

# FINANCING MULTI-SECTOR WATER SUPPLY ASSETS

2015

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AN FTI CONSULTING REPORT





# TABLE OF CONTENTS

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GLOSSARY 2

**1** EXECUTIVE SUMMARY 3

**2** BACKGROUND 9

**3** OPTIONS FOR FINANCING MULTI-SECTOR WATER SUPPLY ASSETS 12

**4** CRITERIA FOR SELECTING BETWEEN THE OPTIONS 27

**5** QUALITATIVE AND QUANTITATIVE ASSESSMENT OF THE OPTIONS 30

**6** ASSESSING THE LEGAL AND REGULATORY FEASIBILITY OF THE OPTIONS 57

**7** ALLOCATING RISKS TO THE PARTIES BEST PLACED TO MANAGE THEM 70

**8** SUMMARY AND CONCLUSIONS 81

**Appendix 1:** FURTHER DETAILS ON THE FINANCIAL MODELLING 85

## GLOSSARY

AWS	Anglian Water Services	PAYG	Pay As You Go
BSA	Bulk Supply Agreement	PFI	Private Finance Initiative
CAP	Central Arizona Project	PR14	Price Review 2014
CMA	Competition and Markets Authority	PR19	Price Review 2019
CISL	Cambridge Institute for Sustainability Leadership	PWS	Public Water Supply
CPI	Consumer Price Index	RAGs	Regulatory Accounting Guidelines
DEFRA	Department for Environment, Food & Rural Affairs	RAG2	Regulatory Accounting Guideline 2
EA	Environment Agency	RAG5	Regulatory Accounting Guideline 5
GSP	Government Support Package	RPI	Retail Price Index
IDB	Internal Drainage Board	RCV	Regulatory Capital Value
IDoK	Interim Determination of K	SIP	Specified Infrastructure Provider
IP	Infrastructure Provider	SPV	Special Purpose Vehicle
IRR	Internal Rate of Return	STPR	Social Time Preference Rate
JV	Joint Venture	TTT	Thames Tideway Tunnel
LT	Long Term	WACC	Weighted Average Cost of Capital
MSWSA	Multi-sector water supply asset	WIA	Water Industry Act
Non-PWS	Non- Public Water Supply	WREA	Water Resources East Anglia
NPV	Net Present Value	WRMP	Water Resource Management Plan
OFTO	Offshore Transmission Owner	WSL	Water Supply Licensing
Ofwat	The Water Services Regulation Authority		

## EXECUTIVE SUMMARY

### Introduction

- 1.1** The water sector in England & Wales is facing significant challenges to its ability to maintain resilient supplies of water resources, particularly from climate change and population growth. Innovative solutions to financing and delivering water infrastructure may help meet these challenges. Collaboration between statutory water companies and other water users, such as power companies and farmers, to develop multi-sector solutions may have the potential to deliver significant benefits for customers, the environment and contribute to a more resilient water sector in the future.
- 1.2** Anglian Water is working with other statutory water companies, other water users and the Environment Agency (EA) to address these challenges in the East Anglia region as part of the Water Resources East Anglia (WREA) initiative. As part of its work, the WREA initiative is considering the desirability and practicality of developing multi-sector water supply assets (MSWSAs). These assets would provide both public water supplies (PWS) and supplies to other water users (non-PWS) to help address the challenges faced by the water sector. If it is decided to proceed with one or more MSWSA projects, then a key issue for the sector, and for the statutory water companies, will be how best to finance such projects.
- 1.3** Against this background, FTI Consulting LLP (FTI) has been commissioned by Anglian Water Services (AWS) to identify and describe the different options that may be available for financing MSWSAs, to undertake an initial evaluation of which of these options might be most appropriate and to identify any barriers to implementation from existing regulatory arrangements applicable to the sector.

### Conclusions and recommendations

- 1.4** Each of the financing options we have assessed has different strengths and weaknesses. The choice between the options will depend on the yet-to-be-identified regulatory and contractual arrangements that would apply to the MSWSA. It is not possible, therefore, to conclude definitively on a preferred financing option at this stage.
- 1.5** Our assessment suggests that options involving corporate financing by statutory water companies – whether involving one company investing on its own or a number of companies investing jointly – are likely to provide the lowest cost of funding and therefore potentially the lowest costs to water users. However, there are some circumstances when there may be a need to involve a wider group of stakeholders, which could give rise to other benefits such as supporting greater co-ordination of water resource planning between the different stakeholders. Where a wider group is involved, there will need to be mechanisms in place to allocate risks effectively. This may be important given that our initial discussions with stakeholders suggested that there may be some barriers to their participation in a MSWSA as either an investor or a user of water from the project, though some stakeholders expressed enthusiasm about being involved in these types of projects.

- 1.6** The magnitude of any additional benefits that project finance (via a Special Purpose Vehicle (SPV)) or multi-sector Joint Venture (JV) options could create will need to be carefully assessed and weighed against the higher costs associated with these options. The benefits of SPVs and multi-sector JVs may be particularly to the fore if the project itself is unlikely to proceed without the financial engagement of multiple partners. Furthermore, it is more likely that SPV and multi-sector JV approaches lend themselves better to larger projects, as the additional transaction costs of SPVs and multi-sector JVs would be proportionally less compared to the costs of the project as a whole, and the co-ordination and risk mitigation effects would be greater.
- 1.7** Following from this logic, the proportion of the water from a MSWSA that would be supplied to statutory water companies is likely to influence the optimal financing structure: the higher the proportion, the lower the risk of the project is likely to be (as the cashflows of the project are likely to be less volatile) and the more likely it is that the lower costs of corporate financing will outweigh any potential benefits from project finance or multi-sector JV options. Also, the smaller a MSWSA project is, relative to the statutory water companies considering investing in it, the more likely it is that a corporate finance approach will be feasible.
- 1.8** All of the options require some amendment to legislation in order to be feasible e.g. changes to the Water Supply Licensing (WSL) or Specified Infrastructure Provider (SIP) regimes and/or to statutory water companies' pipe laying and compulsory land acquisition powers. DEFRA, Ofwat and stakeholders will need to work to resolve these barriers if more MSWSAs are to come forward. Perhaps the most immediate priority may be to consider what changes to statutory water companies' pipe laying and land acquisition powers would be needed in order to enable the financing of a MSWSA by a JV between two statutory water companies to be readily taken forward.
- 1.9** The sector is in the midst of implementing the Water Act 2014 and Ofwat is currently undertaking a root and branch review of its regulatory framework ahead of the next periodic price review (PR19). The industry therefore now has an opportunity to consider the appropriate financing options for MSWSAs over the coming months and how best to ensure the legislative framework and regulatory regime supports appropriate financing structures.

### The options available for financing MSWSAs

- 1.10** We have identified three general approaches to financing MSWSA infrastructure projects: corporate finance; project finance; and through joint ventures. The general characteristics of each of these approaches can be summarised as follows:
- the **corporate finance** approach involves an existing company funding a project using internally generated company funds and/or through the raising of new debt and equity. In this instance, the project will be wholly owned by the company and be included within the company's balance sheet;

- the **project finance** approach typically involves the creation of a separate project company financed with non-recourse debt (i.e. a type of loan that is not secured by guarantees from sponsoring shareholders). These companies may contain just a single asset; and
- the **joint venture** approach typically allows funding from two or more parties through the establishment of a separate legal entity. Each party may provide equity in the form of cash to finance the project or contribute assets such as land. Debt funding may or may not be provided on a non-recourse basis, depending on the characteristics of the project.

**1.11** To identify the various options for financing MSWSAs, we have reviewed the previous work performed on MSWSAs. Specifically, we have considered the work performed by the Cambridge Institute for Sustainability Leadership (CISL) with AWS in 2014, approaches to financing water infrastructure projects in other countries and we have reviewed common financing structures in other sectors. Based on our work, we have considered the following seven financing options, which are described more fully in Section 3:

- **Option 1 - Single Water Company:** a single statutory water company finances, builds and operates the MSWSA as part of its normal activities, using a corporate finance approach. Under this approach, the company would fund the project through its existing sources of debt and equity as well as through self-generated funds. Under this approach, the MSWSA would be retained on the balance sheet of the water company;
- **Option 2 - Multi-Sector Joint Ventures:** a group of farmers, supermarkets, power companies and/or other water users invest alongside the statutory water company through a Joint Venture arrangement to finance, build and operate the MSWSA;
- **Option 3 - Special Purpose Vehicle:** an independent SPV is established to finance, build and operate the MSWSA project using the Project Finance approach. Ownership of the SPV could be opened up to a range of different investors, including financial investors, such as infrastructure or pension funds;
- **Option 4 - Regulated/Unregulated Split:** the MSWSA could be split into two separate projects, one financed by a statutory water company for PWS purposes, and the other financed by other parties for both non-PWS purposes and PWS purposes. This split could allow part of the project to be financed by the statutory water company as part of its regulated activities. The other part of the project could be financed separately from the regulated business. Under this option, we assume the project is financed using a mixture of corporate finance and JV finance;
- **Option 5 - Pre/Post Construction Split:** the project could also be split temporally. For example, a statutory water company could undertake the preparatory work, before other parties undertake the construction.

This approach is similar to the arrangements for the Thames Tideway Tunnel (TTT), where Thames Water has undertaken the early stages of the project but a separate entity will undertake the remainder of the project. We assume under this option that the project is financed using a mixture of corporate finance and project finance;

- **Option 6 - Statutory Water Company Joint Venture:** two or more statutory water companies could form a JV to finance the MSWSA. Under this option, the water companies would be the sole investors and users of water from the project; and
- **Option 7 - Water Company Shareholder Joint Venture:** the parent companies of two or more statutory water companies could form a JV to finance the MSWSA separately from the regulated statutory water companies.

### Our assessment of the options for financing MSWSAs

#### Criteria

- 1.12** To assess the different options listed above, we have applied the criteria set out in Table 1-1 below.

**TABLE 1-1: CRITERIA FOR SELECTING BETWEEN FINANCING OPTIONS**

CATEGORY	CRITERIA
Feasibility	Compatibility with legal and regulatory framework
Project implementation	Ability to allocate risks efficiently Ability to achieve co-ordination benefits Ability to attract the required amount of capital
Water user objectives	Total cost Impact on bill profile Quality of service
Investor objectives	Attractiveness to equity investors Attractiveness to new debt investors Acceptability to existing debt investors
Environmental objectives	Water trading Water efficiency

Source: FTI

- 1.13** Our assessment of the options is based on: i) a qualitative assessment using the criteria stated above; and ii) a quantitative assessment of the costs to finance the different options, using stylised financial modelling techniques. We have also discussed the appropriateness and feasibility of each financing option with representatives from a number of the stakeholder groups interested in MSWSAs. We summarise our assessment, by criteria, below.

## Feasibility

**1.14** Through our own analysis and through discussions with AWS's legal team, we have identified a number of potential legal and regulatory issues relevant to the financing of MSWSAs. These issues may affect the implementation of certain options. Our full assessment, and some specific recommendations about changes to the legal and economic regulatory frameworks for water companies for DEFRA and Ofwat to consider, is contained in Section 6. However, we summarise the key issues we have identified below:

- we understand that the WSL and SIP regimes may need to be modified if they are to facilitate financing of MSWSAs through JVs or SPVs. This issue may impact Options 2, 3, 4, 5 and 7;
- the abstraction licensing regime may place restrictions on the ability of different users of water from the MSWSA to trade water rights with each other, potentially reducing the attractiveness of participating in a MSWSA and preventing some of the benefits of the project (such as more efficient use and allocation of water) from being realised. This issue is likely to affect all of the options;
- we understand that the rules around Bulk Supply Agreements (BSAs) may influence the terms and conditions on which a MSWSA could enter into long-term contracts with water users. This issue could potentially affect Options 1, 2, 3, 4, 5 and 7;<sup>1</sup>
- we consider that it is unclear how the regulatory accounting guidelines applied to statutory water companies would be applied to MSWSAs. Uncertainty about how to demonstrate that long-term contracts with the MSWSA (which would be an associate entity) are at arm's length could limit the ability of water companies to enter into long-term contracts for water from the project. This issue could affect Options 2 and 4; and
- we understand that the pipe laying and land acquisition powers of statutory water companies would not be available to any legal entity other than the statutory water companies, affecting Options 2, 3, 4, 5, 6 and 7. Option 6, despite being a JV of two statutory water companies and the existence of a number of statutory reservoirs where water companies have successfully operated assets jointly (see paragraph 6.30), would not have these powers as it involves a legal entity separate from the statutory water company financing the MSWSA. A statutory water company undertaking unregulated activities (such as supply of water to farmers for reasons other than public water supply) may also not be able to exercise its pipe laying and land acquisition powers in relation to all aspects of the MSWSA, meaning Option 1 would also be constrained by this issue.

**1.15** We consider that DEFRA, Ofwat and stakeholders will need to work to resolve the barriers identified above. However, it is clear that some of the financing options are affected by more of these issues than others.

**1.16** Restrictions that apply to some water companies' existing financing arrangements relating to their ability to undertake non-regulated activities (such as the development of infrastructure for reasons other than public water supply) will need to be taken into account. These restrictions may inhibit the ability of some statutory water companies to deliver MSWSAs through Option 1 (but not Option 6 where no unregulated activity is envisaged).

## Project implementation

**1.17** Where a project requires multiple parties to be involved in financing, SPVs and JVs, which both involve putting in place a suite of contractual arrangements tailored to the project in question, can be useful mechanisms for co-ordinating the different stakeholders in the project and allocating risks to the parties best placed to bear them (as we discuss in Section 5). These forms of structure can create significant benefits for stakeholders, particularly where there is a high degree of asset specificity (i.e. where assets can only support trade between small numbers of parties). They could also support a more co-ordinated approach to water planning and resource use across the stakeholders involved.

**1.18** The investors willing to invest in JVs and SPVs could be, but would not necessarily be, different to those willing to invest through a corporate financing option. JVs and SPVs, with their more complicated financial structures, may be less attractive to some investors, particularly where those options are non-recourse (which may be the case in a Project Finance option). However, JVs and SPVs may also provide an opportunity for other investors to participate in the projects. The attractiveness of different financing options to different investor groups may need to be explored further in due course.

**1.19** Where there is a need for multiple players to come together to finance a project, the SPV and JV options are more likely to be suitable, and may work best where the project is larger. The size of the project is relevant not only to the potential risk that the project could pose to the corporate entity, but also because the additional transaction costs of project finance and joint venture would be proportionally smaller. Also, the larger the project relative to the size of the firm trying to finance it, the more likely it is to impact on the corporation's own financing e.g. by increasing gearing, impacting on credit ratings and reducing the ability of management to pursue alternative growth strategies.

1. Option 1 potentially involves a Bulk Supply Agreement from one statutory water company to another.

## Water user objectives

**1.20** The costs of financing each project will have to be passed on to customers. Consequently, all other things being equal, the lowest cost options may be preferable. We understand that Project Finance and JV options are likely to be more expensive than the standard corporate finance approach because:

- there will be additional costs associated with the establishment of contractual arrangements governing each aspect of the project;
- the Project Finance and JV approaches will require additional due diligence by lenders to understand the risks of the project;
- the Project Finance and JV approaches are likely to have higher ongoing monitoring requirements, which will increase transaction costs; and
- the specific nature of the project and lack of recourse to the other businesses of the project's investors may also increase the risk to lenders and hence the cost of capital.

**1.21** Based on our analysis, we consider that issues relating to quality of service can be addressed under any of the different financing structures suggested. However, ensuring quality of service would be a key issue that the more complex structures would need to show was being appropriately managed. Greater co-ordination between different stakeholders under the JV and Project Finance options could lead to more tailored packages of products being available to water users.

**1.22** The higher the proportion of the water from a MSWSA that would be supplied to statutory water companies, the lower the risk of the project is likely to be (as the cashflows of the project are likely to be less volatile) and the more likely it is that the lower costs of corporate financing will outweigh any potential benefits from project finance or joint venture. Likewise, the smaller a MSWSA project is relative to the statutory water companies considering investing in it, the more likely it is that a corporate finance approach will be appropriate.

## Investor objectives

**1.23** We discussed the attractiveness of MSWSAs with a number of stakeholders including statutory water companies, power companies, the agriculture and food production sectors, infrastructure funds and debt investors. Our discussions focused on the risks and opportunities associated with MSWSAs and the attractiveness of, and the barriers that may exist to, participating in MSWSAs under the different financing options. A summary of our findings is set out in Section 5.

**1.24** We selected stakeholders based on their involvement, either directly or indirectly, in the WREA programme and their potential interest or existing involvement in the financing of the water sector.

**1.25** Statutory water companies were generally enthusiastic about exploring the possibility of developing MSWSAs in collaboration with other water companies. They noted that there are examples of such collaborations already in place across the industry (albeit many pre-date privatisation).

**1.26** Other water users expressed mixed views about participating in MSWSAs (as either water users or as investors), highlighting the availability of alternative sources of water. These alternatives were likely to affect their willingness to contribute towards the costs of the infrastructure (including any connection costs associated with new distribution pipelines), though some water users were enthusiastic about participating in MSWSAs.

**1.27** Both infrastructure funds and debt investors indicated that they might be interested in investing in MSWSAs, subject to satisfactory regulatory and contractual arrangements being put in place.

**1.28** Existing debt investors may be concerned about the companies they have lent to getting involved in new activities with a different risk profile. Existing debt investors will want to be protected against new risks associated with MSWSAs, so they may prefer an option which is off balance-sheet i.e. project finance, or a JV without recourse to the parent companies.

## Environmental objectives

**1.29** The environmental impact of a MSWSA would depend on the design of the project rather than financing structure. However, the more co-ordination that exists between the different stakeholders in the project, the greater the benefits that are likely to accrue (e.g. a smaller asset may be able to meet the needs of more stakeholders if the water from the asset is used more efficiently).

**1.30** Accordingly, through greater co-ordination between stakeholders, JVs and Project Finance may be able to achieve greater environmental benefits through the more efficient allocation of water, and trading of water rights, among the different stakeholders.

## Stylised financial modelling

**1.31** To test the financial impact of different financing options, we have considered the cost to users of the water from a hypothetical project. To do this we have considered the Net Present Value (NPV) of the profile of payments from water users over time for each financing option, discounted at HM Treasury's Social Time Preference Rate. A key input to our assessment is the cost of capital under each option.<sup>2</sup> Standard corporate finance theory states that the cost of capital will vary across each of the options if the systematic risk of project cashflows varies between options. This could be the case if there are differences in the risk profile of a MSWSA under different financing options e.g. if the contractual or regulatory arrangements applied to the project vary.

<sup>2</sup> To focus on the impact of the choice of financing options on stakeholders, we have assumed the key technical characteristics of the MSWSA (e.g. capex, opex, asset life) are the same across each of the options. In practice, there could be some variation if different regulatory and/or contractual arrangements led to, for example, more efficient delivery of the project (i.e. lower capex and opex).

**1.32** We have not undertaken a detailed bottom-up analysis of the risk, or the cost of capital, or the likely availability of capital, for each financing option because the actual position will fundamentally depend on the regulatory and contractual arrangements applied to the project, which are not currently known. Instead, we have made high-level, theoretical assumptions (see Section 5) about the cost of capital, based on independent estimates of the cost of capital from other projects similar to MSWSAs. We have adjusted these estimates so they are forward-looking and based on a common set of assumptions about the equity risk premium and risk-free rate. Specifically:

- the cost of capital for Option 1 (Single Water Company) is assumed to be a weighted average of the costs of capital for statutory water companies undertaking either PWS or non-PWS activities. This reflects our assumption that in Option 1 a statutory water company funds a MSWSA and supplies water to both PWS and non-PWS users;<sup>3</sup>
- the cost of equity for Option 2 (i.e. a multi-sector JV) is assumed to reflect the highest internal hurdle rate of the various stakeholders investing in the MSWSA. We have assumed this rate to be equal to the cost of equity of power companies (noting that the Weighted Average Cost of Capital (WACC) of some of the other stakeholders may in fact be higher).<sup>4</sup> The cost of debt is assumed to fall between that of the corporate finance option and the project finance option (discussed below);
- for Option 3 (Special Purpose Vehicle), where the MSWSA is project financed using an SPV, we have assumed the cost of capital is likely to be similar to that of an Offshore Transmission Owner (OFTO), uplifted to include construction risk (which the MSWSA would face, but the OFTO does not). We discuss our reasoning further from paragraph 5.79 below;
- the WACC for Options 4 (Regulated/Unregulated Split) and 5 (Pre/Post Construction Split), which are combinations of Options 1, 2 and 3, is assumed to be a weighted average of the WACCs applicable to the respective financing options. The weights reflect the relative proportions of the MSWSA delivered under each financing option;
- the WACC for Option 6 (Statutory Water Company JV), which does not involve other water users, is assumed to be similar to that of a statutory water company undertaking PWS activities; and
- the cost of capital for Option 7 (Water Company Shareholder JV) is assumed to be the same as in Option 2 except the cost of equity reflects that of statutory water companies (as these are the only equity investors in this financing option).

**1.33** Table 1-2 below summarises the cost of capital assumptions we have used in our stylised financing modelling. Our analysis suggests that the cost of capital is likely to be lower where the MSWSA is financed by statutory water companies, either individually (Option 1) or jointly (Option 6).

**TABLE 1-2: SUMMARY OF COST OF CAPITAL ASSUMPTIONS**

OPTIONS FOR DELIVERING MULTI-SECTOR ASSETS	DESCRIPTION	THEORETICAL ASSUMED REAL PRE-TAX WACC
1 Single Water Company <sup>5</sup>	Corporate finance	3.57%
2 Multi-Sector JV	Joint venture	3.87%
3 Special Purpose Vehicle	Project finance	4.19%
4 Regulated/Unregulated Split	Corporate finance / JV	3.62%
5 Pre/Post Construction Split	Corporate finance / Project Finance	4.11%
6 Statutory Water Company JV	Water company JV inside ring-fence	3.53%
7 Water Company Shareholder JV	Water company JV outside ring-fence	3.73%

Source: FTI assumptions. See Section 5 for further details.

Note: these are not FTI's predictions for actual costs, rather assumptions for the purpose of stylised financial modelling.

<sup>3</sup> See Ofwat, Setting price controls for 2015-20 Final price control determination notice: policy chapter A7 – risk and reward, 2014, p42 and Ofwat (2015) "Draft Determination of Terms and Conditions of the Supply of Non-Potable Water from Dwr Cymru Cyfyngedig to Tata Steel UK Limited at Llanwern under Section 56 of the Water Industry Act 1991", July, p25.

<sup>4</sup> There is a body of academic literature which suggests that the rate of return that each investor would seek from the MSWSA project would reflect their internal hurdle rate, rather than the risk profile of the project: see, for example, Meier and Tarhan (2007) "Corporate Investment Decision Practices and the Hurdle Rate Premium Puzzle", January or Driver and Temple (2010) "Why do hurdle rates differ from the cost of capital?", Cambridge Journal of Economics, 34(3), pp501 – 523. See also CMA, Energy market investigation Provisional findings report, Appendix 10.4: Cost of capital, 2015, p4-1.

<sup>5</sup> This describes a situation where an asset which was providing water for multiple users would be financed by a single water company. This is not the same as a single water company providing an asset solely for the purposes of public water supply, where the entire cost of the asset would be expected to be within the Regulatory Capital Value.

## Assessment of options

- 1.34** Based on our assessment above, we draw the following conclusions.
- 1.35** Our analysis suggests that there are potentially significant legal and regulatory barriers to the delivery of a MSWSA through any of the financing options identified. The pipe laying and compulsory land acquisition powers of statutory water companies do not appear to extend to legal entities other than statutory water companies (even JVs between them) or to the carrying on of unregulated activity (such as the supply of water to farmers for reasons other than public water supply). The abstraction licensing regime could also inhibit the ability of different users of water from the MSWSA to trade water rights with each other, potentially reducing the attractiveness of participating in MSWSAs for some water users and inhibiting the ability of the project to allocate and use water more efficiently. Options 2, 3, 4, 5 and 7 are also likely to require some amendment to the WSL or SIP regimes in order to be feasible.
- 1.36** The SPV and Multi Sector JV options which bring together all stakeholders can allocate risks (such as construction and demand) directly to those best able to manage them.
- 1.37** Similarly the SPV and Multi Sector JV options - where these may be needed to manage the involvement of multiple stakeholders - can be expected to be more likely to support the potential co-ordination benefits of MSWSA projects such as delivering water supply assets to meet the needs of a wider group of water users.
- 1.38** Overall, our assessment suggests that the corporate financed options - Single Water Company and Statutory Water Company JV - are likely to provide the lowest cost of funding.
- 1.39** Financing options with predominantly regulated revenue streams may achieve a smoother impact on payments from water users, including bills paid by customers of statutory water companies. This is because the regulated revenue streams would increase and decrease more gradually than the Multi-Sector JV or Project Finance options, which involve step-changes in revenues from water users.
- 1.40** Our discussions with water users indicated mixed views from water users about participating in MSWSAs through direct equity investment, with some water users highlighting the existing of alternative sources of water but others enthusiastic about the possibility of being involved in MSWSAs. Infrastructure funds and lenders expressed interest in MSWSAs, subject to satisfactory regulatory and contractual arrangements being developed, but existing debt investors may have reservations about the companies they have lent to (whether statutory water companies or other water users) investing in MSWSAs and may seek to be protected against any new risks these investments create.
- 1.41** However, Option 1 may be incompatible with the existing financing arrangements some of the statutory water companies have in place, which could constrain their ability to undertake unregulated (non-appointed) activities.
- 1.42** Greater co-ordination between stakeholders under the JV and SPV options may be able to support the more efficient allocation of water among the different stakeholders. In addition the closer involvement of water users in these options may make it easier to develop new services tailored to meet the needs of water users.
- 1.43** A more detailed summary of our assessment of the different financing options against the selection criteria can be found in Section 8 of the report.

## BACKGROUND

### Introduction

**2.1** This report has been prepared by FTI Consulting LLP (“FTI Consulting” or “FTI”) for Anglian Water Services (AWS) in connection with financing of multi-sector water supply assets (i.e. financing of water supply assets for the benefit of both statutory water companies and other water users) under the terms of AWS’s services agreement with FTI dated 16 June 2015 (the “Contract”). We have been asked to advise on the different options which might be available for financing these types of assets and to evaluate their strengths and weaknesses, including any barriers to their implementation. We set out our instructions in more detail below.

### Background

**2.2** Water supply assets have traditionally been designed, constructed, financed and operated by regional monopoly water undertakers (also referred to as statutory water companies throughout this report), under the auspices of the Water Industry Act (WIA) 1991. Ofwat has determined the way the costs of these assets have been recovered within the constraints of the Act and the license conditions of the undertakers. The undertakers have played a central role, putting forward proposals for investments in assets and the management of water resources through price control business plans and through Water Resource Management Plans (WRMPs).

**2.3** Development of assets by parties other than the statutory undertaker for the purpose of public water supply has been constrained to very specific circumstances in the UK, meaning that in practice almost all investment in assets for public water supply (PWS) has been by the statutory undertaker. Meanwhile, investment in water resources for other purposes has been undertaken by other parties based on those parties’ water resource requirements and their ability and willingness to finance them e.g. farmers have developed their own water resources as and when required by their agricultural products.

**2.4** Planning of water resources for public water supply and ‘other’ purposes has not, to date, been well integrated.<sup>6</sup> This may not have led to optimal outcomes in all cases. For example, it is possible that an individual farmer has developed a dam to supply its water resource requirements while at another geographically proximate location the local water undertaker has developed a reservoir for public water supply purposes, but it would have been more cost effective to have developed a slightly larger reservoir jointly.

**2.5** There may be opportunities for different water users to collaborate more effectively and efficiently, reducing the costs of water resources and benefitting the environment e.g. by developing smaller reservoirs which disrupt rivers less, by recycling water or through increased water trading.

**2.6** There may be opportunities for collaborative development of water resources in the short term, but it may also be that such joint planning becomes more and more important as water resources become less predictable (due to the effects of climate change) and demand for water resources grows (as a result of population growth, particularly in the south east of England).

**2.7** Recognising the opportunities for multi-sector water supply assets (MSWSAs), AWS has been exploring the potential benefits of these projects and the best ways to facilitate them. AWS’s work in this area is part of its contribution to the Water Resources East Anglia (WREA) project, where AWS, other statutory water companies, other water users and the Environment Agency (EA) are working together to optimise water resources across the East Anglia region. As part of that work the WREA is considering the desirability and practicality of a multi-sector approach to water supply assets.

**2.8** While no decisions have yet been made about whether one or more multi-sector assets would be worth developing, before any MSWSA project is ready to be taken forward a range of issues will need to be examined, one of which is the best way to finance these projects. For example, which parties are best placed to fund the investments, how those investments should be funded and what regulatory arrangements are needed to enable those parties to get involved, such that the projects best deliver for customers and the environment as well as investors.

**2.9** The different financing options available might not, however, be compatible with the existing legal and regulatory frameworks which AWS and other stakeholders have to operate within. Moreover, with Ofwat in the midst of a root and branch review of its approach to setting allowed revenues for statutory water companies at Price Review 2019 (PR19) (the so called Water 2020 programme), there is an opportunity for AWS to contribute to the evidence base available to Ofwat as it deliberates over the most appropriate structure of regulation for 2020 onwards. In particular, there is an opportunity to highlight to Ofwat potential changes to its regulatory framework which could support the development of MSWSAs. Noting that Ofwat approved funding for AWS’s work on multi-sector planning as part of Price Review 2014 (PR14), we anticipate that Ofwat will take an active interest in the work AWS is doing in this area.<sup>7</sup>

<sup>6</sup> See, for example, Helm (2015) “Catchment management, abstraction and flooding: the case for a catchment system operator and coordinated competition”, February.

<sup>7</sup> See, for example, Ofwat (2015) “Towards Water 2020 – policy issues: promoting markets”, July, p21 for an acknowledgment of Ofwat’s interest in AWS’s work to “plan, fund, deliver and maintain – in partnership – a new large-scale water resource of one sort or another, or to support changes to the efficient use of existing resources”.

## Our instructions

**2.10** In this context AWS has commissioned FTI to consider the different options which might be available for financing MSWSAs and to undertake a preliminary assessment of those options. Our work builds on a previous study undertaken for AWS by the Cambridge Institute for Sustainability Leadership (CISL) entitled "Sink or Swim? A multi-sector collaboration on water asset investment" (April 2014). We have not been asked to consider the desirability or practicality of MSWSAs, but have instead considered the financing of MSWSAs on the assumption that one or more such projects would be desirable.

## The author

**2.11** FTI's work has been led by Anthony Legg. Anthony is a Director in FTI's Economic and Financial Consulting practice based in London. He is an expert in regulatory finance and economic regulation, particularly for regulated water, electricity and gas networks. Anthony was assisted by Jennie Cassidy. Jennie is a Senior Consultant at FTI, specialising in regulatory economics.

**2.12** The report has also benefited from the independent academic review of Professor Raphael N. Markellos of the Norwich Business School / University of East Anglia, whose academic research and writing has spanned a range of fields in finance, including the financing of infrastructure. The report has also been subject to FTI's standard internal quality assurance processes.

**2.13** Unless stated otherwise, all references to "we" and "us" throughout this report refer to the author. We have discussed issues relevant to this report with AWS. The opinions expressed in this report are, however, the author's own.

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## Approach

**2.22** To evaluate the most appropriate approach to financing MSWSAs we have explored the range of options available and assessed those options against a criterion reflecting the objectives of different stakeholders in the project. Initially we make this assessment based on financial theory and practice, assuming the legal and economic regulatory framework applied to the English water sector does not constrain the financing options available. However, recognising that this may not be the case, we consider whether the existing legal and regulatory framework gives rise to any barriers to the implementation of each of the financing options and – where barriers exist – whether changes to legislation or regulation may be appropriate to facilitate investments in MSWSAs. Whichever option is adopted, it will be important to allocate risks to those most able to bear them in order to secure value for money for water users (including the customers of statutory water companies). Therefore, we have also explored the risks which may arise in MSWSAs and the tools available to stakeholders in MSWSAs to efficiently allocate those risks to the parties best placed to manage them.

**2.23** Specifically, our approach to investigating and evaluating the different options available for financing MSWSAs:

- Section 3 identifies and describes a range of options building on the 'Sink or Swim report', taking into account a review of available academic research and practice and discussions with stakeholders;
- Section 4 discusses a criterion for selecting between the options based on an assessment of who the key stakeholders are and what their key measures of success are;
- Section 5 assesses the options against the evaluation criterion through qualitative assessment of the options, discussions with stakeholders and stylised financial modelling of a notional MSWSA;
- Section 6 assesses the feasibility of the options given the existing legal and regulatory framework and, where appropriate, identifies changes to the legal and regulatory arrangements which may be needed to support MSWSAs;
- Section 7 considers how value for money can be secured through efficient risk allocation and mitigation; and
- Section 8 sets out a number of recommendations to explore the financing of MSWSAs further, including a number of changes to the existing regulatory and legal arrangements which might be required in order to facilitate optimal investments in MSWSAs.

## Structure of this report

**2.24** Reflecting the approach outlined above, this report is structured as follows:

- Section 3 describes the various options available for financing MSWSAs;
- Section 4 outlines a criterion for selecting between the options;
- Section 5 presents the results of our evaluation of the different financing options based on qualitative assessment, stylised financial modelling and discussions with stakeholders;
- Section 6 assesses the feasibility of the different financing options within the existing legal and regulatory framework applied to the English water sector and considers whether any changes may be required to facilitate investment in MSWSAs;
- Section 7 discusses how best value for money could be secured within each financing option; and
- Section 8 summarises our conclusions and recommendations.

**2.25** The Appendix provides some further information about some of the inputs to the stylised financial modelling.

**2.26** As part of our work we have reviewed a range of previous infrastructure investments to identify the lessons which might be applicable to MSWSAs. These past transactions are referred to in this report as and when relevant.

## OPTIONS FOR FINANCING MULTI-SECTOR WATER SUPPLY ASSETS

- 3.1** In 2014 the Cambridge Institute for Sustainability Leadership worked with AWS and a range of companies across the finance, agriculture, retail, civil engineering and real estate sectors to consider the implementation of multi-sector catchment based initiatives with the potential to provide businesses with the capacity to secure water supply during long-term droughts (significantly reducing associated business risks). The work focused on a case study, a proposed water storage investment in the Wissey catchment (which is located in the East of England, the driest and one of the fastest growing economic regions in UK).
- 3.2** CISL's report, "Sink or Swim: A multi-sector collaboration on water asset investment" explored novel financing models for a multisector catchment-based water asset investment and management approach, starting by identifying the potential benefits each different sector might secure from an investment in water storage. Four high-level financing options were identified, taking into account the views of the different participants in the working group. The models ranged from a traditional water-company led approach through to project financing options. The four options were:
- **Option 1** : A statutory water company finances, builds and operates the MSWSA as if it is any other project (both the PWS and non-PWS portions). The project is financed on the balance-sheet of the statutory water company i.e. Corporate Finance.
  - **Option 2a**: Farmers and/or other water users invest alongside a statutory water company in a Joint Venture arrangement to finance, build and operate the MSWSA;
  - **Option 2b**: Supermarkets invest alongside a statutory water company in a JV arrangement similar to Option 2. The supermarkets effectively invest in water assets on behalf of its supply chain i.e. farmers. Supermarkets would sell water to the farmers and/or offset the costs of water from the price of the agricultural products supplied by farmers.
  - **Option 3**: an independent Special Purpose Vehicle (SPV) is established to finance, build and operate the MSWSA project. Ownership of the SPV would be opened up to all kinds of investors, including purely financial investors.
- 3.3** A key focus for our work has been to flesh out how these models might work in more detail, enabling the options to be evaluated and compared in more depth. We consider that these four options are plausible possibilities, though we consider options 2a and 2b to be variants of the same option i.e. a Multi-Sector Joint Venture. Our discussions with stakeholders have identified that large industrial users and Internal Drainage Boards (IDBs) may be other groups of stakeholders which might participate in MSWSAs.
- 3.4** We have also considered whether there may be other options for structuring and financing MSWSAs. One such possibility is to split the funding of the project into parts. Two ways that this might be done are:
- **Option 4**: the MSWSA could be split into two separate projects, one financed by a statutory water company for PWS purposes, and the other financed by other water users for non-PWS purposes (this is like splitting the project into Appointed and non-Appointed activity).
  - **Option 5**: funding of the project could also be split temporally. For example:
    - a statutory water company could undertake a range of preparatory work, before other parties undertake the construction and then operate the asset (this is similar to the Thames Tideway Tunnel (TTT) model);
    - a statutory water company could construct the asset, then sell it to other investors (this has some similarities to the Offshore Transmission Owners (OFTO) model); or
    - a statutory water company could construct the asset, then securitise the revenues post-construction (which has similarities to the Kielder Reservoir).
- 3.5** Option 4 might be applicable where the MSWSAs comprised separately identifiable assets e.g. a reservoir and its associated pipe network, multiple separate reservoirs with a shared pipe network, or even a Sustainable Drainage System project which might be split into zones.
- 3.6** We also consider that Option 4 is worth considering further if there is a possibility that the legal and regulatory frameworks applicable to MSWSAs might require the project to be separated into the elements relating to PWS and non-PWS.
- 3.7** We have also considered options where only statutory water companies participate in the MSWSA. While these options do not involve farmers, power companies, IDBs or industrial users, the willingness of these other parties to participate in MSWSAs is uncertain (e.g. because they have existing alternative water supplies), though there have been some expressions of interest about participating in MSWSAs from some parties. Water companies working together could also potentially deliver significant benefits for customers and the environment relative to delivering infrastructure separately.<sup>8</sup> We have considered two variants on this theme:
- **Option 6**: Statutory Water Company JV. In this financing option two or more statutory water companies would co-invest into a JV which would be a subsidiary of the regulated water companies.

<sup>8</sup> See, for example, Ofwat (2010) "A study on potential benefits of upstream markets in the water sector in England and Wales", March.

- **Option 7:** Water Company Shareholder JV. This option is similar to Option 6 except that instead of the statutory water companies co-investing, their respective shareholders co-invest into a new entity which delivers the MSWSA.

- 3.8** The seven options can be thought of as lying on a spectrum between a corporate financed option, whereby a statutory water company delivers 100% of the project, and a purely project financed option, whereby the project is delivered by an SPV (and does not necessarily involve a statutory water company or its shareholders in the direct financing of the project). The options between each end of the spectrum involve either dividing the ownership of the project between a statutory water company and other stakeholders, or splitting the project into two different projects owned (and financed) by different stakeholders.
- 3.9** Figure 3-1 below summarises the options, with the options not included in the original 'Sink or Swim' report shown in yellow.
- 3.10** Some of the options could be delivered by a statutory water company within the conditions of its Instrument of Appointment i.e. within the regulatory ring-fence. Others would need to be delivered by a separate entity outside the regulatory ring-fence.
- 3.11** We note that similar MSWSAs developed in Australia (such as the Murray-Darling Basin scheme and some Tasmanian irrigation schemes) and the USA (the Central Arizona Project (CAP)) have involved significant sums of Government funding. Similar Government backed financing arrangements would, in theory, be possible in

the UK as well, as the recent TTT procurement process has illustrated. However, we have assumed that the Government would be unwilling to either directly fund MSWSAs or to provide other forms of support (such as underwriting of loans), so we have focused on private-sector funding options.<sup>9</sup>

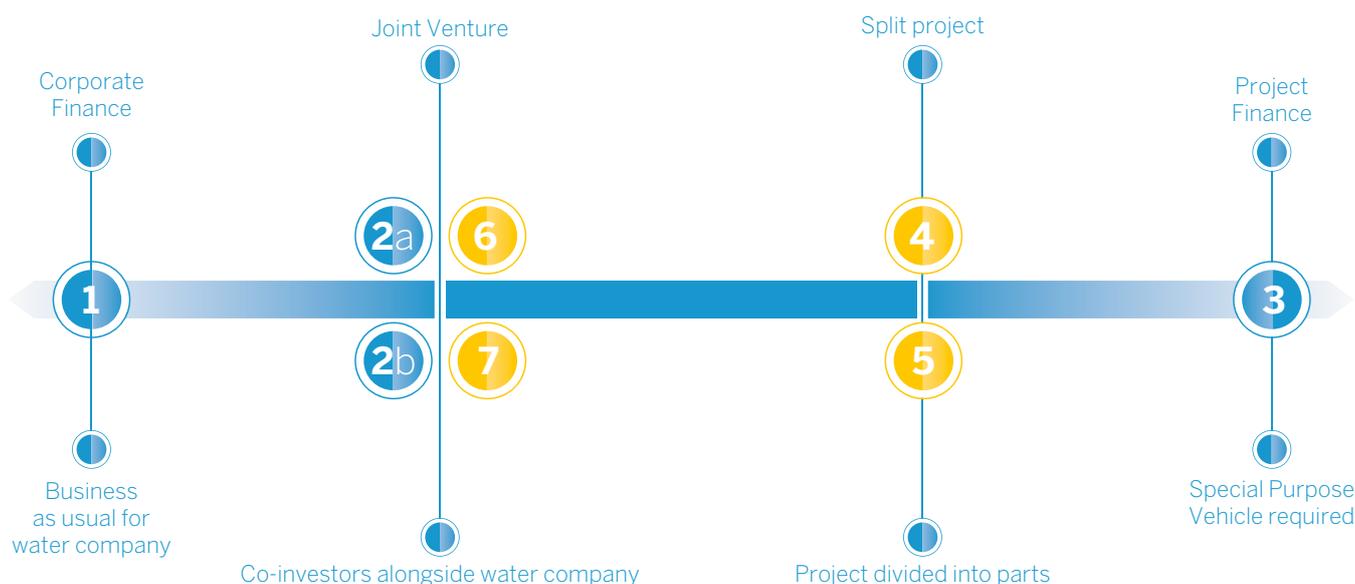
- 3.12** We discuss the seven options in more detail below. For each option we describe:

- who the investors would be and the role of debt financing. (Gearing and the cost of capital are discussed later);
- who the users of water from the project would be;
- who the contractors would be and who would have responsibility for making arrangements with those contractors; and
- the way that revenues would be determined at a high level.

- 3.13** A MSWSA could relate to several different types of infrastructure, such as reservoirs, winter storage, desalination plants, water recycling or water transfer assets. To explore these different financing options we have taken a reservoir as a representative project. As illustrated in Figure 3-2 below, a reservoir comprises a number of different individual pieces of infrastructure:

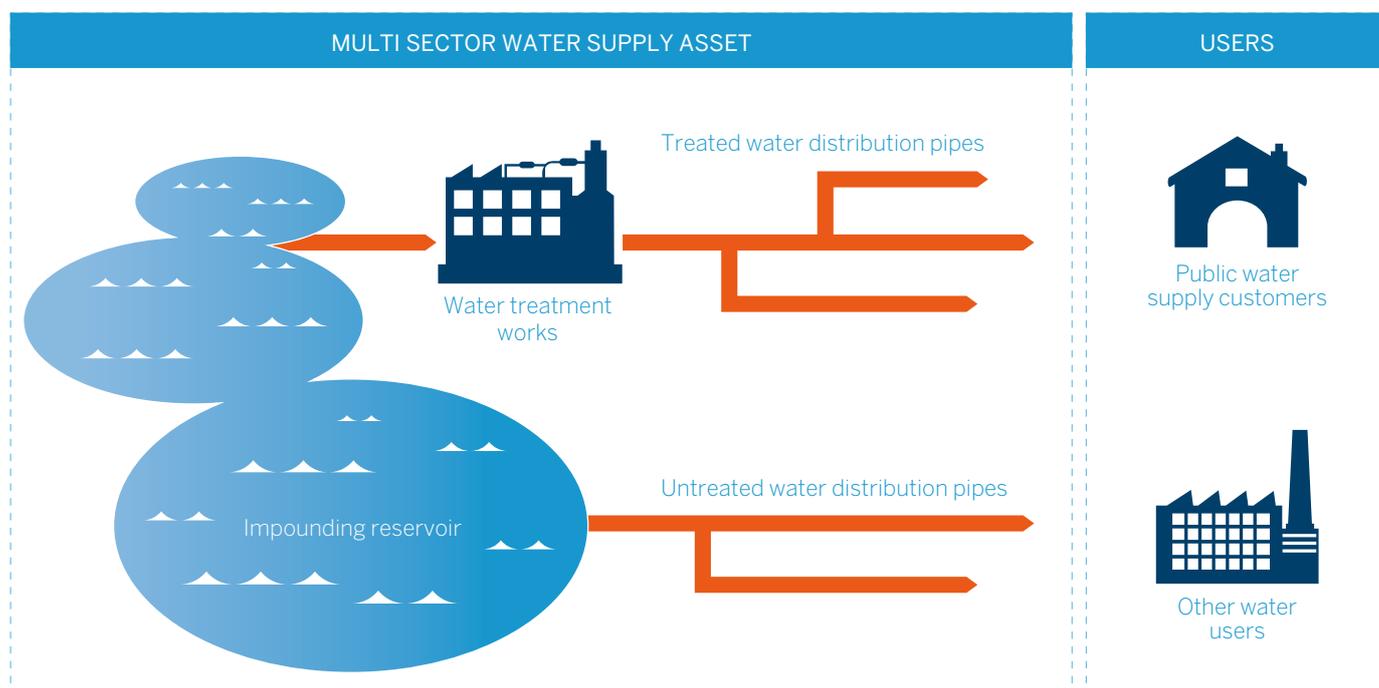
- an impounding reservoir;
- a water treatment works;
- pipes for transporting treated water; and
- pipes for transporting untreated water.

**FIGURE 3-1: SPECTRUM OF FINANCING OPTIONS**



<sup>9</sup> We note that Section 154B of the Water Industry Act 1991 (as inserted by the Water Industry (Financial Assistance) Act 2012) gives the Secretary of State for Environment, Food and Rural Affairs the power to make financial assistance available for large and complex infrastructure projects in the water sector in certain circumstances: see Ofwat (2015) "Criteria for selecting specified infrastructure projects – Ofwat guidance", May, p7.

FIGURE 3-2: STYLISED ILLUSTRATION OF A RESERVOIR MSWSA



**3.14** Later in our analysis we consider the potential implications of financing different types of MSWSAs.

**3.15** Broadly speaking the different financing options fall into one of three categories:

- **Corporate finance** refers to a situation in which the capital required to fund the MSWSA is sourced through the debt and equity of the company sponsoring the project, or through internally generated funding such as retained earnings.
- **Project finance** is defined as the creation of a legally independent project company financed with non-recourse debt, usually for the purpose of investing in an asset of a single purpose and limited life.<sup>10</sup>
- **Joint venture** involves two or more parties establishing an entity and contributing equity to fund the assets. The parties are jointly responsible for the associated profits, losses and costs of the entity. There may or may not be recourse to the project's sponsors' other business interests.

**3.16** With these general frameworks in mind we now describe the different financing options at a high level. The descriptions are illustrative and different sets of arrangements could be put in place in practice, depending on the contractual and regulatory arrangements applied. These arrangements are not yet known for the MSWSA, but we discuss later the types of features which might be important to delivering the objectives of stakeholders.

#### Option 1 – Single Water Company

##### Investors

**3.17** In this option a statutory water company is the sole financier and owner of the project. The statutory water company would use a combination of debt and equity to finance the project, the same as the rest of its investment programme. The equity could either be newly raised or from retained earnings, or a combination of the two. The project would be financed as part of the statutory water company's wider financing programme and would not have separately identified debt or equity. Because the project is not financed separately, cash flows from the statutory water company's other activities could be used to meet the cash needs of the project.

<sup>10</sup> See: Esty (2002) "The economic motivation for using project finance", p9.

## Water users

**3.18** While a statutory water company would be the sole investor, in contrast to water companies' 'business as usual', it would not be the sole user of the MSWSA. Rather, it would sell a portion of the water produced by the project to other users. These users could include a range of different parties such as other statutory water companies, power companies and agricultural producers.

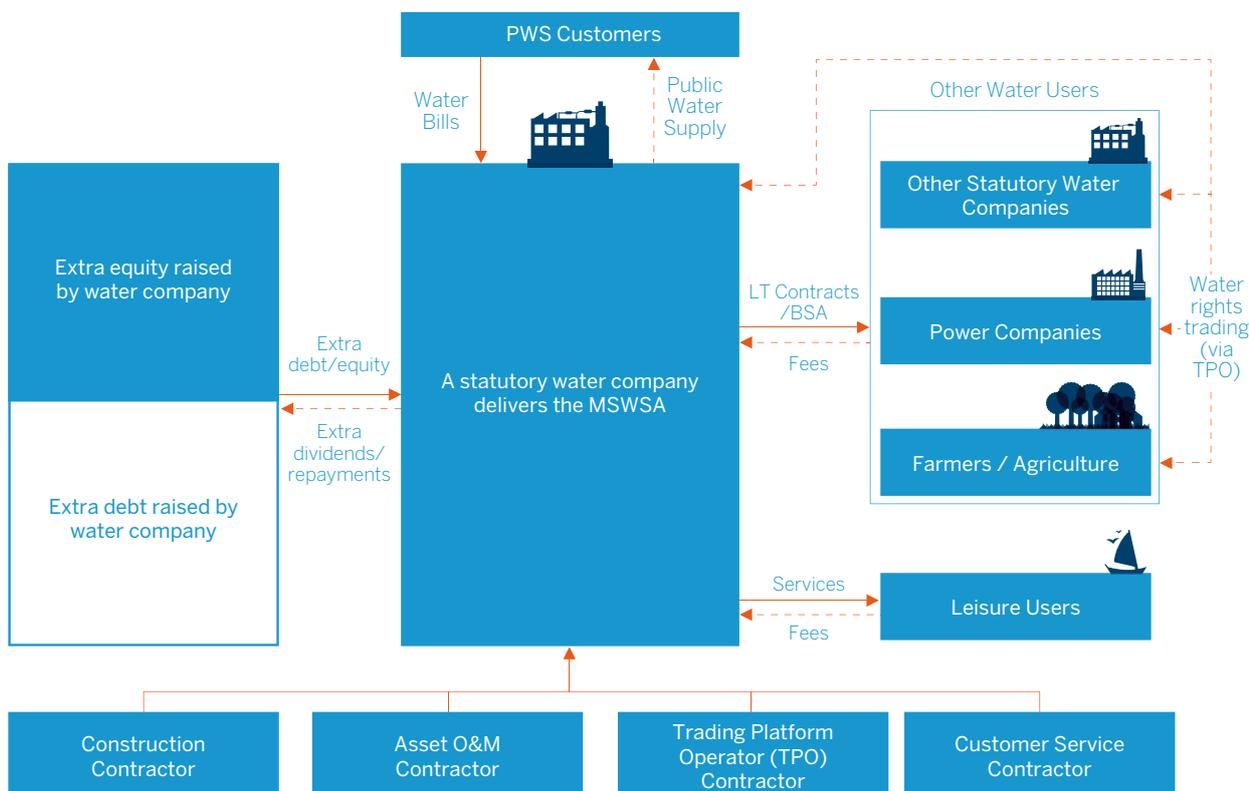
**3.19** Rights to the water from the MSWSA could be allocated among, or sold to, the users of the project (including statutory water companies) and these rights may be tradeable between the different water users. These rights confer an entitlement to extract a certain quantity of water in a given year, though the quantity may be linked to the water available i.e. a water 'share' rather than an 'allocation'. Users may pay for the water rights along with annual charges and a volumetric charge for the water they actually use.<sup>11</sup> Depending on the mix of these different types of charges, the revenues from water users may be more or less certain.

## Contractors

**3.20** The statutory water company would also have sole responsibility for arranging and managing any contractors required to deliver and operate the project, such as construction and O&M contractors. The customer service activities associated with the project could be carried out by the statutory water company's existing retail functions (including any embedded within the wholesale function) or be outsourced to another retailer. The statutory water company might also have a role to play – which it could elect to outsource - facilitating trading of water rights between water users. The statutory water company could use its pipe laying and compulsory purchasing powers to support the delivery of the PWS portions of the project, but agreement to purchase land or lay pipes for non-PWS activities would need to be negotiated commercially.

**3.21** Figure 3-3 illustrates the relationships between the various stakeholders in the project.

FIGURE 3-3: OVERVIEW OF OPTION 1 - (SINGLE WATER COMPANY)



Notes: "LT" is long-term and "BSA" is Bulk Supply Agreement.

<sup>11</sup> Water charging is discussed in more detail in Sections 6 and 7, but we note that the three components of water charging described here have been employed in multi-sector water supply asset projects in Australia and the USA.

## Revenues

**3.22** We assume that the project would recover its costs through a combination of revenue sources:

- a regulated revenue stream, recovered from the statutory water company's PWS customers. This revenue stream would, if governed by the existing PR14 regulatory framework, be determined using a standard 'building blocks' methodology whereby a proportion of totex is added to Regulatory Capital Value (RCV) and depreciated over time;
- a Bulk Supply Agreement (BSA) with one or more other statutory water companies (if water is supplied to other water companies); and
- one or more long-term contractual arrangements with water users such as power companies and farmers for non-PWS (unregulated) water. Water users would make payments to the MSWSA in return for water rights and/or volumes of water used.

**3.23** There are some important differences between these revenue streams. The statutory water company's fully regulated revenue stream would be expected to decrease over time in real terms (if it was calculated using the PR14 methodology) as the value of the asset depreciates and the allowed return (RCV x WACC) diminishes. BSAs and commercial contracts might, however, take a different form: these arrangements might specify payments which are broadly constant over time (in real terms), though a wide range of pricing structures would be possible. If these payments are broadly constant over time then they could be similar to a stream of annuity payments, whereby the proportion of the project's costs which the statutory water company seeks to recover from a particular water user are smoothed over the duration of the contract between the parties (rather than following a declining profile like the regulated revenue stream). There may also be important differences in risk between these different revenue streams e.g. there could be differences in the ability of the counterparties to each revenue stream to make the payments required.

**3.24** The project might also receive some revenue from other sources e.g. leisure users of a reservoir might pay fees for boating, angling licenses or at retail shops on site.

## Option 2: Multi-Sector JV

### Investors

**3.25** In this option the various water users form a JV to finance the project. The water users could fund the equity in proportion to their expected water consumption, but other patterns of contributions would be equally possible. In theory some of the contractors to the project might also be potential investors in the project, but we have assumed that the equity would be

funded by the water users. Contributions from other water users might include in-kind transfers, rather than up-front cash funding. These contributions might take the form of land, abstraction licenses or assistance with the construction of the asset e.g. digging trenches for pipes to be laid in.

**3.26** The project raises its own debt, which could be on a non-recourse basis, but may not be. If the debt is non-recourse the equity investors in the project would not be liable for debt payments if the project defaults. Debt could be in the form of loans, project bonds or debt from JV partners.<sup>12</sup>

### Water users

**3.27** The users of water from the project would be the same as for the single water company in Option 1.

**3.28** Users would again purchase tradeable water rights in the project. The water rights purchased by the different water users of the MSWSA could be purchased in proportion to the equity ownership stakes. For example, if a power company invested in 20% of the equity, and equity represented 50% of the financing of the project (the remainder being funded by debt), then the power company could be assumed to own 20% of the water rights even though it has only funded 10% of the actual capital of the project.

### Contractors

**3.29** The JV could enter into a number of contractual arrangements to deliver the project:

- a construction contractor (and potentially sub-contractors) to build the asset;
- a contractor for the operation and maintenance (O&M) of the asset;
- a party to facilitate trading of water rights between the different water users; and
- a customer service contractor to calculate payments due, issue bills, collect payments, to answer any queries from customers and other customer facing activities.

**3.30** The statutory water company could conceivably act as the O&M and customer service contractor, if not in other roles: the statutory water company would appear to be well placed to operate the asset by dint of the fact that the asset would need to be integrated with the remainder of the water company's PWS network, while the customer service activities of the MSWSA (which are likely to be limited) could also be undertaken by the water company given it would already undertake similar activities and might already have relationships with the users of the MSWSA.<sup>13</sup>

<sup>12</sup> For some recent examples of project infrastructure bonds, see Moody's (2014) "Pilot phase of the Project Bond Initiative demonstrates early proof of concept", November 18.

<sup>13</sup> Some of these relationships might be of a different character to those envisaged for the MSWSA. For example, while the statutory water company might already supply farmers for drinking water, it might not currently provide water for irrigation purposes.

**3.31** The JV would not be able to use the pipe laying and compulsory purchasing powers that statutory water companies possess. Instead, agreement to purchase land or lay pipes would need to be negotiated commercially.

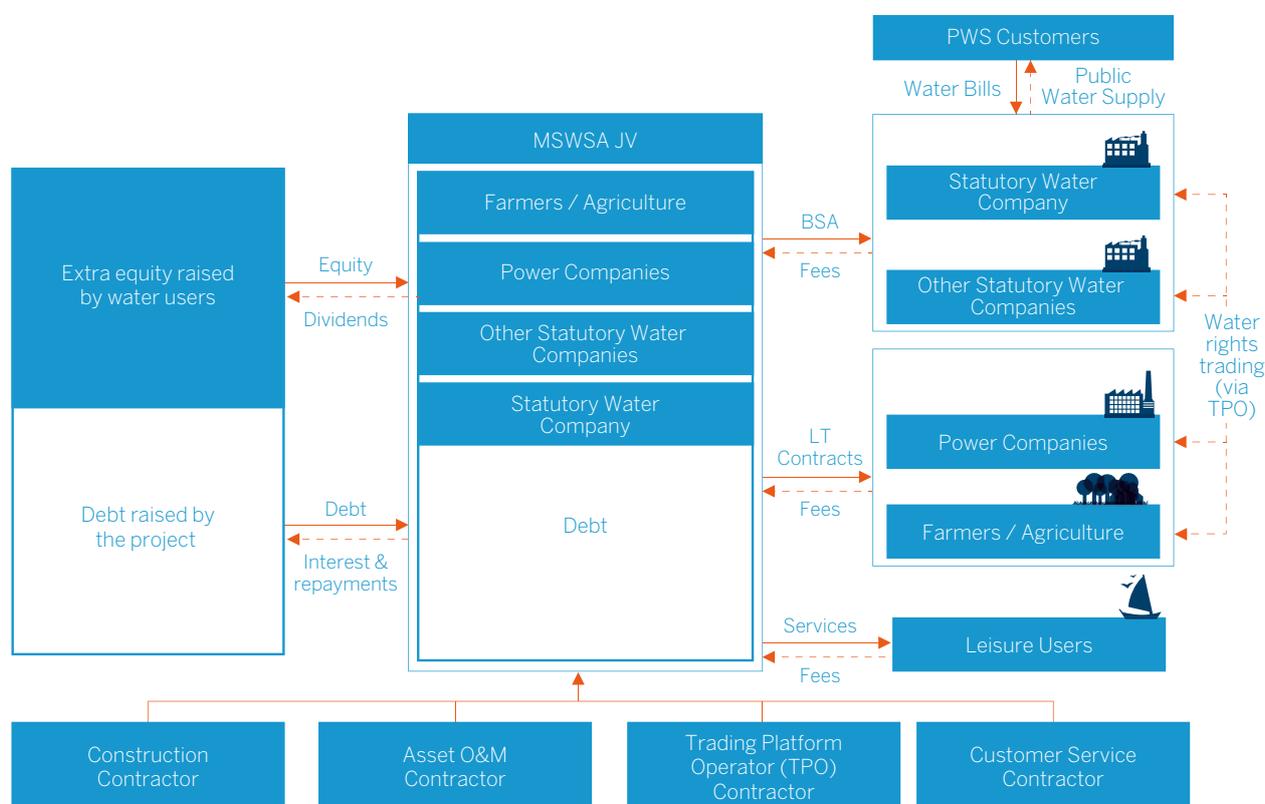
**Revenues**

**3.32** The MSWSA project would still need to enter into a series of long-term contracts with water users: in order to cover the ongoing costs of the project (including debt repayments and O&M) the project would need to receive revenues from water users. These contracts would

operate similarly to those in Option 1 except that the statutory water company is now a user of water from the project as well i.e. the statutory water company has a long-term contract for water with the MSWSA. This long-term contract between the MSWSA and the statutory water company might be a BSA, or it might be another commercial contract, depending on whether the BSA regime applies or not (an issue we consider in more detail in Section 6).

**3.33** Figure 3-4 illustrates the arrangements between the various stakeholders in the project.

**FIGURE 3-4: OVERVIEW OF OPTION 2 (MULTI-SECTOR JOINT VENTURE)**



Notes: "LT" is long-term and "BSA" is Bulk Supply Agreement.

**Option 3: SPV**

**Financing**

**3.34** In this option the MSWSA project is financed and owned entirely by an SPV. Potential equity investors include users of water from the project, contractors or financial investors such as infrastructure funds (though all of this depends on the risk profile of the project). Water companies could also be shareholders in the SPV and their participation – if they are the dominant water user – may be important to enable the project to raise finance. The project would raise its own non-recourse debt, either through loans from banks or by issuing bonds. The debt may be guaranteed by the project's sponsors during the construction period.

**Water users**

**3.35** The customers would be the same as in Option 1.

**Contractors**

**3.36** The contractual arrangements would be the same as in Option 2.

**3.37** The SPV would not be able to use the pipe laying and compulsory purchasing powers that statutory water companies possess. Instead, agreement to purchase land or lay pipes would need to be negotiated commercially.

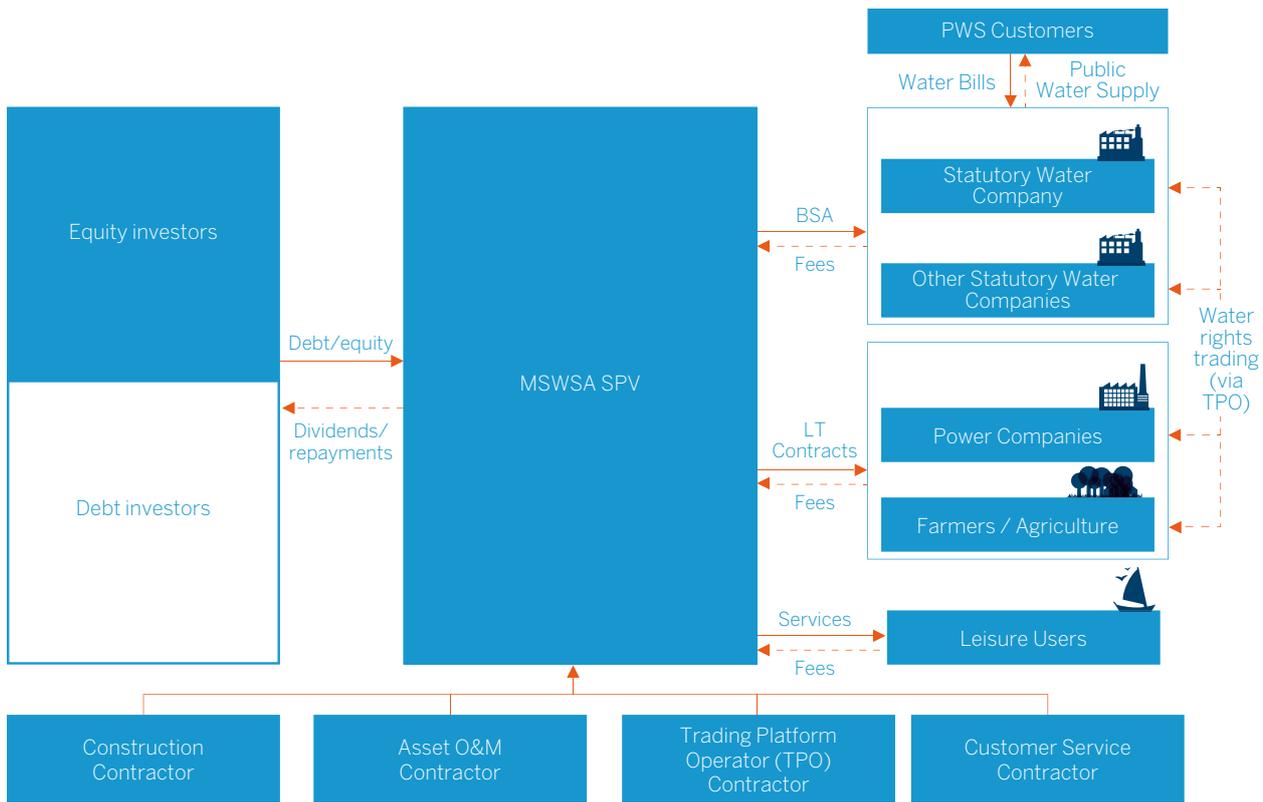
**Revenues**

**3.38** The SPV would enter into a series of long-term contracts with water users, including the statutory water company, in order to recover the upfront capital costs as well as the ongoing costs of the project (including debt

repayments and O&M). These contracts would operate similarly to those in the multi-sector JV in Option 2.

**3.39** Figure 3-5 illustrates the arrangements between the various stakeholders in the project.

**FIGURE 3-5: OVERVIEW OF OPTION 3 (SPV)**



Notes: "LT" is long-term and "BSA" is Bulk Supply Agreement.

**Option 4: Regulated/Unregulated split**

**Investors**

**3.40** In this option delivery of the MSWSA is split between two entities, a statutory water company and a JV. The statutory water company delivers the PWS portion of the project and the JV delivers the non-PWS portion. The statutory water company would raise its own debt and equity to fund the PWS portion, similar to the single water company in Option 1. The JV would inject its own equity and raise its own project debt, as in the multi-sector JV in Option 2.

**3.41** While noting that it is a legal question, we consider that it may not be possible for two separate legal entities to own different parts of the same physical asset e.g. the top and bottom half of a reservoir. There may also be challenges financing and managing a single asset owned by different legal entities given the need for co-ordination and agreement between the parties. However, we consider Option 4 – Regulated/Unregulated Split may be feasible in certain circumstances noting that a

MSWSA could comprise multiple co-located assets (e.g. a reservoir and a treatment works) or multiple assets (e.g. two reservoirs, one for PWS and one for non-PWS).

**3.42** For example, the statutory water company could own a reservoir for PWS purposes and other stakeholders an entirely separate reservoir for non-PWS purposes. This may make some sense if there are economies of scale in some aspect of construction or operation.

**3.43** Alternatively, noting that a MSWSA could involve several separate assets as Figure 3-2 showed, the statutory water company could own a treatment works which it uses to serve PWS customers, but other stakeholders could own the reservoir and sell raw water to both the water company (for PWS purposes) and to non-PWS water users as well (who might, if they desired, then pay an access charge to the water company in return for treating the water). The latter would potentially make the water company a customer of the non-PWS portion of the MSWSA project.

**Water users**

- 3.44** The statutory water company would sell the PWS services to its customers and to other water companies.
- 3.45** The JV would sell services to farmers, power companies and any other users (potentially including statutory water companies). These services might include both PWS and non-PWS services.

**Contractors**

- 3.46** Both the PWS and non-PWS parts of the project might enter into contractual arrangements with third parties to deliver some aspects of the project e.g. construction, O&M, customer service etc. It would theoretically be possible that the two different parts of the project could enter into separate contracts for these activities. It is also possible that the two parts of the project would appoint the same third party to undertake works on their behalf, though this could be less likely if the assets are physically separate. Some of the activities, such as O&M and customer service, are similar to business-as-usual activities for the statutory water company so it is possible that these activities would be outsourced to the water company.
- 3.47** To the extent that some individual water users might receive both PWS and non-PWS water (e.g. farmers who are connected to mains water supply for the farmhouse, but who use the non-PWS supply for irrigation) then it

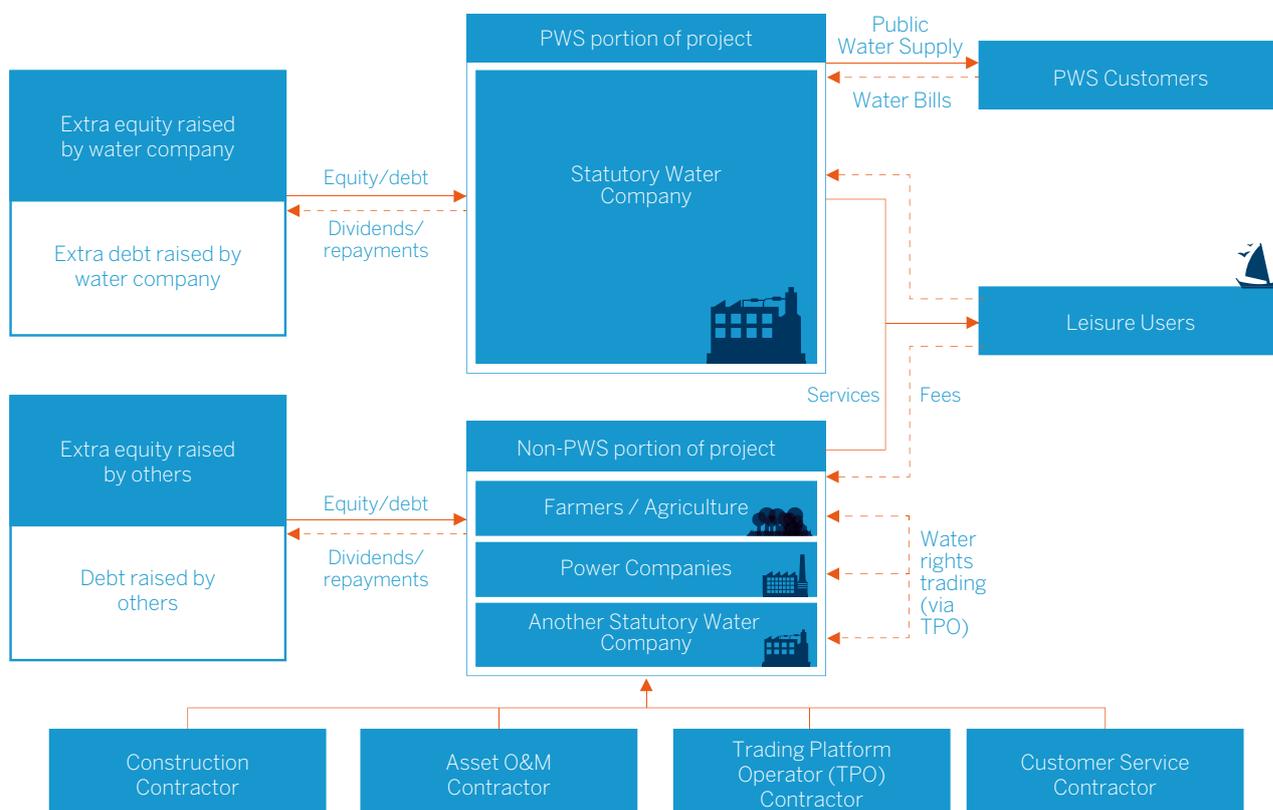
might be possible for a retailer (whether part of a statutory water company or not) to issue a single bill on behalf of both the statutory water company and the JV. The issuing of a single bill, rather than separate bills, would be similar to the approach adopted by Thames Water on behalf of the Thames Tideway Tunnel Infrastructure Provider (IP). Such joint billing is also common across the industry e.g. Water Only Companies billing on behalf of Water and Sewerage Companies and vice versa.

- 3.48** The statutory water company could use its pipe laying and compulsory purchasing powers to support the delivery of the PWS (regulated) portion of the project, but the JV would need to negotiate agreement to purchase land or lay pipes for the non-PWS (unregulated) part of the project on commercial terms.

**Revenues**

- 3.49** The costs of the PWS portion of the project would be recovered via the usual building blocks methodology. Water sold by the statutory water company to other water companies would be under the terms of a BSA.
- 3.50** The JV would earn revenues through long-term contracts. A constant (in real terms) stream of payments would likely be made over the life of the contract.
- 3.51** Figure 3-6 illustrates the arrangements between the various stakeholders in the project.

**FIGURE 3-6: OVERVIEW OF OPTION 4 (REGULATED/UNREGULATED SPLIT)**



Note: contractual arrangements for the statutory water company's PWS-related work are not shown for ease of presentation.

## Option 5: Pre/Post Construction Split

### Investors

- 3.52** In this option delivery of the MSWSA is again split, but this time based on timing. A statutory water company takes responsibility for delivering the early part of the project, before an SPV is established to deliver the remainder. These arrangements have some parallels with the way that the TTT has been delivered, with Thames Water responsible for a wide range of pre-construction works (e.g. land purchases) prior to the main construction of the Tunnel itself.
- 3.53** It is not clear at this stage, however, at which point in the construction of a MSWSA it would make sense for the statutory water company's role to end and the SPV's to begin. For the Tideway the split is based on protecting Thames Water from the riskiest aspects of the project's delivery. Whether similar risks arise in relation to a MSWSA would depend on the exact engineering requirements of a particular project.

### Water users

- 3.54** The customers of the project would be the same as in Option 3, where an SPV is created to finance the project.

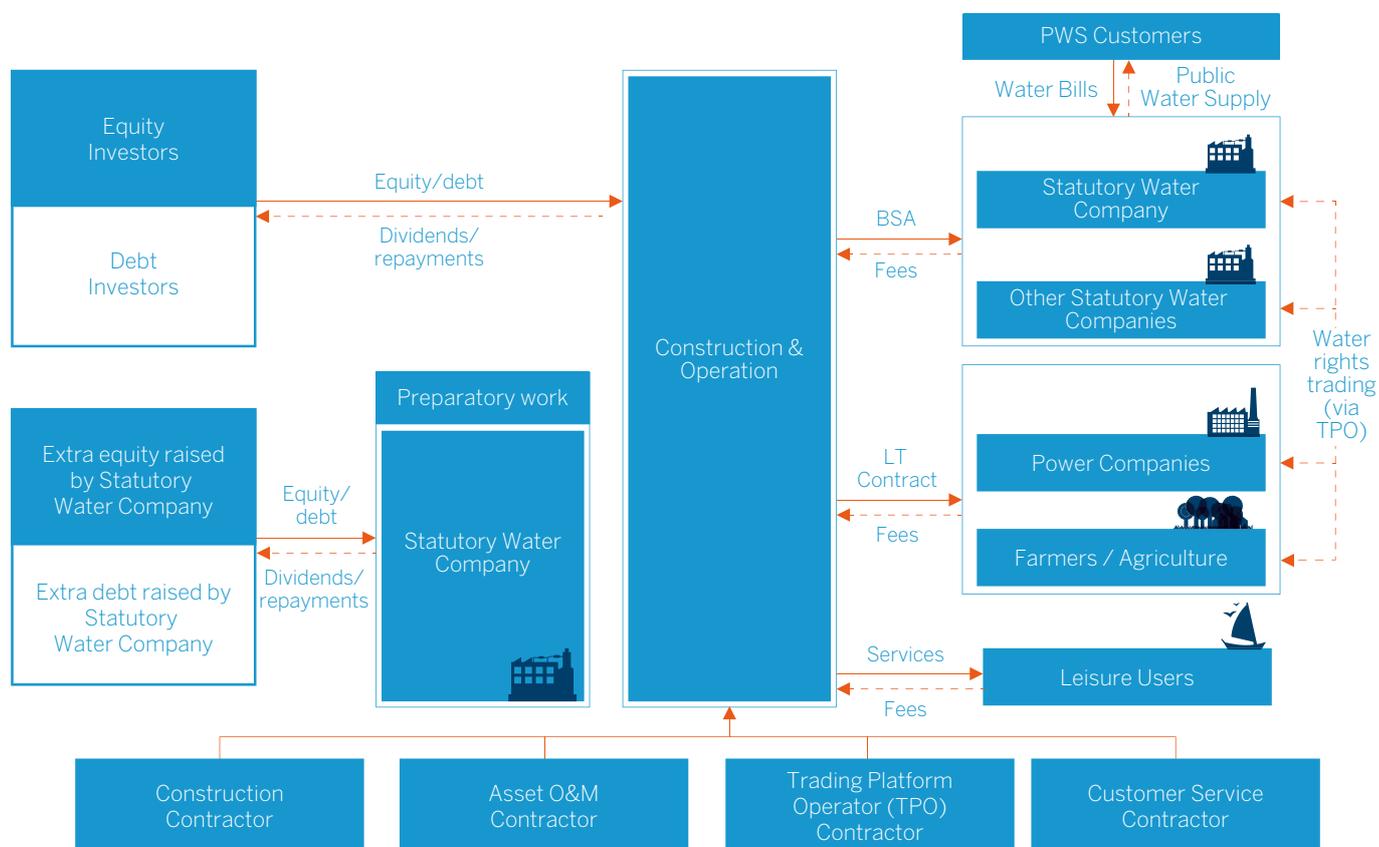
### Contractors

- 3.55** The statutory water company and the SPV would enter into contracts with sub-contractors similar to in Option 4, where the MSWSA is split into two separate projects.
- 3.56** The statutory water company could use its pipe laying and compulsory purchasing powers to support the delivery of the PWS (pre-construction) portion of the project, but the SPV would need to negotiate agreement to purchase land or lay pipes for the non-PWS (construction and operations) part of the project on commercial terms.

### Revenues

- 3.57** As in Option 4, the statutory water company would have funded preparatory works, so these costs would be recovered from PWS customers through the usual regulatory framework applicable to such expenditure.
- 3.58** The SPV would enter into a series of contracts with water users, similar to the arrangements for the SPV in Option 3. Consequently, the water company would be a customer of the SPV, as well as funding the preparatory work. The water company would also enter into a long-term contract (potentially a BSA) with the SPV established to finance and deliver the remainder of the MSWSA project.
- 3.59** The costs which the SPV would need to recover from water users would be lower than for the SPV in Option 3 because a portion of the MSWSA is funded separately by the water company (and recovered from its PWS customers via the building blocks method). The water company's investment in the SPV (if any) and the proportion of the SPV's revenues which the water company funds would have to be calibrated to avoid a cross-subsidy from the company's PWS customers (who have funded 100% of the preparatory work) to other water users.
- 3.60** Figure 3-7 illustrates the arrangements between the various stakeholders in the project.

FIGURE 3-7: OVERVIEW OF OPTION 5 (PRE/POST CONSTRUCTION SPLIT)



Note: contractual arrangements for the statutory water company's pre-construction work are not shown for ease of presentation, nor is the revenue stream from PWS customers to the statutory water company for the pre-construction work. "LT" is long-term and "BSA" is Bulk Supply Agreement.

### Option 6: Statutory Water Company JV

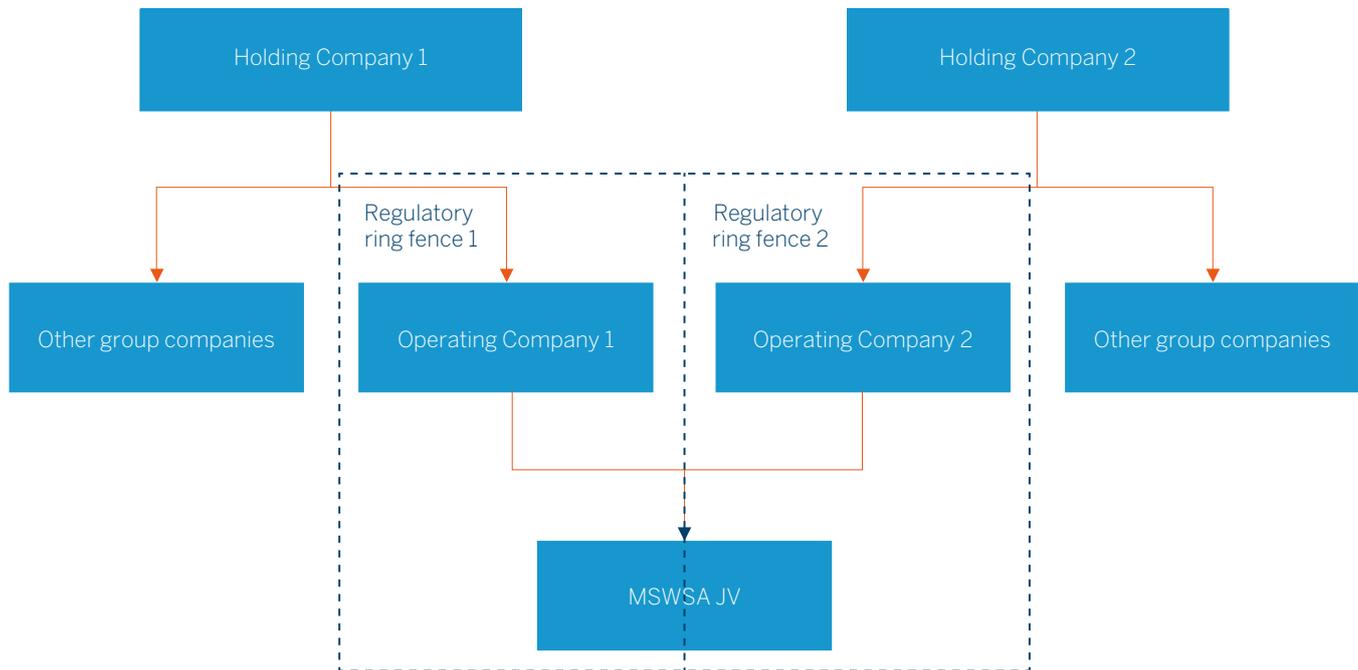
#### Investors

**3.61** As mentioned in paragraph 3.7 earlier, if it turns out to be challenging to secure the involvement of other water users in the MSWSA, there may be merit in exploring financing options which only involve statutory water companies. Accordingly, in this option the MSWSA is financed by two or more statutory water companies through a JV established as an associate of the various water companies involved.<sup>14</sup> The JV is a subsidiary or associate of the statutory water companies (rather than of the holding companies of the water companies). As such, the project's debt could be raised by the JV with guarantees from the parent companies.

**3.62** Figure 3-8 illustrates the relationship between the JV and its parent companies, which are the regulated water companies (OpCos). We have assumed that the regulatory ring-fence would extend to cover the partly owned subsidiary of the regulated water companies.

<sup>14</sup> The JV is only likely to be a subsidiary of one of the water companies under accounting rules, depending on a range of factors including voting rights. If the entity is not a subsidiary, for example because the water company only owns a minority shareholding, it may be an associate of that company.

FIGURE 3-8: RELATIONSHIP BETWEEN WATER COMPANY JV AND STATUTORY WATER COMPANIES



#### Water users

**3.63** The water produced by the project would be allocated amongst the various water users through contracts. Each user could pay for its water rights, and any water it uses, under these contracts. The costs of the JV could be allocated to the parent companies in agreed proportions.

**3.64** The parent companies – the statutory water companies – would then sell the water to their PWS customers as part of their normal business activities. While in theory the JV could sell water to other water users (e.g. farmers), this is not envisaged in this financing option where only water companies are assumed to be involved.

#### Contractors

**3.65** The JV could, in theory, have its own contractors for O&M, construction etc or it could outsource the letting of these contracts back to one or more of the parent companies. Any costs associated with the contractors would be allocated to the different parent companies in agreed proportions. There would not appear to be any need for a separate retail capability given that it would be the parent companies which would sell the water to PWS customers as part of their normal business activities.

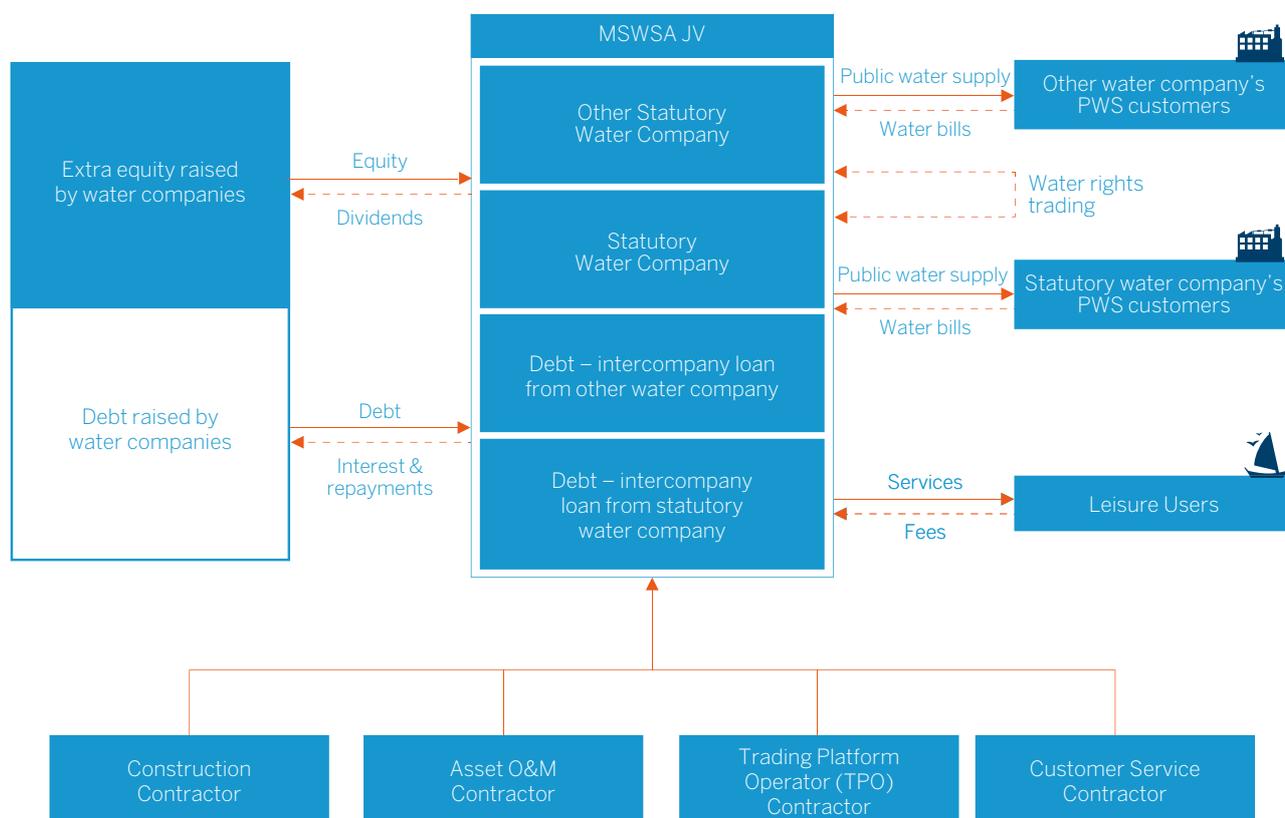
**3.66** The JV, despite being a collaboration between two statutory water companies would not be able to utilise the pipe laying or land acquisition powers of the statutory water companies and would have to negotiate agreements to carry out these activities commercially. We note the existence of a number of statutory reservoirs where water companies have successfully operated assets jointly (see paragraph 6.30), but such arrangements were not envisaged as part of Option 6, though it would be open to Government to make such arrangements if that was thought to be the best way forward.

#### Revenues

**3.67** Because the JV is inside the regulatory ring-fence, the water would be sold to PWS customers and remunerated through the building blocks methodology applied to other regulated activities conducted within the regulatory ring-fence.

**3.68** Figure 3-9 illustrates the arrangements between the various stakeholders in the project.

FIGURE 3-9: OVERVIEW OF OPTION 6 (STATUTORY WATER COMPANY JV)



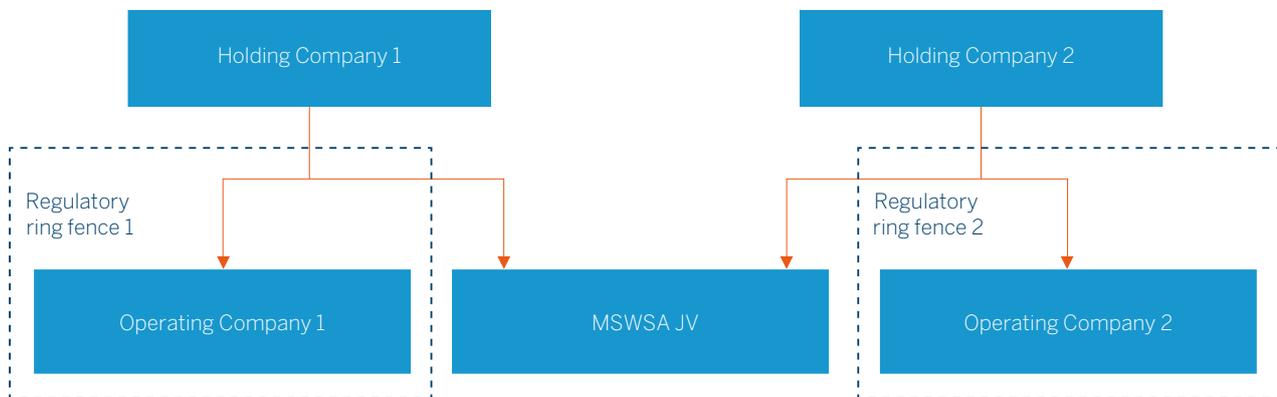
## Option 7: Water Company Shareholder JV

### Investors

**3.69** In this option the MSWSA is financed by the shareholders of two or more statutory water companies through a JV established for the purpose. The shareholders of the statutory water companies would contribute the equity to the project. The JV would sit outside of the regulatory ring-fences of the existing water companies, as Figure 3-10 below illustrates.<sup>15</sup> Because the entity is stand-alone, it could attempt to raise project debt on a stand-alone basis. Alternatively, the corporate groups that it is part of could each raise debt at the HoldCo level (or another corporate entity) and lend those funds to the JV as an inter-company loan.

<sup>15</sup> There are examples of JVs in the water sector e.g. Costain and Severn Trent Water formed a JV to provide water management services, to the commercial and industrial sector (though Severn Trent Water has subsequently purchased Costain's minority interests in Severn Trent Services), while Wessex Water and Bristol Water formed a JV in April 2015, water2business to provide specialised water efficiency services to non-household retail customers.

**FIGURE 3-10: RELATIONSHIP BETWEEN WATER COMPANIES' SHAREHOLDERS' JV AND STATUTORY WATER COMPANIES**



#### Water users

- 3.70** Because the JV would be separate from the statutory water companies, the water it produces would be subject to explicit contractual arrangements. These long-term contractual arrangements would involve the payment of fees by the statutory water companies in return for the water.
- 3.71** The statutory water companies would then sell the water to their PWS customers as part of their normal activities.

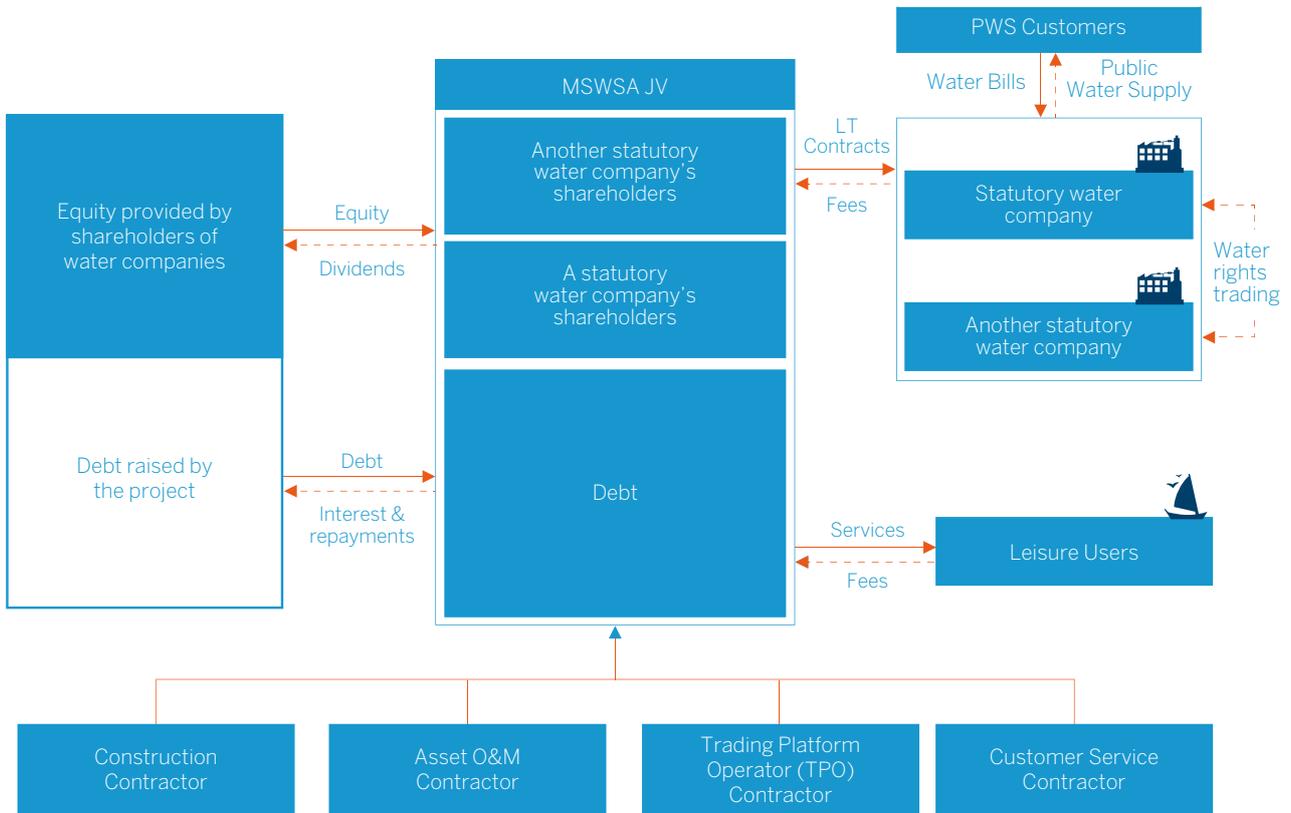
#### Contractors

- 3.72** The contractual arrangements would be the same as in Options 2 and 3, where a separate entity is formed to finance the project.
- 3.73** The JV would not be able to use the pipe laying and compulsory purchasing powers that statutory water companies possess. Instead, agreement to purchase land or lay pipes would need to be negotiated commercially.

#### Revenues

- 3.74** The JV would enter into a series of long-term contracts with the relevant statutory water companies in order to recover the upfront capital costs as well as the ongoing costs of the project (including debt repayments and O&M). These contracts would operate similarly to those in Options 2 and 3.
- 3.75** Figure 3-11 illustrates the arrangements between the various stakeholders in the project.

FIGURE 3-11: OVERVIEW OF OPTION 7 (WATER COMPANY SHAREHOLDER JV)



Note: "LT" is Long Term.

### Summary of options

**3.76** The different financing options can be compared along a number of dimensions, relating to the financing of the project, the way it is regulated and its sources of income.

**3.77** Table 3-1 summarises and compares the different options.

**TABLE 3-1: SUMMARY OF THE DIFFERENT FINANCING OPTIONS**

	OPTION 1	OPTION 2	OPTION 3	OPTION 4	OPTION 5	OPTION 6	OPTION 7
<b>FINANCING</b>							
Financial structure	Corporate finance	JV	SPV	Corporate finance/ JV	Corporate finance/ SPV	Corporate finance/ JV	JV
Investors	Statutory water company	Statutory water company shareholders Other water companies Other water users	Statutory water company Other water companies Other water users Other investors	Statutory water company Other water companies Other water users	Statutory water company Other water companies Other water users Other investors	Statutory water company Other water companies	Statutory water company shareholders Other water companies shareholders
<b>REGULATION</b>							
PWS activity within regulatory ring fence?	YES	NO	NO	PARTLY	PARTLY	YES	NO
<b>INCOME</b>							
Revenue stream	Building block BSA Long-term contracts	Long-term contracts	Long-term contracts	Building block BSA Long-term contracts	Building block Long-term contracts	Building block	Long-term contracts

## CRITERIA FOR SELECTING BETWEEN THE OPTIONS

- 4.1** As described above, there are a range of potential options available for financing MSWSAs. To help identify the strengths and weaknesses of different options and to choose between the options requires criteria to compare the options' performance against.
- 4.2** To develop a selection criterion we have identified the key stakeholders in a MSWSA and the factors which are important to them.
- 4.3** Broadly speaking the stakeholders fall into one of three categories:
- water users;
  - investors (both debt and equity); and
  - the environment.
- 4.4** A range of different factors are important to each of these stakeholder groups, as summarised below.
- 4.5** Government and regulators would also be key stakeholders, but their interests should be aligned with meeting the objectives of the stakeholders above.
- 4.6** Allocating risks appropriately between stakeholders can help to achieve the objectives of the different stakeholders. An efficient allocation of risk can also help to reduce the overall risk of the project. Consequently, financing options can also be assessed by ascertaining their ability to allocate risks to the stakeholders best placed to manage them.
- 4.7** Different financing options may be more or less able to attract the capital required for the project. Some investors may find particular financing options more or less attractive than others, for example, depending on the complexity of the financing arrangements and whether the debt of the project is non-recourse or not. Other financing options may enable different investors, potentially with different risk appetites, to participate in the project. Consequently, the ability of each financing option to attract the capital required for the project also needs to be considered.
- 4.8** It may also be expected that different financing options can create different benefits for stakeholders by involving stakeholders in different ways. For example, involving stakeholders as direct equity investors may generate co-ordination benefits by aligning the incentives of the different stakeholder groups. Therefore, financing options can also be assessed according to their ability to include different stakeholders and to increase co-ordination between them.
- 4.9** Another key selection criterion is the feasibility of implementing the preferred option(s). In particular, whether the regulatory framework would enable a chosen

option to be implemented in practice, or whether there are barriers to implementation which either completely prevent a particular option being taken forward, or which would require the project to be substantially (and detrimentally) altered to be compliant with the prevailing arrangements. We discuss the feasibility of different options from a regulatory perspective in more detail in Section 6.

### Water users (both PWS and non-PWS)

**4.10** The factors which are important to water users are likely to include:

- total cost: all else equal, and assuming that low cost translates to low price, water users (as a group) would prefer the least cost option, measured over the life of the project;
- the profile of bills over time: all else equal, water users would prefer the cost recovery of the project to be smoothed over time, avoiding volatility in bills and spreading costs equitably between current and future water users;<sup>16</sup> and
- the quality of service (which includes factors like the impact on the environment, as well as the reliability and quality of water supplied) provided.<sup>17</sup>

**4.11** It may also be important to consider how different customer groups are affected by the MSWSA. For example, it may be helpful to make a distinction between PWS customers and non-PWS water users given that investment to deliver services for PWS customers (served by a statutory water company) have traditionally been subject to economic regulation, while non-PWS activities have been unregulated. Likewise, different groups of water users may want different products from the MSWSA e.g. assurance of water supply in drought periods, an ability to access water on a regular basis as and when desired, or an ability to store water in the reservoir until it is required.

### Investors

**4.12** Equity investors are likely to evaluate the attractiveness of a MSWSA on the basis of the returns that it is expected to generate, relative to the risks that the investor would be expected to bear. All else equal, a higher rate of return would be required to compensate for bearing greater risk. Some of the key measures that equity investors might consider could include:<sup>18</sup>

- the expected equity Internal Rate of Return (IRR) and NPV of the project; and
- the payback period of the project.

<sup>16</sup> See, for example, AWS (2014) "Bill phasing research – report of research findings", September, which stated on p3 "customers were clear that they wanted bills to be kept as low as possible in the short-term and to avoid any sharp bill increases in the longer term".

<sup>17</sup> Quality of service could be measured by reference to a wide range of factors including the availability of water, the quality of water, flexibility of pricing, terms and conditions of service, as well as customer service.

<sup>18</sup> See, for example, Graham et al (2002) "How do CFOs make capital budgeting and capital structure decisions", Journal of Applied Corporate Finance.

**4.13** Other water users, such as power companies or farmers, might seek benefits from the project other than purely financial returns. Some water users might consider investing into the equity of the project in order to secure the benefits of greater assurance of access to water. Some water users might also look to contribute to the project in non-financial ways, such as through in-kind contributions of land or abstraction licenses, and the returns they seek from the project may also be non-financial in nature.

**4.14** Debt investors would also seek the highest risk-adjusted return on their investment e.g. the highest spread above the risk-free rate available for a given level of risk. To evaluate the investment, debt investors would potentially have regard to the likelihood of receiving the promised stream of interest payments by assessing the types of financial ratios that a credit rating agency considers, such as gearing, interest coverage ratios and cash flows available for debt servicing. Debt investors might also seek to protect their investments through guarantees and other forms of security, which help to reduce the likelihood of default and enable a lower cost of debt finance.

**4.15** Existing and new debt investors may have different objectives. New investors may be primarily interested in the ability of the project to repay any funds they lend to the project, but pre-existing debt investors of the sponsors of a project (including statutory water companies corporate financing the project) may be interested in protecting their existing investments. Covenants may be included on existing debt in order to minimise the ability of company management to undertake activities which unduly increase the risks to the repayment of that debt.

**4.16** At the time of writing we are unaware of specific guidance from any of the credit rating agencies relating to MSWSAs, but given there could be – depending on how the arrangements, such as economic regulation, for MSWSAs work - similarities between MSWSAs and other infrastructure asset classes such as OFTOs and statutory water companies, debt investors might have regard to ratios used for these other types of businesses.

## Environment

**4.17** The project is likely to impact on the environment in a number of ways, including:

- i. an impact during construction, which will depend in part on the scale and location of the MSWSAs developed; and
- ii. an impact during operation, which will depend in part on the efficiency with which water resources are allocated between users and ultimately used (both of which depend, at least in part, on the ability of the different users of water to trade amongst themselves).

**4.18** However, an assessment of the implications of the environmental impact of the project is outside of our scope of work. Nevertheless, we have considered in a qualitative sense:

- the ability of participants in the project to trade water; and
- the incentives for water users to use water efficiently.

## Summary

**4.19** Based on a review of the different potential stakeholders in a MSWSA and an assessment of their different objectives, and the objectives of the project itself, we have identified a number of criteria for assessing the range of financing options.

**4.20** These criteria are summarised in Table 4-1 on the next page. Our assessment of these criteria is discussed at various points throughout this report, as indicated in the table.

TABLE 4-1: SUMMARY OF SELECTION CRITERIA

CATEGORY	CRITERIA	DEFINITION	SEE SECTION
Project implementation	Ability to allocate risks efficiently	The ability of the particular financing option to achieve value for money for water users by allocating risks to those best placed to bear them.	Paragraphs 5.3 to 5.19 Section 7
	Ability to achieve co-ordination benefits	The ability of the particular financing option to achieve co-ordination benefits through the involvement of different groups of stakeholders.	Paragraphs 5.3 to 5.19
	Ability to attract the required amount of capital	The ability of the financing arrangements to attract the capital required for the project, taking into account its attractiveness to different types of investors (e.g. as a result of the complexity of the financing arrangements) and the opportunity it affords different types of investors to participate in the project.	Paragraphs 5.3 to 5.19
Water users	Present value of the cost of the project to water users (Total cost)	The present value of the revenues of the project payable by water users (including public water supply customers of statutory water companies), discounted at the Social Time Preference Rate (STPR).	Paragraphs 5.3 to 5.19 Paragraphs 5.20 to 5.37 Paragraphs 5.87 to 5.95
	Impact on customers' bill profile	The difference in revenues payable by water users between a scenario where the MSWSA project goes ahead and a scenario where it does not. <sup>19</sup>	Paragraphs 5.3 to 5.19 Paragraphs 5.20 to 5.37 Paragraphs 5.87 to 5.95
	Quality of service	The ability of the project to deliver the services and products demanded by water users, both in terms of quantity and quality of services and products.	Paragraphs 5.3 to 5.19
Investor	Attractiveness to equity investors	The benefits derived from the project by new equity investors. Measured by the expected equity IRR and NPV of the project and its payback period, but could also include non-financial benefits such as increased resilience to drought.	Paragraphs 5.3 to 5.19 Paragraphs 5.20 to 5.37 Paragraphs 5.87 to 5.95
	Attractiveness to new debt investors	The ability of the project to meet its obligations to its debt investors, measured using selected credit metrics.	Paragraphs 5.3 to 5.19 Paragraphs 5.20 to 5.37 Paragraphs 5.87 to 5.95
	Acceptability to existing debt investors	Whether the impact of the investment in a MSWSA would have positive or negative implications for existing debt investors.	Paragraphs 5.3 to 5.19 Paragraph 6.10
Environmental	Ability to trade water (Water trading)	Whether the financing option enables different stakeholders in the project to trade water rights in the MSWSA amongst themselves (and/or with other parties).	Paragraphs 5.129 to 5.130 Paragraphs 7.47 to 7.52
	Water efficiency	The ability of the project to incentivise water users to use water efficiently.	Paragraphs 5.129 to 5.130
Feasibility	Compatibility with legal and regulatory framework	The ability of the particular financing option to be implemented in practice, taking into account existing legal, regulatory and financial arrangements.	Section 6

<sup>19</sup> We have assumed that the alternative to developing a MSWSA is to do nothing, but in reality this would not necessarily be the case as alternative sources of water may need to be developed (at some other cost).

## QUALITATIVE AND QUANTITATIVE ASSESSMENT OF THE OPTIONS

**5.1** The criteria above provide a number of metrics against which we can measure the different financing options, including project implementation, water users' objectives, investors' objectives and environmental criteria. To assess the performance of the different options against these criteria we have undertaken both qualitative and quantitative analysis. Specifically, we have:

- made a qualitative assessment of the applicability of different financing options to MSWSAs i.e. whether the project lends itself to corporate finance, project finance or JVs and the strengths and weaknesses of each;
- discussed the options with stakeholders to gauge the relative attractiveness of the different options; and
- undertaken stylised financial modelling to understand differences in overall project costs, the spread of costs over time and the impact on different stakeholders.

**5.2** We discuss the results of our work below. The feasibility of the options within the legal and regulatory framework applied to the English water sector is discussed in Section 6.

### Qualitative assessment of different financing options to MSWSAs

**5.3** As discussed in Section 3, a range of different financing options are potentially available, broadly falling into one of three categories: corporate finance, project finance or JV. Each of these financing options has relative benefits and costs, and the preferred option(s) will depend on the characteristics of a given MSWSA, and characteristics and preferences of potential water users and investors.

**5.4** The choice of how to finance a MSWSA has important implications for how the risks of the project are allocated across stakeholders, which in turn has implications for the cost of the project, its governance structure, and the incentives for other stakeholder to participate.

**5.5** Under a corporate finance structure a company funds a new investment as part of a corporate balance sheet. The company can use internally generated funds and/or raise new debt and equity to finance projects.

**5.6** In contrast, project finance is defined as the creation of a legally independent project company financed with non-recourse debt, usually for the purpose of investing in an asset of a single purpose and limited life.<sup>20</sup> Project finance structures are typically characterised by high leverage compared to corporate finance. The debt funding is non-recourse, meaning creditors depend on the cashflows generated by the asset for debt repayments and cannot rely on cross-collateralisation from cashflows and assets from the corporate entity's other activities in the way that they can under a corporate finance structure. Project risks are allocated between investors, lenders and other parties through a series of contracts governing all aspects of the project e.g. construction, operations, supply of inputs, and the purchase of outputs.

**5.7** Another alternative financial structure is a JV arrangement, where two or more parties establish a separate legal entity and contribute equity to fund the assets. The parties are jointly responsible for the associated profits, losses and costs of the entity. Unlike project finance, however, there may or may not be recourse to the participants' other business interests. By establishing an entity with joint ownership and mutual commitment of equity, JVs can reduce project risk where there are gains associated with combining expertise of the parties involved and aligning their incentives to cooperate.

**5.8** Some of the typical characteristics of corporate financing, project financing and JVs are summarised in Table 5-1.

<sup>20</sup> See Esty (2002) "The economic motivation for using project finance", p7.

TABLE 5-1: ATTRIBUTES OF ALTERNATIVE FINANCING STRUCTURES

DIMENSION	CORPORATE FINANCE	PROJECT FINANCE	JOINT VENTURE
Financing vehicle	Multi-purpose organisation	Single purpose organisation	Single purpose organisation
Transaction costs	Lower due to competition from providers, generally established relationships	Relatively high due to legal costs, contracting requirements	Relatively high due to legal costs, contracting requirements
Cost of capital	Typically relatively low	Typically relatively high	Typically relatively high
Capital structure	Typically relatively low leverage	Typically relatively high leverage	Project-specific
Debt financing	Unsecured corporate debt has recourse to all company assets	No recourse to other assets of the investors	Recourse depends on terms and conditions of the project
Equity financing	Exposed to distress costs caused by the project, which may increase corporate WACC	Exposure to distress costs limited to equity contribution	Depends on agreement between equity investors e.g. what guarantees they provide
Risk allocation	Less effective at allocating risks	Contractual arrangements more efficiently allocate risks	Contractual arrangements more efficiently allocate risks
Coordination between stakeholders	Less effective at promoting coordination between stakeholders	Some benefits through tailored governance structure	Joint ownership promotes coordination between stakeholders
Governance	More managerial discretion	More tailored and transparent	More tailored and transparent but multiple parties can add complexity

**5.9** Compared to a corporate finance structure, creating a separate legal entity generally requires significantly greater transaction costs. This includes the cost of establishing contractual arrangements governing all aspects of the project, additional due diligence required by lenders to understand the risks of the project and the ongoing monitoring requirements. The specific nature of the project, and lack of recourse, also increases the risk to lenders and hence the cost of capital.<sup>21</sup> Accordingly the margins lenders require on the cost of funds are generally higher than corporate finance, all else equal. They can also take significantly longer to establish, with lead times from 6 to 18 months.<sup>22</sup>

**5.10** There are, however, also several characteristics of project finance and JV structures that can lead to lower overall net financing costs compared to a corporate finance structure. Through the creation of contractual relationships between the project company and other participants, a project finance or JV structure can be more efficient at allocating risks to the parties that are most capable of managing them.

**5.11** Both JVs and project finance structures can be particularly effective where there is a high degree of asset specificity, that is, where assets can only support trade between a small number of parties.<sup>23</sup> In the case of a MSWSA, the location of the asset and the upfront investment in pipes required to supply water to other water users, such as power companies, farmers and industrial users means that the water can only be traded among a limited number of users. The potential for parties to renege or seek to renegotiate agreements to purchase the water after the pipes have been laid can threaten the project's cashflows, reducing the expected return and thus the viability of the project.

**5.12** An example of this occurred in the early stages of operation of the Central Arizona Project (CAP), the largest and most expensive water transfer project constructed in the US. Agricultural users signed long-term contracts for the water during the initial sign-on phase, but many users later declared bankruptcy and renegotiated subsidised short-term contracts. It was subsequently suggested that users had signed up to ensure that the project was built, but did not expect to actually have to meet their

<sup>21</sup> See Yescombe (2002) "Principles of project finance", p14.

<sup>22</sup> See Esty (2002) "The economic motivation for using project finance", p9.

<sup>23</sup> See Kogut (1988) "Joint Ventures: Theoretical and empirical perspectives".

commitments under those contracts given precedents set by past federal water projects which suggested that the developer of the project would likely accept modifications to the contracts after the project was complete.<sup>24</sup>

- 5.13** Project companies are able to design their corporate governance structure to directly address the specific risks associated with the project in ways that are difficult to replicate under a corporate finance structure. A JV structure is particularly effective at aligning incentives of asset users and owners, and ensuring that any ex post conflicts are avoided.<sup>25</sup> However, water users may be reluctant to invest equity in assets that are not directly related to their core business, or because the expected returns do not exceed their internal hurdle rate. As discussed later in Section 6, some of these issues can also be partly addressed through the structure of water use charges. The inclusion of an upfront fee, in particular, ensures that water users make a financial commitment at the inception of the project, which provides an additional level of certainty about the expected revenues of the project.
- 5.14** Project finance is also generally seen as an effective structure for aligning the interest of investors with that of project managers.<sup>26</sup> Separate legal incorporation and the extensive number of specified contracts associated with project finance create a high degree of transparency and reduce the costs to investors associated with monitoring and assessing performance. High leverage, which is typical of project finance, also limits managerial discretion over the use of the project's cashflows compared to corporate debt, where repayments are made from aggregated corporate cashflows.
- 5.15** The financing arrangements for a MSWSA may also influence the environmental impact of the project. While the environmental impact of a MSWSA could be expected to depend on the design of the project rather than financing structure, the more co-ordination that exists between the different stakeholders in the project, the greater the benefits that are likely to accrue (e.g. a smaller asset may be able to meet the needs of more stakeholders if the water from the asset is used more efficiently). Accordingly, JVs and Project Finance may be able to support a more co-ordinated approach to water planning and resource use (e.g. through the more efficient allocation of water, and trading of water rights) among the different stakeholders involved in the project. For example, as we discuss in paragraph 7.25, reductions in the use of pesticides and fertilisers by some stakeholders may be able to increase the availability of water from the MSWSA for all stakeholders.
- 5.16** Finally, in the case of high-risk projects, a project finance structure reduces the potential for collateral damage compared to a project funded on-balance sheet.<sup>27</sup> For projects funded on balance sheet, there is a risk that the company will incur indirect distress costs on other existing assets. For example, if cash flows are volatile compared to existing cashflows, this could increase the overall volatility of corporate cashflows, which could in turn impact on the cost of external financing for the entire business. Project financing – and JV financing where recourse is capped – would also limit the exposure of the companies sponsoring the project to their equity contributions and more effectively share the exposure to the project risk across all the parties involved with the asset, including contractors, water users and suppliers.
- 5.17** Overall, project finance and JVs tend to be characterised by higher transaction costs and more expensive funding, but they are also generally more efficient at allocating project risks to parties that are best placed to bear them. By promoting joint ownership and investment by water users, JVs can be particularly effective at aligning incentives between water users and asset owners, and encouraging cooperation and innovation. One of the key motivations for adopting a project finance approach is to limit corporate exposure to the project risks and provide transparency to investors.
- 5.18** These relative merits of project finance and joint venture mean that they are more likely to be advantageous compared to corporate finance where a project is larger. The size of the project is relevant not only to the potential risk that the project could pose to the corporate entity, but also because the additional transaction costs of project finance and JV would be proportionally smaller. The larger the project relative to the size of the corporation trying to finance it, the more likely it is to impact on the corporation's own financing e.g. by increasing gearing, impacting on credit ratings and reducing the ability of management to pursue alternative growth strategies.
- 5.19** Ultimately, the optimal financing structure for a MSWSA will depend on the specific characteristics of a given MSWSA and motivations of the parties involved. In particular, the allocation of water between statutory water companies and other users will have a significant bearing on the risks of the project. As the share of water allocated to PWS increases, there is less reliance on demand from other users and the riskiness of the cashflows – and hence the relative benefits of off-balance sheet financing – is likely to be reduced.

<sup>24</sup> See Wilson (2002) "Economic Science and the Central Arizona Project: Lessons Learned", Journal of Contemporary Water Research and Education, Vol. 123(1).

<sup>25</sup> See Kogut (1988) "Joint Ventures: Theoretical and empirical perspectives".

<sup>26</sup> See Esty (2002) "The economic motivation for using project finance" p9.

<sup>27</sup> See: Esty (2002) "The economic motivation for using project finance" p24.

## Stakeholder views

- 5.20** As part of our work we have discussed the attractiveness of MSWSAs with a small number of different stakeholders, including:
- representatives of other water companies;
  - representatives of power companies;
  - representatives of the agriculture and food production sectors;
  - financial investors, including infrastructure funds; and
  - potential debt investors and credit rating agencies.
- 5.21** Most of the stakeholders we spoke with were selected because of their involvement, either directly or indirectly, in the WREA programme, or because of their interest or involvement in the financing of the water sector.
- 5.22** Other potential water users that it has not been possible to engage with within the constraints of this project are supermarkets and large industrial water users.
- 5.23** We explored the following topics with the stakeholders we spoke to:
- the risks and opportunities associated with MSWSAs, including the different types of products that different stakeholders want from the project;
  - the tools for risk mitigation and allocation;
  - whether particular financing options would be attractive or not to different types of investors;
  - the barriers that may exist to investing in particular MSWSA arrangements; and
  - whether particular stakeholders would be likely to seek to invest in a MSWSA directly, or prefer to just purchase water from the project (perhaps subject to some contractual arrangements).
- 5.24** We summarise some of these views below. It is important to recognise that we have only undertaken a limited stakeholder engagement exercise, so the views summarised below may not be representative of each stakeholder group's views.

## Other water companies

- 5.25** We spoke to a number of water companies. The views of the individuals we spoke to included:
- some companies face a supply/demand balance challenge going forward, so any options which could help to address those problems are worth exploring and consequently companies would be willing to discuss MSWSAs with other companies;
  - the resilience benefits of a MSWSA are very important;
  - water companies are open to either a direct investment alongside other water companies or to entering into a long-term contract for water, but

it would depend on the returns available from the opportunity; and

- there are a number of joint schemes between various statutory water companies already in existence, mostly from pre-privatisation. The experience from these schemes (albeit these are schemes not involving water users other than statutory water companies) suggests the sector can work together on MSWSAs.

- 5.26** Having discussed MSWSAs with a number of other water companies, it is clear that there is appetite to explore how companies can work together to mutual benefit. The companies we spoke with were all generally positive about the possibility of investing into a MSWSA, though some appeared to favour an involvement in an out-of-area MSWSA using a long-term contract rather than an equity investment as this could reduce the size of any upfront cost (depending on the size of any upfront payment to acquire water rights).

## Power companies

- 5.27** We spoke to a number of representatives of the power sector. The views of the individuals we spoke to included:
- the power sector requires a significant amount of water to operate, but most power plants have adequate abstraction rights on rivers to meet current needs;
  - there is, however, some uncertainty regarding future access to water as the existing rights might change under the new abstraction licensing regime which DEFRA is currently consulting on. The power industry is simultaneously undergoing significant change with a push towards decarbonisation, which is creating uncertainty about the types of new power plants that will be built and where they will be located. In combination, this means that the industry faces uncertainty about its future access to and needs for water;
  - recognising these risks, power companies would be interested in exploring alternative sources of water, including MSWSAs, potentially as back-up supplies when other supplies are unavailable;
  - power companies could consider investing directly in a MSWSA if it was commercially attractive, taking into account the alternative set of potential investments available to the companies; and
  - power companies would be open to a discussion about purchasing water under a long-term contract.

- 5.28** There might, however, be some barriers to power companies participating in MSWSAs. For example:
- there is uncertainty around the long-term water needs of any given power plant as power companies are not under any obligation to locate in a particular geography or supply a fixed amount of power, so they could conceivably choose to relocate or cease supplying power once a given plant reaches the end of its useful life; and

- the price of water from the MSWSA would be a key determinant of power companies' interest in purchasing water from these projects: power plants may be unable to pass through higher water charges to the price of the power that they generate, so it may be difficult for the MSWSA to recover costs through high charges during the infrequent periods when power companies actually use the water from the MSWSA, particularly given that power plants are (generally) under no obligation to generate power and could instead shut down during periods where water prices make generation uneconomic.

### Agricultural and food production sector

**5.29** We heard a number of views from the representatives of the sector we spoke to including:

- water security is a big issue for the sector, so farmers, food producers, land-owners and others involved in the supply chain should be interested in discussing options to develop additional sources of water, particularly those which are resilient to drought;
- there is some appetite among the agricultural and food production sectors, therefore, to explore the feasibility of MSWSAs; and
- there are other examples of similar types of investments in the sector, such as grain stores where farmers purchase tradeable rights to capacity in a third-party owned facility, so the complexity of arrangements for a MSWSA should not be a significant barrier to the participation of the agricultural and food production sector in MSWSAs.

**5.30** However, the representatives indicated that there may be some potential hurdles to overcome:

- MSWSAs would be competing with other water resources (at least in some cases) since much of the sector already has access to water from rivers, aquifers and other sources. Many farmers have developed on-farm storage in recent years. As a result, the MSWSA is likely to be a relatively expensive source of water, but that could still be valuable if the water is available when other sources are not;
- the willingness of agriculture and food producers to participate in a MSWSA would depend, in part, on the certainty with which water from the MSWSA would be available e.g. whether access to water could be guaranteed and whether agriculture would be subordinated to public water supply etc; and
- the sector is diverse: water needs will vary according to the type of crop / product produced, availability of alternative sources of water, existing abstraction licenses (which might provide very substantial amounts of water for some abstractors) and location/topography. Even within a small area there could be significant diversity because of the factors above. A one size fits all approach is less likely to succeed than tailored offerings based on detailed surveys and engagement with individuals.

**5.31** The agriculture and food production sector representatives we spoke to also considered that it would be helpful to identify ways in which the upfront costs of developing the MSWSA and any associated connection costs that the sector would contribute towards could be reduced or defrayed. Some potential solutions raised by the individuals we spoke with included:

- if multiple farmers (and other local users) could club together to participate in the MSWSA then that could defray costs e.g. costs of pipework required to connect a particular locality to the MSWSA; and
- in-kind contributions to the cost of the project, such as allowing right-of-ways across land so that pipes could be laid, or the sale of abstraction licenses to the MSWSA, might be a way that the sector could contribute.

**5.32** The agriculture sector representatives we spoke to were also cautious about whether farmers and others in the sector would be willing to let supermarkets act as a water 'buying agent' on their behalf i.e. supermarkets invest in the MSWSA and then use their water rights to supply farmers who sell their produce to the supermarket. Some caution was expressed about supermarkets having additional bargaining power in the negotiation of prices for agricultural products. A similar view was expressed about the involvement of other members of the production chain in a similar role.

### Infrastructure funds

**5.33** The representatives of infrastructure funds that we spoke with were generally receptive to considering an investment into a MSWSA delivered by a SPV if it made commercial sense. The investors we spoke with made a number of comments about the attractiveness of investing into a MSWSA, including:

- how the regulatory regime, if any, would operate (e.g. would expenditures be included in RCV) would be critical to their decision to participate;
- the SPV created under Option 3 could be viewed as somewhat like the arrangements under a Power Purchase Agreement (PPA), with long-term contracted revenues, so has some similarities to other types of investments that some infrastructure funds have made in the past; and
- Option 3 would potentially be more attractive if the counterparties were just statutory water companies. Involving other counterparties might make the project more risky and increase the cost of capital.

**5.34** The investors we spoke with also noted that the TTT, which has recently completed its process to appoint the licensee, had achieved a very low cost of capital (2.497% real, vanilla) primarily because of a Government Support Package (as we discuss in more detail following paragraph 5.73). Their view was also that the TTT was able to attract a lot of capital because of its size, but that because the TTT is much bigger than a MSWSA is likely to be a MSWSA might not be able to attract capital on the same terms.

## Debt investors

**5.35** The views expressed by debt investors during our discussions with them included:

- the types of debt finance available to the MSWSA may differ depending on who the investors are and the assumed revenue streams available to the project;
- if the MSWSA was delivered by a particular corporate entity, then it would be the creditworthiness of that corporate entity which would be evaluated, taking into account any recourse to related entities that might be available;
- some lenders may not be able to lend to particular

stakeholders which have different credit risk to water companies; and

- loans to SPVs may be more expensive than to water companies and there may be more restrictions on the situations in which a loan can be made, depending on the specific circumstances of the SPV. There may also be differences in the terms and conditions of the loans, including the duration of the loan.

### Summary

**5.36** Table 5-2 summarises the views we have heard from stakeholders regarding their willingness to participate in a MSWSA as a water user or as an investor.

**TABLE 5-2: SUMMARY OF STAKEHOLDER VIEWS**

STAKEHOLDER	POTENTIAL ROLE ON MSWSA	COMMENTS
Other water companies	Equity Investor	Willing to discuss
	Water user	Most interest
Power companies	Investor	Some interest
	Water user	Most interest, but will be some challenges to securing participation
Agriculture and food production	Investor	Some interest
	Water user	Most interest, but will be some challenges to securing participation
Infrastructure funds	Equity Investor	Interested
Banks	Debt provider	Interested

**5.37** On the basis of the (limited) stakeholder engagement we have undertaken, it seems to us that in very broad brush terms the users of water from the MSWSA may be more likely to enter into long-term contracts with the MSWSA than to directly invest in the equity of the project, though there is interest in direct investments from some stakeholders. This is consistent with our earlier qualitative assessment of the different financing options. This may point us towards Options 1, 3, 5, 6 and 7 where other water users outside of statutory water companies are not involved in the financing of the project. Option 5, where the MSWSA is split into separate projects pre- and post-construction, could also work, provided that the portion of the project that is not funded by the statutory water company is not assumed to be financed by other water users.

### Stylised financial modelling

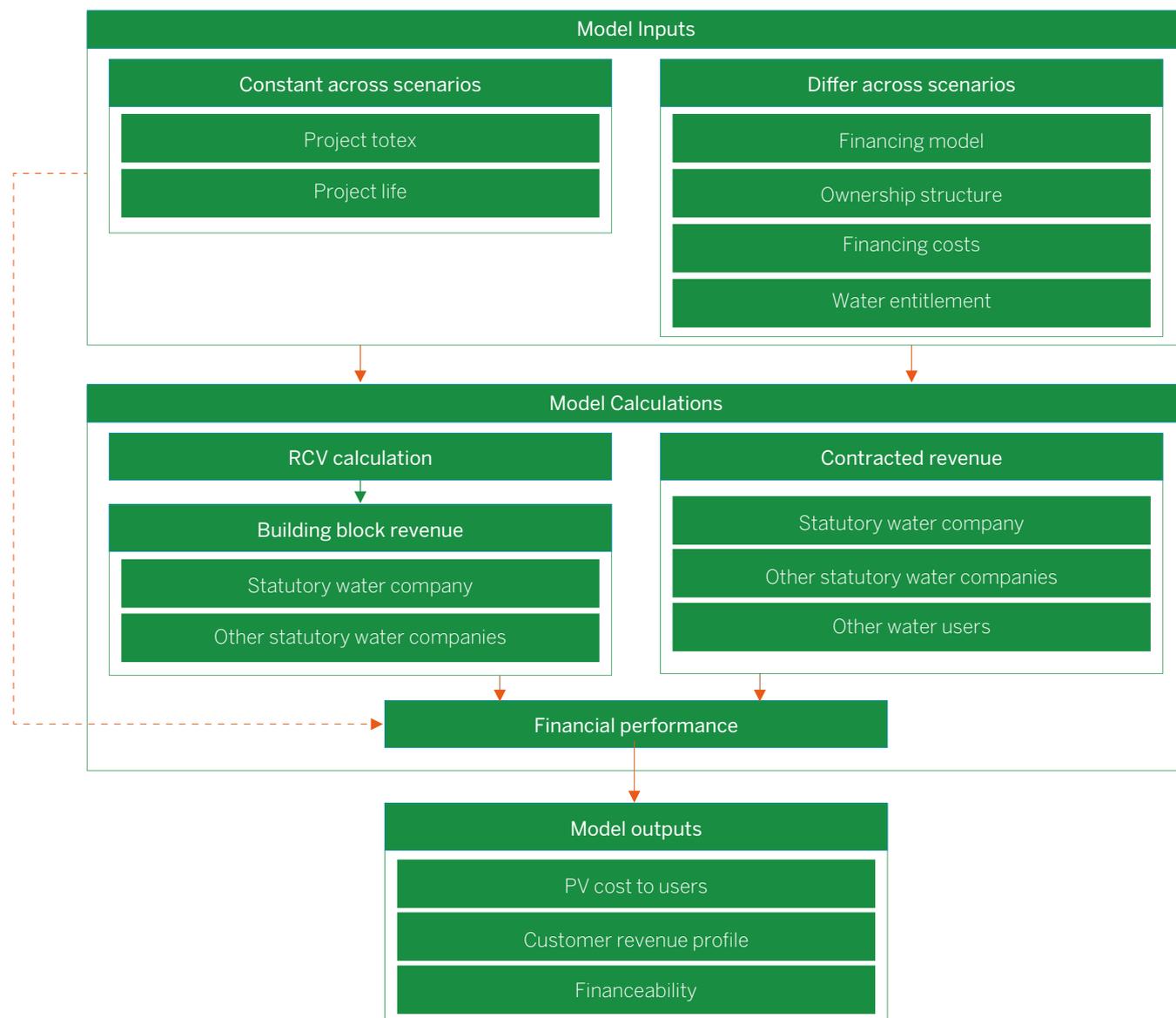
**5.38** To inform our evaluation of the different financing options we have also undertaken a stylised financial modelling exercise.

**5.39** The financial model compares the impact of different ownership structures and financing arrangements on a range of financial metrics for a notional MSWSA.

**5.40** The modelling relies on a range of cost information supplied by AWS and a number of assumptions we have calibrated from third party sources. This information is used to estimate the impact of the different financing options on key stakeholders, measured through the amount of revenue required to cover the project costs, as well as other Key Performance Indicators.

**5.41** Figure 5-1 provides a high level overview of the model structure, linking the inputs to the outputs via a set of revenue and financial performance calculations.

FIGURE 5-1: OVERVIEW OF STYLISED FINANCIAL MODELLING



### Model inputs

**5.42** The model calculations are based on inputs that specify the parameters of a hypothetical MSWSA, and inputs that relate to the share of water rights, ownership and financial structure of the project. Inputs have been calibrated based on discussions with AWS, stakeholders and on external independent sources.

**5.43** Assumptions related to the specific project, including the project life and capex and opex costs of the project, are not varied across the different financing scenario for the purpose of the modelling exercise. As noted earlier, we have used a reservoir MSWSA as the representative project. Table 5-3 presents the assumptions regarding the project cost and the life of the project for a hypothetical reservoir for accounting purposes. We test the sensitivity of our results to a different type of MSWSA and variations in the project life and project costs later in this chapter.

**TABLE 5-3: ASSUMED PROJECT COSTS BY SCENARIO  
(£M REAL 2012/13 PRICES)**

	ASSUMPTION
Project life	
Total project life	29 <sup>28</sup>
Construction period	4
No. years of operation	25
Project costs	
Capex – Total	470 <sup>29</sup>
Opex – Annual	10 <sup>30</sup>

Source: AWS

**5.44** There are also a set of inputs and assumptions specifying the ownership and financing structure of the project, the allocation of water rights, and the cost of capital that vary across the different options.

**5.45** As outlined in Section 3, the set of financing model options and associated ownership structures that have been considered are:

- **Option 1 - Single Water Company:** A statutory water company owns the entire project and funds the project on balance sheet.
- **Option 2 – Multi-Sector Joint Venture:** the project equity is contributed by a statutory water company and other water users, while the debt funding is raised directly by the project.
- **Option 3 - SPV:** all funding is raised by an SPV. Funding is assumed to be contributed by investors other than the users of the water from the project.
- **Option 4 - Regulated/Unregulated Split:** the MSWSA is split into two separate projects, with a statutory water company funding 80% under a corporate finance structure for PWS purposes, while the remaining 20% is funded by a combination of equity contributions from water users (including other statutory water companies and other users) and debt financing.
- **Option 5 - Pre/Post Construction Split:** the project is split temporally with a statutory water company funding 10% of the project under a corporate finance structure, and the remainder is funded under an SPV arrangement.
- **Option 6 – Statutory Water Company JV:** two or more statutory water companies form a JV to finance the MSWSA. The water companies would be the sole investors and customers of the project.

- **Option 7 – Water Company Shareholder JV:** the parent companies of two or more statutory water companies form a JV which would finance and deliver the MSWSA. The JV would be a sister company to the statutory water companies, but outside of the regulatory ring-fence around the statutory water companies.

**5.46** For the purpose of the modelling, we have assumed that the allocation of water rights among water users, and therefore the share of revenues contributed by different types of users, is the same for Option 1 through to Option 5. Based on discussions with AWS the proportions of water allocations and consumption across the different sectors is assumed to be:

- Statutory water company: 80%
- Other water companies: 10%
- Other water users: 10%

**5.47** For Options 6 and 7, where water companies are the sole investors and customers of the project, the proportions of water allocations and consumption is assumed to be:

- Statutory water company: 80%
- Other water companies: 20%<sup>31</sup>

**5.48** We have also estimated the WACC for each of the scenarios. Standard corporate finance theory tells us that the cost of capital will vary across each of the options if the systematic risk of the cashflows of the project differs between the options. This could be the case if there are differences in the risk profile of a MSWSA under different financing options, or if the risk profile of the parties contracted to purchase the water differs across the options. In practice, the specific risks of the project may also be taken into account by investors in certain circumstances e.g. a farmer who is, in practice, unable to diversify their investment in a MSWSA.

**5.49** We have not attempted to undertake a detailed bottom-up analysis of the risk of the different financing options given this will fundamentally depend on the regulatory and contractual arrangements applied to the project in each financing option. Instead, we have made some high level assumptions about what the risk profile of the project could be in different financing options.

**5.50** To identify a reasonable assumption for the WACC to use in our stylised financial modelling for each financing option, we have considered a range of publically available information. This information is summarised in Table 5-4. These are necessarily high level approximations, and a more detailed analysis would be required for a full project evaluation.

<sup>28</sup> This is broadly consistent with the fixed revenue period of 20 years for OFTOs, and the average duration of current Private Finance Initiative contracts of 26.8 years. See: HM Treasury (2014) "Private Finance Initiative projects: 2014 summary data". We also note that Scottish Water has a range of wastewater treatment works operated under PFI contracts which have durations of 25 – 40 years: see Scottish Water (2009) "Strategic Review of Charges 2010-14: Second Draft Business Plan: March 2009 – Appendices", p4.

<sup>29</sup> Based on the estimated cost of building a reservoir, treatment plant and pipelines, where 80% of the water is treated for public water supply and the remaining 20% is untreated. Information provided by AWS.

<sup>30</sup> Opex is assumed to be constant over the life of the project, commencing in the year following the completion of the capex.

<sup>31</sup> Although Options 6 and 7 involve fewer water users, which could suggest that a smaller MSWSA is required, it is assumed that other water companies purchase a higher share of water under these scenarios and invest in less water capacity elsewhere. As a result, it is assumed that the size and cost of the MSWSA is the same under these options as for other options.

**TABLE 5-4: INDEPENDENT THIRD PARTY ESTIMATES OF THE COST OF CAPITAL FOR INFRASTRUCTURE ASSETS, REAL PRE-TAX**

SCENARIO	GEARING	COST OF DEBT	COST OF EQUITY	REAL PRE-TAX WACC	SOURCE
Statutory water companies undertaking PWS activity	62.50%	1.96%	6.14%	3.53%	PR14 (forward looking wholesale WACC adjusted for tax)
Statutory water companies undertaking non-PWS activity	62.50%	2.18%	6.94%	3.96%	Draft Determination – Supply of water to Tata Steel (adjusted to be forward-looking)
JV involving other water users e.g. power companies	71.25%	2.75%	6.63%	3.87%	Various, explained below
JV not involving other water users	71.25%	2.75%	6.14%	3.73%	Various, explained below
Project finance	80.00%	3.54%	6.76%	4.19%	OFTO financing costs <sup>32</sup> ; PFIs; financing costs; stakeholder engagement

Sources: as stated and FTI assumptions and calculations

**5.51** Below we explain in more detail how we have derived the WACC inputs for our stylised financial modelling from the available public data sources in each of the financing options.

#### **WACC for statutory water companies undertaking PWS activities**

**5.52** At its most recent periodic price control review (PR14), Ofwat estimated a WACC of 3.74% (real, vanilla) for statutory water companies, but deducted 0.14% to arrive at a WACC of 3.60% (real, vanilla) for their wholesale activities i.e. their activities other than retailing of water and wastewater.<sup>33</sup>

**5.53** Ofwat's WACC was, however, based on a blended average of the costs of embedded and new debt. An investment in a MSWSA would be based only on the forward-looking cost of debt, reflecting that new debt would need to be raised to finance the project. Therefore, we have adjusted Ofwat's PR14 estimated wholesale WACC to only reflect the cost of new debt.

**5.54** The cost of equity and cost of debt have then been adjusted to estimate the wholesale WACC, as a MSWSA should not require a significant separate retail function. The MSWSA would likely only provide retail services to a relatively small number of customers, similar – we understand from AWS – to the retail capability for wholesale water business.

**5.55** Finally, we have converted the WACC to real, pre-tax terms by applying Ofwat's assessment of the effective tax rate of the industry.<sup>34</sup>

**5.56** We note that Ofwat's PR14 WACC pertained to a five year period, rather than to the longer investment horizon that might apply to a MSWSA. However, Ofwat has recently indicated that it considers its PR14 WACC estimate to be a reasonable estimate of the long term (15 year) WACC for the industry.<sup>35</sup>

<sup>32</sup> See: National Audit Office (2012) "Offshore electricity transmission: a new model for delivering infrastructure"; KPMG (2014) "Offshore Transmission: An Investor Perspective – Update Report", pp23-24.

<sup>33</sup> See Ofwat (2014) "Setting price controls for 2015-20 Final price control determination notice: policy chapter A7 – risk and reward", p42. We note that two companies were allowed a marginally higher WACC as a result of achieving enhanced status, but the estimate we have used here is applicable to all but one of the other 16 companies. We note that the CMA has recently published its Provisional Findings in an appeal of the PR14 Final Determinations by Bristol Water which provides another estimate of the cost of capital for statutory water companies: see CMA (2015) "Bristol Water plc price determination – Provisional findings", July, p261. However, the CMA's estimate of the WACC is very similar to Ofwat's (3.76% v 3.74%), so we have used Ofwat's own estimate as this is applicable to most of the statutory water companies.

<sup>34</sup> The WACC has been converted to pre-tax using an effective tax rate of 10%: see Ofwat (2014) "Setting price controls for 2015-20 Final price control determination notice: policy chapter A7 – risk and reward", p40.

<sup>35</sup> See Ofwat (2015) "Draft Determination of Terms and Conditions of the Supply of Non-Potable Water from Dwr Cymru Cyfyngedig to Tata Steel UK Limited at Llanwern under Section 56 of the Water Industry Act 1991", July, p92.

**5.57** We also note that using the PR14 WACC for a statutory water company assumes that financing a MSWSA would have no impact on that cost of capital for the existing statutory water company business. However, this may not be the case in practice. For larger companies the impact may be relatively minor given the relative size of a MSWSA investment compared to their existing RCVs.<sup>36</sup> But this may not be the case for smaller companies, some of which have RCVs smaller than the cost of a MSWSA. If the investment did impact on the wider company (e.g. by increasing gearing), then this could have implications for the company's credit rating and for the financial flexibility available to its management and investors.

#### WACC for statutory water companies undertaking non-PWS activities

**5.58** The PR14 WACC used above is consistent with a regulated revenue stream being sold to PWS customers over a five year period. This WACC may not be appropriate in circumstances where a statutory water company is supplying non-PWS customers and/or over a longer time period. In particular, if the non-diversifiable risks associated with supplying large non-household customers is greater than supplying household customers because, for example, demand by large users tends to vary more in response to fluctuations in general economic conditions compared to PWS customers, then the WACC should reflect these greater risks. In this respect we note that Ofwat has recently determined the cost of capital for a long-term supply of water by an incumbent to a large non-household customer in a dispute between Dwr Cymru (Welsh Water) and Tata Steel. There Ofwat applied an uplift to its PR14 WACC, concluding on a real vanilla WACC of 4.32% (compared to the 3.74% it adopted at PR14).<sup>37</sup>

**5.59** The 4.32% WACC again reflects the embedded debt costs of the statutory water companies, so we have again adjusted the WACC estimate so that it reflects only the forward-looking cost of debt. To do this we have adjusted the WACC that we estimated above for PWS activities for the additional debt and equity risk premiums which Ofwat had included as part of its Tata Steel draft determination. We have assumed that gearing would be the same for a PWS and non-PWS project.

#### WACC for a Joint Venture involving other water users

**5.60** Other water users that could potentially purchase water from the MSWSA could include power companies, farmers, large industrial users, supermarkets and IDBs. Option 2, the multi-sector JV, envisages that one or more of these different stakeholders could also invest, potentially alongside statutory water companies, into the equity of a JV established to finance and develop a MSWSA.

**5.61** Where the MSWSA is funded using a JV structure, the internal hurdle rate of the investors in the MSWSA JV could provide a lower bound for the WACC of the project.<sup>38</sup> The return demanded by other water users for their investment may also depend on specific risks and benefits accruing from the project, such as the impact on the profitability of their core businesses as a result of purchasing water from the MSWSA when water from other sources is unavailable. Additional risks associated with a joint ownership model, such as risks around governance where there are multiple owners, and, where there is limited recourse to the project's sponsors, greater exposure to downside scenarios, could also add to the cost of capital of the JV in practice.

**5.62** This means that the expected return on equity from the project would need to be at least equal to the cost of equity of the investor with the highest internal hurdle rate, unless it is assumed that preference shares (or other arrangements) could be used to offer different risk profiles and returns to different categories of shareholders. In this case, if for example power companies are assumed to be the investor with the highest hurdle rate, then the cost of equity of the project would reflect power companies' cost of equity.<sup>39</sup>

**5.63** On the assumption that the JV is bankruptcy remote from its equity investors (so that the debt investors in the JV would have no claim against the parent companies of the JV and nor would the debt investors in the parent companies be able to call on the JV to meet the debt obligations of the parent companies), then the cost of debt and gearing of the project would reflect the riskiness of the cashflows of the project on a stand-alone basis (rather than the cost of debt of the other water users). However, we consider that it may not be possible for a JV to achieve bankruptcy remoteness in practice

<sup>36</sup> For example, the investment into a single MSWSA would be around 6.9% of AWS's existing RCV (£494m / £7,112m). The £494m is the £470m construction cost described in Table 5-3, converted to March 2015 prices. The £7,112m is from Ofwat (2015) "Regulatory capital value updates", 11 June, and is reported in March 2015 prices.

<sup>37</sup> See Ofwat (2015) "Draft Determination of Terms and Conditions of the Supply of Non-Potable Water from Dwr Cymru Cyfyngedig to Tata Steel UK Limited at Llanwern under Section 56 of the Water Industry Act 1991", July, p25.

<sup>38</sup> There is a body of academic literature which suggests that the rate of return that each investor would seek from the MSWSA project would reflect their internal hurdle rate, rather than the risk profile of the project: see, for example, Meier and Tarhan (2007) "Corporate Investment Decision Practices and the Hurdle Rate Premium Puzzle", January or Driver and Temple (2010) "Why do hurdle rates differ from the cost of capital?", Cambridge Journal of Economics, 34(3), pp501 – 523.

<sup>39</sup> We note that it is possible that an investor might choose to invest in a project where the apparent financial rate of return is below its required rate of return in some circumstances. For example, a farmer might choose to proceed with an apparently NPV-negative investment into a MSWSA because the farmer ascribes some real option value to its participation in the scheme (e.g. because having the water supply available could enable it to expand its business in future, or protect it against problems with its other water supplies) or because there are specific (as opposed to diversifiable) benefits which accrue to the farmer as a result of the project e.g. synergies with its other activities. However, for current purposes we have assumed that these factors do not apply to other water users of the MSWSA.

because the equity investors in the project might be expected to 'step in' and support the project in the event that it was in financial difficulties if the project is important to their businesses and/or there could be situations envisaged where the project itself is impacted by a parent entity encountering financial difficulties.<sup>40</sup> Reflecting this assumption of 'quasi bankruptcy remoteness' we have assumed that the gearing and the cost of debt of the JV would be somewhere between the gearing of a corporate financed MSWSA and a project financed MSWSA. For simplicity we have assumed that gearing and cost of debt would be half-way between the two.

- 5.64** To apply the approach described above we have investigated the cost of capital of the various different types of water users which might potentially be involved in a MSWSA. The WACCs of these different types of water users are likely to vary and independent third party estimates of WACC are not readily available for some of these types of users. For the purposes of our stylised financial modelling we have therefore based the assumed cost of equity on the Competition and Market Authority's (CMA's) assessment of the cost of equity for a power generation company as part of its ongoing energy markets inquiry, subject to some adjustments described below.<sup>41</sup> We assume that this is a reasonable proxy of the internal hurdle rate that a power company would apply when evaluating the MSWSA – that is, the return on equity from the MSWSA would need to exceed power companies' own cost of equity – and it therefore provides a lower bound for the WACC that should be applied for a JV. For the purpose of this exercise we have assumed that other potential stakeholders, including farmers, IDBs and large industrial users, have the same cost of equity as power companies, though this may understate the cost of equity in some cases.<sup>42</sup>
- 5.65** The cost of equity estimated by the CMA for power companies has been adjusted to reflect the risk-free rate and equity risk premium from PR14 to ensure consistency across the estimated WACCs. We have adopted the higher end of the range estimated by the CMA, reflecting that most of the power companies have argued that the CMA's assessment underestimates the WACC, and calculated the cost on a pre-tax basis using an estimated tax rate of 10%, which is again consistent with that used in PR14.<sup>43</sup>
- 5.66** The gearing and cost of debt assumptions depend in part, as explained above, on the assumptions we have made for project financing, discussed below.

### WACC for a Joint Venture between shareholders of water companies and not involving other water users

- 5.67** We have assessed the WACC of a JV formed by two or more statutory water companies on the same basis as we assessed the WACC of a JV involving other water users. We have assumed the cost of equity would reflect the cost of equity of water companies' shareholders, though this does not account for the additional risk to shareholders as a result of moving the project off-balance sheet. The costs of debt and gearing would be halfway between those of a corporate finance and project finance option, reflecting that the debt raised may not be non-recourse to the parent companies in practice. The cost of equity of water companies' shareholders could be similar to the cost of equity of investors in project finance infrastructure, which is discussed below.
- 5.68** We note that the equity in a JV between the shareholders of multiples statutory water companies could be divided up in a variety of ways e.g. 50/50, 33/33/33, 80/20 etc, depending on how many companies are involved and their relative interest in the project. If it is assumed that the cost of equity of all the different shareholders in statutory water companies in England & Wales is the same, then the WACC of the JV would be invariant – under the simplifying assumptions we have made – between each of these scenarios. We note that this may not be the case in practice as the shareholders of statutory water companies are diverse and the returns required may also vary according to whether the company has control of the asset or not (in which case they may require a higher rate of return as compensation), but for simplicity we have assumed the cost of equity of the JV to be the same regardless of the proportions of the equity actually held by different investors.

### WACC for project financing of a MSWSA

- 5.69** Project finance can be defined as the creation of a legally independent project company financed with non-recourse debt.<sup>44</sup> In the case of a MSWSA, this would mean that the providers of debt to the project would have no claim against the companies or other entities which have sponsored the project (i.e. statutory water companies and other water users) and invested in its equity, other than to the value of that equity investment.

<sup>40</sup> See, for example, Moody's (2012) "Power Generation Projects – Rating Methodology", p28, December 21.

<sup>41</sup> See: CMA (2015) "Energy market investigation Provisional findings report, Appendix 10.4: Cost of capital", p4-1.

<sup>42</sup> The evidence we have identified suggests that farmers may have a higher cost of capital than power companies; see Franks (2009) "Coping with the credit crunch? A financial appraisal of UK farming". However, we have not been able to identify a robust and up-to-date estimate of the cost of capital for farmers. Consequently, to be conservative we have assumed that the WACC of a farmer is the same as the WACC of a power company.

<sup>43</sup> We note that this is lower than the 27% tax rate applied by the CMA in its calculations, but this is based on historical corporate tax rates between 2007 and 2013 and we have sought to present all the WACC assumptions using a consistent treatment of tax as our stylised financial modelling does not take tax into account (based on discussions with AWS as explained in the Appendix).

<sup>44</sup> See, for example, Esty (2003) "The Economic Motivations for Using Project Finance", Harvard Business School.

- 5.70** Projects which are most suitable for project finance often have limited lives, employ established technologies, generate substantial free cash flow and have few options for profitable follow-in investments.<sup>45</sup> Depending on the regulatory and contractual arrangements in place for a MSWSA, it may have some or all of the characteristics of a project which could be project financed, so there appears to be some merit in considering a project financing approach to a MSWSA. In the context of the water industry, there may also need to be a case for treating a MSWSA differently to other water sector infrastructure, so consideration may need to be given to what makes a MSWSA different to activities normally undertaken and financed by statutory water companies. There are also significant transaction costs typically associated with project finance which would also need to be taken into account in a fuller evaluation of project financing of MSWSAs.<sup>46</sup>
- 5.71** The cost of capital of a project financed MSWSA could be higher or lower than some of the other financing options, depending on the relative riskiness of the project's cashflows in the different options. At this early stage of the investigation of the appropriate approach to MSWSAs, it is not possible to draw any definitive conclusions about what the regulatory or contractual arrangements might look like for a project financed MSWSA.
- 5.72** Therefore, to identify an appropriate WACC to assume for the project finance option, we have regard to a number of different reference points which could provide reasonable assumptions for the WACC of a project financed MSWSA if it had a similar risk profile to these other projects. While making comparisons to these other data points is a way to identify assumptions for our stylised financial modelling, it is important to recognise that there is significant flexibility about how the arrangements for a project financed MSWSA could be structured and consequently the risk profile of a project financed MSWSA could be significantly different to these reference points.
- 5.73** Noting these caveats, some relevant reference points for the WACC of a project financed MSWSA could include:
- OFTOs: offshore sub-sea electricity cables connect offshore windfarms to the onshore electricity grid. These investments are subject to a tailored regulatory regime, which fixes their allowed revenues in real terms over a 20 year period based on the expected costs of operating, maintaining, financing and decommissioning the assets. Mechanisms are included which allow the revenue stream to be adjusted in certain circumstances (e.g. additional capex is required, force majeure etc), protecting investors against significant downside risks. OFTO investors are not exposed to the performance of the offshore windfarm to which they connect, but they are incentivised to maintain the availability of the assets through a set of rewards and penalties if availability exceeds or falls short of a target level of availability. OFTO investors, to date, do not bear any construction risk as the investment is made only after the asset is complete and commissioned.<sup>47</sup> Counterparty risk is relatively low as OFTO revenues are underwritten by electricity consumers.
  - Private Finance Initiative (PFI): in the UK, PFI projects have provided a successful financing structure for infrastructure projects, with 728 projects currently operational across government.<sup>48</sup> Under a typical PFI structure, a public sector entity contracts with a private sector company – often through an SPV – to design, build, finance, maintain and operate an asset for a fixed period of time – generally around 25 to 30 years – and is benchmarked against pre-set performance standards.<sup>49</sup> In return for meeting the required standards, the private entity is paid a pre-defined payment stream by the government counterparty. Performance of the PFI is typically incentivised through the contract terms, which include rewards and/or penalties associated with performance.
  - TTT: the TTT is a 25km long interception, storage and transfer tunnel running up to 65 metres below the River Thames from west London to Abbey Mills, where it will connect with the Lee Tunnel to transfer the sewage to Beckton Treatment Sewage Works. The project is expected to cost £4.2bn (2011 prices).<sup>50</sup> As a major stand-alone infrastructure project in the water sector, the TTT potentially provides a useful reference point for a MSWSA, albeit there are very specific factors relating to the TTT and a MSWSA would be substantially smaller. The project will be delivered under the SIP regime by a specially appointed Infrastructure Provider determined by a competitive tendering process, which it has recently been announced will be Bazalgette Tunnel Limited. A bespoke regulatory regime has been developed to apply to the project in order to make it financeable. Under this regulatory regime the allowed revenues of the IP will be calculated largely formulaically during the construction period based on the costs of the project (including financing costs submitted by the IP), subject to various adjustments in the event that unforeseen circumstances arise. Beyond the construction period Ofwat will have a greater role to determine the allowed revenues of the project.

45 Brealey, Myers and Allen (2008) "Principles of Corporate Finance", Ninth Edition, p688.

46 Brealey, Myers and Allen (2008) "Principles of Corporate Finance", Ninth Edition, p688. For example, the National Audit Office (NAO) has previously stated that each OFTO competition ran by Ofgem cost between £7m and £8m: see NAO (2012) "Offshore electricity transmission: a new model for infrastructure delivery", June, p26.

47 All licences granted so far are of this type, as the associated assets were already complete or under construction when the licensing regime came into force.

48 As at 31 March 2014: see HM Treasury (2014) "Private Finance Initiative projects: 2014 summary data".

49 See HM Treasury (2014) "Private Finance Initiative projects: 2014 summary data".

50 Source: Thames Tideway Tunnel website, accessed on 9 September 2015.

**5.74** The risk profile of each of these precedents is likely to differ from that of a MSWSA, the arrangements for which are currently undefined, so it is not possible to reach a definitive view on what the WACC of a project financed MSWSA might be. However, we note that the TTT is likely to be lower much risk than a MSWSA would be because of the presence of a government support package, which we explain in more detail in the Box below.

### Risk profile of the Thames Tideway Tunnel

The successful bidder for the Thames Tideway Tunnel (TTT) was recently announced. The cost of capital submitted by the successful consortium was 2.497% (real, vanilla),<sup>51</sup> significantly lower than the allowed cost of capital of the incumbent water companies (3.74% real, vanilla). On the face of it this might suggest that a competitive tendering process for a licence to finance, build and operate a MSWSA could extract better value for money for water users through lower financing costs than if the MSWSA was funded inside the regulatory ring-fence by statutory water companies. This might mean that Option 3 – SPV would be preferable to Option 1 – Single Water Company, which is the opposite of what Table 5-4 above suggested. However, it is difficult to compare the WACC from the TTT to the WACC of a statutory water company for a number of reasons including:

- there are significant differences in the risks borne by investors.<sup>52</sup>
- the TTT investors benefit from a Government Support Package.<sup>53</sup> Moody's has indicated that the TTT "benefits from a comprehensive support package, which includes insurance of last resort provision, liquidity in case of market disruption, contingent equity support and compensation payments if the project is terminated for becoming unviable..." such that the TTT has "strong resilience to downside scenarios, taking into account the funding, liquidity and compensation payments available under the government support package, which provide significant risk mitigation in severe and unlikely downside scenarios".<sup>54</sup>

- differences in regulation: a bespoke set of regulatory arrangements have been applied to the TTT, which differ to those applied to statutory water companies. As part of these bespoke arrangements the TTT regulatory framework provides a range of protections that the PR14 framework does not e.g. investors in the IP are partially protected against movements in market interest rates.<sup>55</sup>
- the WACCs are used in different ways:
  - if the WACC for a MSWSA was applied to RCV in a similar way to PR14, then it would be applied to the whole value of the asset included in RCV and fixed over time, subject to periodic re-sets. However, the WACC submitted by bidders for the TTT applies to expected constructions costs and to liquidity cost allowances, but not to cost overruns (which are subject to a different WACC to be determined by Ofwat).<sup>56</sup>
  - the WACC submitted by bidders for the TTT also applies out to the end of construction scheduled for 2030, a longer period than the WACC determined for water companies at PR14.<sup>57</sup>

There are also differences in the way that the TTT and water companies are funded, with the TTT's gearing constrained to a maximum of 62.5%. The cost of capital for an incumbent water company also reflects the costs of embedded debt, not just forward-looking debt costs.

The TTT WACC might also not be directly applicable to a MSWSA funded outside the regulatory ring-fence because of differences between the TTT and a MSWSA. Aside from differences in risk and the way the WACC might be applied, the infrastructure investors that we spoke to as part of this project thought there may also be a difference in the ability of a MSWSA to attract financing on similar terms given differences in the sizes of the projects.

In the round, while it is possible that a competitive tendering process could lead to a lower cost of capital for a MSWSA than we have assumed in our stylised financial modelling, it is difficult to draw inferences about the likely cost of capital in such a scenario on the basis of the unique TTT experience. The other evidence we have considered suggests that project financing would be more expensive than corporate finance for a MSWSA.

51 See Ofwat (2015) "Project Licence – Bazalgette Tunnel Limited", Appendix 1, para 1.18, p54, 21 August 2015.

52 Ofwat also discusses some differences in risk between the TTT and statutory water companies during the operational phase: see Ofwat (2015) "Ofwat guidance on approach to the economic regulation of the Infrastructure Provider for the Thames Tideway Tunnel", pp17-18.

53 More details on the GSP were published by DEFRA on 7 September 2015: see <https://www.gov.uk/government/publications/thames-tideway-tunnel-government-support-package-contract-documents>.

54 Moody's (2015) "Moody's assigns Baa1 rating to Bazalgette Tunnel Limited", 24 August.

55 A Financing Cost Adjustment would apply: see Ofwat (2015) "Explanatory memorandum to the Project Licence issued to Bazalgette Tunnel Limited", p12, para (e).

56 See Ofwat (2015) "Explanatory memorandum to the Project Licence issued to Bazalgette Tunnel Limited", p5 and p9, para (b).

57 See Ofwat (2015) "Ofwat guidance on approach to the economic regulation of the Infrastructure Provider for the Thames Tideway Tunnel", p7 which indicates that the Bid WACC applies up until 31 March 2030.

- 5.75** OFTOs and PFIs both have important differences from a MSWSA as well. For example, an OFTO does not bear any construction risk, and may face lower counterparty risk if the MSWSA relies on payments from other water users for some of its revenues. PFIs do bear construction risk, but may also face lower counterparty risk. The technical complexity of operating a PFI will vary significantly according to the type of project involved, so the operational and construction risks could be higher or lower than those of a MSWSA. The risk mitigation mechanisms (e.g. clauses which allow revenues to be re-adjusted if certain events occur) built into either OFTOs or PFI arrangements could be stronger or weaker than those that a MSWSA would benefit from, depending on the arrangements applied to a MSWSA.
- 5.76** Noting the above, we consider that the WACC for an OFTO could provide a reasonable reference point for an assumption about the WACC of a MSWSA for the purposes of our stylised financial modelling, though in practice the risk profile of a MSWSA may be higher than that of an OFTO noting the points made above e.g. an OFTO does not face construction risk.
- 5.77** There are a number of different data points available in relation to OFTOs' WACC, including:
- Ofgem has most recently determined the cost of capital for calculating Interest During Construction (IDC) to be equal to 8.0% nominal, pre-tax.<sup>58</sup> This figure does not include any allowance for construction risks on the basis that Ofgem assesses efficient capex at the end of the construction period, so any overruns which are efficiently incurred will be reflected in the allowed costs of the project.<sup>59</sup>
  - According to Ofgem, the cost of equity for OFTOs has ranged from 9%-11% in nominal post-tax terms, while gearing has been between 80% and 90% with debt supplied by both commercial banks and the EIB.<sup>60</sup> The NAO estimates that the cost of debt for OFTOs is around 210-220 basis points above the risk-free rate while, according to Ofgem, the cost of debt for OFTOs has typically been around 200-220 basis points above Libor.
- 5.78** By comparison, the cost of debt financing for PFIs has typically been slightly higher than for OFTOs, with the debt spread between 200 and 300 basis points.<sup>61</sup> The NAO attributes the higher costs for PFI projects relative to OFTOs to the additional construction risks for PFI projects. In contrast, equity financing on PFIs has been slightly lower than the 9-11% range stated above for OFTOs, with a range of 8%-9% for investors buying into operational projects.<sup>62</sup> According to the National Audit Office, this is likely to partly reflect that PFI is a mature market and hence investors are willing to accept a lower return.
- 5.79** Based on the evidence above we have assumed the cost of capital for the purpose of a project-financed MSWSA for our stylised financial modelling as follows:
- the nominal post-tax cost of equity is assumed to be 9% and gearing is assumed to be 80%, both of which are at the lower bound of OFTOs;
  - the cost of debt is based on the lower bound of the spread reported by the NAO for OFTO projects above the risk-free rate i.e. 210 basis points. To state the WACC on a consistent basis with the other financing options, this debt spread has been applied to the risk-free rate adopted by Ofwat at PR14; and
  - an uplift has been applied for construction risk, noting that the OFTO cost of capital data reflects operational (i.e. post-construction) projects.<sup>63</sup>
- 5.80** This estimate of the WACC could be conservative for a project-financed MSWSA, given a less mature regulatory regime (noting the OFTO regime has been applied to several projects already, whereas any project financed MSWSA would be subject to an untested bespoke regulatory regime, albeit one which might benefit to a degree from Ofwat's track record of economic regulation), the additional construction risk of the MSWSA and higher counter-party risk. Lenders may also want an additional premium on the cost of debt to reflect risks attached to a new financing structure in the market.

### WACC inputs to the stylised financial modelling

**5.81** Building on the analysis and evidence presented above, we have made the following assumptions about the WACC of the MSWSA in each of the different financing options:

- the riskiness of the cashflows for Option 1 (Single Water Company) are assumed to be a weighted average of the riskiness of cashflows for statutory water companies undertaking either PWS or non-PWS activities (noting that in Option 1 the MSWSA would sell water to both PWS and non-PWS users). As a result, the WACC for Option 1 is assumed to be a weighted average of the

58 See Ofgem (2013) "Decision on approach to Interest During Construction for offshore transmission", 18 December.

59 See Ofgem (2013) "Proposed interest during construction approach for offshore transmission and Project NEMO", p14, paragraph 2.14, 18 October.

60 See KPMG (2014) "Offshore Transmission: An Investor Perspective – Update Report", p23.

61 See KPMG (2014) "Offshore Transmission: An Investor Perspective – Update Report", p23.

62 See KPMG (2014) "Offshore Transmission: An Investor Perspective – Update Report", p23.

63 The uplift applied is calculated using the 16.6% uplift to the WACC applied by Ofgem when calculating interest during construction for Project Nemo, an electricity interconnector subject to a semi-regulated regime by Ofgem: see Ofgem (2013) "Proposed interest during construction approach for offshore transmission and Project NEMO", October, p14. Since the uplift would only apply during the construction phase, we have only applied 4/29th of the uplift (given the construction period is 4 years and the total project duration is 29 years including the operational phase for the MSWSA).

WACC for statutory water companies undertaking PWS activities and of the WACC for statutory water companies undertaking non-PWS activities, as shown in Table 5-4. The WACC is estimated using a 90% weighting on the WACC for statutory water companies undertaking public water supply activities and 10% on the WACC for water companies selling to other water users, reflecting the assumed allocation and consumption of water across sectors.<sup>64</sup> This implies a real, pre-tax WACC of 3.57%. The costs of debt and equity, and of gearing, are calculated in the same way.

- the cost of equity for Option 2 (Multi-sector Joint Venture) is assumed to reflect the highest internal hurdle rate of the various stakeholders assumed to invest in the MSWSA, which we have assumed to be equal to the cost of equity of power companies (noting that the WACC of some of the other stakeholders may be higher). As discussed earlier, we have also assumed that the debt of the JV would not be completely bankruptcy remote due to the expectation that investors may 'step in' to support the project if it gets into financial difficulties. This means that the cost of debt of the project would be somewhere between the costs of debt of a project financed and a corporate financed approach. Consistent with this approach we have also assumed that the gearing of the MSWSA would be between these two options. For simplicity, we have assumed both the cost of debt and gearing would be half way between those of the corporate finance (Option 1) and SPV (Option 3) approaches, though it could be anywhere in the range.
- for Option 3 (SPV), where the MSWSA is project financed using an SPV, we have assumed the riskiness of the cashflows would be similar to those of an OFTO and the applicable WACC is therefore based on the WACC of an OFTO, as discussed above.<sup>65</sup>
- for Options 4 (Regulated/Unregulated Split) and 5 (Pre/Post Construction Split), which are combinations of Options 1, 2 and 3, we have assumed the WACC is a weighted average of the WACCs applicable to the respective financing options. For example, the WACC for Option 4, where the project is split into regulated and unregulated components, is based on 80% of the MSWSA being financed by using a corporate finance approach (Option 1) and 20% being financed using the Multi-Sector Joint Venture (Option 2) approach. Gearing is calculated in the same way.
- because Option 6 (Statutory water company JV inside the regulatory ring-fence) is financed within the regulatory ring-fences of two or more statutory water companies, but does not involve selling water to any non-PWS water users, the risk profile of the project is likely to be very similar to that of a statutory water company undertaking PWS activities. The longer-term nature of an investment in a MSWSA might be expected to increase the WACC above the WACC Ofwat allowed at PR14, all else equal, but we note that Ofwat has assessed that its PR14 allowance is a reasonable estimate of the long-term WACC of the sector.<sup>66</sup> Accordingly, we have assumed the WACC in Option 6 would be equal to the WACC for a statutory water company (subject to the various adjustments described in paragraphs 5.52 to 5.55 above) i.e. equal to 3.53%.
- the cost of capital for Option 7 (Water Company Shareholder JV outside the ring-fence) is assumed to be equal to the WACC for a JV between shareholders of water companies and not involving other water users, as discussed in paragraphs 5.67 and 5.68.

**5.82** Table 5-5 summarises the cost of capital assumptions we have made in our stylised financial modelling.

**TABLE 5-5: SUMMARY OF STYLISTED FINANCIAL MODEL INPUTS**

OPTION	DESCRIPTION	GEARING	COST OF DEBT	COST OF EQUITY	ASSUMED REAL PRE-TAX WACC
1	Single Water Company	62.50%	1.98%	6.22%	3.57%
2	Multi-Sector JV	71.25%	2.75%	6.63%	3.87%
3	SPV	80.00%	3.54%	6.76%	4.19%
4	Regulated/ Unregulated Split	64.25%	2.14%	6.30%	3.62%
5	Pre/Post Construction Split	78.25%	3.39%	6.71%	4.11%
6	Statutory Water Company JV	62.50%	1.96%	6.14%	3.53%
7	Water Company Shareholder JV	71.25%	2.75%	6.14%	3.73%

Source: FTI assumptions.

<sup>64</sup> 90% of the water from the project is assumed to be supplied to statutory water companies: 80% to one company and 10% to another.

<sup>65</sup> See: National Audit Office (2012) "Offshore electricity transmission: a new model for delivering infrastructure"; KPMG (2014) "Offshore Transmission: An Investor Perspective – Update Report"; pp23-24.

<sup>66</sup> See Ofwat (2015) "Draft Determination of Terms and Conditions of the Supply of Non-Potable Water from Dwr Cymru Cyfyngedig to Tata Steel UK Limited at Llanwern under Section 56 of the Water Industry Act 1991". July, p92.

**5.83** We note that our modelling has implicitly assumed that traditional sources of debt and equity (such as bonds and loans) would be used to finance the MSWSA, but it might also be possible for the project to attract capital through other sources such as issuing retail bonds<sup>67</sup> or through the use of bonds issued by a consortium of water companies.<sup>68</sup> We have not, however, explored these alternative sources of capital in our work. Unless these sources of capital had a materially different cost to the sources we have taken into consideration and these sources of capital represented a material amount of the capital raised, the impact on the overall cost of finance of the different financing options is likely to be small.

### Model calculations

**5.84** Based on these inputs the model undertakes a number of calculations, including of the project's revenues. These are built up on a user-by-user basis, and are calculated to raise funds over the life of the project to cover construction, operating and financing costs. The assumed revenue profile over time is then calculated based on either:

- Building Blocks Revenue: a simplified version of Ofwat's PR14 methodology is applied to calculate allowed revenues based on RCV, WACC, Totex (split

by the PAYG ratio) and asset lives (which inform depreciation). This method for calculating revenues is applied whenever a statutory water company is investing directly or through another entity which sits within the regulatory ring fence (such as in Option 6, where statutory water companies form a JV). When a statutory water company funds part of the project in the same way, then the corresponding part of the revenues is calculated using the building blocks method.

- Contracted Revenue: on the assumption that unregulated (non-PWS) water would be sold under long term contracts with a broadly constant stream of payments required (e.g. similar to Kielder Reservoir or an OFTO), we proxy a contracted revenue stream by annuitising the Building Blocks Revenue. This method for calculating revenues is applied whenever a statutory water company is not the investor.

**5.85** Table 5-6 shows the assumed split between regulated revenues and contracted revenues for each of the scenarios considered.

**TABLE 5-6: PROPORTION OF PROJECT REVENUE BY TYPE OF WATER USER**

	OPTIONS						
	1	2	3	4	5	6	7
<b>BUILDING BLOCKS</b>	<b>80.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>80.0%</b>	<b>10.0%</b>	<b>100.0%</b>	<b>0.0%</b>
Statutory water company	80.0%	0.0%	0.0%	80.0%	10.0%	80.0%	0.0%
Other water companies	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	0.0%
<b>CONTRACTED REVENUE</b>	<b>20.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>20.0%</b>	<b>90.0%</b>	<b>0.0%</b>	<b>100.0%</b>
Statutory water company	0.0%	80.0%	80.0%	0.0%	70.0%	0.0%	80.0%
Other water companies	10.0%	10.0%	10.0%	10.0%	10.0%	0.0%	20.0%
Other users	10.0%	10.0%	10.0%	10.0%	10.0%	0.0%	0.0%

Source: FTI assumptions.

<sup>67</sup> Severn Trent Water and National Grid have both issued retail bonds in the past as part of their capital raising programmes.

<sup>68</sup> We note that there are examples of water companies, or similar entities, coming together to issue bonds in the past. For example, 81% of the equity of the Nederlandse Waterschapsbank NV Bank is owned by Dutch water authorities (website accessed on 10 September 2015) and in the UK the Royal Bank of Scotland (RBS) has previously issued bonds on behalf of Water only Companies (WoCs) through its Artesian programme.

**5.86** The model then generates a number of outputs based on the selection criteria:

- the present value of the costs to water users (i.e. the revenues of the project) over the life of the project, discounted at the social time preference rate;
- total costs to water users on an annual basis over the life of the project;
- financing costs for the project, based on the assumed WACC; and
- financial ratios for the project, assessed as though the project is financed on a stand-alone basis.<sup>69</sup>

### Results of the financial modelling

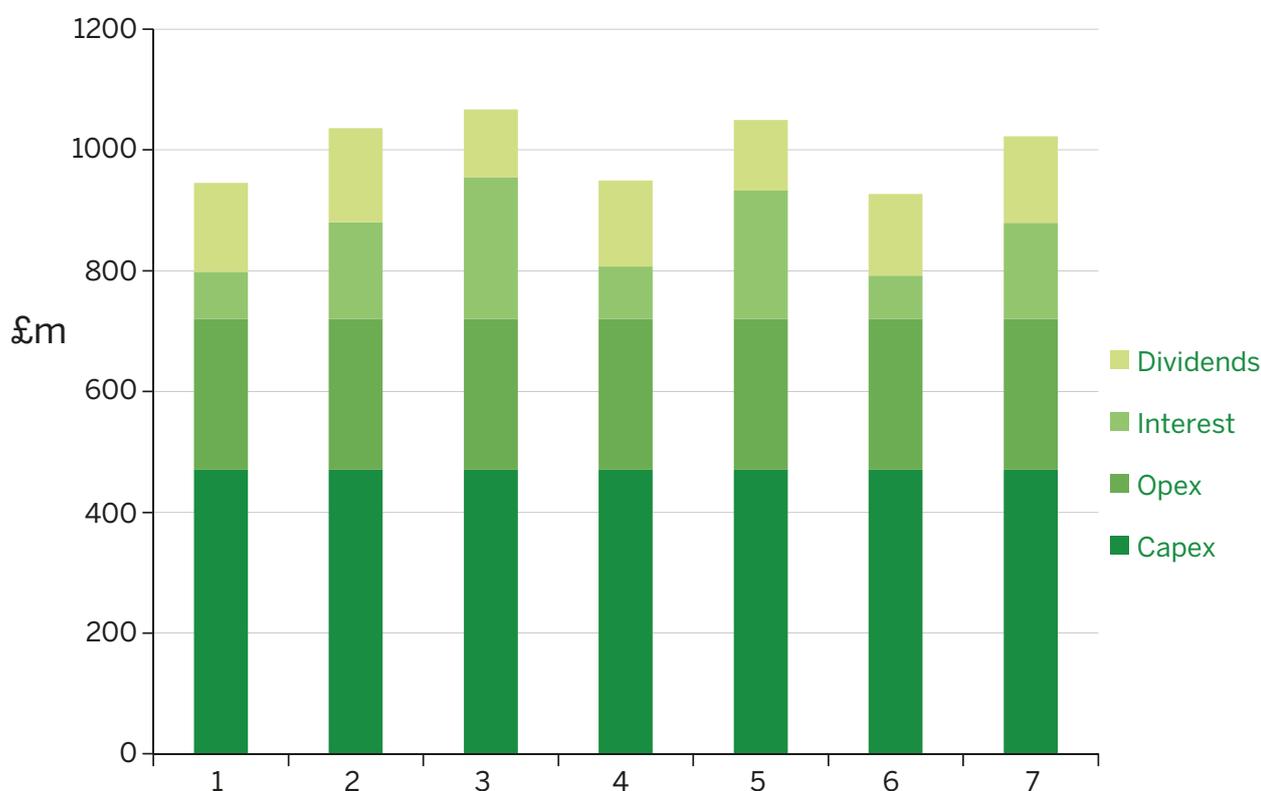
**5.87** This section sets out a comparison of the modelling results across the seven scenarios for:

- revenues paid by water users (including the PWS customers of statutory water companies); and
- the present value of the cost of the project to water users.

**5.88** The project revenues, or the costs to water users, have been calibrated to cover the project and financing costs under each of the options. The revenues vary across the options, depending on the financing costs associated with the funding structure.

**5.89** As shown in Figure 5-2, under Option 1, where a statutory water company owns and operates the MSWSA under a corporate finance structure, financing charges and hence revenues are relatively low, even after adjusting for the slightly higher risks associated with undertaking some non-PWS activities. Financing charges are also low under Option 4, where the majority of the project (80%) is built under a corporate finance structure and the remainder is funded through a JV arrangement. For Option 6, which only involves statutory water companies and no other users, the cost of capital is also assumed to be relatively low, as discussed earlier.

**FIGURE 5-2: BREAKDOWN OF PROJECT REVENUES (2012/13 £M)**



Source: FTI calculations

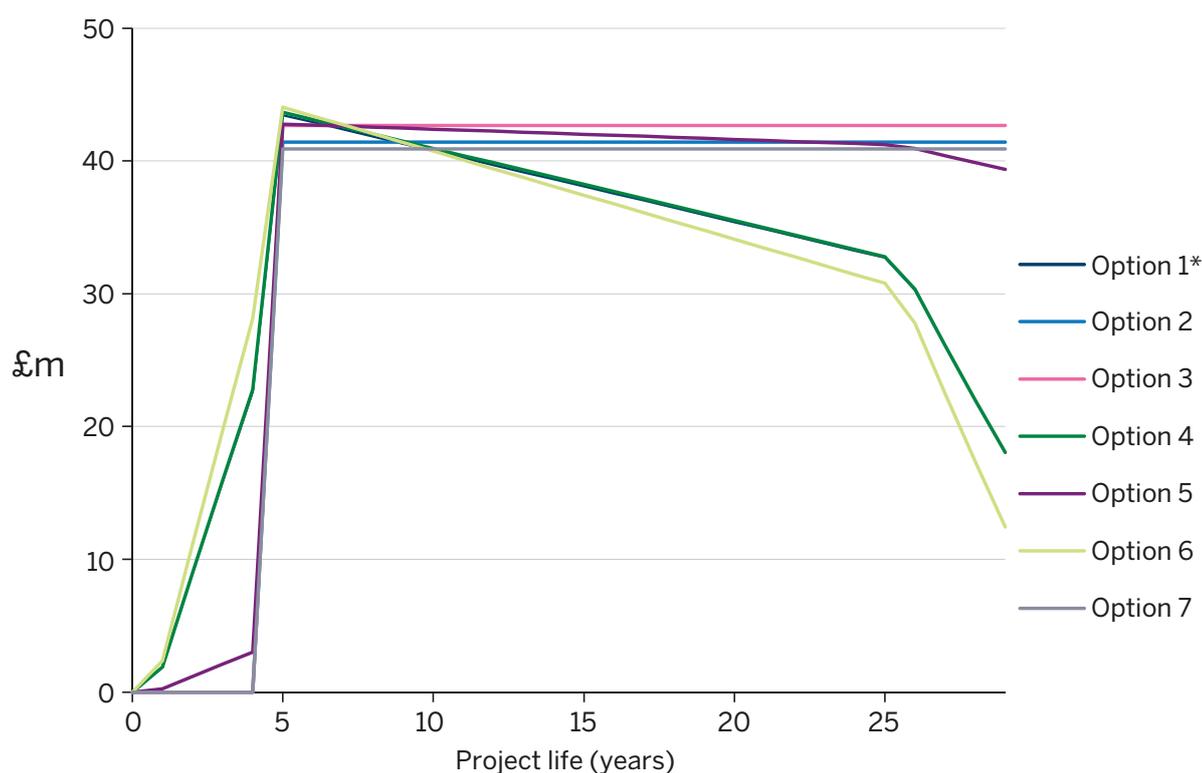
<sup>69</sup> We focus on the project on a stand-alone basis, even where it is financed by a statutory water company or some other entity, because we want to isolate the impact of the project on financeability (rather than reflect any cross-financing which might be possible from the wider corporate entity responsible for delivering the project).

**5.90** In contrast, costs to water users are higher under Options 2, 3, 5 and 7 reflecting that the assumed cost of capital tends to be higher under a JV or project financing arrangement.

**5.91** The profile of revenues also differs across the options, as show in Figure 5-3. For Options 1, 4 and 6, where statutory water companies directly own part of the project and their revenues from PWS customers are

assumed to be regulated using the building block method. A small share of revenue is also calculated using this method under Option 5, where a statutory water company funds 10% of the project through corporate finance.<sup>70</sup> Under this method, some revenues are collected through the construction phase of the project. Once the project is operational, the amount collected declines over time as capital is repaid and funding costs fall.

**FIGURE 5-3: ANNUAL PROJECT REVENUE BY OPTION (2012/13 £M)**



\*Option 1 is very similar to Option 4

Source: FTI calculations

**5.92** For Options 2, 3, and 7, where a statutory water company does not directly own the project, the annual costs to water users are assumed to be constant (in real terms) over the operational life of the project.

**5.93** In Section 4 we outlined that the PWS customers of the statutory water companies may prefer to avoid volatility in their water bills, which suggests that a smoother profile of revenues from the MSWSA may be preferable. Options which have significant proportions of regulated revenues, which we assume increase more gradually and then decrease over time, could be preferable to other financing options which involve step changes in

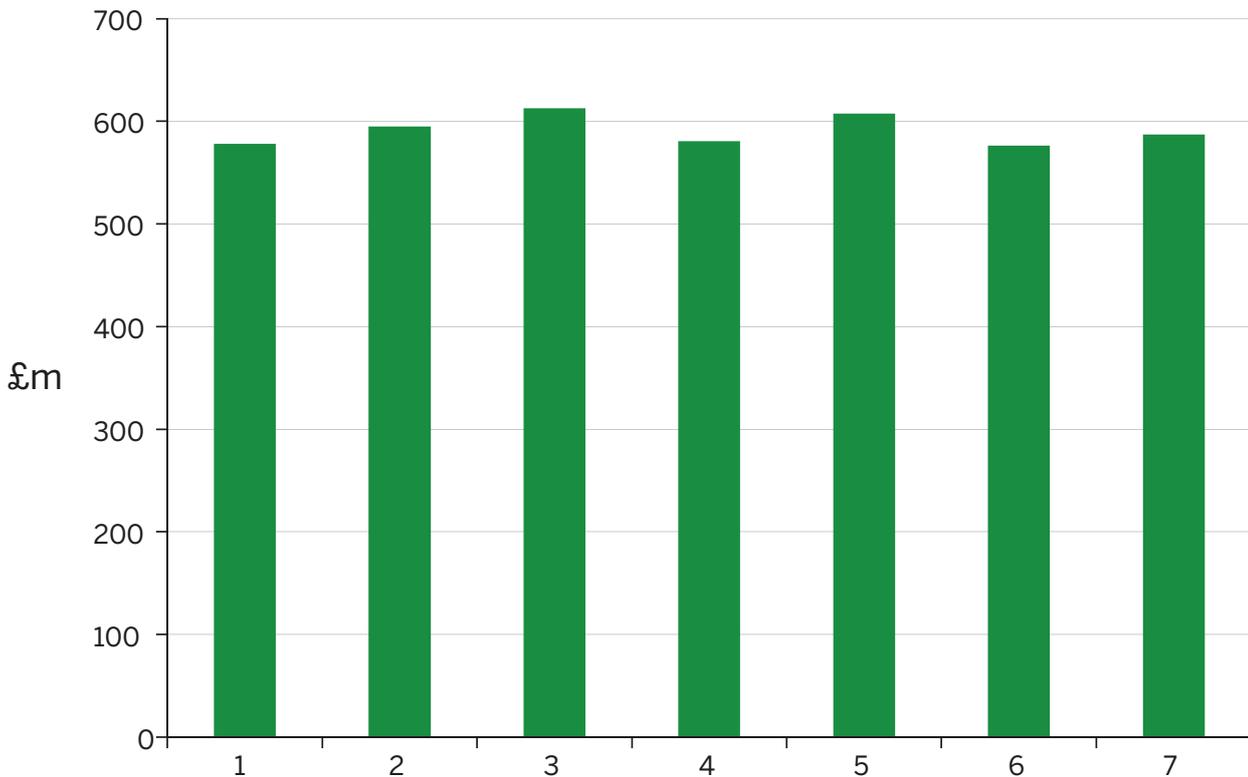
the amounts paid by water users even if the revenues under these options are stable over the operational life of the project (in real terms).

**5.94** To assess the present value of the costs to water users we have discounted the annual revenue streams at HM Treasury's Social Time Preference Rate (STPR) of 3.5%, which provides a measure of the time-value of money to society, rather than any particular investor. The present value of costs to water users – illustrated in Figure 5-4 below - are the lowest in Options 1, 4 and 6 and highest in Options 3 and 5, though there is not a substantial difference across the options.<sup>71</sup>

<sup>70</sup> For Option 5, where the statutory water company owns 10% of the project under a corporate finance structure but is entitled to 80% of the water rights, it is assumed that 10% of revenues are collected under the building block profile and 70% under an annuity with constant payments.

<sup>71</sup> See HM Treasury (2011) "The Green Book – Appraisal and Evaluation in Central Government", July, p26.

FIGURE 5-4: NET PRESENT VALUE OF PROJECT REVENUES AT STPR (2012/13 £M)



Source: FTI calculations. "STPR" is Social Time Preference Rate.

**5.95** To help inform our assessment of the different financing options from the perspectives of debt and equity investors we have also considered the project IRR, the payback period and some simplified credit ratios. The results are shown in Table 5-7 below. The project IRR is equal to the cost of capital by construction.<sup>72</sup> The IRR on the project is equal to the project WACC by construction. The breakeven point, where the project starts to make a positive return, is broadly consistent across the projects at around 22 years, suggesting this would not be likely to influence investors' choices about the financing option. The Funds From Operations (FFO)-to-net debt ratio measures the ability of companies or projects to generate sufficient cash flows to cover debt

repayments.<sup>73</sup> In the absence of specific guidance about how rating agencies would approach a MSWSA this metric may provide one high level indication of the ability of the MSWSA to attract debt, but other ratios may be more appropriate, particularly for project financing or JV options.<sup>74</sup> A ratio above 11% is generally consistent with an investment grade credit rating for a regulated gas or electricity network.<sup>75</sup> As expected, options with relatively lower gearing generally have a higher FFO-to-net debt ratio, though all the options have an average ratio that is consistent with an investment grade rating over the first 15 years of operation assuming the selected ratio and threshold tests would be applicable to a MSWSA.

<sup>72</sup> We note that NPV is a more reliable measure than IRR; see for example Brealey, Myers and Allen (2008) "Principles of Corporate Finance", Ninth Edition, p123ff.

<sup>73</sup> See: Moody's (2014) "Regulated Electric and Gas Networks".

<sup>74</sup> The FFO is measured as revenues less operating expenses, and net debt is measured as debt outstanding.

<sup>75</sup> See: Moody's (2014) "Regulated Electric and Gas Networks", p19.

TABLE 5-7: FINANCIAL RATIOS

	OPTION						
	1	2	3	4	5	6	7
NPV of project revenues (£m)	578	586	608	579	603	576	586
Project IRR (%)	3.57%	3.71%	4.09%	3.59%	4.02%	3.53%	3.69%
Break-even point (years)	19	20	19	19	19	18	20
FFO-to-net debt ratio over 1st 15 years of project life	17%	12%	11%	16%	11%	18%	12%

Source: FTI calculations

### Scenario analysis

**5.96** The above analysis has made a range of assumptions about the cost and characteristics of MSWSAs. However, there is significant uncertainty around these costs and characteristics at this early stage in the consideration of MSWSAs. Moreover, as we mentioned in paragraph 5.43, the stylised modelling is based on a reservoir project, but there are other types of MSWSAs which could be considered. The preferred financing options could be different, in theory, if different types of project are considered and/or if the characteristics of the project are assumed to be different from those assumed in the modelling above. Likewise, we have assumed (see paragraph 5.57) that the cost of capital of statutory water companies would be unaffected by financing a MSWSA, but this may not necessarily be the case, particularly for smaller companies.

**5.97** To explore the impact of changing the assumed characteristics of the MSWSA, a number of sensitivities have been considered:

- changing the assumed construction period and operating life of the project, in case a reservoir MSWSA should be assumed to take longer to construct and/or could operate over a longer period;
- changing the structure of payments from water users to introduce an upfront payment, as has been the case in other multi-sector water projects in other countries;
- changing the assumed type of MSWSA e.g. a desalination plant instead of a reservoir; and
- the impact of increasing the cost of capital of a statutory water company.

### Changing the assumed construction period and operating life of the project

**5.98** The assumed length of the project has some bearing on the overall cost – and therefore required revenues – of the project. This section briefly considers the impact on the project cost if the construction phase of the project takes longer, or the project has a longer assumed operating life.

**5.99** We have tested the impact of changes in the duration of the construction and operational phases on the NPV of payments from water users as summarised in Table 5-8 below. The cost of constructing the project and the assumed annual operating expenditure are unchanged.

TABLE 5-8: SENSITIVITY ANALYSIS: ASSUMED CONSTRUCTION AND OPERATION PERIODS

	BASE CASE	LONGER CAPEX	LONGER OPEX
Construction period	4	5	4
Operating life	25	25	30
Total project life	29	30	34

Source: FTI assumptions and AWS.

**5.100** Extending the construction period, but not the total cost of construction, reduces the NPV of payments from water users as payments are deferred further into the future. However, extending the operating life of the project increases the NPV of payments as users fund operating costs over a longer period.

**5.101** More significantly for the choice of financing option, changing the construction or operating periods does not affect the ordering of the NPVs of the different financing options. Table 5-9 below summarises the results.

**TABLE 5-9: COMPARISON OF NPV OF PROJECT REVENUES AT STPR UNDER DIFFERENT PROJECT LIFE ASSUMPTIONS (2012/13 £M)**

	OPTIONS						
	1	2	3	4	5	6	7
Base Case	578	595	613	581	608	576	587
Longer capex	566	584	603	569	597	564	576
Longer opex	595	614	634	598	628	593	605

Source: FTI calculations.

### Introducing an upfront payment

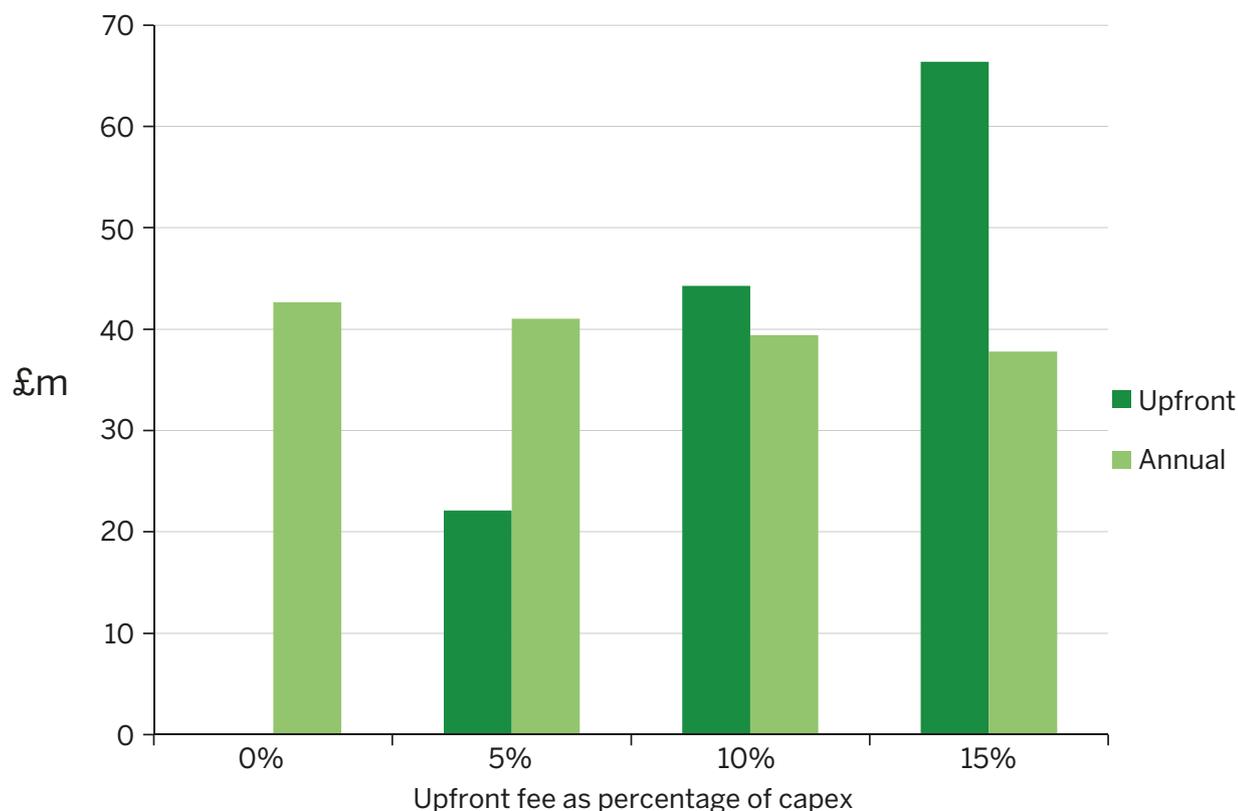
**5.102** As outlined in paragraph 5.84, the assumed profile of payments from water users has been based on various combinations of two approaches – a building block methodology based on the approach used by Ofwat, applied to regulated revenue streams, and an annuity approach, applied to contracted revenue streams.

**5.103** As discussed further in a Box on charging options below (see Section 6), there are alternative ways to structure payments from water users. One approach, which has been adopted in other multi-sector water projects in Australia and the US, is the inclusion of an upfront fee – possibly in exchange for water rights – in addition to ongoing fees which may include fixed and volumetric components. Introducing an upfront fee provides a more robust commitment from water users at the inception of the project than a contractual arrangement by reducing the likelihood of water users renegeing on their contractual obligations, as occurred in the Central Arizona Project in the US.

**5.104** To test the impact of this type of fee structure on the financing of a MSWSA project, we have considered the impact of introducing a range of upfront fees calibrated as a proportion of the project's capex costs. We have tested the impact of an upfront fee structure on Option 3 – SPV, which assumes that the MSWSA is funded using a project finance structure. This is because all project revenues are assumed to be unregulated under this option and therefore the revenue profile can be set by the MSWSA rather than being subject to Ofwat's building block methodology and statutory water companies' existing tariff structures. This approach implicitly assumes that the regulatory regime applied to the MSWSA does not restrict the structure of charges that can be applied in practice.

**5.105** Introducing an upfront fee would need to be offset by a reduction in ongoing fees in order to be attractive to water users. Figure 5-5 shows the total upfront fees and the ongoing annual fees for a number of scenarios. The ongoing annual fee is adjusted in each scenario to ensure that the NPV of revenues equates to the NPV of the project construction, operating and financing costs. We have assumed that 5%, 10%, and 15% respectively of the project capex costs are collected in the form of an upfront fee and the remainder is collected on a fixed annual basis. As the graph shows, a significant upfront fee would be required in order to reduce the ongoing payment significantly: a 15% upfront fee would reduce ongoing annual fees by 11% compared to the base case. This suggests that water users are unlikely to perceive a substantial advantage to making an upfront payment to the project, but this may be essential in order to align the interests of the different stakeholders in the project appropriately, which in turn could be helpful to enabling the project to proceed. JV and Project Finance structures may be more effective at achieving these arrangements, as discussed earlier, because they enable a bespoke set of contracts to be developed which can align stakeholders' incentives more closely.

FIGURE 5-5: COMPARISON OF UPFRONT AND ANNUAL FEES UNDER DIFFERENT FEE ASSUMPTIONS (2012/13 £M)



Source: FTI calculations

Notes: results shown are for Option 3 (SPV).

### Other types of MSWSA

**5.106** The analysis has so far assumed that the MSWSA under consideration is a reservoir. However, as discussed above, the MSWSA could also relate to other types of infrastructure, such as a desalination plant or water recycling facility.

**5.107** The key difference for the purpose of the modelling exercise is differences in the cost structure of alternative assets. The construction and operational costs for a new water reservoir and a desalination plant of similar capacity, based on information supplied by AWS, are shown in Table 5-10. Compared to a reservoir, a desalination plant has marginally lower construction costs, but higher ongoing operating costs.

TABLE 5-10: ASSUMED PROJECT COSTS FOR DIFFERENT TYPES OF MSWSAS (2012/13 £M)

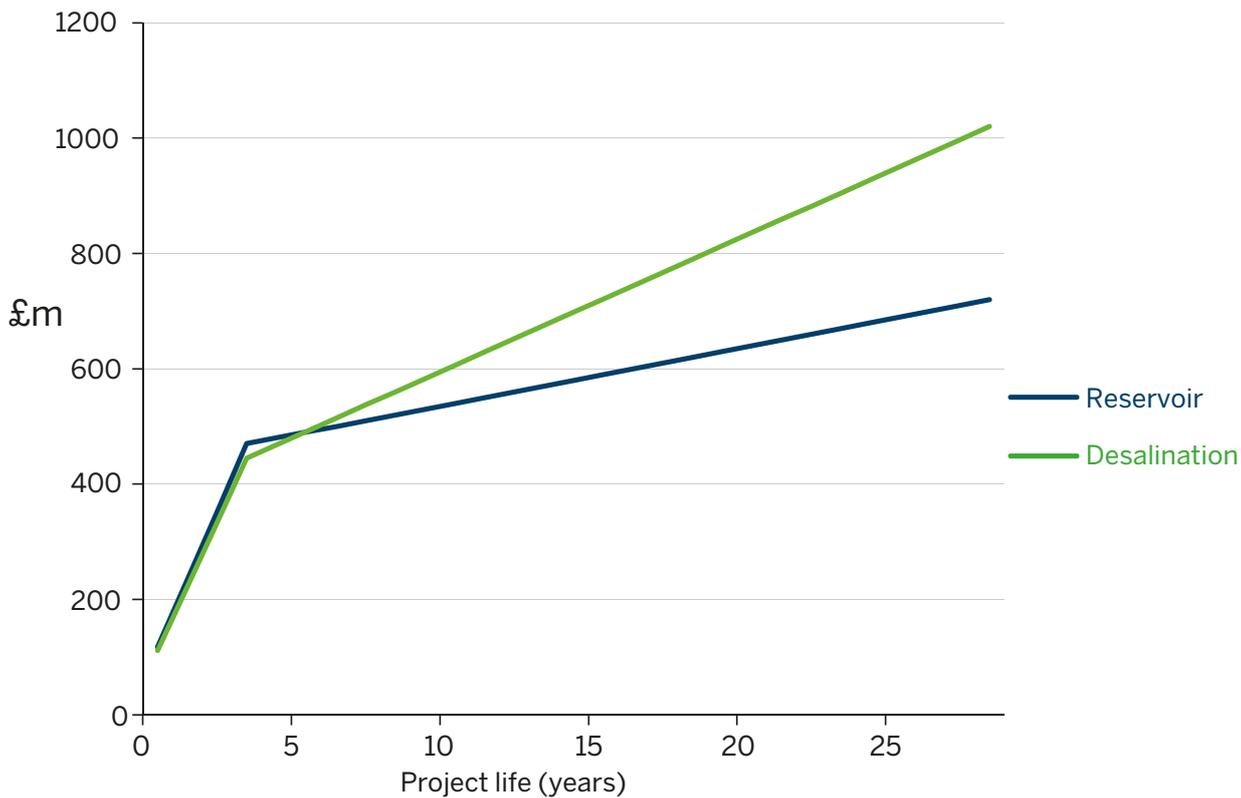
	RESERVOIR	DESALINATION PLANT
Construction costs (total)	470	445
Operating costs (annual)	10	23
Construction period	4	4
Operational life	25	25

Source: AWS

**5.108** Figure 5-6 below compares the cumulative cost of the two assets over an assumed asset life of 25 years.<sup>76</sup> As the figure shows, the difference in construction costs between the two water assets is very small in

comparison to the difference in operating costs with the latter leading to significantly higher costs for a desalination plant compared to a reservoir over the life of the project.

**FIGURE 5-6: UNDISCOUNTED CUMULATIVE PROJECT COSTS FOR A RESERVOIR AND A DESALINATION PLANT (2012/13 £M)**



Source: AWS estimates

The higher opex assumption leads to significantly higher costs associated with the desalination plant over the life of the project, despite the lower capex spend. This leads to significantly higher required revenues for a desalination plant compared to a reservoir across all

options considered, as shown in Table 5.11. Consistent with the findings for a reservoir MSWSA, Options 1, 4 and 6, where the project is funded, or largely funded, by statutory water companies, have the lowest NPV of revenues.

**TABLE 5-11: COMPARISON OF NPV OF PROJECT REVENUES FOR A WATER RESERVOIR AND A DESALINATION PLANT (2012/13 £M)**

	OPTION						
	1	2	3	4	5	6	7
<b>NPV AT SOCIAL DISCOUNT RATE</b>							
Reservoir	578	595	613	581	608	576	587
Desalination plant	742	758	775	744	770	740	750

Source: FTI calculations

<sup>76</sup> In practice, the engineering asset lives of the two projects are likely to differ. However the assumed life of 25 years is broadly consistent with the duration of financing for the Scottish Water PFIs and the average duration of PFI contracts as discussed in the modelling section above.

## Increasing the cost of capital of a statutory water company

- 5.109** As discussed in paragraph 5.57, we have assumed that the cost of capital of statutory water companies would be unaffected by financing a MSWSA. However, this may not necessarily be the case if the financing of the project has a material impact on the riskiness of the cashflows of the statutory water company(ies) financing the project.
- 5.110** As we noted, a single MSWSA investment could be a relatively small proportion of a large statutory water company's RCV. For example, a £494m investment in a MSWSA would be around 6.9% of AWS's existing RCV.<sup>77</sup> The investment in a MSWSA might not, depending on how risky the project is, have a material impact on a large statutory water company's cost of capital. However, a MSWSA could be a more substantial investment for a small company.
- 5.111** To test the potential impact of financing a MSWSA on our assessment of the different financing options, we asked AWS to estimate the impact of a 5 basis points increase (i.e. a significant increase) in the allowed cost of capital on its allowed revenues for a four year period, matching the construction period of a MSWSA (which is when the impact on a statutory water company's WACC is likely to be highest given this is likely to be the riskiest period of the project). Discounting these estimated revenue streams at the STPR provides an estimate of the additional costs to water users (in present value terms) of Options 1 or 6 if the statutory water company's WACC was increased by financing the MSWSA.
- 5.112** The results suggest that the NPV of costs to water users would increase by around £15m (2012/13 prices) in this scenario. If these additional costs were added to the NPVs we calculated earlier (see Figure 5-4), Options 1 and 6 would still appear to be the lowest cost options (noting that Option 4, which involves a statutory water company financing most of the project, would also have a higher cost than previously), albeit the options would now be closer together.
- 5.113** This sensitivity analysis suggests that unless financing a MSWSA was expected to significantly alter the risk profile of the statutory water company (or companies) financing it, the least cost financing options would continue to be Options 1 (Single Water Company) and 6 (Statutory Water Company JV).

## Conclusion

- 5.114** In this section we have assessed each of the financing options against the project implementation, water user objectives, investor objectives and environmental criteria outlined in Section 4 based on: i) a qualitative assessment; and ii) a quantitative assessment of the costs to finance the different options, using stylised financial modelling techniques. We have discussed the

appropriateness and feasibility of each financing option with representatives from a number of the stakeholder groups interested in MSWSAs. We summarise our assessment, by criteria, below.

## Project implementation

- 5.115** SPVs and JVs, which both involve putting in place a suite of contractual arrangements tailored to the project in question, are typically better than corporate financing at co-ordinating the different stakeholders in the project and allocating risks to the parties best placed to bear them. These forms of structure can create significant benefits for stakeholders, particularly where there is a high degree of asset specificity (i.e. where assets can only support trade between small numbers of parties).
- 5.116** One of the benefits of a MSWSA is realising the benefits of a more co-ordinated approach to water planning and resource use. These are more likely to be realised if the project involves a wider range of stakeholders directly in the project. This may be better achieved using the JV or Project finance structures, as both structures provide for direct participation in a way that is not feasible under the standard corporate finance approach.
- 5.117** The investors willing to invest in JVs and SPVs could be, but would not necessarily be, different to those willing to invest through a corporate financing option. JVs and SPVs, with their more complicated financial structures, may be less attractive to some investors, particularly where those options are non-recourse (which may be the case in a Project Finance option). However, JVs and SPVs may also provide an opportunity for other investors to participate in the projects. The attractiveness of different financing options to different investor groups may need to be explored further in due course.
- 5.118** Where there is a need for multiple players to come together to finance a project, the SPV and JV options are more likely to be suitable, and may work best where the project is larger. The size of the project is relevant not only to the potential risk that the project could pose to the corporate entity, but also because the additional transaction costs of project finance and joint venture would be proportionally smaller. Also, the larger the project relative to the size of the firm trying to finance it, the more likely it is to impact on the corporation's own financing e.g. by increasing gearing, impacting on credit ratings and reducing the ability of management to pursue alternative growth strategies.
- 5.119** The greater the complexity of the project (whether, for example, in terms of its technical engineering characteristics or the range of stakeholders involved), the more likely it is to require a range of specialised skills, which can be co-ordinated and incentivised by project finance or joint ventures.

<sup>77</sup> The £494m is the £470m construction cost described in Table 5-3, converted to March 2015 prices.

## Water user objectives

**5.120** The costs of financing each project will have to be passed on to water users. Consequently, all other things being equal, the lowest cost options may be preferable. We understand that Project Finance and JV options are likely to be more expensive than the standard corporate finance approach because:

- there will be additional costs associated with the establishment of contractual arrangements governing each aspect of the project;
- the Project Finance and JV approaches will require additional due diligence by lenders to understand the risks of the project;
- the Project Finance and JV approaches are likely to have higher ongoing monitoring requirements, which will increase transaction costs; and
- the specific nature of the project and lack of recourse to the other businesses of the project's investors may also increase the risk to lenders and hence the cost of capital.

**5.121** Based on our analysis, we consider that issues relating to quality of service can be addressed under any of the different financing structures suggested. However, ensuring quality of service would be a key issue that the more complex structures would need to show was being appropriately managed. Greater co-ordination between different stakeholders under the JV and Project Finance options could lead to more tailored packages of products being available to water users.

**5.122** The higher the proportion of the water from a MSWSA that would be supplied to statutory water companies, the lower the risk of the project is likely to be (as the cashflows of the project are likely to be less volatile) and the more likely it is that the lower costs of corporate financing will outweigh any potential benefits from project finance or joint venture. Likewise, the smaller a MSWSA project is relative to the statutory water companies considering investing in it, the more likely it is that a corporate finance approach will be appropriate.

## Investor objectives

**5.123** We discussed the attractiveness of MSWSAs with a number of stakeholders including statutory water companies, power companies, the agriculture and food production sectors, infrastructure funds and debt investors. Our discussions focused on the risks and opportunities associated with MSWSAs and the attractiveness of, and the barriers that may exist to, participating in MSWSAs under the different financing options.

**5.124** We selected stakeholders based on their involvement, either directly or indirectly, in the WREA programme and their potential interest or existing involvement in the financing of the water sector.

**5.125** Statutory water companies were generally enthusiastic about exploring the possibility of developing MSWSAs in collaboration with other water companies. They noted that there are examples of such collaborations already in place across the industry (albeit many pre-date privatisation).

**5.126** Other water users expressed mixed views about participating in MSWSAs (as either water users or as investors), highlighting the availability of alternative sources of water. These alternatives were likely to affect their willingness to contribute towards the costs of the infrastructure (including any connection costs associated with new distribution pipelines), though some water users were enthusiastic about participating in MSWSAs.

**5.127** Both infrastructure funds and debt investors indicated that they might be interested in investing in MSWSAs, subject to satisfactory regulatory and contractual arrangements being put in place.

**5.128** Existing debt investors may be concerned about the companies they have lent to getting involved in new activities with a different risk profile. Existing debt investors will want to be protected against new risks associated with MSWSAs, so they may prefer an option which is off balance-sheet i.e. project finance, or a JV without recourse to the parent companies.

## Environmental objectives

**5.129** The environmental impact of a MSWSA would depend on the design of the project rather than financing structure. However, the more co-ordination that exists between the different stakeholders in the project, the greater the benefits that are likely to accrue (e.g. a smaller asset may be able to meet the needs of more stakeholders if the water from the asset is used more efficiently).

**5.130** Accordingly, JVs and Project Finance may be able to support a more co-ordinated approach to water planning and resource use (e.g. through the more efficient allocation of water, and trading of water rights) among the different stakeholders involved in the project.

## Stylised financial modelling

**5.131** To test the financial impact of different financing options, we have considered the cost to users of the water from a hypothetical project. To do this we, we have considered the NPV of the profile of payments from water users over time for each financing option,<sup>78</sup> discounted at HM Treasury's Social Time Preference Rate. A key input to our assessment is the cost of capital under each option. Standard corporate finance theory states that the cost of capital will vary across each of the options if the systematic risk of project cashflows varies between options. This could be the case if there are differences in the risk profile of a MSWSA under different financing options e.g. if the contractual or regulatory arrangements applied to the project vary.

<sup>78</sup> To focus on the impact of the choice of financing options on stakeholders, we have assumed the key technical characteristics of the MSWSA (e.g. capex, opex, asset life) are the same across each of the options. In practice, there could be some variation if different regulatory and/or contractual arrangements led to, for example, more efficient delivery of the project (i.e. lower capex and opex).

- 5.132** We have not undertaken a detailed bottom-up analysis of the risk, or the cost of capital, of each financing option because in fact the actual risk will fundamentally depend on the regulatory and contractual arrangements applied to the project, which are not currently known. Instead, we have made high-level assumptions about the cost of capital, based on independent estimates of the cost of capital from other projects similar to MSWSAs. We have adjusted these estimates so they are forward-looking and based on a common set of assumptions about the equity risk premium and risk-free rate. Specifically:
- the cost of capital for Option 1 (Single Water Company) is assumed to be a weighted average of the costs of capital for statutory water companies undertaking either PWS or non-PWS activities. This reflects our assumption that in Option 1 a statutory water company funds a MSWSA and supplies water to both PWS and non-PWS users;<sup>79</sup>
  - the cost of equity for Option 2 (i.e. a multi-sector JV) is assumed to reflect the highest internal hurdle rate of the various stakeholders investing in the MSWSA. We have assumed this rate to be equal to the cost of equity of power companies (noting that the WACC of some of the other stakeholders may in fact be higher).<sup>80</sup> The cost of debt is assumed to fall between that of the corporate finance option and the project finance option (discussed below);
  - for Option 3 (Special Purpose Vehicle), where the MSWSA is project financed using an SPV, we have assumed the cost of capital is likely to be similar to that of an OFTO, uplifted to include construction risk (which the MSWSA would face, but the OFTO does not). We discuss our reasoning further from paragraph 5.79 below;
  - the WACC for Options 4 (Regulated/Unregulated Split) and 5 (Pre/Post Construction Split), which are combinations of Options 1, 2 and 3, is assumed to be a weighted average of the WACCs applicable to the respective financing options. The weights reflect the relative proportions of the MSWSA delivered under each financing option;
  - the WACC for Option 6 (Statutory Water Company JV), which does not involve other water users, is assumed to be similar to that of a statutory water company undertaking PWS activities; and
  - the cost of capital for Option 7 (Water Company Shareholder JV) is assumed to be the same as in Option 2 except the cost of equity reflects that of statutory water companies (as these are the only equity investors in this financing option).
- 5.133** Our analysis suggests that the cost of capital is likely to be lower where the MSWSA is financed by statutory water companies, either individually (Option 1) or jointly (Option 6).

### Summary

- 5.134** Table 5-12 below summarises our assessment of the different financing options against the project implementation, customer objectives, investor objectives and environmental criteria.

<sup>79</sup> See Ofwat, Setting price controls for 2015-20 Final price control determination notice: policy chapter A7 – risk and reward, 2014, p42 and Ofwat (2015) "Draft Determination of Terms and Conditions of the Supply of Non-Potable Water from Dwr Cymru Cyfyngedig to Tata Steel UK Limited at Llanwern under Section 56 of the Water Industry Act 1991", July, p25.

<sup>80</sup> There is a body of academic literature which suggests that the rate of return that each investor would seek from the MSWSA project would reflect their internal hurdle rate, rather than the risk profile of the project; see, for example, Meier and Tarhan (2007) "Corporate Investment Decision Practices and the Hurdle Rate Premium Puzzle", January or Driver and Temple (2010) "Why do hurdle rates differ from the cost of capital?", Cambridge Journal of Economics, 34(3), pp501 – 523. See also CMA (2015) "Energy market investigation Provisional findings report, Appendix 10.4: Cost of capital", p4-1.

TABLE 5-12: ASSESSMENT OF FINANCING OPTIONS AGAINST PROJECT, CUSTOMER AND INVESTOR CRITERIA

CATEGORY	CRITERIA	OPTION						
		1	2	3	4	5	6	7
Project implementation	Ability to allocate risks efficiently	✓	✓✓	✓✓✓	✓	✓✓	✓✓	✓✓
	Ability to achieve co-ordination benefits	✓	✓✓✓	✓✓✓	✓✓	✓✓	✓	✓
	Ability to attract the required amount of capital	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Water user objectives	Total cost	✓✓✓	✓	✓	✓✓	✓	✓✓✓	✓
	Impact on bill profile	✓✓	✓	✓	✓✓	✓	✓✓	✓
	Quality of service	✓	✓✓	✓✓	✓	✓✓	✓	✓
Investor objectives	Attractiveness to equity investors	✓✓	✓	✓	✓	✓	✓	✓
	Attractiveness to new debt investors	✓✓✓	✓	✓	✓✓	✓	✓✓	✓
	Acceptability to existing debt investors	✓	✓✓	✓✓✓	✓	✓✓	✓	✓
Environmental	Water trading	✓	✓✓✓	✓✓	✓✓	✓	✓✓	✓
	Water efficiency	✓	✓✓✓	✓✓	✓✓	✓	✓✓	✓

## ASSESSING THE LEGAL AND REGULATORY FEASIBILITY OF THE OPTIONS

**6.1** The previous section has assessed the financing options as if there are no legal and regulatory barriers to any of the options i.e. as if they can all be implemented as described. However, the legal and regulatory frameworks applied to the water sector in England may not necessarily be consistent with the assumed set of arrangements for each financing option. To test the feasibility of implementing MSWSAs within the existing water sector legislation and economic regulation we explore whether there is:

- a legal framework that will facilitate MSWSAs;
- an economic regulation framework which enables MSWSAs to go ahead, including:
  - a supportive approach to determining the allowed revenues of the MSWSA (for its regulated activities);
  - a clear and supportive set of Regulatory Accounting Guidelines (RAGs);
  - Bulk Supply Agreement (BSA) rules which are consistent with long-term commercial contractual arrangements that unregulated parties would put in place;
- an abstraction licensing regime which accommodates water rights trading; and
- pipe laying and compulsory acquisition powers needed to enable a MSWSA to construct and operate the asset as envisaged.

**6.2** We discuss these aspects below. Where we identify barriers, we make recommendations to address these barriers which DEFRA, Ofwat and stakeholders may wish to consider further.

### A legal framework which enables MSWSAs to be developed

**6.3** Within the existing legal framework applicable to the English water sector there are broadly four different delivery routes available for MSWSAs:

- within the regulatory ring-fence of an existing statutory water undertaker;
- unlicensed (and unregulated) supply to a statutory water undertaker in its wholesale capacity;
- WSL licenses; or
- the Specified Infrastructure Provider (SIP) regime (which has been applied to the Thames Tideway Tunnel).

**6.4** Each of these different regimes has its advantages and disadvantages and some might not be available for each option for financing MSWSAs. However, in order for the MSWSA to provide public water supplies – as envisaged in all of the options - the MSWSA would need to operate under one of these regimes.

**6.5** Table 6-1 summarises the possible regulatory arrangements which might apply to the different financing options.

**TABLE 6-1: SUMMARY OF REGULATORY FRAMEWORKS FOR DIFFERENT FINANCING OPTIONS**

OPTION	COMMENT
1	Project subject to the same regulatory regime as a statutory water company <sup>81</sup>
2	Outside of a statutory water company's regulatory ring-fence, so possibly SIP, WSL or unlicensed
3	Outside of a statutory water company's regulatory ring-fence, so possibly SIP, WSL or unlicensed
4	Part of the project inside the ring-fence, part of it outside
5	Part of the project inside the ring-fence, part of it outside
6	Project subject to the same regulatory regime as a statutory water company
7	Outside of a statutory water company's regulatory ring-fence, so possibly SIP, WSL or unlicensed

**6.6** Each of the different regulatory frameworks imposes certain requirements on the MSWSA project, on the activities it could undertake, the way it is financed and the way that it recovers costs from water users. Consequently, there are advantages and disadvantages to these different options. We discuss these below.

### Ofwat's economic regulation framework applicable to statutory water undertakers

**6.7** Under the Water Industry Act 1991 (as amended) Ofwat has responsibility for determining the revenues which the statutory water undertakers are allowed to recover from their customers. To date Ofwat has assessed these revenues every five years. The most recent decision was made in 2014 (PR14) to apply from 1 April 2015 to 31 March 2020. PR14 considered wholesale water, wholesale wastewater, household retail and non-household retail activities separately. A MSWSA would fall within the wholesale activities, though could potentially have implications for retail e.g. charges might need to be adjusted to reflect any change to wholesale costs. Wholesale revenues were determined as a function of expenditures ('totex'), past expenditure (remunerated through RCV 'run off'), an allowed profit

<sup>81</sup> As discussed elsewhere, this does not necessarily mean that the cost of the MSWSA would have to be remunerated through a RCV-based building blocks method. But Ofwat would be responsible for designing and applying whatever regulatory regime applied to the MSWSA.

(RCV x WACC) and tax. Totex comprises capex and opex, part of which is allowed to be recovered in the year it is incurred ('PAYG revenue'), the remainder being added to RCV and remunerated over subsequent years. A PAYG ratio is used to determine the split between PAYG revenue and other revenue.

- 6.8** While the existing PR14 framework is in place until 2020, there is significant uncertainty about how Ofwat's regulatory regime might apply beyond that date.
- 6.9** The market arrangements which might apply to any new entrant water resource provider – which would apply to a MSWSA delivered through any of the options other than Option 1 (Single Water Company) or Option 6 (Water Company JV) – are also unclear at this stage. For example, the MSWSA might enter into contracts to supply water to retailers (potentially including the statutory water company's own retail division), rather than to the statutory water company's wholesale business.
- 6.10** Another significant issue with delivery within the regulatory ring-fence is that unregulated activities – which is what supplying water to non-PWS water users would entail – is not permitted on any significant scale by some companies' existing financing arrangements: much of the water sector is funded by companies which have whole business securitisations or which have otherwise issued debt which includes covenants, placing restrictions on the ability of the water companies to participate in certain kinds of activities.

### Unlicensed water supply

- 6.11** There are a number of ways which parties other than statutory water companies can supply water for public water supply purposes. The WSL and SIP regimes are two options which we discuss later. However, AWS has told us that it is also possible for statutory water companies to source water from third parties which do not hold a license in certain circumstances i.e. an 'unlicensed' approach.
- 6.12** The Water Industry Act 1991, as amended, does not prohibit the purchase of water from unlicensed third parties by statutory water companies in their capacities as wholesalers. The WSL and SIP regimes both envisage a party other than the statutory water company supplying the water to end-customers and it is prohibited to supply water to end-customers (for public water supply purposes) without a license of some kind. However, no such restriction applies to the purchase of water for wholesale purposes by a statutory water company. A statutory water company could purchase raw water from any party it wishes to. The duties of
- statutory water companies mean that they are unlikely to purchase water from another party unless that supply of water is lower cost than the available alternatives and the supply is credible and reliable. A number of statutory water companies actively sought expressions of interest from third parties to supply raw water as part of the most recent round of Water Resource Management Plans (WRMPs).<sup>82</sup> Southern Water and South East Water have recently proposed adjustments to the WRMP process which would make it easier for third parties to bid into WRMPs.<sup>83</sup>
- 6.13** If a statutory water company wanted to purchase water from an unlicensed supplier then it would enter into a commercial contract for that purpose. The terms and conditions of that contract would be negotiated between the parties, but might not – as we discuss later – be subject to the BSA arrangements given that the supply would not be from a statutory water company.
- 6.14** If a statutory water company did purchase water from an unlicensed supplier, the water supplied would then be added to the pool of available water resources and sold to end-customers at a geographically averaged price in line with statutory water companies' normal practices. The cost of the unlicensed supply would be incorporated into the business plans that companies submit to Ofwat at each periodic review and, subject to Ofwat's approval, incorporated into customer bills i.e. allowed revenues. Because of the totex mechanism applied to water companies' expenditures as part of calculating allowed revenues, there could be a timing mismatch between the revenues received from end-customers and the payments due to the unlicensed supplier, so there could be a negative impact on the financeability of the statutory water company under these arrangements, but if the cost of the water supplied was relatively little compared to the overall costs and revenues of the statutory water company, the impact may be immaterial.
- 6.15** The above means that a MSWSA could be set up by a party other than the statutory water company without a licence. The MSWSA would enter into a contract to supply that water to the statutory water company on a commercially negotiated set of terms and conditions. Options 2, 3, 4, 5 and 7 – all of which envisage an entity other than the statutory water company supplying water – could in theory be delivered under the unlicensed approach.
- 6.16** The MSWSA would not, however, be able to benefit from the pipe laying or compulsory land acquisition powers that statutory water companies have, as we discuss later (see paragraphs 6.85 to 6.87).

<sup>82</sup> See, for example, Thames Water (2014) "Final Water Resources Management Plan 2015-2040: Main Report – Section 7 – Appraisal of Options", p23, which explains that TMS issued an Official Journal of the European Union (OJEU) Notice inviting third parties to register interest in providing bulk supply of raw or treated water.

<sup>83</sup> See Southern Water (2015) "Water 2020 – Water resources: proposed changes to enhance the scope for innovation and competition" and Frontier Economics (2015) "Water 2020 – water resource planning and third party options – a discussion paper produced jointly by South East Water and Frontier Economics", July.

## WSL license regime

- 6.17** The current Water Supply Licence regime provides for combined licenses, whereby an entity other than the incumbent water undertaker may provide ‘upstream’ water resources in connection with a retail supply. At present the combined WSL has not been unbundled, though the Water Act 2014 includes provisions to do so.
- 6.18** Section 1 of the Water Act 2014 introduces wholesale water authorisations which are defined in Schedule 1 of the Water Act 2014, though these provisions of the Act have yet to be ‘turned on’. Multi-sector water supply assets could require such an authorisation. While this may impose some additional burdens on the entity, it may also provide some benefits.
- 6.19** An incumbent water undertaker may not hold a WSL under s17AA(4) of the WIA, as amended by the Water Act 2014. Consequently, a statutory water company’s participation in the multi-sector water supply asset would need to be through some other entity, similar to the way that a number of statutory water companies currently participate in the English and Scottish non-household retail markets, unless the transaction can be structured in a way that the water company is investing in a regulated asset and the WSL only applies to the unregulated asset. This is a legal question. If the statutory water company did want to participate through the WSL licensee then it would need to establish a separate entity as a sister company i.e. the owners of the statutory water company would need to set up another legal entity to make the investment into the multi-sector asset.
- 6.20** Further, a wholesale authorisation can only be in connection with customers supplied by a retail authorisation (see clause 5(b) of the new Schedule 2A of the WIA 1991 introduced by the Water Act 2014) and a retail authorisation can only be granted for non-household customers (see clause 4 of the new Schedule 2A of the WIA 1991 introduced by the Water Act 2014), so it appears a multi-sector investment which (partially) serves household customers could not be granted a wholesale authorisation. This would mean that the MSWSA would need to be somehow split into different parts, one serving household customers and another serving other customers. This could be a variant of Option 4, where the MSWSA is split into two separate projects.
- 6.21** It is also unclear how the WSL regime would apply to the sale of water to non-PWS water users. If the MSWSA was a WSL licensee, would it be able to sell water for non-PWS purposes? If so, would there be any (unnecessary) constraints on the activities it could undertake e.g. the quality of water it would provide? The licence conditions of a WSL with a wholesale authorisation have not yet, to our knowledge, been developed by Ofwat. We note, however, that the standard WSL licence conditions currently applicable do not appear to restrict a WSL from undertaking non-PWS activities so long as the licensee

“shall carry on the activities authorised by its licence in a manner which does not impair or put at risk the proper, efficient and economical performance by any water undertaker of its functions” and “the Licensee shall ensure that all such arrangements have been made as are necessary for securing that it is and continues to be able to meet its obligations under its water supply licence”.<sup>84</sup>

### Recommendation:

The UK government and Ofwat should consider taking steps to ensure that the WSL regime is capable of accommodating MSWSAs.

- 6.22** There is no established methodology for calculating allowed revenues for a WSL licensee. While there may not need to be for much of the project, the regulated portion of the project selling public water to non-household water users might need to be subject to some sort of price control unless it could be demonstrated that competitive tension was restricting its charges (an issue which might go to Ofwat’s RAGs discussed below (though it is not clear if those RAGs would apply to a WSL licensee)). We discuss how allowed revenues might be set later.

## SIP regime

- 6.23** Sections 36A-36G of the Water Industry Act 1991 (as inserted by Section 35 of the Flood and Water Management Act 2010) provide for certain projects to be regulated on a bespoke basis separate from the incumbent water undertaker. Specifically, Section 36A provides for “large or complex” projects to be awarded to a separate legal entity, an Infrastructure Provider, who then takes responsibility for financing and operating the infrastructure in question, if the project “threatens the undertaker’s ability to provide services for its customers”. The TTT is an example of a specified project under this section of the WIA 1991.
- 6.24** It is a legal question whether water supply assets benefiting multiple sectors would qualify under these sections of the WIA. Our view is that it is unclear if a MSWSA would qualify under the SIP:
- while a MSWSA does not appear to be on the same scale or as complex as the TTT, these are potentially reasonably large projects (£445 – 470m construction costs each according to AWS) and the co-ordination of multiple stakeholders alone makes them complex; and
  - while a MSWSA may or may not have significant financeability implications for a statutory water undertaker depending on the size of the project relative to the company’s usual investment programme, to the extent that these projects are potentially crucial to the ability of a water company to achieve a resilient water supply, MSWSAs could threaten the undertaker’s ability to provide services for water users.

<sup>84</sup> See Condition 2(1) and 2(3)(a) of DEFRA (2005) “Water Industry Act 1991: Section 17H – Standard Conditions of Water Supply Licences”, November, as available on the Ofwat website.

- 6.25** The SIP regime, if applicable, imposes a number of restrictions on MSWSAs:
- the project may be subject to a competitive tender process: s36B(1) of the WIA 1991;
  - section 36B(2) of the WIA 1991 prohibits the direct participation of the incumbent water company (in this case the statutory water company in whose area the MSWSA would be developed);
  - while section 36B(4) leaves it open for companies associated with the statutory water company to bid for the project, those associated companies might be unsuccessful with their bids and would in any case be likely to incur cost in bidding; and
  - any regulatory arrangements which might be applied to the project by Ofwat would have to be developed in due course, meaning any associate company and its partners would have limited visibility of the way revenues would be determined at the time they decide to deliver a MSWSA via the SIP regime.
- 6.26** In any case, a project delivered outside the regulatory ring-fence by an associate entity would not necessarily protect the statutory water company's credit rating: to the extent that an investment in an IP had a negative impact on the credit rating of the statutory water company's parent company, the ring-fence provisions are not "sufficient in themselves to prevent the onset of financial distress of a regulated subsidiary".<sup>85</sup>
- 6.27** Whether the parent company should be prevented from bidding for the project would need to be carefully considered e.g. whether a level playing field with other bidders could be created, noting that the statutory water company would be officially procuring the IP under the SIP regime (potentially giving rise to a conflict of interest). We note that Ofgem is currently consulting on a similar set of arrangements to apply to the electricity grid system operator (NETSO) as part of its Integrated Transmission Planning and Regulation (ITPR) project and their proposals do not necessarily require a legally separate SO function.<sup>86</sup>
- 6.28** The last point means that there is no specific pre-defined methodology for calculating allowed revenues for the IP. In each new case the entire regulatory framework needs to be developed, albeit much could potentially be borrowed from existing regulatory arrangements (as has been the case for the Thames Tideway where the regulatory framework has borrowed from Ofwat's PR09 regulatory framework).
- 6.29** It is also not clear how the SIP regime would apply to the non-PWS portion of the project i.e. the sale of water to farmers, power companies, large industrials etc outside of the statutory water company's regulated activities. For example, could an IP actually carry out such activities within the terms of its license? If it could, would the SIP impose any restrictions on them?

#### Recommendation:

The UK government should consider taking steps to ensure the SIP regime is capable of accommodating MSWSAs.

#### Statutory reservoirs

- 6.30** A number of existing reservoirs across England are jointly owned by multiple statutory water undertakers. For example, Ardleigh Reservoir, which is jointly managed by AWS and Affinity Water, was established by the Ardleigh Reservoir Order 1967.
- 6.31** These arrangements were typically established pre-privatisation by legislation. We anticipate that the other routes-for-delivery described above might be explored first to find a workable solution, but the existence of these 'statutory reservoirs' highlights that alternative approaches might be available if required.

#### Choosing between the options

- 6.32** The different regulatory delivery routes are not all well-suited to MSWSAs. Some of the primary issues they raise are:
- delivery within the regulatory ring-fence would be attended by significant regulatory uncertainty at the moment and may not be compatible with the industry's existing financing arrangements;
  - a MSWSA which held a WSL license would be unable to supply water to domestic customers and may not be able to undertake non-regulated activity i.e. non-PWS supply to farmers, power companies etc; and
  - it is unclear if MSWSAs would qualify under the SIP regime, and in any case the SIP regime would potentially limit the role of the statutory water company in these projects to the detriment of water users (by not allowing the significant expertise of the incumbent companies to be brought to bear during the planning and development of the MSWSA).
- 6.33** This suggests that some changes to the regulatory arrangements might be required.
- 6.34** It could be argued that the industry's financing arrangements are a matter for companies to manage themselves (and that it is within the company's power to make the required amendments to their financing arrangements) and that this is not a valid reason to amend the existing regulatory frameworks available to water companies to deliver MSWSAs. However, DEFRA and Ofwat could pragmatically recognise – noting that financing options primarily financed by statutory water companies, such as Options 1 and 6, may be lower cost than alternatives - that the existing financing arrangements make it less likely that a MSWSA could

<sup>85</sup> See Standard & Poor's (2012) "How Regulatory Ring-Fencing Affects Our Ratings on UK Utilities", November, p4.

<sup>86</sup> See Ofgem (2015) "Integrated Transmission Planning and Regulation (ITPR) project: final conclusions", March.

be delivered within the regulatory ring-fence due to the time and cost involved in negotiating amendments to companies' Common Terms Agreements and covenants, and the uncertainty around what arrangements might eventually be put in place.

**6.35** If it was decided to finance the MSWSA outside the regulatory ring-fence, it would be important that the arrangements recognise that incumbent water companies have a role to play in the development of MSWSAs. These roles could include:

- planning of the MSWSA, the costs of which could be funded through the price control even if the assets were eventually delivered by another entity;
- undertaking preparatory works for the MSWSA, even where some of those works might only be required for the non-Appointed part of the project. Preparatory works are by their very nature unlikely to be any more risky than other water company activities, so provided the recovery of the costs associated with these activities is possible through the regulatory framework, debt funders might be less likely to object to the statutory undertaker being involved. This would require Ofwat to enable such preparatory work to be funded by PWS customers. Such arrangements could be enabled as part of Option 5, where we assume that the project is split pre- and post-construction, similar to for the implementation of the TTT; or
- participating in the JV or SPV alongside other investors.

**6.36** The first two roles could sit with the incumbent water company in any of the financing options. Activities like the design of the infrastructure, procuring contractors and pre-construction work could potentially also be undertaken by the incumbent water company, or left to the MSWSA. A detailed examination of the engineering process for developing these projects, and where the opportunities for (and therefore potential benefits from) innovation arise, would need to be undertaken to decide the appropriate role for the incumbent water company.

**6.37** A case could be made for allowing the incumbent water company to participate in the JV or SPV, potentially through an associate entity, if the cost of undertaking a competitive tendering exercise (in whatever form) is expected to outweigh any benefits it might deliver. Whether this is the case may need to be explored in further detail. However, the transaction costs of such processes can be non-trivial, so the expected reduction in the cost of the MSWSA (whether through capex, opex or financing savings) would need to be at least large enough to offset those higher costs.<sup>87</sup> This may be an area that needs to be investigated further to determine if MSWSAs should be competitively tendered.

## A supportive approach to setting allowed revenues

**6.38** Regardless of the delivery route chosen, Ofwat may need to set an allowed revenue for the MSWSA (or part of the MSWSA). In order to raise finance on reasonable terms and to enable the project to recover its costs, it will be important that the revenues which the MSWSA is able to recover in relation to its regulated activities (i.e. public water supply) are set in a supportive manner.

**6.39** For example, the structure of debt raised by the project might differ between financing options. The traditional model adopted in the water sector of raising new debt to pay off existing debt as it matures would be less applicable given the project is not an ongoing business.<sup>88</sup> A portfolio of different debt instruments with varying maturities might be one way to structure debt, but another would be amortising debt (which is common on project financings).<sup>89</sup>

**6.40** This may mean that Ofwat's PR14 regulatory framework, based on totex, is not the most appropriate method to employ for setting allowed revenues. To see this, note that the details of the allowed revenue calculation will lead to a difference in the profile of payments by water users over time:

- options where a substantial proportion of revenue is recovered from PWS customers under a traditional building blocks methodology will exhibit a declining profile over time;<sup>90</sup>
- but a totex regime would produce a different profile of payments by customers than a capex/opex regime; and
- scenarios involving recovery of costs through an annuitized revenue stream, similar to the OFTO regime, would involve a smoother payment profile over time.

**6.41** Figure 6-1 below illustrates in a stylised way the different payment profiles associated with each of the three different methods for setting allowed revenues described in the paragraph above. The results show that a totex regime would lead to allowed costs being recovered over a much longer period than a capex/opex regime or an annuity regime because part of the ongoing opex incurred each year would be capitalised into RCV and then depreciated over a pre-defined asset life. This would mean that costs could potentially be recovered over a period longer than the actual life span of the physical asset. For example, if a project's life span was 10 years, then part of the opex incurred in the project's last year of operation (year 11 assuming one year for capex) would be capitalised and depreciated over a 10 year period (meaning that investors would not recover their costs over the life of the project, but rather over a 20 year period).

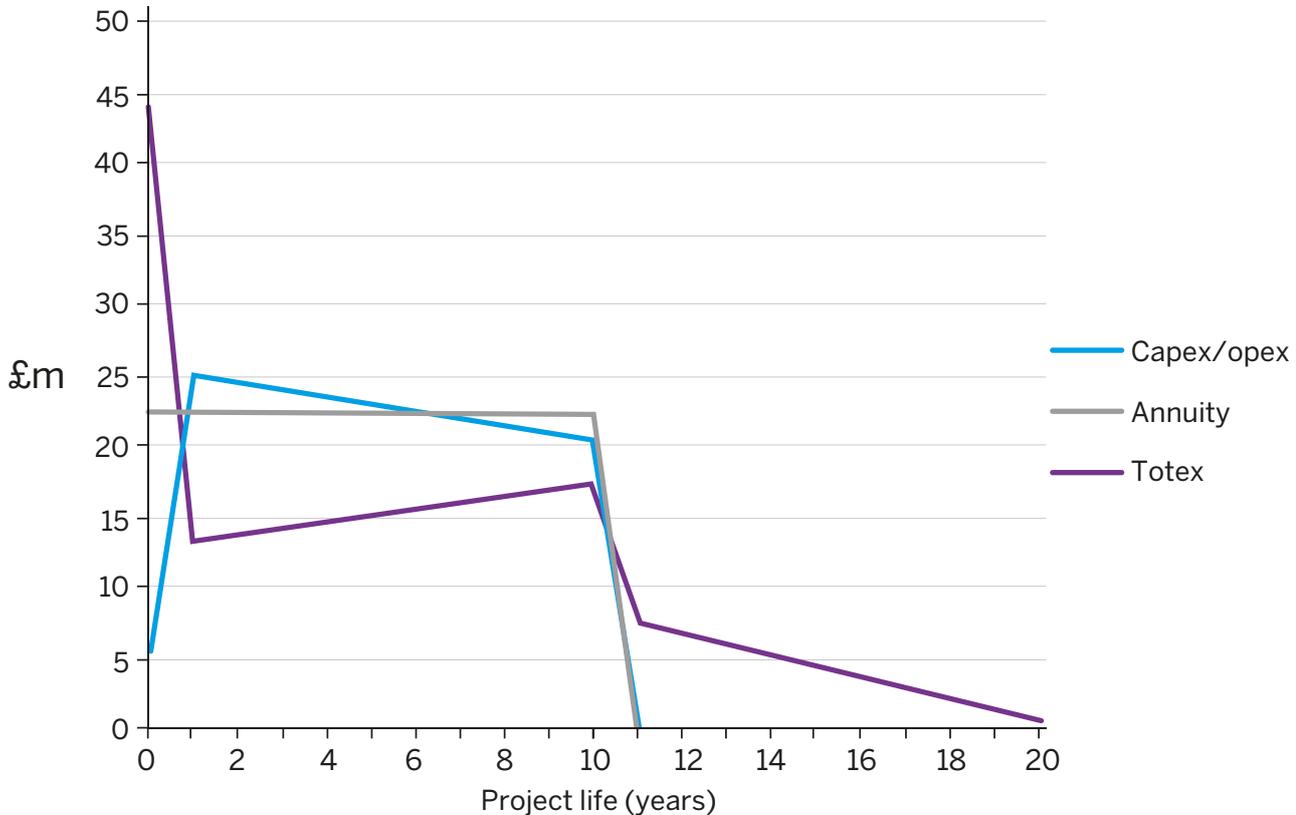
<sup>87</sup> The National Audit Office (NAO) has previously stated that each OFTO competition ran by Ofgem cost between £7m and £8m: see NAO (2012) "Offshore electricity transmission: a new model for infrastructure delivery", June, p26.

<sup>88</sup> This may not be the case for Option 1, for example, as the statutory water company could treat the financing of the project as part of its wider programme of financing for the water company.

<sup>89</sup> Water companies typically raise bonds with bullet repayments, which only require the repayment of interest on an ongoing basis. Amortising debt, on the other hand, would require gradual repayment of the principal of the debt over time. Amortising debt can require constant payments similar to a mortgage, but it is also possible to negotiate a bespoke sculpted debt repayment profile reflecting the debt servicing capacity of the project.

<sup>90</sup> In real terms this will always be the case as the RCV depreciates over time, meaning the allowed WACC x RCV decreases over time. In nominal terms it is mathematically possible for the inflation adjustment applied to RCV to exceed the depreciation in any given year, leading to a higher overall nominal revenue allowance.

FIGURE 6-1: STYLISTED ILLUSTRATION OF DIFFERENT PAYMENT PROFILES



Notes: capex = 100, opex = 10 per annum, WACC = 5%, asset life = 10 years, PAYG ratio = 40%. Assumptions are purely illustrative.

**6.42** An important implication of this is that in any option where the project earned part of its revenue through totex-based revenue allowances then investors – including the non-water company investors investing alongside water companies in Option 2 (Multi-Sector Joint Venture) or funding part of the project in Option 4 (Regulated/Unregulated Split) – would only earn their full expected rate of return long after the project had ceased to deliver services to them. This may reduce the attractiveness of participating in the project to these stakeholders.

**6.43** Noting the above, water users may face a trade-off between paying less in the near term and more in the long term. There may also be significant intergenerational equity issues for Ofwat to consider here.

**Recommendation:**

Ofwat should not use a totex-based approach to setting allowed revenues for a MSWSA delivered outside of the regulatory ring-fence.

**6.44** It is open to Ofwat to set the allowed revenues for the regulated portion of the MSWSA in a number of different ways. An RCV-based building blocks method would not necessarily have to be used. An OFTO-style long-term annuity-based revenue stream would be an alternative, though this would envisage some assets within the ring-fence being remunerated one way and other assets another. In our view, noting the results of our stylised financial modelling, it would be worthwhile Ofwat and the industry exploring alternative ways of structuring the revenue stream for MSWSAs: an annuitized revenue stream could reduce some incidence effects on bills for customers of the statutory water company and produce a smoother profile of customer bills over time, while simultaneously being financeable.

**6.45** The design of the regulated revenue stream would be an issue to consider for any project delivered by an IP under the SIP. However, it may also be worth considering whether revenues for a MSWSA delivered within the regulatory ring-fence by the statutory water company could be based on an annuitized revenue stream. This would mean that some assets within the ring-fence were remunerated differently to those within the RCV, but there may be some benefits to this e.g. in terms of the impact of the investment on the profile of customer bills

over time. Any advantages would need to be weighed against disadvantages, such as added complexity and potentially a perceived reduction in the commitment to the use of RCV to remunerate investors going forward.

**6.46** Whatever approach was adopted to determining allowed revenues for the MSWSA, the parameter assumptions (such as cost of capital, efficiency gains etc) would be critical. These would naturally need to be considered carefully. One element of this exercise would be to consider how the approach to regulating MSWSAs might affect incentives for regulated water companies: if MSWSAs were expected to achieve superior returns (on a risk-adjusted basis) to other water company activities, then companies' incentives might be distorted towards favouring MSWSAs over alternative solutions, potentially to the detriment of customers and the environment.

**6.47** Recognising that MSWSAs will come in different shapes and sizes and that the circumstances surrounding each project could be materially different, it may not be appropriate to try and adopt a one-size-fits-all approach to determining allowed revenues for the regulated portions of these investments. That being the case, the SIP regime might have some advantages over the WSL: the SIP regime, if adapted to accept MSWSAs, would allow greater flexibility to develop bespoke regulatory arrangements on a case by case basis. There are advantages and disadvantages to this approach: one of the advantages is that a bespoke framework can be applied on a case-by-case basis, but the downside to that approach is that it is harder for the regulatory regime to build a track record, perhaps reducing investor confidence in the regime.

**6.48** Whatever approach is taken to setting an ex-ante revenue allowance (if one is set at all), the allowed revenue stream for the MSWSA may need to have a mechanism included whereby the prices could be adjusted for certain events. This might be done at periodic price reviews, but if a long-term revenue stream was set for the MSWSA then re-openers or 'price adjusting events' might need to be included e.g. whether and how any price paid by the recipient of the water would adjust for changes in access charges for the use of the statutory water company's distribution (and potentially treatment) infrastructure.

### Clear and supportive Regulatory Accounting Guidelines

**6.49** Ofwat's RAGs may influence the structure of the project in a number of ways, including:

- whether a statutory water company can invest in the project through an associate of the company if it is then also a user of water from the MSWSA;

- determining the proportion of the MSWSA's costs which are funded by the statutory water company's PWS customers; and
- the use of assets for non-appointed activities.

**6.50** We discuss these issues below.

### Arm's length transactions

**6.51** A statutory water company's involvement in an SPV or JV might require the establishment of a sister company to the water company in order for the parent company to invest in the project. However, if an associate of the water company was to invest in a project which also supplied the water company (i.e. the water company was a user of water from the project) then it is possible that any such arrangements would be classified as a related party transaction. Ofwat's RAGs outline the requirements parties to such transactions must meet.

**6.52** Regulatory Accounting Guideline 5 (RAG5) indicates that "transfer prices should where possible be based on market price and that market price should be determined by market testing".<sup>91</sup> If possible, therefore, the statutory water company would want to demonstrate that it was paying a fair price to its upstream associate.

**6.53** One possible way to demonstrate that a price is fair is through a competitive tendering process.<sup>92</sup> However, it is not necessarily the case that a competitive tender process will deliver net-benefit for water users, noting that the price eventually secured for delivering the services may not be lower and there would be transaction costs associated with establishing and running competitive tender processes.

**6.54** Noting the points above it may not be sensible for the RAGs to require a competitive market testing exercise to demonstrate that the price charged to the statutory water company by an associate is a fair one. An alternative approach to demonstrating the reasonableness of charges might be to apply a margin squeeze test, examining whether the price levied by the associate is sufficient to cover the costs of the MSWSA (including a reasonable rate of return). Once a number of MSWSAs had been established it might be possible to benchmark the prices proposed by another MSWSA by reference to the prices already applied by existing MSWSAs, but the comparability of the different projects would need to be established.

**6.55** A variant of the market testing process above could be to allow competitive tendering on parts of the MSWSA. For example, the construction contracts could be let via a tender process. Similarly, the financing of a pre-designed project could be auctioned off to the lowest bidder. This is not dissimilar to the way that the SIP regime has applied to the TTT, where a package of contractual

<sup>91</sup> See Ofwat (2015) "RAG 5.06 – Guideline for transfer pricing in the water and sewerage sectors", February, p8.

<sup>92</sup> See, for example, Ofwat (2015) "Towards Water 2020 – policy issues: promoting markets", July, p29 which states "alternative providers could be given the opportunity to compete to provide a particular service ... Tendering services in this way could be an important way for companies to provide us with evidence that costs are efficient, even if they were to choose on the basis of the information revealed to provide them in-house".

arrangements was developed by Thames Water before being auctioned off to investors. However, the SIP regime would only be applicable to Option 3 (SPV), or to parts of the project in Option 4 (Regulated/Unregulated Split) and Option 5 (Pre/Post Construction Split). As discussed earlier, Option 2 (Multi-Sector Joint Venture) might not be compatible with the SIP if the intention is to enable farmers, power companies etc to co-invest in the equity of the project (as this would mean running a competitive tendering process for financing of just part of the project).

**6.56** It is important to note that the RAGs do not apply to transactions between an associate entity and other entities (e.g. other water companies, power companies, farmers etc): these arrangements would be governed by contracts which would need to be compliant with competition law.

### Proportion of MSWSA costs funded by PWS customers

**6.57** One of the key benefits of MSWSAs is that they can reduce the aggregate cost to society of constructing water supply assets by substituting a smaller jointly used asset for a number of separate projects. The realisation of these savings, and how they are shared between different stakeholders, will be critical to (a) the project going ahead; and (b) securing the participation of different types of stakeholders in the project.

**6.58** To give an example: if a statutory water company was planning to construct a reservoir with capacity of 100 units at a cost of 500 and a power company was planning to construct another reservoir with capacity of 20 units at a cost of 50, then provided a jointly used reservoir with capacity of 120 units could be constructed for less than 550 there would be benefits to society. Lets say that a 120 unit reservoir could be built for 530, meaning there is a benefit to society of 20. But how should those benefits be shared? There are a number of possibilities available:

- 1 if the cost to the statutory water company – and its PWS customers – remains at 500, then there is no benefit to those customers and the water company would have little incentive to participate in a joint scheme. (We leave to one side any non-financial benefits the water company might get from the project e.g. an improved likelihood of the reservoir project being approved by Ofwat, the EA etc.) The power company would benefit significantly in this case: it would only have to pay 30 to get the 20 units of capacity that it was seeking (compared to a cost of 50 if it built a separate smaller reservoir itself).
- 2 if the cost to the power company remains at 50, then there would be no benefit to the power company to participate in the joint scheme. The statutory water company and its PWS customers would benefit though: instead of paying 500 for the 100 unit reservoir, they would only have to pay 480.

3 the benefits could be split between both the statutory water company and the power company in some way (and there are a number of different ways to approach this problem). If the benefits were pro-rated, then the water company would receive 5/6 of the total benefit (i.e.  $100 / 120$ ) and the power company the remaining 1/6th. With total benefits of 20 (i.e.  $550 - 530$ ), that would mean benefits of 17 would be allocated to the water company and 3 to the power company, such that the water company's overall contribution would be 483 and the power company's 47 and both parties are better off.

**6.59** Of course, given the different patterns of consumption by different users it might be possible to construct a reservoir with a smaller capacity, at lower cost, that would meet all the users' requirements. This would make the allocation of benefits more complex to work out, but the principles would remain the same.

**6.60** A normal commercial agreement between two parties with similar bargaining power might be expected to reflect the third possibility above, splitting the benefits between the different stakeholders. Ofwat's RAGs could play an important role in facilitating this.

#### Recommendation:

Ofwat's RAGs should seek to enable MSWSAs to share benefits between the different stakeholders in order to encourage their participation in these projects (thereby realising benefits for society overall).

**6.61** RAG5 states that "RAG2 should prevent appointed activities cross subsidising non-appointed activities" (though RAG2 appears to then refer back to RAG5 for how to allocate costs between appointed and non-appointed activities).<sup>93</sup> This suggests that Ofwat's current RAGs would not enable any sharing of benefits from a MSWSA with other stakeholders i.e. all of the benefits would need to accrue to either PWS customers or to statutory water company's investors. This would mean that other stakeholders would have no incentive to participate in a MSWSA, other than that it is the right thing to do. Ofwat should re-consider the RAGs to make it possible for the statutory water company (and other water companies sponsoring MSWSAs) to share some of the benefits with other water users, subject to ensuring that PWS customers are no worse off as a result.

**6.62** The RAGs currently allow for the possibility of determining transfer prices between appointed and non-appointed businesses based on long-run marginal costing techniques in circumstances where the company is able to justify its reasons for using this technique.<sup>94</sup> However, it is unclear at this stage if these marginal costing approaches would be allowed for MSWSAs.

<sup>93</sup> See Ofwat (2015) "RAG 5.06 – Guideline for transfer pricing in the water and sewerage sectors", February, p14 and Ofwat (2015) "RAG 2.05 – Guideline for classification of costs across the price controls", February, p5.

<sup>94</sup> See Ofwat (2015) "RAG 5.06 – Guideline for transfer pricing in the water and sewerage sectors", February, pp15-16.

**Recommendation:**

It would be helpful if Ofwat were to clarify that MSWSAs are a situation in which marginal costing approaches could be employed and any evidence that it would expect water companies to adduce in support of their proposed cost allocations.

**6.63** To the extent that Ofwat's regulatory framework simply passes-through the costs allocated to the statutory water company to PWS customers, then any reduction in the share of costs funded by the water company would benefit PWS customers. The water company's investors would not, however, benefit financially directly. There may be benefits to the water company in the form of enhanced reputation and customer legitimacy, but in order to provide a financial incentive for the water company to enter into a MSWSA the benefits of the project may need to be partially allocated to the water company's shareholders.<sup>95</sup> RAG5 recognises that it is appropriate for investors to share in the benefits and Ofwat should ensure that this remains the case for MSWSAs.<sup>96</sup>

**Recommendation:**

Ofwat should review the regulatory accounting rules applying to MSWSAs so that they enable the benefits to society from these projects to be shared between water users and investors, thereby creating a stronger incentive for water companies and their investors to participate in these projects.

**Use of assets for non-appointed activities**

**6.64** Option 1, where a single water company delivers that asset under a corporate finance structure, would see the statutory water company own an asset which would then be used to deliver both appointed and non-appointed activities. The costs of the asset, including financing costs, and any operating costs, would need to be allocated between the appointed and non-appointed activities. RAG5 states "costs for use of the asset should be allocated between the appointed and non-appointed business" and that RAGs 2 and 5 set out the principles companies should follow when allocating the costs.<sup>97</sup> RAG5 goes on to discuss that there should be no cross-subsidy between the appointed and non-appointed business, while RAG2 sets out principles for cost allocation, the most relevant of which appears to be that "cost causality requires that costs (and revenues) are attributed or allocated to those activities and services that cause the cost (or revenue) to be incurred".<sup>98</sup>

**6.65** This suggests that costs might be allocated in proportion to the usage of the asset e.g. if non-appointed services were 40% of the services supplied by the MSWSA, then 40% of the costs might be attributed to the non-appointed business. For the reasons set out above (paragraph 6.61), this might limit the ability of the MSWSA to share benefits between the different stakeholders in the project.

**Recommendation:**

Ofwat should review the RAGs to ensure they enable some sharing of benefits between customers of the statutory water companies and other users of water from the MSWSA i.e. enable mutual cross-subsidisation of the investment between both sets of water users.

**Bulk Supply Agreements which facilitate long-term commercial arrangements**

**6.66** Sections 40 – 40J of the Water Industry Act 1991 (as amended by the Water Act 2014) relate to bulk supplies of water. These provisions have not yet come into force, but we assume that they will be by the time a MSWSA is being developed in detail. Section 40 sets out that the Bulk Supply sections of the Act only apply where a water undertaker or a New Appointment and Variation is seeking a bulk supply from a water undertaker. Consistent with this (notwithstanding that it predates the revisions to the legislation), Ofwat's bulk supply policy principles indicate that bulk supplies include:<sup>99</sup>

- an existing appointed company supplying water, sewerage or water and sewerage services to a new appointee; or
- an existing appointed company supplying water, sewerage or water and sewerage services to another existing appointed company.

**6.67** This would appear to clearly capture a sale of water from the MSWSA to an appointed water company if the MSWSA is delivered within the regulatory ring-fence of an existing appointed water company, such as in Option 1 – Single Water Company.

**6.68** It is less clear, however, whether the supply of water from a MSWSA delivered by a JV or SPV to a statutory water company would fall within the meaning of "bulk supply". For example, since an IP under appointed the SIP regime would not be a water undertaker, it appears that any supply of water from it to a water undertaker would not be classified as a "bulk supply", but that may not be the Government's intention.

<sup>95</sup> If the expected rate of return on the MSWSA is higher than on delivering a smaller business as usual project then there may already be an incentive for the statutory water company to pursue MSWSAs, but at this stage it is not clear whether this would be the case.

<sup>96</sup> See Ofwat (2015) "RAG 5.06 – Guideline for transfer pricing in the water and sewerage sectors", February, p16 which states "when a non-appointed activity includes the optional use of an asset owned and also used for an appointed activity, then it is appropriate that both shareholders and customers should benefit".

<sup>97</sup> See Ofwat (2015) "RAG 5.06 – Guideline for transfer pricing in the water and sewerage sectors", February, p16.

<sup>98</sup> See Ofwat (2015) "RAG 2.05 – Guideline for classification of costs across the price controls", February, p3.

<sup>99</sup> See Ofwat (2011) "Bulk supply pricing – a statement of our policy principles", February, p5.

**Recommendation:**

DEFRA should consider the applicability of bulk supply rules to contracts between a JV or SPV and a statutory water company. These may need to be clarified by legislation.

**6.69** Assuming that a contract between a JV or SPV and incumbent water company(ies) would be a bulk supply, then the question arises as to how the bulk supply rules would apply. In the different financing options described in Section 3 we have assumed that a BSA would operate, or could be made to operate, similarly to a commercial contractual arrangement that parties to a MSWSA would want to enter. This implicitly assumes that any rules and guidance applicable to BSAs would not be incompatible with commercial arrangements.

**6.70** The terms and conditions, including pricing, of a BSA are subject to determination by Ofwat if either party to the agreement refers to the matter to Ofwat: s40(3) of the WIA. Similarly, if either party to the agreement applies to Ofwat, Ofwat may order variations to the BSA, or terminate it, as Ofwat sees fit: s40A(1) of the WIA. Further, Ofwat may issue codes in respect of BSAs: s40B of the WIA. These codes may make provision about a range of matters, including the terms and conditions of the BSA: s40B(2)(d). These terms and conditions will include the duration of the agreement. Section 40E provides for Ofwat to issue charging rules applicable to BSAs. These rules could set out the types of charges which can be imposed and how those charges should be determined: s40(E)(2)(a) and (b) of the WIA.

**6.71** It is clear from the above that Ofwat will, once the amendments included in the Water Act 2014 are enacted, potentially have significant influence over the terms and conditions of BSAs, including pricing. Consequently, key questions arise in relation to how Ofwat's approach to BSAs would facilitate:

- long-term contracts, or whether prices would need to be periodically re-set;
- a non-negotiable commitment from one water company to another (without a disruptable supply, unless that is what the parties agreed);
- which costs would the agreement need to reflect, not just in terms of definitions, but whether those costs would need to be 'locked in' at the time the contract was signed or whether they could be updated to reflect outturn construction costs;
- what a reasonable rate of return on a BSA might be, and whether that is the same as the rate of return which an investor in a MSWSA would want; or
- whether the two parties could enter into a binding contract – potentially subject to some subsequent adjustments – prior to the project commencing in order to provide confidence to the MSWSA developer that there would be demand for its services.

**6.72** It is possible that Ofwat's codes and charging rules might not be compatible with the commercial agreement that a MSWSA (whether as part of a statutory water undertaker or not) and a water undertaker might look to put in place.

**6.73** While we note that under the prospective s40(3) of the WIA Ofwat's powers to determine bulk supply prices only apply if the matter is referred to Ofwat by one of the parties to the agreement, Ofwat's codes and charging rules – when published – will need to accommodate the commercial arrangements a MSWSA would look to put in place. Consequently, Ofwat will need to consider how its codes and rules should be designed to be compatible with MSWSAs.

**Recommendation:**

Ofwat should consider whether its bulk supply guidance, and any relevant charging codes and rules, are fit for applying to MSWSAs.

**An abstraction licence regime which enables water rights trading**

**6.74** The financing options we have presented have assumed that the various customers of the MSWSA would be able to freely trade water rights among themselves (and potentially with outside parties who wish to join the scheme at some later date). If it is not possible to freely trade these rights then the environmental benefits of the scheme could be compromised: stakeholders might be less likely to participate, the size of the MSWSA might need to be larger to accommodate these market frictions and water use might not be optimised. In theory Ofwat could look to minimise this impact by placing incentives on water companies, but it would not be possible for Ofwat to apply those incentives directly to other water users. A more effective solution is likely to be ensuring that the abstraction licensing regime, which governs the ability of parties to take water from the environment, has no impact on the way that a MSWSA project is structured by:

- reducing limits on the ability of customers of the MSWSA to trade water amongst themselves, or with other parties; and
- reducing limits on the ability of stakeholders in the project to transfer their existing abstraction licenses to the MSWSA.

**6.75** We discuss each of these issues below.

**Reducing limits on the ability of parties to trade water**

**6.76** The significant role that water rights trading can potentially play in mitigating risks faced by the project and its stakeholders is discussed in paragraph 7.48. Noting this potentially positive contribution, in all of the different options considered we have assumed that the MSWSA would be able to create tradable water rights

through the contracts it enters into with the water users i.e. each water user would purchase water rights as part of entering into a contract with the MSWSA. We have assumed these rights would be freely tradable, without any limitations the abstraction licensing regime might impose.

**6.77** However, AWS has told us that the current abstraction licensing regime might limit the ability of a MSWSA's customers to trade water amongst themselves, depending on the type of MSWSA:

- abstraction licenses could be required for a desalination plant depending on where it was abstracting from:
  - if it was abstracting from an estuary, which might be the case as brackish water is easier to desalinate than water from the sea, then an abstraction license would be required; but
  - if it was abstracting from the sea, then a license would not be required (though it may depend on how far out to sea the abstraction takes place);
- abstraction licensing for reservoirs depends on the type of reservoir:
  - for some reservoirs, such as Rutland, where essentially a valley is flooded, the reservoir forms a water body in its own right. In this case, abstraction licences are needed from the watercourse into the reservoir and to abstract water from the reservoir. The abstractions from the watercourse to the reservoir are known as transfer licences and have a low charge, but likely to have relatively strict conditions. The abstraction from the reservoir will have a higher charge, but relatively low environmental conditions, except to protect nature which lives on the reservoir, such as if the reservoir is a Site of Special Scientific Interest. In this case it seems unlikely that there could be any trading of allocations without using the abstraction licensing system.
  - for other reservoirs, such as Covenham, where water is abstracted into a reservoir which is not part of the water system (e.g. it is a self-contained, lined reservoir), an abstraction licence is still needed from the water course to the reservoir, but no licence is needed to abstract from the reservoir. In the opinion of AWS's water resources team, this is the kind of reservoir that would most likely be a multi-sector asset. In this case there is no licence to abstract from the reservoir, so trading between investors might be done outside the abstraction licensing regime.
- aquifer storage and recovery would be subject to some licensing requirements to enable the EA to track and monitor use: abstracted water would be subject to the usual licensing requirements, while there could also be license requirements on water injected into the aquifer;

- water re-use and recycling may also be subject to abstraction licensing restrictions: the most likely scenario would be an indirect scheme whereby the treated recycled water is discharged a short distance upstream (for subsequent abstraction and treatment) and this would require a discharge consent for the recycled wastewater as well as licenses for the subsequent abstraction.

**6.78** A further interaction between water rights trading and the abstraction licensing regime could be the type of licence a MSWSA owner might have to abstract into the reservoir. PWS licences are a little different to other licences because of drought permits, which essentially prioritises PWS over other uses in times of drought. However, given that the MSWSA is not purely for PWS purposes, whether a MSWSA would be able to have such priority is open to question.

**6.79** It might also be the case that different customers' uses of water are more or less consumptive than others i.e. the amount of water which is returned to the environment after it has been used can vary depending on what the water is used for. This could have implications for the environment, such that the trading of water rights between different water users needs to be managed to avoid any impact on the environment. It could be the case that different classes of water rights would need to be created, and only owners of a particular class of rights could trade with each other (in any given trade). Or it might be that the MSWSA SO (or the TPO discussed earlier) might have to play a role in monitoring and approving trades within guidelines set by the EA.

**6.80** The benefits of water rights trading mean that it is important that the regulatory and legal framework applied to MSWSAs should enable tradeable water rights to be created by the MSWSA and make it as easy as possible to trade those rights among the different water users. Noting the way that the abstraction licensing regime works, the uncertainties around that, and the potential reforms to the regime being considered by DEFRA at the moment, it is important that the licensing regime is made clearer.<sup>100</sup>

**Recommendation:**

DEFRA and the EA should ensure that the abstraction licensing regime supports MSWSAs (of various types) and promotes water trading.

<sup>100</sup> See DEFRA (2013) "Making the most of every drop: consultation on reforming the water abstraction management system", December.

## Reducing limits on the ability of stakeholders to transfer abstraction licenses to the MSWSA

- 6.81** In order to build any new reservoir, more water would be needed than is currently available, so the MSWSA would need to obtain this from somewhere. It could be the case that new licenses are created for the MSWSA, but it might also be the case that the MSWSA would look to take advantage of transfers from existing abstractors in some cases.
- 6.82** One way which some stakeholders might look to contribute to the project is through in-kind transfers, rather than up-front cash funding. These contributions might take the form of land, abstraction licenses or assistance with the construction of the asset e.g. digging trenches for pipes to be laid in. To the extent that some stakeholders may want to transfer their existing abstraction licenses to the MSWSA, the EA's existing rules on transfers of these licenses would apply. This could have important implications for the project.
- 6.83** At present, any transfer of an abstraction license is subject to the EA's approval. The EA has a right to vary the terms of the license e.g. imposing a time-limit on the license (instead of perpetual rights). This introduces risk into any transfer between stakeholders and the MSWSA: the value of the stakeholder's contribution to the project may be difficult to estimate in these circumstances (if it is permitted at all), while the MSWSA would face uncertainty about the amount of water abstraction licenses it would actually receive.
- 6.84** DEFRA is consulting on changes to the abstraction licensing regime which appear likely to see a more flexible set of arrangements introduced in future. The exact arrangements are not yet finalised, nor is the date for when they may begin to apply. To facilitate investment in MSWSAs it is important that DEFRA makes appropriate reforms to the abstraction licensing regime.

### Recommendation:

DEFRA should implement reforms to the abstraction licensing regime which are as flexible as possible (e.g. the water shares model consulted on previously), providing stakeholders with confidence that their licenses can be transferred to the MSWSA if that is their intention.

### Recommendation:

Prior to the enactment of any new regime, Defra should ensure that the abstraction licensing regime is modified to provide more clarity and predictability about the process of transferring licenses between parties.<sup>101</sup>

## Pipe laying and land purchasing powers which facilitate MSWSAs

- 6.85** Statutory water companies have a range of powers to enable them to carry out their functions. These include, under Sections 155 and 159 of the Water Industry Act 1991 respectively, the ability to compulsorily acquire land and to secure access to land in order to lay pipes. These powers are only available to statutory water companies i.e. they are not available for WSL, SIP or unregulated entities, which would instead need to reach commercial agreements with land owners in order to carry out these activities. These powers are also not available to a JV between statutory water companies: even though the entity is assumed to be within the regulatory ring-fence of the companies, the pipe laying and compulsory acquisition powers only attach to the statutory water company itself, so a separate legal entity could not exercise these powers. This could give rise to some land owners seeking to extract ransom rents where their land is essential to the project, a situation we understand has arisen in relation to telecommunications masts.<sup>102</sup>
- 6.86** The unavailability of these powers for WSL, SIP or unregulated entities – and the risk that this poses to their ability to deliver the project efficiently – may mean that any land purchases and pipe laying would need to be undertaken by the incumbent statutory water company. This may suggest the MSWSA project would need to be split in some way, such as in Options 4 and 5. It may be that the statutory water company would need to undertake these activities in all of the financing options we have considered, before the remainder of the project is completed by another entity. This would be similar to the approach that was taken for the TTT, where Thames Water – the relevant statutory water company – acquired all of the land needed for the project.<sup>103</sup>
- 6.87** However, while statutory water companies have pipe laying and compulsory purchase powers, these powers are only available to statutory water companies for the purposes of, or in connection with, the carrying out of its functions. As a result, a statutory water company may not be able to compulsorily acquire land or secure access to private land to lay pipes if that was for the purpose of unregulated activity such as supplying water to other water users (such as farmers or power companies) for purposes other than public water supply.

### Recommendation:

The UK Government should consider whether the pipe laying and compulsory purchase powers of statutory water companies are appropriate for MSWSAs, particularly where the only parties to a MSWSA are statutory water companies.

<sup>101</sup> For a fuller discussion of this topic, see HR Wallingford (2012) "Research into water allocation through effective water trading", December.

<sup>102</sup> See, for example, ISP Review (2015) "Rural UK Landowners Angered by New Mobile Network Coverage Deal", 13 January, for a discussion ([website http://www.ispreview.co.uk/index.php/2015/01/rural-uk-landowners-angered-new-mobile-network-coverage-deal.html](http://www.ispreview.co.uk/index.php/2015/01/rural-uk-landowners-angered-new-mobile-network-coverage-deal.html) accessed on 17 September 2015).

<sup>103</sup> See Thames Tideway Tunnel website (<http://www.thames Tideway Tunnel.co.uk/procurement/information-for-investors>) accessed 17 September 2015.

## Conclusion

**6.88** As discussed above, through our own analysis and through discussions with AWS's legal team, we have identified a number of potential legal and regulatory issues relevant to the financing of MSWSAs. These issues may affect the implementation of all of the options. The key issues we have identified are:

- we understand that the Water Supply Licence (WSL) and SIP regimes may need to be modified if they are to facilitate financing of MSWSAs through JVs or SPVs. This issue may impact Options 2, 3, 4, 5 and 7;
- the abstraction licensing regime may place restrictions on the ability of different users of water from the MSWSA to trade water rights with each other, potentially reducing the attractiveness of participating in a MSWSA and preventing some of the benefits of the project (such as more efficient use and allocation of water) from being realised. This issue is likely to affect all of the options;
- we understand that the rules around Bulk Supply Agreements (BSAs) may influence the terms and conditions on which a MSWSA could enter into long-term contracts with water users. This issue could potentially affect Options 1, 2, 3, 4, 5 and 7;<sup>104</sup>
- we consider that it is unclear how the RAGs applied to statutory water companies would be applied to MSWSAs. Uncertainty about how to demonstrate that long-term contracts with the MSWSA (which would be an associate entity) are at arm's length could limit the ability of water companies to enter into long-term contracts for water from the project. This issue could affect Options 2 and 4; and

- we understand that the pipe laying and land acquisition powers of statutory water companies would not be available to any legal entity other than the statutory water companies, affecting Options 2, 3, 4, 5, 6 and 7. Option 6, despite being a JV of two statutory water companies and the existence of a number of statutory reservoirs where water companies have successfully operated assets jointly (see paragraph 6.30), would not have these powers as it involves a legal entity separate from the statutory water company financing the MSWSA. A statutory water company undertaking unregulated activities (such as supply of water to farmers for reasons other than public water supply) may also not be able to exercise its pipe laying and land acquisition powers in relation to all aspects of the MSWSA, meaning Option 1 would also be constrained by this issue.

**6.89** We consider that DEFRA, Ofwat and stakeholders will need to work to resolve the barriers identified above. However, it is clear that some of the financing options are affected by more of these issues than others.

**6.90** Restrictions that apply to some water companies' existing financing arrangements relating to their ability to undertake non-regulated activities (such as the development of infrastructure for reasons other than public water supply) will also need to be taken into account. These restrictions may inhibit the ability of some statutory water companies to deliver MSWSAs through Option 1 (but not Option 6 where no unregulated activity is envisaged).

**6.91** Table 6-2 summarises our assessment of the feasibility of the different financing options against the feasibility criteria presented in Section 4.

**TABLE 6-2: ASSESSMENT OF THE FEASIBILITY OF DIFFERENT FINANCING OPTIONS**

CATEGORY	CRITERIA	OPTION						
		1	2	3	4	5	6	7
Feasibility	Compatibility with legal and regulatory framework	✓✓	✓	✓	✓	✓	✓✓	✓

<sup>104</sup> Option 1 potentially involves a Bulk Supply Agreement from one statutory water company to another.

## ALLOCATING RISKS TO THE PARTIES BEST PLACED TO MANAGE THEM

**7.1** As discussed in Section 5, efficient allocation of risk between the stakeholders in a MSWSA will be important to enabling the project to proceed and securing the best value for money for water users, including the customers of statutory water companies. However, the different financing options for MSWSAs could be designed to allocate risks between stakeholders in different ways. This would not only have implications for the willingness of different stakeholders to become involved in the project, but also on the cost of capital for the project (which in turn is a large component of the overall cost of the project to water users).

**7.2** Therefore, stakeholders will need to consider which parties are best placed to bear which risks and how to allocate risks to those parties.<sup>105</sup> Ideally to address these issues stakeholders would identify:

- the risks which arise on the project;
- their materiality; and
- which stakeholders are best placed to manage those risks.

**7.3** A detailed examination of these issues is outside the scope of our work (and will need to be investigated further in more detail by stakeholders). However, in the interests of assisting stakeholders take MSWSAs forward, we present some preliminary views below.

**7.4** We then consider some of the tools which may be available to statutory water companies and other stakeholders, including DEFRA and Ofwat, to mitigate and allocate risks between the different parties to a MSWSA.

### High level risk assessment

**7.5** Below we discuss some of the different risks which would potentially arise in a MSWSA. This is not intended to be an exhaustive list, but rather a high level overview. Further, the risks would be likely to differ according to the type of MSWSA under consideration (e.g. the construction and operational risks associated with a reservoir could be quite different to a desalination plant), but we have not attempted to take this into account in our discussion.

**7.6** At a high level, risks can be categorised as follows:

- construction;
- revenue / demand;
- operational;
- financing; and
- regulatory.

**7.7** Table 7-1 summarises some of the key types of risk which might arise for a MSWSA.

<sup>105</sup> Ofwat has acknowledged this principle in the past and again recently: see Ofwat (2015) "Towards Water 2020 – policy issues: regulating monopolies", July, p15 which states "risk should be allocated to whoever is best placed to manage that risk".

TABLE 7-1: HIGH LEVEL RISK-REGISTER

TYPE OF RISK	RISK	DESCRIPTION
Construction	Cost overruns	Project costs more to construct than expected
	Construction delays	Project takes longer to construct than expected e.g. due to technical issues or because of issues with contractors (e.g. bankruptcy of construction contractor)
Revenue / demand	Supply exceeds demand (oversized project)	Capacity of project is greater than expected to be needed by water users
	Asset stranding	Demand decreases, rendering part of the capacity of the project unnecessary
	Counterparty risk	Risk that water users do not pay
	Contract renewal/extension risks	Contracts between project and water users might not be renewed when they expire e.g. if demand decreases or if specific water users go out of business etc
Operational	Lower-than-expected availability	The MSWSA is unable to supply water users as often as expected due to environmental conditions (e.g. low flows, poor water quality etc), operational issues such as excessive leakage or poor maintenance or because of issues with contractors (e.g. bankruptcy of the O&M contractor)
	Outages	More maintenance is required than planned, interrupting services to water users
	Water quality risks	Water quality is different from what users demanded, impacting on their ability to use the water
	Reputational risks	Failure by the MSWSA to deliver for water users could have implications for the reputation of some of its stakeholders
	Increases in operating costs	O&M contract, insurance etc costs could all turn out differently from expected
Financing	Higher or lower cost of debt than expected	
	Higher or lower inflation than expected	
Regulatory	Uncertainty about which legal framework applies and whether it is fit for purpose	The regulated portion of the MSWSA could be funded within the ring-fence, or potentially via the WSL or SIP regimes, but each regime may need some adjustment to make it fit for purpose (as discussed in Section 6)
	Allowed revenues could be higher or lower than expected	At this stage the way that Ofwat would set revenues for the regulated portion of the MSWSA is not yet known, nor are the parameter estimates e.g. WACC

**7.8** These risks could be allocated to shareholders, debt investors, sub-contractors, insurers, the environment or to water users depending on the design of the regulatory arrangements and the contracts governing the project. Risks could be shared between different stakeholders in some instances.

**7.9** The materiality of a risk would depend on both its likelihood of occurring and on the impact if the risk did materialise. An assessment of whether a particular risk is likely to arise or not is outside of our scope of work and, in some cases, would likely require an understanding of engineering which we do not possess. Our preliminary views, shown in Table 7-2, are a judgement we have formed based on the work we have done as part of this project and our experience of considering these issues in other contexts.

**TABLE 7-2: PRELIMINARY ASSESSMENT OF MATERIALITY OF RISKS AND WHICH PARTIES MIGHT BE BEST PLACED TO MANAGE THEM**

TYPE OF RISK	RISK	MATERIALITY	PARTY BEST PLACED TO BEAR
Construction	Cost overruns	High	Split between construction contractor, investors and water users
	Construction delays	Medium	Split between construction contractor, investors and water users
Revenue / demand	Supply exceeds demand (oversized project)	Medium	Equity investors
	Asset stranding	Low	Investors
	Counterparty risk	Low	Investors / insurance
	Contract renewal/extension risks	Low	Investors
Operational	Lower-than-expected availability	Medium	Investors and water users
	Outages	Medium	Split between O&M contractor and investors
	Water quality risks	Medium	Investors / insurance
	Reputational risks	Medium	Statutory water company <sup>106</sup> , other water users <sup>107</sup> and Ofwat
	Increases in operating costs	Medium	Split between O&M sub-contractor, Investors, and water users
Financing	Higher or lower cost of debt	High	Investors, then water users
	Higher or lower inflation than expected	Medium	Split between investors and water users
Regulatory	Uncertainty about which legal framework applies and whether it is fit for purpose	High	Investors
	Allowed revenues could be higher or lower than expected	High	Investors

### Tools for risk mitigation and allocation

**7.10** There are various tools available for allocating and mitigating risks. Some risks would be allocated to sub-contractors or to insurers, but others would be allocated between investors and water users. The tools for doing this include:

- regulatory design i.e. the regulatory framework which Ofwat decides to apply to a MSWSA; and
- contract structure i.e. the terms and conditions of the contracts between the project and its water users and investors.

**7.11** However, at this stage neither the contractual structure, nor the regulatory framework, is clear, so it is not possible to identify how risks would be allocated with certainty. Further, a full project structuring and market testing exercise is required to identify how risks should be allocated and mitigated. However, some preliminary observations are possible about the different tools which may be able to mitigate risks and to allocate risks between the parties.

**7.12** There are a variety of tools available to stakeholders to help mitigate and manage risks associated with a MSWSA. Table 7-3 below summarises which tools address which risks.

<sup>106</sup> The experience of Scottish Water suggests that it was its own reputation that was most affected by the performance of the PFI contractors responsible for a significant portion of its wastewater functions: see Scottish Water (2009) "Strategic Review of Charges 2010-14: Second Draft Business Plan – March 2009 – Appendices", March, p8.

<sup>107</sup> Water users who are reliant on the water from the project to deliver their services to their customers could also have their reputations damaged if they fail to deliver e.g. if the yield or quality of their crops is inferior to the standard of performance their customers have come to expect.

TABLE 7-3: TOOLS AVAILABLE FOR MITIGATING RISKS

TYPE OF RISK	RISK	TOOLS FOR MITIGATING RISK
Construction	Cost overruns	Incentives for cost efficiency
	Construction delays	Incentives for timely delivery
Revenue / demand	Supply exceeds demand (oversized project)	Securing pre-commitment from customers; Structuring charges to reduce demand risk; Water rights trading
	Asset stranding	Protecting PWS customers against the risk of asset stranding
	Counterparty risk	Discussed below table
	Contract renewal/extension risks	Discussed below table
Operational	Lower-than-expected availability	Incentives for quality of performance
	Outages	Incentives for quality of performance
	Water quality risks	Incentives for quality of performance
	Reputational risks	Incentives for quality of performance
	Increases in operating costs	Incentives for cost efficiency
Financing	Higher or lower cost of debt	Incentives for efficient financing
	Higher or lower inflation than expected	Incentives for efficient financing
Regulatory	Uncertainty about which legal framework applies and whether it is fit for purpose	Design, and choice, of legal framework (Section 6)
	Allowed revenues could be higher or lower than expected	Design of regulatory framework (Section 6)

**7.13** Some of the risks faced by the project arise on any project and do not appear to have any particular nuances in the context of a MSWSA. These are counterparty risk and contract renewal risks. The regulatory regime, where applicable, could help to mitigate these risks through, for example, funding of expected bad debt costs and inclusion of re-openers in particular circumstances, but these risks are more likely to differ from those faced by a statutory water company in its business-as-usual activities when they relate to the non-PWS (unregulated) portion of the project in which case it would be contractual arrangements which would need to address them.

**7.14** We discuss some of the tools available for mitigating the other risks in more detail below. These tools are available regardless of which financing option is taken, though the details of the mechanisms could vary. Others were considered in Section 6 as part of assessing the feasibility of the different financing options within the existing legal and regulatory arrangements.

### Incentivising cost efficiency

**7.15** Construction costs and operational costs will be key components of the charges levied on water users. To ensure value for money, it will be important to appropriately protect water users against cost overruns, and to encourage efficiency.

**7.16** The appropriate tools for incentivising efficiency will vary between the different financing options. For example:

- in the case where revenues are regulated, such as Option 1 (Single Water Company), then Ofwat could set its regulatory arrangements in a way that incentivised efficiency. This could be done as part of the wider cost assessment applied to statutory water companies. In Option 3 (SPV) some separate arrangements could potentially be put in place similarly to the way that the TTT has been regulated.<sup>108</sup> If Ofwat tried to adopt this approach then it could consider whether there are lessons from other sectors

<sup>108</sup> Ofwat created a separate price control for the pre-construction work undertaken by Thames Water on the TTT as part of PR14.

e.g. in the OFTO regime, at present, the assessment of efficient costs is undertaken towards the end of the construction phase based on an ex-post audit of costs incurred.<sup>109</sup>

- in the case where revenues (or part of those revenues) are not regulated, such as in Options 2, 3, 4 and 5, then contractual arrangements would be used to incentivise cost efficiency. Targets could be set for construction and O&M sub-contractors, and via the contracts with those sub-contractors, risks allocated between the MSWSA and its sub-contractors. Insurers may also bear some of the risks in some situations. The contracts between the MSWSA and water users would specify how, if at all, prices for water would be adjusted in the event of costs out-turning higher or lower than expected.<sup>110</sup>

### Incentivising timely delivery

**7.17** Delays to the delivery of the project could compromise the quality of services available to water users, an issue discussed in more detail below. To the extent that the MSWSA was a key component of how the statutory water company intended to deliver outcomes for its PWS customers, then penalties linked to non-delivery of those outcomes embedded in the wider regulatory regime could provide a strong incentive for the statutory water company to make sure the MSWSA was delivered on time. Ofwat could also only allow the regulated portion of the MSWSA to earn any revenues until construction is complete and operations have commenced, but this may need to be balanced against the financeability implications this could have.

**7.18** The issue of delay might be more of a problem for non-PWS water users because they may have a less resilient supply of water than PWS customers (who are supplied by statutory water companies which have an obligation to maintain security of supply of water). They may look to include compensation payments within the contracts they sign with the MSWSA to this effect.

### Incentivising quality of performance

**7.19** For water users to enter into long-term contracts with the MSWSA they would need to have confidence in the MSWSA's ability to perform over the longer term. There are several dimensions to the quality of performance water users might want to see:

- high availability and reliability;
- low outages; and
- quality of water.

**7.20** To ensure appropriate performance standards are achieved by the MSWSA, there would need to be appropriate incentives and penalties, supported with a robust performance monitoring regime.

**7.21** The statutory water company is likely to be viewed by its PWS customers as responsible for the services it provides, regardless of whether it is the MSWSA's only investor or just a water user i.e. in all of the financing options. The experience of Scottish Water suggests that it was its own reputation that was most affected by the performance of the PFI contractors responsible for a significant portion of its wastewater functions.<sup>111</sup> Consequently, the statutory water company is likely to have a keen interest in ensuring performance by the MSWSA. This could extend to monitoring of the performance of the MSWSA; in the Scottish Water example the PFI contractors were subjected to extensive monitoring and reporting requirements. It may also be appropriate to incorporate mechanisms in any applicable long-term contracts which allow the performance targets of the MSWSA or its contractors to be adjusted to reflect changes to the performance targets of the relevant statutory water companies.

**7.22** Towards this objective, contracts between water users and the MSWSA could be designed to include penalties and/or rewards if particular targets are met e.g. planned maintenance work (and therefore closures) kept below a certain level. In turn some of this risk could be passed on to O&M sub-contractors by the MSWSA.

**7.23** Where all or part of the MSWSA is operated under a regulated model (e.g. Option 1 – Single Water Company), then Ofwat's regulatory regime could include incentives to deliver performance. There are many examples of such incentives within Ofwat's existing toolkit, but others could be designed or borrowed from elsewhere e.g. availability incentives have been included for OFTOs. The appropriate approach to determining allowed revenues for the regulated portion of the MSWSA is discussed in Section 6.

**7.24** These incentives would need to take into account that:

- some water users may, in some circumstances, be able to adjust their water consumption (e.g. use less now, more later) if the project is not able to deliver water at a particular moment in time for some reason;<sup>112</sup> and
- some low-availability events may be outside of the project's control, such as drought, but the project and water users may have some ability to mitigate its consequences e.g. through water trading.

<sup>109</sup> Ofwat has also previously made ex-post assessments of efficient costs as part of its logging up process at previous price control reviews.

<sup>110</sup> It is possible that contracts with customers would not be entered into until after the construction phase was complete or near complete. In that case the outturn construction cost could be reflected in the prices charged to customers, subject to customers' willingness to pay those prices. However, as discussed elsewhere, we assume that the MSWSA will seek to 'lock in' at least a significant portion of its customers (and revenues) by entering into binding contracts prior to construction commencing. If this route is adopted, then those contracts would either envisage all cost risk sitting with the investors in the project, or include clauses which would enable changes in costs to be passed through (or partially passed through) to customers in the form of higher or lower charges.

<sup>111</sup> See Scottish Water (2009) "Strategic Review of Charges 2010-14: Second Draft Business Plan – March 2009 – Appendices", March, p8.

<sup>112</sup> It should also be recognised that some water users' needs are very time critical e.g. vegetable growers require water for their crops at particular times of year in order to achieve the desired yield and quality of their produce.

**7.25** A statutory water company would also have responsibility for ensuring that any water they supply meets drinking water standards set by the Drinking Water Inspectorate. AWS has told us that these requirements mean that there may need to be restrictions on the quality of raw water which can be used by the MSWSA: raw water of particular quality cannot be treated to a standard that a statutory water company would be able to then supply to customers. These requirements may mean that there is a difference between the raw water quality which a statutory water company is willing to accept and the raw water quality which other water users are willing to accept. This could have implications for the availability of water from the MSWSA, for all water users, in certain circumstances. This risk would need to be recognised by all stakeholders to the project and reflected in contracts between the MSWSA and water users. These arrangements could increase awareness among some stakeholders of the impact of certain behaviours (e.g. use of fertilisers and pesticides) on the catchment if that behaviour could then reduce the water available from the MSWSA which that stakeholder wishes to use.

### Incentivising efficient financing

**7.26** Allocating risks appropriately will help to deliver efficient financing costs. Part of allocating risks involves allocating financing risks e.g. movements in interest rates and the rate of inflation.

**7.27** In a competitive market investors would not need to be incentivised to secure efficient financing. The MSWSA may not need to be incentivised to secure efficient financing costs if:

- for the non-regulated portion of the MSWSA, market forces (i.e. competition from alternative water sources) provide sufficient competitive pressure to achieve this.
- for the regulated portion of the MSWSA, competitive tender processes such as those used for OFTOs or the TTT are implemented and achieve competitive tension to drive prices down to efficient levels.

**7.28** The former is hard to assess, but we understand from the stakeholders we have spoken to that alternative water sources are available much of the time. The latter would be subject to the regulatory regime permitting competitive tenders which would only be possible for Options 2, 3, 4, 5 and 7 and, as we discussed in Section 5, may only make sense if the additional benefits these arrangements are expected to generate outweigh the additional costs.

**7.29** If there is insufficient competitive pressure, then Ofwat may need to take steps to incentivise efficient financing (otherwise investors could pass through inefficient financing costs to water users in the form of higher prices). To do this Ofwat could set a cost of capital ex-ante, in which case thought would need to be given to the mechanisms available to adjust that cost of capital should financing costs turn out to be higher or lower. Periodic price control reviews and Interim Determination of K (IDoK) have been the traditional mechanisms for this in the water industry. Re-financing gainshare mechanisms have been included in OFTO and PFI arrangements previously and could also be considered here.

**7.30** Whether there is sufficient competitive pressure or not to drive the cost of capital to an efficient level or not, better value for money for water users may involve protecting investors against certain risks e.g. force majeure. IDoK and Substantial Adverse Effects clauses have traditionally provided this kind of protection in the water industry, but other mechanisms are available. Income Adjusting Events clauses have been included for OFTOs,<sup>113</sup> while the TTT IP licence includes protections against liquidity risks (e.g. if access to capital markets is disrupted due to a financial crisis) and against substantial movements in the cost of debt over time.<sup>114</sup>

**7.31** Inflation risks are often allocated to customers: this has been the traditional approach in the regulated industries in the UK under the RPI-X regime and it has also been the approach adopted for OFTOs and in some PFI arrangements.<sup>115</sup> This is because general price inflation is outside of the control of investors and consumers are typically used to bearing the risks associated with higher and lower inflation. However, it would be open to the parties to a MSWSA to allocate inflation risk differently e.g. by fixing prices in nominal terms, investors would take the risk on whether inflation out-turned higher or lower than expected. The water sector has traditionally used the Retail Price Index (RPI) inflation index to measure inflation, though we note this is currently the subject of some debate.<sup>116</sup> These issues would all need to be considered more carefully in due course (including, for example, any implications for the cost of capital of the project if inflation risks are more difficult to hedge because a particular inflation index is chosen), but for the purposes of our modelling we have assumed that prices would be indexed to RPI inflation.

<sup>113</sup> See, for example, paragraph 15 of amended standard condition E12-J3 of the Gwynt-y-Mor OFTO licence awarded by Ofgem on 19 December 2014.

<sup>114</sup> See Ofwat (2015) "Project Licence – Bazalgette Tunnel Limited", 21 August.

<sup>115</sup> For example, Scottish Water's wastewater PFI contracts are linked to RPI inflation (or variants) to varying degrees: see Scottish Water (2009) "Strategic Review of Charges 2010-14: Second Draft Business Plan – March 2009, Appendices", March, p38.

<sup>116</sup> See Ofwat (2015) "Towards Water 2020 – policy issues: regulating monopolies", July, pp18-20 for a discussion of the possibility of switching from RPI inflation to Consumer Price Index (CPI) (or CPIH, a variant of CPI) inflation.

## Securing pre-commitment from water users

**7.32** One of the risks that the MSWSA faces is that the project is designed and constructed to accommodate much greater demand from water users than actually materialises. Such risks could arise because of changes in circumstances (e.g. availability of alternative resources increases) or because consumers over-estimate their expected requirements. All else equal, over-scoping of the project would be expected to lead to higher construction and operation costs, which would be borne by investors unless they can be recovered from consumers i.e. if a higher price can be charged to those water users who do take the project's water.

**7.33** One way to mitigate some of this risk is to require water users to pre-commit to the project by entering into binding contracts prior to construction to purchase a specified quantity of water rights or capacity. This approach has been adopted with varying degrees of success in other infrastructure projects, such as:

- a public-private partnership in Tasmania, Australia, to build a series of irrigation schemes;
- the Central Arizona Project; and
- Indefeasible Rights of Use have been used to secure the participation of broadband customers on a number of telecoms roll-out schemes.

**7.34** In Tasmania, the Federal Government, State Government and private investors, have constructed or are in the process of constructing 15 irrigation schemes throughout the state. Private capital contributions from farmers and other agricultural investors have been raised through the sale of tradeable water entitlements prior to the commencement of construction. Investors are normally required to contribute 10% of the cost of entitlements up front, with the remainder payable on completion of the project.<sup>117</sup>

**7.35** These projects have typically required around 60–70% of the planned capacity of the project to be taken up by water users through the purchase of water entitlements.<sup>118</sup>

**7.36** The CAP project demonstrated the difficulties in securing binding commitments from water users. Agricultural districts entered into long-term contracts for water 11 years after construction of the CAP commenced. Although farmers signed up for contracts to purchase 71% of the quantity of allocated water, a number of agricultural districts later sold their allocation back to the CAP to avoid bankruptcy.<sup>119</sup>

**7.37** It was revealed through surveys of farmers that they signed contracts to ensure that the project was built, but precedents set by past federal water projects suggested that the Authority would not hold farmers to the rates and terms prescribed in the contracts.

**7.38** The Tasmanian Irrigation schemes and the broadband roll-out schemes both addressed these issues through the sale of capacity rights prior to the commencement of construction. The projects only went ahead after a pre-determined proportion of customers entered into binding contracts for the services offered (water and broadband respectively). Other mechanisms may be available to provide confidence to investors that water users are committed to the project e.g. parent company guarantees or performance bonds could be provided by water users.

**7.39** The agricultural sector representatives we spoke to indicated that a similar sort of arrangement has been used by farmers in England in the context of grain stores and buyers' clubs. Grain stores are a particularly relevant example as we understand from the representatives that in those cases farmers purchased long-term rights to capacity in the store, which could then be traded in the secondary market. This suggests that farmers would be able to get comfortable with the complexity around purchasing and trading water rights in MSWSAs.

**7.40** However, while farmers may be able to engage effectively with water rights trading, the demand from non-PWS water users is particularly difficult to forecast as the MSWSA is likely to be a 'back up' water resource, used only in certain circumstances when alternative water supplies are not available. When particular water users will need to access the facility and how much water they would want to take could be difficult to predict as many water users have alternative water supplies available (e.g. aquifers, rivers, on-farm storage etc) which would typically be lower cost to use than water from the MSWSA. The presence of substitute products reduces the visibility the MSWSA could have over demand from particular users, even if those users have entered into long-term contracts for capacity.

**7.41** Securing pre-commitment from water users does reduce the risk of building a 'white elephant', but it cannot eliminate the risk altogether unless the project requires 100% of its capacity to be pre-contracted. And this may not be a realistic objective if the size of the project is scoped to allow it to meet future demand growth (e.g. as a result of population growth or climate change), noting that water supply infrastructure can have very long lives. Further:

- it might not make sense to try and pre-commit 100% of the capacity of the project if there is an expectation that some water users might only be willing to 'sign up' to the project once others have done so e.g. if farmers are more likely to enter into contracts with the MSWSA once other larger users in their local communities have already done so, thereby enabling some of the costs associated with pipe infrastructure to be defrayed; and

<sup>117</sup> See Tasmanian Irrigation Pty Ltd (2012) "An Innovation Strategy for Tasmania: Focus on Food Bowl Concept Tranche Two Irrigation Scheme Funding Submission to Infrastructure Australia", August, p14.

<sup>118</sup> See Tasmanian Irrigation Pty Ltd (2012) "An Innovation Strategy for Tasmania: Focus on Food Bowl Concept Tranche Two Irrigation Scheme Funding Submission to Infrastructure Australia", August, p14.

<sup>119</sup> See Hanemann (2002) "The Central Arizona Project", University of California, Berkeley.

- extra capacity, or a 'risk reserve', could be an entirely sensible approach in response to uncertainty about demand, such as the uncertainty around the impact of climate change.

**7.42** There may be, however, some downsides to this strategy. For example, in the normal course of commercial arrangements, if the cost of constructing the project exceeds expectations (and is not absorbed by construction contractors), investors would seek to pass through those higher costs to water users in the form of higher prices. In the absence of competition for the services provided by the project this may be possible. However, if contracts had been entered into pre-construction, then any prices included within those contracts (i.e. specifying what water users would have to pay) would be fixed unless the contract includes clauses which enable the additional costs to be passed through. To the extent that a MSWSA might seek to 'sign up' a significant proportion of its capacity before commencing construction (in order to mitigate the risk of having excess capacity), then there could be a risk that cost overruns could not be passed through to higher prices.

### Structure of charges to reduce demand risk

**7.43** Investors may prefer to 'lock in' water users over the longer term, thereby guaranteeing demand and revenues for the project, making it easier to finance. There are, however, some downside risks to such arrangements e.g. the project needs to be confident of its ability to honour its commitment to supply water users over a longer period.

**7.44** Locking in water users over the long term through contracts provides investors with protection against fluctuations in demand only to the extent that the revenue stream is not purely volumetric. If the contract merely specifies that the water user must pay a particular price if it chooses to consume water from the project, then there is no guaranteed minimum revenue and the project is exposed to demand risk as if the contract did not exist.

**7.45** This was one of the many problems on the CAP in the USA, where charges were levied on a purely volumetric basis, one of the contributing factors to a significant under-recovery of revenue when water users opted to use alternative water resources (particularly during the early years of the CAP's operation). On the other hand, many of Scottish Water's PFI contracts recover revenues through volumetric charges, but these projects are nearly all wastewater treatment works with no competition from alternative providers (meaning demand is relatively predictable most of the time).

**7.46** Consequently, the project might look to implement 'take or pay' arrangements which require the water user to use a particular amount of water, or pay for it anyway. Such arrangements might not encourage water efficiency – a water user which did not have to pay more for actually using the water it had contracted for would

be likely to use all of that water whether it was deriving benefits or not unless it could sell the excess water to another party. Further, the MSWSA may only incur some costs when water is actually used e.g. pumping costs. As a result, a volumetric component might be incorporated into contracts.

### Charging options

A key component for the success of the MSWSA will be determining appropriate charging arrangements. In addition to ensuring that water is allocated efficiently among users, it also plays a role in obtaining secure commitments from users and ensuring that risks are shared appropriately between users and the asset owners during times of water scarcity.

There are several factors to consider when setting the charges, including the costs of the MSWSA (and how they vary over time), and factors that will affect demand for each of the potential water users such as the availability and cost of alternative water sources, both in normal conditions and in times of water shortage.

For example, farmers and power companies may have access to an abundance of water at a relatively low cost under normal seasonal conditions, but in times of drought, they may have little supply or very high cost supply from existing alternatives. In this scenario, the MSWSA might offer a form of insurance for water users during times of severe drought. Accordingly, the pricing structure could reflect that of other insurance products, with users paying an annual 'premium' type charge that does not vary over time, and allows them to access a proportion of water in times of severe drought.

In theory, another option would be to auction off water rights annually, allowing the MSWSA owners to adjust the price of water each year depending on availability and demand. While this option would allow prices to respond to changes in market conditions, particularly in times of water scarcity, the disadvantage would be the variability in revenue accruing to investors and a risk that charges only recover marginal costs (and not the sunk cost of the business).

The most appropriate option is likely to sit somewhere in between these two extremes. Examples of charging structures for other MSWSAs that have been considered as part of this report typically have some combination of the following three charges:

- Upfront charge to purchase the water rights
- Fixed annual charge that depends on the share of water rights held by the user
- Variable annual charge that depends on the volume of water consumed by the user

The upfront charge to purchase the water right provides the owner with access entitlements to a defined amount of water, or a share of available water. The value of this right, and therefore the willingness to pay for the rights,

will depend on a number of factors including the size and certainty of other charges, the specification of the water entitlement – whether it be a fixed volume or share of available supply – the costs associated with connecting to the water supply, the ability to trade water rights, and the cost and reliability of alternative options for procuring water. From the perspective of the asset owners, an upfront charge could be used to finance capex and reduce overall financing costs. Requiring some upfront payment is also likely to reduce the likelihood that users would default on their contracts.

As discussed above, the fixed annual charge is akin to an insurance premium. It could also be designed to mirror the cost structure, covering the ongoing operational and maintenance costs of the MSWSA.

Finally, the variable annual charge exposes both the assets owners and users to some risk, but also some reward, associated with variability in demand. If part of the fixed annual charge is replaced with a variable charge, the asset owners stand to gain in times of drought, when water is relatively scarce and the willingness to pay by water users is high. In contrast, water users are better off in normal times if they are able to pay lower annual fixed charges. However some consideration would need to be given to the mechanism for setting variable water prices. Users may be reluctant to purchase water rights without some assurance as to the prices they will face.

Stakeholder engagement will be key to understanding the market for water, including variation in demand across stakeholders and depending on weather conditions and other factors, and availability and pricing of existing supply options and potential future supply options. There are also various economic theories that could be used to inform the pricing structure, including Ramsey pricing, which sets pricing in relation to the price sensitivity of each of the users, and peak load and capacity pricing, which is used to apportion fixed and variable costs in electricity markets.

## Water rights trading to reduce risk of mismatch between supply and demand

**7.47** Whatever arrangements are entered into at the outset of the project, it is almost certainly going to be the case that some adjustments will be required over time: supply and/or demand may be higher or lower than expected over time. This risk will need to be mitigated and managed. We discussed above how the project can be incentivised to try and mitigate the supply-side risks e.g. through availability incentives.

**7.48** We have assumed that in all of the different financing options water users would purchase tradeable water rights as part of entering into long-term contracts with the MSWSA. Similar water rights have been created in Australia and in the CAP.<sup>120</sup> AWS has also undertaken

some work previously on how water rights trading might work. The assumptions we have made are based on those sources and are described in the Box below.

### Water trading

A number of countries around the world, most notably in Australia and some states in the USA, have established regional water markets. These vary from small unconnected water trading schemes to extensive connected systems such as the Murray-Darling Basin, the largest water trading area in Australia.

### What are water rights?

Water markets typically involve the trading of 'water products', both within and between separate water resources. The water products generally fall into two broad categories:<sup>121</sup>

- **Water access entitlements:** These are an ongoing entitlement to access a defined amount of water. This is often a share of water from a specified consumptive pool, meaning that the volume of water available to a water access entitlement may change if the amount of water available in a water management area changes due to climate change or other environmental factors.
- **Water allocations:** These are the specific volume of water allocated to water access entitlements in a given season. A water allocation is announced for water access entitlements on a seasonal basis, and can vary depending on annual seasonal availability.

The water products can also vary depending on attributes such as whether they are high or low reliability rights (i.e. get priority over other water users in times of low availability), and whether allocations can be carried over between seasons.

An important element of water trading schemes in Australia is the 'unbundling' of water rights from land.<sup>122</sup> Previously, property rights for water were tied to land, meaning that farmers had to buy or sell water and land together. The separation or unbundling of water rights from land allows land owners to buy and sell water entitlements independent of land, which increases flexibility for landowners and ensures water is used efficiently.

### What is required to establish water trading?

Experience from other countries shows that well-designed water markets can lead to a more efficient use of water and deliver tangible benefits in a system where water access is scarce. It is particularly effective when there are large numbers of connected water users with varying demands and degrees of flexibility to respond to water shortages.

<sup>120</sup> For example, see Piure (2014) "Markets, water shares and drought: Lessons from Australia" and Hanemann (2002) "The Central Arizona Project", University of California, Berkeley.

<sup>121</sup> See Murray Darling Basin Commission website.

<sup>122</sup> See National Water Commission (2011) "Water Markets in Australia: A Short History."

Key elements of a functioning water trading market include:

- Developing a statutory basis for tradable water permits;
- Establishing water entitlements that are clearly defined, monitored and enforced; and
- Developing workable and efficient trading rules, and robust trading platforms and accounting systems.<sup>123</sup>

### What are the advantages?

Water markets provide flexibility to water users to manage water availability risk and production decisions, as well as respond to factors such as drought and changes in input prices and output prices.

More broadly, they can help manage risks for public water supply, by providing extra capacity that can be purchased to meet demand; allow better management of the environment by providing a cost-effective means of acquiring water for the environment; and support regional communities by allowing farmers and other users to better respond to changing economic, policy and environmental factors.

**7.49** The willingness of water users to sign up to long-term contracts is likely to be a function of (amongst other factors) their certainty about their water demand over the long-term: a water user who is less confident about its water needs is likely to either:

- not want to enter into a long-term contract at all, instead preferring to try and identify alternative sources of water in future (or look to purchase water from the project under some other arrangement); or
- to enter into a contract for a lower amount of water which it is confident that it will require, or a higher amount if it is risk averse and wishes to avoid the possibility of not having enough water.

**7.50** At the same time, investors may consider it a riskier proposition to invest in a MSWSA which has a fixed set of users, some of whom could exit the market altogether e.g. if a power station was to reach the end of its useful life. While there is always a possibility that another user could be found to replace the incumbent, there is a risk that the pricing or other terms and conditions could be different.

**7.51** So while certainty around demand is important to investors, so is flexibility. Trading of water between the different water users could help to mitigate some of these risks.

**7.52** Trading between water rights holders could be undertaken bilaterally. However, to the extent that some sort of market arrangements (e.g. a trading platform) are needed to facilitate trading, then the MSWSA might look to establish a Trading Platform Operator to administer the trades between users. Such an entity, if independent, could potentially enhance stakeholders' perceptions of the strength of their rights and their protection from being subordinated to PWS needs during times of water shortage.

### Protecting PWS customers against asset stranding

**7.53** The regulated portion of the MSWSA may be exposed to market forces (i.e. competition) in some way, noting that the Water Act 2014 – when implemented – will enable competition in upstream activities including the providing of water resources. While the form of competition and associated market arrangements is not yet clear, it might not be limited to competition for the market, at least to the extent that any new assets constructed (such as a MSWSA) might not benefit from a guaranteed (customer underwritten) revenue stream and could be undercut by subsequent events e.g. changes in demand or new cheaper sources of water. Whether exposing a MSWSA to such risks could be expected to deliver more value for money is not obvious, but there is a risk that PWS customers end up funding the regulated portion of the MSWSA when it is either (a) no longer required or (b) no longer the next cheapest source of water.

**7.54** Ofwat could transfer all of this risk to customers by agreeing to honour any long-term contract (whether the contract is real or only implicit) between the MSWSA and the statutory water company. This would effectively treat the contract costs as a pass through. This might require demonstrating that the contract price is at arm's length at the time the contract is entered into, an issue we discuss in more detail in paragraph 6.51.

**7.55** But Ofwat might also choose to eliminate this risk (and allocate all of the risk to investors) if it was felt that any impact on the cost of capital of the MSWSA relating to a heightened risk of asset stranding would be outweighed by the potential to avoid water users having to pay more (either because (a) the MSWSA was no longer the cheapest resource available and could be displaced by a cheaper alternative; or (b) water users pay for both the MSWSA and the alternative). This is an issue that requires further consideration, both in terms of the implications for cost of capital (which is a significant driver of the cost of the MSWSA) and the potential for subsequent innovation to enable cheaper water sources to come to market.

<sup>123</sup> See National Water Commission (2011) "Water Markets in Australia: A Short History."

- 7.56** The standard debate about the allocation of asset stranding risk above is complicated in the case of a MSWSA because it may make economic sense for the entire MSWSA project to shut-down if it receives no (or reduced) revenue from PWS customers (unless there is sufficiently high willingness to pay for its services from non-PWS water users). This means that Ofwat's decisions in relation to the regulated part of the MSWSA might have implications for non-PWS water users.
- 7.57** On the assumption of significant fixed operating and maintenance costs, the ongoing cost base of the MSWSA might not reduce very much even if PWS customers no longer demanded its services, making the continued operation to provide services to only non-PWS water users uneconomic unless prices levied on non-PWS water users can be increased (and those customers are willing to pay those prices).<sup>124</sup> While Ofwat may not be under any strict legal duty to consider the costs and benefits to these wider stakeholders (though perhaps these could be captured in some wider interpretation of the duty to protect customers' interests or to consider the environment), its decisions with respect to the regulated portion of the project could have wider implications.
- 7.58** There may be different ways to approach this problem, but the degree to which the regulated portion of the MSWSA is exposed to asset stranding risk may be important: investors may be willing to accept some commercial risk associated with potential fluctuations in demand for the MSWSA's regulated assets (provided these risks are reflected in the allowed rate of return), but protection against significant downside risk (which could see investors having to fund a loss-making venture) might be required. These issues would need to be explored in more detail as part of further work, but we note that the cap and floor regime Ofgem has developed for electricity interconnectors could provide a template for putting in place downside protections for investors, while simultaneously exposing them to some market risk.

<sup>124</sup> The discussion here might imply some cross-subsidy between PWS customers and non-PWS customers, a situation which Ofwat might seek to avoid. However, as we illustrate in paragraph 6.58, the sharing of common costs between PWS and non-PWS customers might be essential to enabling all stakeholders to participate in the project.

## SUMMARY AND CONCLUSIONS

- 8.1** We have identified three general approaches to financing MSWSA infrastructure projects: corporate finance; project finance; and through joint ventures. The general characteristics of each of these approaches can be summarised as follows.
- the **corporate finance** approach involves an existing company funding a project using internally generated company funds and/or through the raising of new debt and equity. In this instance, the project will be wholly owned by the company and be included within the company's balance sheet;
  - the **project finance** approach typically involves the creation of a separate project company financed with non-recourse debt (i.e. a type of loan that is not secured by guarantees from sponsoring shareholders). These companies may contain just a single asset; and
  - the **joint venture (JV)** approach typically allows funding from two or more parties through the establishment of a separate legal entity. Each party may provide equity in the form of cash to finance the project or contribute assets such as land. Debt funding may or may not be provided on a non-recourse basis, depending on the characteristics of the project. In the report, for simplicity,
- 8.2** To identify the various options for financing MSWSAs, we have reviewed the previous work performed on MSWSAs. Specifically, we have considered the work performed by the Cambridge Institute for Sustainability Leadership, with AWS in 2014, approaches to financing water infrastructure projects in other countries and we have reviewed common financing structures in other sectors. Based on our work, we have considered the following seven financing options, which were described more fully in Section 3:
- **Option 1 – Single Water Company:** a single statutory water company finances, builds and operates the MSWSA as part of its normal activities, using a corporate finance approach. Under this approach, the company would fund the project through its existing sources of debt and equity as well as through self-generated funds. Under this approach, the MSWSA would be retained on the balance sheet of the water company;
  - **Options 2 – Multi-Sector Joint Ventures:** a group of farmers, supermarkets, power companies and/or other water users invest alongside the statutory water company through a Joint Venture arrangement to finance, build and operate the MSWSA;
  - **Option 3 – Special Purpose Vehicle (SPV):** an independent SPV is established to finance, build and operate the MSWSA project using the Project Finance approach. Ownership of the SPV could be opened up to a range of different investors, including financial investors, such as infrastructure or pension funds;
  - **Option 4 – Regulated/Unregulated Split:** the MSWSA could be split into two separate projects, one financed by a statutory water company for PWS purposes, and the other financed by other parties for both non-PWS purposes and PWS purposes. This split could allow part of the project to be financed by the statutory water company as part of its regulated activities. The other part of the project could be financed separately from the regulated business. Under this option, we assume the project is financed using a mixture of corporate finance and JV finance;
  - **Option 5 – Pre/Post Construction Split:** the project could also be split temporally. For example, a statutory water company could undertake the preparatory work, before other parties undertake the construction. This approach is similar to the arrangements for the Thames Tideway Tunnel, where Thames Water has undertaken the early stages of the project but a separate entity will undertake the remainder of the project. We assume under this option that the project is financed using a mixture of corporate finance and project finance;
  - **Option 6 – Statutory Water Company JV:** two or more statutory water companies could form a JV to finance the MSWSA. Under this option, the water companies would be the sole investors and users of water from the project; and
  - **Option 7 – Water Company Shareholder JV:** the parent companies of two or more statutory water companies could form a JV to finance the MSWSA separately from the regulated statutory water companies.
- 8.3** Each of the different financing options has different strengths and weaknesses. The choice between the options will depend on the yet-to-be-identified regulatory and contractual arrangements that would apply to the MSWSA. It is not possible, therefore, to conclude definitively on a preferred financing option at this stage.
- 8.4** Our assessment suggests that the options involving corporate financing by statutory water companies - Single Water Company and Statutory Water Company JV - are likely to provide the lowest cost of funding and therefore potentially lower costs to water users. However, other options which bring in a wider group of stakeholders could give rise to additional benefits compared to these water company only options. These benefits include a greater ability to allocate risks and coordinate water resource planning between the different stakeholders and better alignment of incentives and interests. This may be important given that our initial discussions with stakeholders suggested that there may be some barriers to their participation in a MSWSA as either an investor or a user of water from the project, though some stakeholders were more interested in MSWSAs than others.

**8.5** The magnitude of any additional benefits that the Project Finance or Multi-Sector JV could create will need to be carefully assessed and weighed against the higher costs associated with these options. The benefits of the SPV and Multi-Sector JV options are more likely to outweigh their higher costs compared to corporate finance where a project is larger. This is because the additional transaction costs of SPVs and Multi-Sector JVs would be proportionally smaller, and the co-ordination and risk mitigation effects greater.

**8.6** The proportion of the water from a MSWSA that would be supplied to statutory water companies is likely to influence the optimal financing structure: the higher the proportion, the lower the risk of the project is likely to be (as the cashflows of the project are likely to be less volatile) and the more likely it is that the lower costs of corporate financing will outweigh any potential benefits from the Project Finance or Multi-Sector Joint Venture

options. Also, the smaller a MSWSA project is, relative to the statutory water companies considering investing in it, the more likely it is that a corporate finance approach will be feasible.

**8.7** All of the options require some amendment to legislation in order to be feasible e.g. changes to the WSL or SIP regimes and/or to statutory water companies' pipe laying and compulsory land acquisition powers. DEFRA, Ofwat and stakeholders will need to work to resolve these barriers if more MSWSAs are to come forward. Perhaps the most immediate priority may be to consider what changes to statutory water companies' pipe laying and land acquisition powers would be needed in order to enable Option 6 (a JV between two statutory water companies) to be taken forward.

**8.8** Table 8-1 summarises our assessment of the different financing options against the selection criteria.

**TABLE 8-1: ASSESSMENT OF THE DIFFERENT FINANCING OPTIONS**

CATEGORY	CRITERIA	OPTION						
		1	2	3	4	5	6	7
Project implementation	Ability to allocate risks efficiently	✓	✓✓	✓✓✓	✓	✓✓	✓✓	✓✓
	Ability to achieve co-ordination benefits	✓	✓✓✓	✓✓✓	✓✓	✓✓	✓	✓
	Ability to attract the required amount of capital	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Water users objectives	Total cost	✓✓✓	✓	✓	✓✓	✓	✓✓✓	✓
	Impact on bill profile	✓✓	✓	✓	✓✓	✓	✓✓	✓
	Quality of service	✓	✓✓	✓✓	✓	✓✓	✓	✓
Investor objectives	Attractiveness to equity investors	✓✓	✓	✓	✓	✓	✓	✓
	Attractiveness to new debt investors	✓✓✓	✓	✓	✓✓	✓	✓✓	✓
	Acceptability to existing debt investors	✓	✓✓	✓✓✓	✓	✓✓	✓	✓
Environmental	Water trading	✓	✓✓✓	✓✓	✓✓	✓	✓✓	✓
	Water efficiency	✓	✓✓✓	✓✓	✓✓	✓	✓✓	✓
Feasibility	Compatibility with legal and regulatory framework	✓✓	✓	✓	✓	✓	✓✓	✓

**8.9** If financing options other than Options 1 (Single Water Company) and 6 (Statutory Water Company JV) are considered worthy of further exploration – because the additional benefits are expected to outweigh the

additional costs – then a number of specific changes to the available regulatory frameworks may need to be explored. Our recommendations are summarised in Table 8-2 below.

**TABLE 8-2: SUMMARY OF RECOMMENDATIONS IN RELATION TO REGULATORY ISSUES**

ISSUE	RECOMMENDATION
Develop appropriate legal framework for delivery of MSWSAs	Remove the size / complexity restrictions from the SIP qualification criteria for MSWSAs (if it is anticipated that MSWSAs would not, or might not, meet these)
	Adapt SIP regime so that an IP can deliver a MSWSA
	Adapt WSL regime so that a licensee can deliver a MSWSA
Pipe laying and compulsory land acquisition powers	Make sure appropriate pipe laying and compulsory acquisition powers are available for MSWSAs

**8.10** Regardless of the delivery route chosen for MSWSAs and the way that any regulated revenue stream is determined, securing value for money for customers will require consideration of a range of other issues

e.g. in relation to incentivising cost efficiency, quality of service, enabling water rights trading and avoiding an inefficiently sized asset. Table 8-3 summarises the recommendations we have made in these areas.

**TABLE 8-3: SUMMARY OF RECOMMENDATIONS TO SECURE VALUE FOR MONEY**

TYPE OF ISSUE	ISSUE	RECOMMENDATION
Construction	Incentivise efficient costs	Appropriately share unanticipated cost savings between contractors, investors and customers using contracts and/or regulatory arrangements
	Incentivise on time delivery	Put in place through contractual or regulatory arrangements appropriate penalties for delayed delivery of the project
Revenue / demand	Facilitate long-term contracts	Ensure RAGs are compatible with long-term contracts that a MSWSA might enter into with an associated statutory water company
	Facilitate long-term contracts	Clarify rules around BSAs and whether they would apply in this context to contracts between JVs/SPVs and statutory water companies and, if so, how they would work
Operational	Facilitate water rights trading	Amend abstraction licensing regime to make it clearer what rules apply in what situations; minimise restrictions on trading within MSWSAs
	Minimise outages	Develop availability incentive for inclusion in regulatory regime where applicable
	Incentivise efficient costs	Appropriately share unanticipated cost savings between contractors, investors and customers using contracts and/or regulatory arrangements
Financing	Incentivise efficient financing costs	Appropriately share unanticipated cost savings between investors and customers using contracts and/or regulatory arrangements
	Debt covenants restrict investment in MSWSAs by some statutory water companies	Explore with debt investors whether it would be possible to deliver unregulated activities within the ring-fence, or at least some related activities e.g. pre-construction work relating to a MSWSA

**8.11** Notwithstanding all of the analysis presented and recommendations made, a range of further work will be required to explore financing options for MSWSAs in more detail, before it is possible to conclude on any one particular option definitively (and it may be the case that different financing options are appropriate for different types of MSWSAs or in different scenarios). These next steps include:

- a more thorough estimation of the financing costs of a MSWSA under the different financing options, both based on theoretical models (such as Capital Asset Pricing Model) and on market-testing with potential financiers;
- a more comprehensive analysis of risk: what the risks are, how material they are, how they can be mitigated and who is best placed to manage them;
- development of a more detailed 'straw man' of particular sets of regulatory arrangements which could be applied to MSWSAs;
- a more detailed assessment of the potential additional benefits which JVs and/or project finance could generate;
- deeper testing of different stakeholders' willingness to participate, particularly their willingness to either invest up front or to enter into long-term contracts taking into account differences in the expected marginal costs of the different water sources available to these parties;
- an assessment of the different types of charging arrangements which the MSWSA might use, including their strengths and weaknesses. Stakeholders will need to be engaged on this issue;
- the design of water rights, and water trading arrangements specific to MSWSAs will need to be considered in more detail;
- a legal opinion on whether each of the different financing options are fit for purpose and any changes which may be required; and
- a more detailed assessment of the tax position of the MSWSA and whether there would be any material differences between financing options.

**8.12** These actions could help statutory water companies, other water users, regulators and Government to build an evidence base upon which to make a more concrete selection between the different financing options.

**8.13** The sector is in the midst of implementing the Water Act 2014 and Ofwat is currently undertaking a root and branch review of its regulatory framework ahead of the next periodic review (PR19). The industry therefore now has an opportunity to consider the appropriate financing options for MSWSAs over the coming months and how best to ensure the legislative framework and regulatory regime supports appropriate financing structures.

# APPENDIX 1 FURTHER DETAILS ON THE FINANCIAL MODELLING

**A1.1** The financial model compares the impact of different ownership structures and financing arrangements on a range of financial metrics for a notional multi-sector water supply asset (MSWSA).

## Key inputs to the model

**A1.2** The key inputs and assumptions to the model are:

- Ownership structure: the percentage of equity contributed by each stakeholder and whether the project raises its own debt (project finance) or is funded on balance sheet by the stakeholders (corporate finance);
- Water consumption: the percentage of water which each stakeholder is expected to use. This determines the assumed allocations of water rights and the sources of revenue for the project;
- Project costs: the capex and opex associated with the project;
- Operational parameters: the duration of capex and the length of operations;
- Project revenues: the amount of revenues earned by the project;
- Financing arrangements: the types of debt finance available (EIB, bonds, amortising loans etc) and the cost of capital of the project; and
- Tax: the model does not take tax into account because the advice we received from AWS's internal tax team is that the impact will be immaterial. We discuss this in more detail below.

**A1.3** Some of these topics have been discussed in the main body of the report. We discuss the assumptions and inputs underpinning each of the other aspects of the model below.

## Project revenues

**A1.4** Under each of the scenarios, the project costs are funded through revenues raised from customers for supplying water in proportion to the water rights allocated to each customer type. However, the timing of the revenues collected from customers are assumed to differ depending on the customer and the financing option under consideration.

**A1.5** There are two ways in which the revenue profiles are calculated within the model:

- revenues can be calculated using a stylised version of the Ofwat 'building blocks' approach. Under this approach, project costs, or totex, are split between expenditure that is remunerated in the year and that which is added to the RCV based on a fixed Pay-as-you-go (PAYG) ratio of 55%.<sup>125</sup> The proportion added to the RCV is remunerated over the operational life of the asset through a depreciation allowance, and a return on the amount added to the RCV. Annual revenue is then calculated as the sum of the annual PAYG expenditure, an allowance for depreciation of the RCV, and a return on the amount added to the RCV. We assume that revenue is earned during construction, consistent with the RCV being greater than zero over this period.<sup>126</sup> This approach is applied when the statutory water company and/or other water companies would sell the relevant proportion of the water produced by the project to their PWS customers as part of their licensed activity.
- revenues can also be calculated based on an annuity approach. Under this approach, project costs are recovered through a constant revenue stream that spreads the project's costs evenly across the life of the project, commencing once the project is operational. This approach to calculating revenues is used in all other scenarios, including when one statutory water company sells water to another under a BSA. The annuity method is similar to the way that allowed revenues are calculated for OFTOs. There are also similarities to the Contracts-for-Difference in the electricity sector, where contractually binding prices are set for several years based on the results of an auction.

**A1.6** Table A-1 on the next page shows when each of the two revenue profiles is applied.

<sup>125</sup> The PAYG ratio is the proportion of expenditure which is remunerated in year. (1 – PAYG) is the percentage added to RCV.

<sup>126</sup> This approach has been taken for the Thames Tideway Tunnel as well.

**TABLE A-1: REVENUE PROFILE ASSUMPTIONS**

	OPTIONS						
	1	2	3	4	5	6	7
Statutory water company	Building block	Annuity	Annuity	Building block for water company funded portion	Building block for water company funded portion	Building block	Annuity
Other water companies	Annuity	Annuity	Annuity	Annuity	Annuity	Building block	Annuity
Other water users	Annuity	Annuity	Annuity	Annuity	Annuity	NA	NA

Source: FTI assumptions. "Other water users" include supermarkets, power companies and farmers.

**A1.7** Whether a building blocks or annuity profile is assumed to apply to revenues from each stakeholder depends on whether that stakeholder is an investor in the project, and whether that stakeholder is the ultimate consumer of water or just a conduit who sells the water to other customers e.g. the statutory water company is merely a conduit in some scenarios, selling the water on to PWS customers as part of their licensed activities. Broadly speaking, we make the following assumptions:

- where the statutory water company invests directly in the project under a corporate finance structure, it is assumed that the revenues the project earns from supplying PWS customers is part of the statutory water company's licensed activity under the WIA 1991 and the Ofwat 'building blocks' methodology applies. It is assumed that the water company enters into long-run contracts with other water users, and revenue payments are broadly constant over the life of the project.
- for other scenarios, where the project is developed under a JV or SPV financing structure, we assume that customers – including water companies, power companies and farmers – would make broadly constant annual payments to the project.

**A1.8** It is important to note here that the statutory water company (and other water companies) are only modelled as investors in a MSWSA where that entity itself is an investor. If the investment is made through an associate entity, such as another 'Group' company owned by the same shareholders, then the statutory water company would not be treated as an investor in the project, just a customer.

**Tax**

**A1.9** The model does not include tax on the basis that:

- we have assumed that tax can be treated as a pure pass-through i.e. the model assumes that the allowance for tax costs included within revenues exactly equals actual tax costs, such that tax has no impact on the financial performance of the projects. We consider that this is a reasonable assumption for the purposes of the stylised financial modelling we have undertaken for this report, but would need to be explored in more detail as part of exploring financing arrangements in more detail.
- AWS's in-house tax team advised us that the tax arrangements applicable to the project would be largely independent of the ownership of the project e.g. capital allowances attach to the physical assets of the project.
- AWS's in-house tax team advised us that there was no strong reason to assume there would be much of a difference between the effective tax rates of different investors (if the remainder of their activities are left to one side) for the purpose of our work.
- AWS's in-house tax team also advised us it should not make a lot of difference whether the MSWSA project was delivered by AWS or another Group company as group tax relief would enable any tax losses/gains in one part of the Group to be offset against performance elsewhere.

**A1.10** Noting these points, tax costs do not appear likely to cause a material difference in required revenues between any of the different financing options. So from a customer perspective tax arrangements should not matter very much (and not enough to warrant modelling them for the purposes of this project given the complexity involved). As a consequence we have excluded tax from the model.



## Contact us

### **Anthony Legg**

Director, Economic and Financial Consulting  
D +44 20 3727 1312  
M +44 7753 300 520  
anthony.legg@fticonsulting.com

### **Jennie Cassidy**

Senior Consultant, Economic and Financial Consulting  
D +44 20 3727 1656  
M +44 7541 929 357  
jennie.cassidy@fticonsulting.com



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