

Initial Decision Paper 7:

Futureproofing service levels: sustainable asset maintenance

This is the seventh in a series of Initial Decision Papers that the Water Industry Commission will publish during the Strategic Review of Charges 2021-27. The Commission will issue initial, revised and final Decision Papers. These Initial Decision Papers set out, for customers and other stakeholders, the Commission's current views on important matters relating to the Strategic Review of Charges 2021-27. They will provide the Commission's views on:

- Strategic issues facing the industry that will impact levels of service beyond the next regulatory control period;
- The prospects for customers' charges during the next regulatory control period;
- Issues that directly and materially impact the charges that customers will pay in the next regulatory control period;
- The potential for Scottish Water to engage even more effectively with its customers; and
- The approach to the Strategic Review of Charges 2021-27.

The Commission has adopted the principles of Ethical Based Regulation and intends to conduct a transparent and collaborative price review¹, taking account of all the evidence available to it in coming to the views set out in these Initial Decision Papers.

In line with the Cooperation Agreement signed with Scottish Water and Citizens Advice Scotland, the Commission would be minded to adopt a business plan, agreed with the Customer Forum, and consistent with the Commission's Final Decision Papers as its Draft Determination.

This seventh Initial Decision Paper discusses the challenge of ensuring Scottish Water invests sufficiently in maintaining and replacing its asset base. All stakeholders will have to work together to ensure that the governance and regulatory framework is appropriate for the challenge at hand.

Key messages

In the Commission's view the regulatory framework has not focussed sufficiently on the effective maintenance of long-term assets. The price setting process has sought to ensure that the regulated company faces a hard budget constraint over the regulatory control period. While this has been very successful in improving operational efficiency, it appears that insufficient attention has been paid (by both regulator and regulated company) to futureproofing levels of service. This is not necessarily about spending more now – it is about ensuring that sufficient resources are available when Scottish Water needs to replace its assets. An important consideration is the extent to which today's customers currently make an appropriate contribution towards the ultimate cost of replacing the assets that are in use.

A regulated company will respond to the incentives contained within a regulatory framework. If the regulator allows expenditure on maintenance only where there is an immediate demonstrated need, there may be a reduced focus on ensuring assets and service levels are resilient and sustainable over the longer term.

In line with the views of the Scottish Government, we all want future generations to inherit a sustainable and resilient water and sewerage service. As such, the regulatory framework should encourage an increased focus on understanding the condition and risk profile of assets. Industry stakeholders could usefully

¹ Innovation and Collaboration: future proofing the water industry for customers', published on 10 April 2017 and available on the Commission's website.

improve their understanding of the costs that will be incurred over time as assets approach the end of their lives and need to be replaced.

Such an improved understanding would allow there to be a fair allocation of costs between current and future customers. However, we will likely have to look carefully at the governance and regulatory frameworks to ensure that the industry is able to meet its future liabilities in an equitable way.

Introduction

To maintain the current service levels, Scottish Water carefully monitors the performance of its assets, invests to reduce the risk of a service failure and, where necessary, replaces those assets which are no longer fit for purpose. Investment in maintaining assets and levels of service to customers is commonly called capital maintenance. More recently, Scottish Water has begun to develop further its understanding of the risks that it faces and the consequences that it could face in the event of an asset failure. This welcome work on risk and resilience has resulted in an increased focus on asset condition.

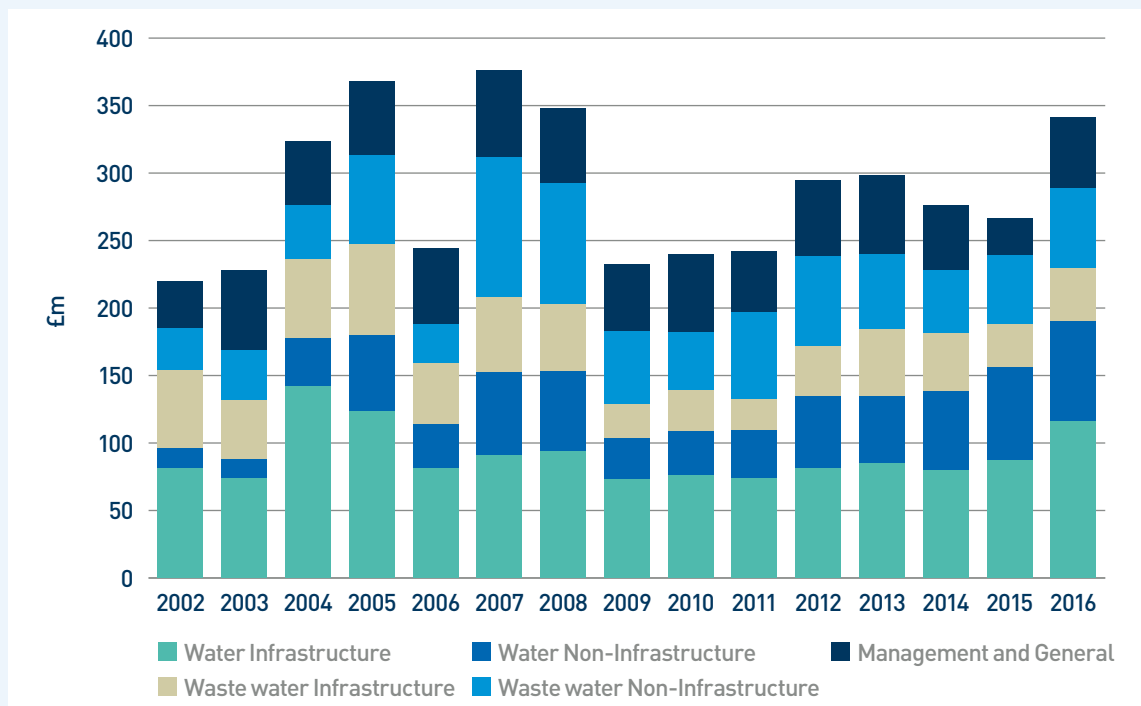
This note sets out some background to the potential challenges posed by maintaining assets over the long-term. It explains the level of expenditure that has been committed to date and why it may be prudent to plan for increased expenditure in future. It highlights the steps that both Scottish Water and the Water Industry Commission for Scotland are currently taking to futureproof the industry. The Commission are keen that the water industry in Scotland can ensure that future generations will inherit a sustainable and resilient water and sewerage service.

Current and potential future expenditure on maintenance

Historic Expenditure on Maintenance

The annual expenditure for capital maintenance since Scottish Water was established in 2002 is set out in Figure 1.

Figure 1: Scottish Water’s capital maintenance expenditure (2016-17 prices)



The average annual expenditure since the establishment of Scottish Water is £286m (in 2016-17 prices).

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Scottish Water's Current Asset Value

Scottish Water currently estimates that its Modern Equivalent Asset Value (MEAV) – the cost of replacing all of its existing assets with new assets that would deliver the same level of service – is around £60 Billion. Even if a much lower level of MEAV (£40 Billion) and a very high asset life (125 years) were assumed, the current allowance for maintenance appears to be low. Of course, more realistic assumptions of asset life and MEAV could suggest that much more funding will ultimately be required. Figure 2 sets out the potential annual provision for maintenance that would allow for assets to be replaced at the end of their lives.

Figure 2: Potential annual allowance required to replace assets at the end of their lives

Modern Equivalent Asset Value	80 Year Average Asset Life	100 Year Average Asset Life	125 Year Average Asset Life	Average Annual Actual Spend
£40 Billion	£500 Million	£400 Million	£320 Million	
£60 Billion	£750 Million	£600 Million	£480 Million	£286 Million
£80 Billion	£1,000 Million	£800 Million	£640 Million	

We see a similar pattern if we look at Scottish Water's reporting of expenditure on maintenance across each of the main asset categories. This is outlined in Figures 3 and 4.

This high level analysis would seem to support a conclusion that Scottish Water's current level of expenditure is much less than could be expected if its maintenance and replacement commitments were evenly spread. As such, it would be reasonable to expect that, at the current time, the average underlying condition of the assets is deteriorating.

Such a deterioration in the overall condition of assets (even if service levels are broadly maintained) would have to be addressed by future generations of customers. The actual position may well not be so stark: shifts in technology and strategic approaches could potentially reduce the costs of replacing or renovating assets.

Figure 3: Expected depreciation and current maintenance spending

Asset class	Expected annual depreciation of MEAV (£m)	Historic 5 year average spend on maintenance (£m)	Historic 10 year average spend on maintenance (£m)
Water Infrastructure ²	108	90	86
Water Non-Infrastructure	122	61	52
Waste water Infrastructure	195	40	38
Waste water Non-Infrastructure	141	56	63
Support Services	5	49	52
Total	571	295	291

Figure 4: Expected and implied life of each asset class

Asset class	Expected life of asset class (years)	Implied life – Gross MEAV Divided by 10 Year Average spend (years)	Variance
Water Infrastructure	155	195	-40
Water Non-Infrastructure	42	98	-56
Waste water Infrastructure	200	1,015	-815
Waste water Non-Infrastructure	39	87	-48
Support Services	33	3	30

² 'Infrastructure' assets primarily relate to the underground network of pipes and sewers, along with reservoirs and outfalls, while 'Non-Infrastructure' assets are the above-ground elements of the network such as treatment works, storage and pumping stations. Support Services include vehicles, plant and IT.

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The analysis of future replacement costs should be treated with some caution. Scottish Water will rightly want to review its analysis of its MEAV. And, in considering asset lives, it will be important to consider how this may vary for different categories of asset. It may well also be appropriate to consider carefully the risk and consequences of different types of asset failure. However, even with these caveats, we may be storing up asset replacement bills for future generations.

Improving Industry Understanding

The Commission has agreed with Scottish Water an approach to improve industry understanding of how we might best understand and respond to future capital maintenance needs. We set out this approach in our methodology. It contains five stages:

- Scottish Water plans to understand fully the maintenance profile at the PFI sites and the lessons that can be learned;
- Scottish Water intends to confirm its understanding of the MEAV of its assets, the proportion of expended life and the most important failure modes and consequences;
- Scottish Water is continuing to develop detailed asset maintenance plans covering all its 'critical assets'³. The Commission has recognised that this will take some time and will not be complete before the next regulatory control period;
- Scottish Water is currently setting out its plans to improve its understanding of assets in the second 'pro-active management' category; and
- Scottish Water is also reviewing the assets that it considers can be fixed if and when they fail. They want to ensure that customers and other stakeholders understand and agree with their judgments. Scottish Water's aim is to ensure that levels of performance to customers are, on the average, maintained or improved.

For each of these steps, joint work is underway exploring areas such as the information required, the financing of the investment, the monitoring of the assets and the communication with stakeholders.

This is a long-term project covering multiple areas and may take many years. Although not all of the information will be available in time for the next Strategic Review of Charges, the information gathered will help Scottish Water and the Commission make progress in our joint goal of futureproofing the water industry.

Condition and Service

Scottish Water continues to perform well – as evidenced by performance indicators such as the Overall Performance Assessment (OPA) and the Customer Experience Measures (CEM). The current level of capital maintenance would, therefore, seem to be broadly adequate if the objective is solely to maintain current levels of service. There is, however, less visibility of how the condition of Scottish Water's assets has changed over time and the potential risks that it is managing. The Commission has a duty to have regard to the interests of future customers and, as such, we want to ensure that Scottish Water is managing future maintenance needs appropriately.

It seems to the Commission that the costs of maintenance are likely to increase as assets approach the end of their lives⁴. It is important that the water industry in Scotland has as detailed an understanding as possible of the likely deterioration of its assets and the costs that could arise. Moreover, the largest single maintenance cost will be the ultimate replacement of the asset with an appropriate and optimised solution. It follows that there could be a substantial mismatch between the depreciation (cash flow for maintenance and replacement) and the incidence of cash expenditures that Scottish Water will face. There is a lot more work to be done to understand current levels of expenditure and its impact on future asset replacement liabilities.

The Commission recognise that it will take some time for Scottish Water to develop the level of understanding, which we believe to be in the customers' interest. Our commitment is to support Scottish Water and stand ready to discuss the implications of their developing understanding.

³ Scottish Water divides its assets into three broad categories: 'critical' (a failure would significantly impact on levels of service), 'requires pro-active management' (important to maintaining a good level of service) and 'assets that can be fixed on failure' (having a low impact on levels of service).

⁴ For example, an older car or house tends to cost more to maintain than a newer one.

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Scottish Water inherited nine PFI projects from the predecessor regional authorities. The Commission will comment further on the PFI contracts in a future Initial Decision Paper.

The Commission has previously analysed the legacy PFI contracts and concluded that they may not currently represent value for money⁵. This reflects the dramatic improvement in Scottish Water's operating and capital expenditure efficiency since 2002. However, there are lessons that could be learned from the financing of these PFI contracts and, perhaps, be effectively applied to the future public funding of assets. They appear to provide a useful example of how an investor ensures the return of capital as well as the return on capital.

The price paid by Scottish Water ensures that, over the life of the contract, the investor recoups all the money invested in improving the asset. This may be achieved either in equal annual instalments over the life of the contract or, equivalently, by means of lower annual instalments and the payment, by Scottish Water, of a terminal charge⁶. Scottish Water would pay any terminal charge when it reassumes responsibility for operating the asset.

The service provider will seek to reduce the debt that it incurred in providing the upgraded asset. It will also want to keep any new expenditure on maintenance to the minimum consistent with the performance requirements of its contract.

The nature of such a contract means that Scottish Water will inherit an asset, which may prove to require substantial refurbishment or replacement. It is important, however, to bear in mind that Scottish Water did not incur any debt when the sewerage works were upgraded (as would be the case in a traditional asset procurement). As such, Scottish Water could reasonably borrow to improve the assets that it receives back from the contractor. In short, the generation of customers that received a service during the life of the PFI contract will have paid the full economic cost of the service that was provided⁷.

This project finance approach is quite different to the approach typically used by regulators that we set out earlier. It may be useful to consider how the regulatory model could be more closely aligned to the project finance approach as we seek to futureproof the water industry.

The key lesson is that each investment is actively managed such that the company is able to replace it when it reaches the end of its life.

Potential lessons from Glas Cymru

Glas Cymru was established in 2002 to acquire the water appointment, Dwr Cymru, previously owned by Hyder Plc. Glas Cymru is a company limited by guarantee. Both Glas Cymru and Dwr Cymru are financed only by debt. There are no shareholders and they pay no dividends. The Board uses any cash outperformance in one of three ways:

- It may provide a rebate to its customers;
- It may invest in resolving an issue that was not funded in its regulatory contract; and/ or
- It may reduce its debt.

⁵ See, for example, 'The Strategic Review of Charges 2006-10: Methodology - Our work in regulating the Scottish water industry. Volume 4: The scope for operating cost efficiency.' Section 13.8. Page 120. Also, 'Price Setting 2010-15' 'Staff Paper 5'. Both available on the Commission's website.

⁶ This is a payment made at the end of the contract. It should reflect either the value in use remaining of the assets that were purchased or the sum required to repay the initial committed investment that has not been covered by the annual charges. In essence, the Net Present Value (NPV) of the payments should be the same under either scenario.

⁷ It will also have had to pay the cost of capital required by the contractor. This cost of capital is likely to be higher than the public sector's cost of capital.

Figure 5 shows how the overall debt and leverage of Dwr Cymru has changed since it was established.

Figure 5: The overall debt and leverage of Dwr Cymru 2002-2016

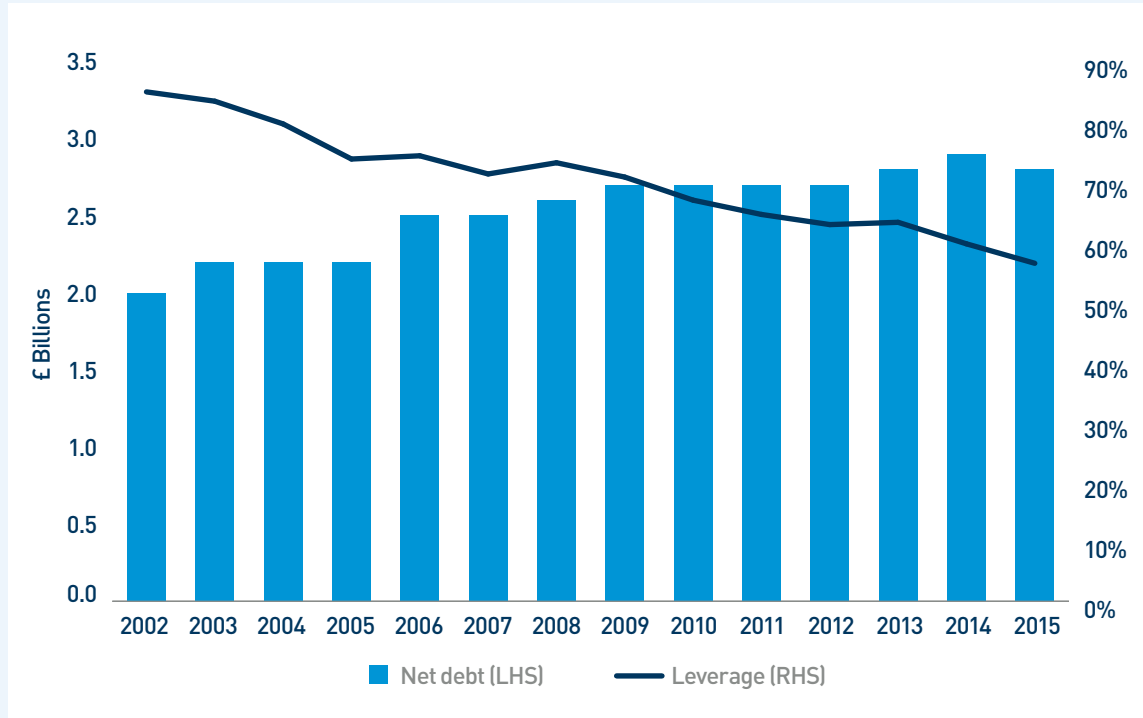
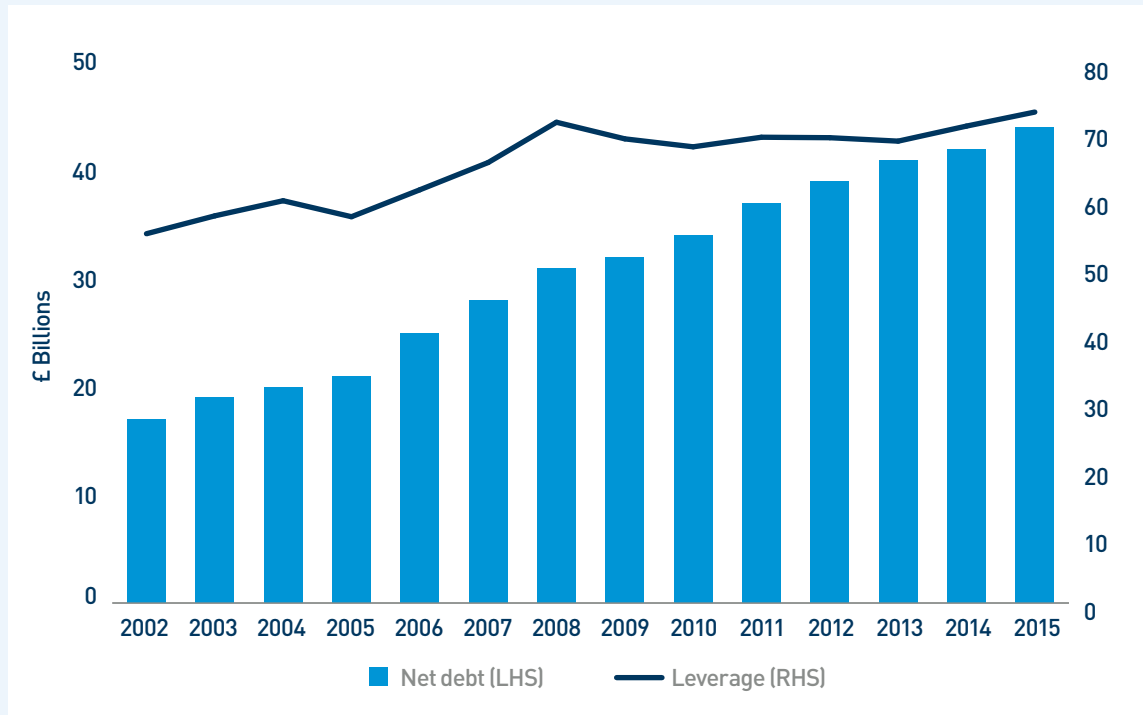


Figure 6 shows the trend in borrowing and leverage of the English water companies over the same period.

Figure 6: Net debt and leverage of English water companies 2002-2016



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The stronger balance sheet of Dwr Cymru reduces borrowing costs for their customers today but it also positions the company well should it find the need to increase expenditure on maintenance.

This approach is not wholly dissimilar from the 'project finance' approach explained earlier – the key difference is that the Board of Dwr Cymru is taking decisions with an eye to future expenditure on maintenance and replacement⁸. It is a less tightly defined approach but it is allowing progress to be made in addressing a challenge that is probably, across the industry, less well understood than would be desirable.

Summary

It seems likely that customers will face higher costs associated with asset maintenance and replacement in the future. As we noted earlier, Scottish Water seems to be doing a good job of maintaining its performance with the current allowed for level of maintenance, but this level looks likely to be insufficient to maintain and replace assets over the longer term. The implied extended asset lives appear to be a timely warning.

There are three ways in which we could potentially address this maintenance challenge. The first would be to continue to make allowances consistent with demonstrated need. The second would be to make additional annual provisions such that major asset replacement can be managed without any material adverse impact on customers' bills (a 'sinking fund' or 'project finance' approach). The third would be to follow the lead of Dwr Cymru and reduce the level of outstanding borrowing such that there will be available borrowing capacity when assets reach the end of their life. Each of these options has significant implications for both the Scottish Government (both as owner and policy maker) and Scottish Water.

⁸ For example, in 2015-16 the Board of Welsh Water allocated an additional £32 million (not included in their regulatory contract agreed with Ofwat and funds that in the traditional equity model would have been paid out to shareholders) to several projects including improvements to the water supply network in the Rhondda Valley, 33 Kilometers of water main serving almost 20,000 properties and improvements in North Pembrokeshire benefitting 11,000 properties.