, justifying a CAC.

This CAC is still being developed and costs have not yet been prepared.

For this CAC first-line assurance took the form of a comparison with the Ofwat criteria. Comprehensive second-line assurance was carried out in the form of challenge by the Red Team, composed of ex-Ofwat employees.

Welsh Language Services

Companies operating wholly in Wales are required by the Welsh Language Act 1993 and Welsh Language (Wales) Measure Act 2011 to treat the Welsh and English languages on an equal basis. In addition, the Well-being of Future Generations (Wales) Act 2015 has a goal of encouraging and enhancing the use of the Welsh language, which may lead to increasing demand for Welsh language services in future years.

The bi-lingual requirement does not apply to companies operating in England, which make up the majority of those used as a basis for Ofwat cost modelling, so it is unlikely that this requirement is covered by the model.

STW currently provides a 'light-touch' Welsh language service for its Powys area, which has been approved by the Welsh Language Board, but as STW serves customers mainly in England is not required to provide a service to the level

envisaged by the legislation mentioned above. HD plans to provide a Welsh language service building on that currently provided by DVW, for both the Powys and Wrexham areas. In practice this will require that customer-facing documents and contact by telephone are available in both languages and that customers should be able to communicate with the company in Welsh, if they wish. The intention is to provide the spoken Welsh service by offering customers who request it when they contact the company by telephone a call-back from a Welsh speaker within a defined time-period, and to respond to communications written in Welsh using the same language.

In practice, the company does not have enough fluent Welsh speakers to provide this service and there is only one fluent Welsh speaker in Customer Services, so it is proposed to provide the call-back and written Welsh service using a contracted service. It will also be necessary to train staff to enable them to communicate in Welsh when dealing with incidents.

CCG and deliberative workshops have expressed strong support for the service. In practice, in these workshops, some customers welcomed the opportunity to hold conversations in Welsh, but preferred to revert to English when completing questionnaires. This does not detract from the legal requirement and also the reputational benefit to the company of having a Welsh language service. The requirements of the service will be embodied in the Welsh Language Scheme for HD, which has not yet been drafted, but will be based on that for DVW. When drafted, this will need to be approved by WG's Welsh Language Commissioner and will be subject to annual internal audit by HD.

HD has set up a Welsh Language Panel (known as the Wales Committee) to oversee this and other matters specific to Wales. To protect customers, a Performance Commitment is also proposed relating to the Welsh service. It is intended that this will be reputational only and not financial and be measured by the extent of compliance with the Welsh Language Scheme, assessed in annual audits.

Costs are currently being firmed up. The current cost for DVW is in the region of £0.3m per AMP, but this does not include the translation of a number of documents which it is proposed to make available in Welsh, such as the publication of Willingness to Pay results and the customer-facing APR summary, and DVW currently serves a smaller number of potential Welsh speakers than will HD, with the addition of the Powys area. It is expected that costs will exceed the materiality threshold, which is £0.6m per AMP.

We concluded from our review that there was a legislative requirement and strong customer support for a Welsh language service, that this was outside management control, consistent with Ofwat's PR19 themes, and unlikely to be adequately covered

by Ofwat's cost modelling as it only applies to companies serving customers in Wales. We therefore consider this CAC to be justified, provided that it meets the materiality threshold. First- and second-line assurance has not been carried out.

NEP and Biodiversity

The Water Industry National Environmental Programme (WINEP) imposes statutory obligations relating to discharges to rivers in Wales. The company has a statutory duty to comply with its biodiversity duty as set out in the Environment (Wales) Act 2016 (which is not just to protect, but to enhance biodiversity) and will contribute to WG's well-being goals as set out in the Well-being of Future Generations (Wales) Act 2015. Specifically, these obligations are:

Urban Wastewater Treatment Directive (UWWTD). For defined locations:

- Investigate CSOs including the installation of event duration monitors
- Monitor dry-weather flows and flows to full treatment, including the installation of event duration monitors
- Increase flows to full treatment
- Increase storm tank capacity

Water Framework Directive:

- No deterioration of river water quality
- Improve river water quality to good ecological status, if cost-effective.

Environment (Wales) Act:

- Imposes a biodiversity duty, specific to Wales, based on species lists and national indicators. Covers investigations only in AMP7. Includes the proposed Vyrnwy biodiversity improvements

WINEP:

- Investigations only in AMP7 for invasive non-native species (INNS)

These impose significant obligations for HD and the Welsh rivers it discharges to. These are mandatory, except for the improvement of river water quality to good ecological status under WFD, which is only required if cost-effective. Ofwat has

stated that its cost modelling does not currently include any environmental enhancements.

Customer support has been demonstrated during Willingness to Pay consultation, where customers expressed support for service packages for reducing pollution, reducing sewer flooding and wider environmental benefit. In workshops, customers discussed the value they attach to the outdoor environment. Further customer workshops took place on the 27th and 28th March to assess the level of support for biodiversity, but the findings had not yet been factored into the business case. A stakeholder workshop is taking place in April.

The company has jointly with NRW assessed the need for proposed improvements, challenging the need and scope of proposed improvements and reducing cost by proposing improvements to existing assets, such as flow monitors, rather than replacements.

We reviewed the costs attached by the company to the above obligations. Construction costs were assessed by Capital Delivery teams, based on outline designs. Unit rates were used for investigations and the installation of monitors. For biodiversity, the estimated cost of measures at Vyrnwy were included. Where relevant, the revenue effects of capital projects (REOC) were included for operating costs that will commence during the 2020-25 period. The resulting total estimated Totex currently stands at £4.6m, compared with a materiality threshold of £0.3m.

The benefits arising from the above measures have also been tabulated, where defined.

The full scope of WFD investment will not be certain until ministerial approval is given in 2021. If this differs from that currently envisaged, a substitution mechanism is proposed to ensure delivery of the same outcome. The company has tested the evidence put forward against the Ofwat criteria.

We concluded from our review that there was a legislative requirement and customer support for environmental and biodiversity improvements, that this was outside management control, consistent with Ofwat's PR19 themes, and unlikely to be adequately covered by Ofwat's cost modelling, which Ofwat has stated does not include any enhancements. We therefore consider this CAC to be justified and it appears to easily meet the materiality threshold.

Formal first- and second-line assurance has not been carried out, although the proposals have been peer-reviewed by subject-matter experts.

Supply Resilience

This claim relates to the management of the company's distribution service reservoirs (DSRs). The quality performance of these assets, measured by regulatory samples, is very good with no Coliform failures in AMP6. However some Coliform failures have been experienced in routine operational samples. It is known that some DSRs are not appropriately sized for current needs, resulting in concerns over both turnover times (potentially affecting bacteriological quality) and supply resilience (with potentially inadequate storage in parts of the network when it is under stress).

It is believed that, due to difficult investment priority choices which had to be made by the management of DVW in the past, there has been underinvestment in these assets. As a result a number of DSRs have reached or exceeded their expected lives. The oldest is 150 years old. In addition 12 DSRs will come under the requirements of the Floods and Water Management Act 2010 (FWMA 2010), which imposes more stringent requirements for monitoring and maintenance and is being implemented at a faster pace in Wales than in England.

The above factors indicate that a very significant investment will be required in DSRs during AMP7. The company believes that investment needs will not be adequately modelled by Ofwat, due to the disproportionately large DSR asset stock in the company. Analysis shows that HD has significantly more DSRs per head of population than any other company.

We agree that a CAC is justified for this investment, due to:

- New requirements for monitoring and investment imposed by the FWMA 2010, affecting 12 DSRs, at a faster pace than in England, imposing a requirement outside management control

- The disproportionately large DSR asset stock in HD, compared with the rest of the industry. Ofwat's models are unlikely to include the number of DSRs as a variable and the anomalous situation of DVW was recognised by a cost assessment adjustment at PR14.

- HDs limited ability to absorb spikes in investment, due to its small size. This saw DVW focus investment on water treatment works, rather than other assets, during the last 3 AMPs.

The proposed work consists of the replacement of the highest-risk DSRs, the optimisation and consolidation of DSRs within the network and improved monitoring and modelling of the network. This will reduce the risk of a water quality failure and

DSRs being out of service, increase resilience and assist with FWMA 2010 compliance.

The company's approach to investment needs forms part of a risk-based, long-term plan, which has resulted in a prioritised list of all of the company's 89 DSRs. Unprompted, supply resilience is not an issue which customers raise. They take it for granted that the company can be trusted to always provide a supply of water which is safe and good to drink and the company aims to manage the stock of DSRs towards this aim.

The current PR19 investment need is assessed as follows (Totex):

- Compliance with FWMA 2010 (inspection and maintenance, based on historic costs) £0.114m
- Membrane and sample line replacement (based on historic costs) £1.38m
- Structural maintenance (based on AMP6 cost) £6m
- Reconfiguration for increased resilience (based on the estimated cost of abandoning 2 small DSRs with low turnover) £0.6m

This totals £8.1m. The implicit Ofwat model allowance is estimated as £2.6m, based on the allowance made at PR19, before adjustment, inflated. The balance of £5.5m is very significant in the context of the size of HD's likely overall investment programme, and compares with a materiality threshold of 1% of Totex, which is likely to be approximately £1m for water supply.

At the time of the assurance meeting the Business Case was still being developed and costs, particularly the structural maintenance cost, remained to be firmed up. Costs so far estimated appear to be of the right order and to be material.

Formal first- and second-line assurance has not been carried out, although the proposals have been peer-reviewed by subject-matter experts.

Prepared by: **Steve Bentley**

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