Dŵr Cymru
Welsh Water

WSH34-IP01 –

Assessing our Plan for Direct Procurement for Customers (DPC) Opportunities

Contents

Executive Summary

The Regulator introduced the DPC delivery model for PR19. For PR24, the Regulator has simplified and clarified the DPC delivery model and its usage. The new assessment to be applied by water companies, when compiling their business plans for PR24, comprises three tests:

- Programme Scalability Test,
- Construction Risk Test and
- Operation and Maintenance Risk Test.

In accordance with the above, we have undertaken an initial assessment of our investment programme to determine which scheme(s) may be suitable for delivery via the DPC model. This has included a thorough investigation of the AMP8 programme using the following selection process.

Potential schemes, and/or bundles of schemes, were selected from our potential PR24 programme using the following criteria. The criteria were set intentionally lower than the Ofwat DPC thresholds to make sure we had thoroughly assessed all potential candidates.

- Discrete schemes with likely upfront investment of Capex of £50M or greater, and/or discrete schemes with a likely Totex of £100M or greater,
- Discrete schemes that could be sensibly packaged together (same work type, reasonable geographic locations with similar timings requirements) that generated a likely upfront investment of Capex of £50M or greater, and/or a likely Totex of £100M or greater,
- Programmes of work with likely upfront investment of Capex of £50M or greater, and/or discrete schemes with a likely Totex of £100M or greater.

Our selection process identified the following five (5) schemes:

- Scheme 1 – WSH64-PE02 - Protecting Multiple Adjoining SSSIs near the SECS Main
- Scheme 2 – WSH59-RS03 - Increasing Safety of Impounding Reservoirs
- Scheme 3 – WSH62-RS01 - Increasing Resilience of Tap Water Supply - Asbestos Cement Mains
- Scheme 4 – WSH54-CW02 - Improving Acceptability of Tap Water – Networks
- Scheme 5 – WSH70-PE01 - Minimising Environmental Harm from Storm Overflows

Each of the five (5) schemes have been subjected to a rigorous and systematic analysis via the use of a specialist DPC Selector Tool ©. The DPC Selector Tool © interrogated each of the three (3) core ‘Tests’ using eleven (11) defining ‘Principles’ and fifteen (15) sets of ‘Sub-Criteria’.

Following our analysis, the DPC Selector Tool © provided us with a summarised result of the respective scores using a confidence factorisation. This summary either supported a scheme for delivery via the DPC model as being ‘more favourable’ or did not support a scheme for delivery via the DPC model by stating it to be ‘less favourable’.

The results are as follows:

- Scheme 1 – Less favourable to delivery via the DPC model
- Scheme 2 – Less favourable to delivery via the DPC model
- Scheme 3 – Less favourable to delivery via the DPC model
- Scheme 4 – Less favourable to delivery via the DPC model
- Scheme 5 – Less favourable to delivery via the DPC model

Based on the above findings, we do not therefore propose to deliver any of our currently envisaged AMP8 schemes via the Regulator’s DPC delivery model.

1. Introduction

1.1 Background

Welsh Water has undertaken an initial assessment of its investment programme to determine which project(s) (scheme(s)) are suitable for Direct Procurement for Customers (DPC) as defined by Ofwat's PR24 Final Methodology.

The purpose of this report is to set out the process by which Welsh Water have applied Ofwat's DPC guidance to their business planning process at PR24 to identify the schemes that are most suitable to the DPC delivery model.

1.2 The Regulator

Ofwat (the Regulator) first introduced the DPC procurement model for Price Review 19 (PR19). This was to be a new way to develop and deliver schemes within the water industry by promoting innovation and resilience through long-term, third-party involvement and ultimately drive the greatest value for customers.

For PR24, the Regulator has simplified and clarified the DPC delivery model and its usage. There are 3 main changes:

- Scheme value – now raised to £200M Totex, recognising that similar activities/schemes can be bundled together to reach the £200M Totex threshold.
- DPC by default – schemes meeting the test will have DPC as the default delivery model.
- Technical Discreteness assessment – revised tests, principles and supporting criteria when assessing schemes for DPC candidacy.

1.3 The DPC Tests

In February 2023, the Regulator undertook a consultation process in relation to its revised 'Technical Discreteness' assessment. By March 2023, the Regulator had published its '*Guidance for appointees delivering direct procurement for customers projects*', setting out its expectations for the commercial model applicable to DPC projects and the approval and assurance processes to support DPC projects as part of Price Review 24 (PR24).

In April 2023, the Regulator then published its '*Direct Procurement for Customers - Technical discreteness guidance*'. This included the new 'Technical Discreteness' assessment to be applied by water companies when compiling their business plans for PR24. It comprised the following three tests:

1. Programme Scalability Test,
2. Construction Risk Test and
3. Operation and Maintenance Risk Test.

Each test requires the water company to carefully consider certain principles and underpinning criteria to inform either a 'yes' or 'no' response. If the test response elicits a 'no' then the project will be considered 'more' suitable for DPC.

The Regulator further confirmed that, a 'Value for Money' assessment of the DPC procurement model, compared to the in-house counterfactual, would not be required at this initial stage of the process.

2. Our Approach

2.1 How Have we Approached Our Assessment

We have adopted the new tests highlighted above and undertaken an analysis of the relevant question being posed by the Regulator when assessing each test. This includes reviewing the test question and determining the fundamental test description to be satisfied. An overview is provided below.

2.1.1 The Programme Scalability Test

Regulator Test
For individual projects or assets, is the sum of the whole life Totex for the single project or combined projects/assets proposed by a water company over one or more successive control periods less than £200M? Response: ▪ Yes – combined projects and/or assets in proposed programme do not meet the whole life Totex threshold for consideration for DPC ▪ No – either single project or combined projects and/or assets in proposed programme meet the whole life Totex threshold for consideration for DPC
Brief Test Description
The Programme Scalability Test is primarily a test of size. Water companies will need to consider various factors including the amalgamation (bundling) of suitable work. A financial test is also applicable with a threshold set at £200M (Totex) whether for a single project or multiple projects bundled together. Guidance from the Regulator suggests that the financial threshold alone should not determine whether this test has been passed or not.

2.1.2 The Construction Risk Test

Regulator Test
Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or managed or mitigated through contractual arrangements, or by adapting the project scope for delivery by DPC?
Brief Test Description
The Construction Risk Test is primarily a risk transfer test. Water companies will need to identify salient risks and assess whether there is a significant reason why a particular construction risk cannot be transferred, managed, or mitigated under a contractual arrangement. This will require an evidence-based approach which considers dissecting the scheme and (if necessary) re-testing the Programming Scalability Test.

2.1.3 Operations and Maintenance Risk Test

Regulator Test
Is there any significant reason why the maintenance, and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?
Brief Test Description
The Operation and Maintenance Test is also a risk-based test. Water companies need to have consideration as to the volume and regularity of operation and maintenance works for the scheme as well as the site and geographic location. Quality factors and regulatory requirements can affect the outcome of this test, but the Regulator has asked all water companies to assess alternative contracting models even if operation and/or maintenance are not suitable i.e., DBFT, DBFM etc.

Having assessed the fundamental test questions, we then undertook a detailed analysis of the Regulator's updated documentation including, but not limited to, the recently published '*Direct Procurement for Customers - Technical discreteness guidance*'.

Through our analysis we were able to determine that the Regulator had implied numerous principles and sub-criterion factors to each of the test questions. We therefore compiled a list of the principles and sub-criteria underpinning each of the three tests to help formulate a more comprehensive and accurate result beyond a simple 'yes or no' answer. Table 1, below, shows our approach to the respective tests.

Table 1: Test parameters

Ofwat Core Test	Principle	Sub-Criteria	Sub-Test Question
Programme Scalability Test	Financial Threshold	Totex	Is the forecast Totex of the scheme at least £150M?
		Capex	Is the forecast Capex of the scheme at least £50M?
	Similar Characteristics	Construction Requirements	Is the asset or system of assets, or similar small projects bundled together, sufficiently similar in nature for construction purposes?
		Risk Profile	Does the asset or system of assets, or similar small projects bundled together have a risk profile that is suitable for DPC?
		Repeatable Work(s)	Are the asset or system of assets, or similar small projects bundled together substantially the same/similar and capable of being repeated easily?
		Geographical Constraints	Are the asset or system of assets, or similar small projects bundled together over geographically proximate and/or can be delivered without any significant constraints?

Ofwat Core Test	Principle	Sub-Criteria	Sub-Test Question
	Control Periods	Programmable Work(s)	Can the asset or system of assets, or similar small projects bundled together be delivered sequentially over one or more AMPs?
	Asset Scale	Volume / Asset Value	Are the assets or system of assets, or similar small projects bundled together of substantial value and/or have a long economic lifecycle?
	Timescale	Contract Duration	Is the expected contract duration of at least 15 years, and under 30 years?
Construction Risk Test	Significant Risk	Interface(s)	Does the asset or system of assets, or similar small projects bundled together have significant interface risks?
	Risk Transfer	Managed / Mitigated / Transferred	Is it possible to manage, mitigate or transfer all of the risks that have been identified in relation to the asset or system of assets, or similar small projects bundled together?
	Cost Impact	Commercial Viability	To manage, mitigate or transfer the identified risks, what would the likely impact on the cost of the contractual arrangement with the CAP be?
O&M Risk Test	Scale Impact	Volume Demands	What level of confidence is there in the ability of the CAP to meet the volume demands associated with the asset or system of assets, or similar small projects bundled together?
	Quality Impact	Quality Standards / Regulatory Impact	What level of confidence is there in the ability of the CAP to meet the requisite quality and/or regulatory standards associated with the asset or system of assets, or similar small projects bundled together?
	Risk Transfer	Alternate model (DBFT / DBFM)	Can the asset or system of assets, or similar small projects bundled together be suitable for delivery without Operational and/or Maintenance requirements and still be viably procured via DPC?

2.2 How We have Analysed each Test

Each ‘Sub-Criterion’ has been provided with a corresponding ‘Sub-Test Question’ to be answered. This reflects the notion that the answers will not necessarily be a binary ‘yes’ or ‘no’. To capture the Regulator’s tests and our associated principles, sub-criteria, and sub-test questions, we used a ‘heatmap-style’ DPC Selector Tool© that enabled us to apply each test and sub-criteria test using a scale of 1-4 (where 4 is more likely a ‘yes’, and 1 is more likely a ‘no’).

At this stage, scheme information is not fully developed. To address this issue, the DPC Selector Tool© further enabled us to factor a confidence grading to each Sub-Test Question. The confidence grades are certain, high, medium, low, and unknown.

A visual depiction of the DPC Selector Tool© is shown below in Figure 1. From left to right, this sets out the Regulator's test, principles, sub-criteria, scoring mechanism (low and high boundaries in red and green respectively) and the confidence factorisation.

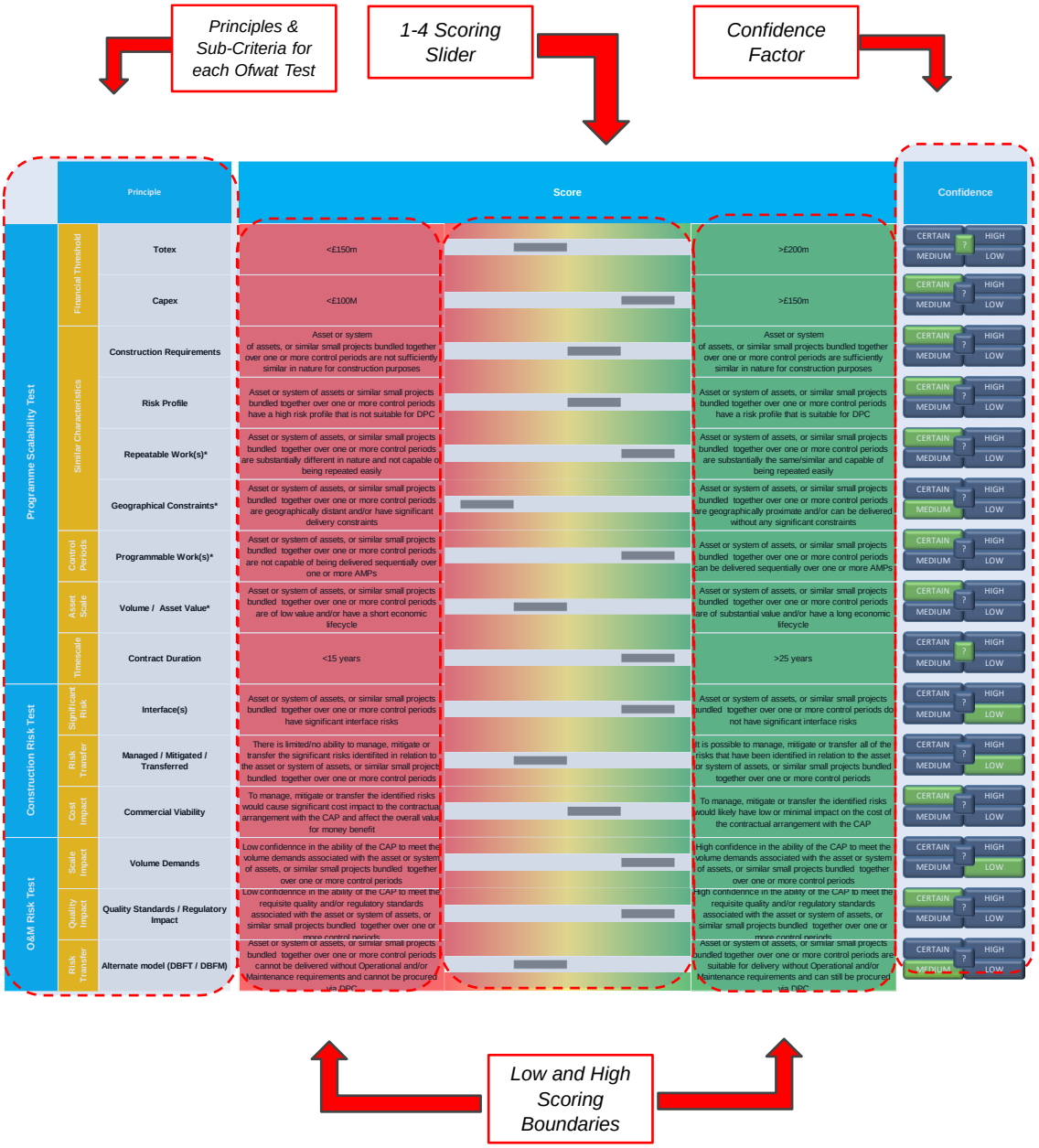


Figure 1: DPC Selector tool

2.2.1 How have We Assessed a Scheme?

Each scheme has been assessed using the DPC Selector Tool ©. This ensures that each scheme is subject to the same rigorous process of analysis regarding each of the Regulator's tests.

Once a scheme has been assessed, the DPC Selector Tool© then provides a summarised output of the scores (1-4) against each of the Sub-Criteria (15 in total). It also generates a summary of the respective confidence gradings. An example result for a scheme is shown below in Figure 2.

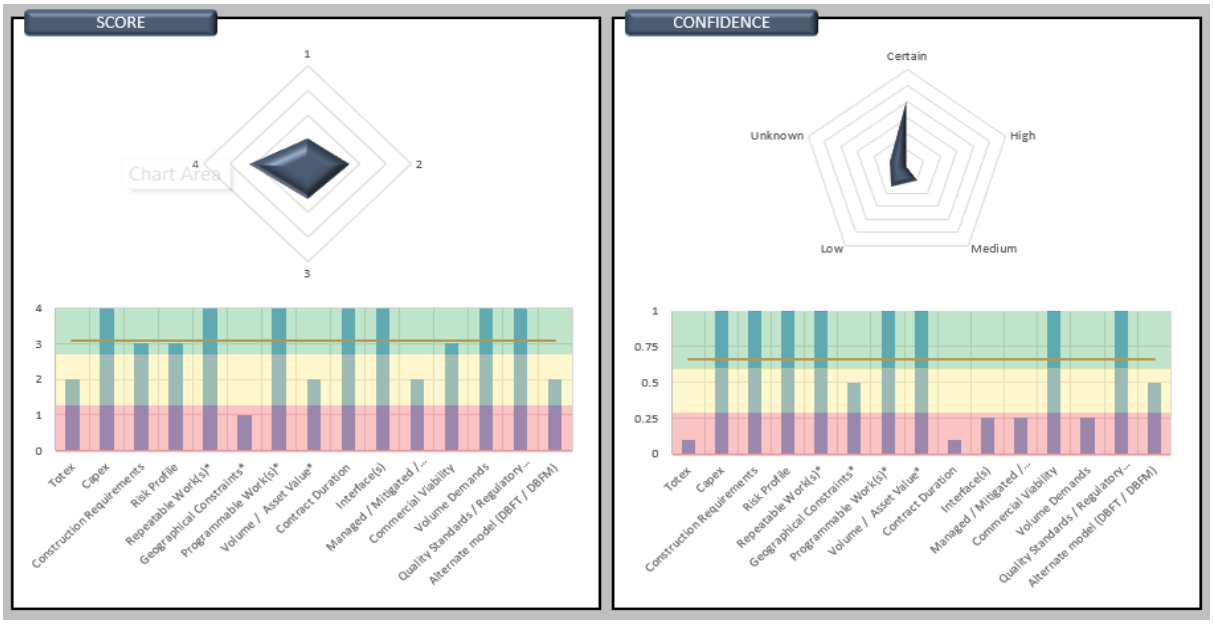


Figure 2

As shown in Figure 2 above, the summary graphics help identify the overall scores by creating a median banding (red line). This provides quick identification as to whether a scheme is more likely (scores 3/4) or less likely (scores 1/2) to be appropriate for delivery via the DPC model.

2.2.2 How have We Selected Schemes for DPC Review?

We have undertaken an initial assessment of our investment programme to determine which scheme(s) may be suitable for delivery via the DPC model. This has included a thorough investigation of the AMP8 programme using the following selection process. Potential schemes, and/or bundles of schemes were selected from our potential PR24 programme using the following criteria. The criteria were set intentionally lower than the Ofwat DPC thresholds to make sure we had thoroughly assessed potential.

- Discrete schemes with likely upfront investment of Capex of £50M or greater, and/or discrete schemes with a likely Totex of £100M or greater
- Discrete schemes that could be sensibly packaged together (same work type, reasonable geographic locations with similar timings requirements) that generated a likely upfront investment of Capex of £50M or greater, and/or a likely Totex of £100M or greater
- Programmes of work with likely upfront investment of Capex of £50M or greater , and/or discrete schemes with a likely Totex of £100M or greater

2.3 Our Schemes

This section provides a summary of each of the schemes identified as part of our review. All five (5) schemes have been assessed individually for DPC suitability, using our approach described above.

2.3.1 Scheme 1 – Protecting Multiple Adjoining SSSIs near the SECS Main (Scheme = Individual Project)

In 2008, post-construction, the land through which the SECS rising main passes was designated a Site of Special Scientific Interest (SSSI). This change has led us to reassess the consequences of sewer mains failure on the environment (through better understanding of impact).

Since its installation, the SECS main has deteriorated. This has led to fifteen (15) failures being recorded since 2010, which includes: 1 x category 2, 2 x category 3 and 4 x category 4 pollution events. We forecast that the rate of failure will increase through time as the pipeline continuous to deteriorate.

Figure 3: Route of SECS main

Natural Resources Wales (NRW) has made it clear in written responses to us that the reactive response to failures, however well managed, poses an unacceptable risk to the SSSI and the wider environment. As such this is a scheme which is in the NEP programme under driver W_SSSI_NDIMP1. Our preferred approach is to undertake a complete replacement of the SECS main Based on option 1B as assessed: £83M WLC; £66M Capex; £17M Opex.

2.3.2 Scheme 2 – Increasing Safety of Impounding Reservoirs (Scheme = Bundled Projects)

Our Impounding Reservoirs scheme encompassed 47 locations across the entire country. Inspections carried out by Independent Engineers (APRE; Section 10 of the Reservoirs Act 1975) are to be in 10-year intervals to ensure that the dam structure and spillways, instrument and valves are all operational. Minor maintenance of access and fencing, as well as regular dam safety inspections are also crucial to reduce the risk of dam failures. Activity will vary by site and will likely include feasibility, design, manufacturing, and construction. Activities must be complete to deadlines set by the APRE under Measures in the Interest of Safety (MITOS).

Dams pose many risks to public health and safety and are highly regulated and driven by statutory commitments. Often located upstream from populated and industrialised areas, regular monitoring of reservoir conditions is essential, and liable to financial penalties and public scrutiny if not adhered to. This scheme is ongoing and indefinite, and likely to become more challenging over time, given that 43% of UK dams are over 100 years old and will require regular and more extreme maintenance.

The Dam Safety Team carry out regular surveillance of reservoirs and dam structures up to several times per week and act as a ‘first line of defence’ to mitigate the threat of dam failures. Besides routine surveillance, the nature of work varies across the assets given that some works will be reactive rather than proactive. There is also high risk in the interfaces between our reservoirs and other infrastructure services. Based on preferred option and combining base and enhancement investment, c£150M Capex).

2.3.3 Scheme 3 – Increasing Resilience of Tap Water Supply - Asbestos Cement Mains (Scheme = Bundled Projects)

The unique combination of water and soil chemistry in Wales means that AC mains are degrading at a rate much faster than the UK average. We have worked with independent specialists to analyse the drivers behind the condition of our AC mains and the subsequent impact on performance.

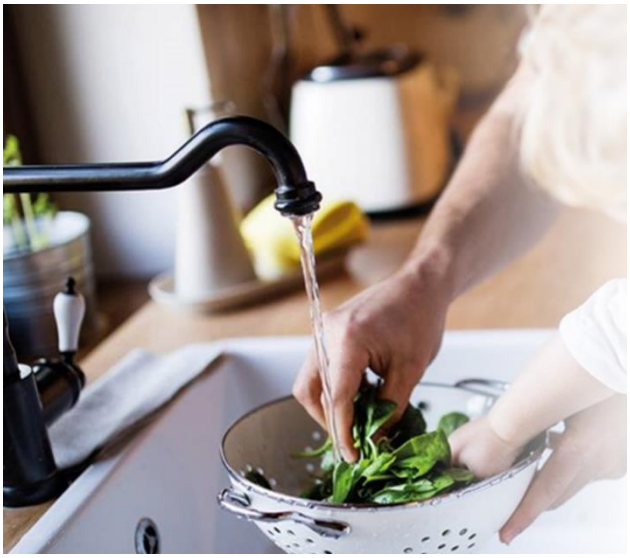
AC mains constitute 13% of our mains and in tackling this challenge, we can target our investment to maximise benefits for our customers and communities. As such, the required intervention sites are geographically spread, and therefore this 'scheme' will be a series of individual projects bundled together across our operating region.

The work will be replacement of a range of diameters of AC pipework in roads verges, footways, and open land. Road closures will be required, as will interaction with live mains to facilitate connections whilst minimising customer interruptions and delivery of service.

The technical solutions for replacement are likely to vary depending on site location and other factors, and will include open cut, pipe bursting, lining, directional drilling, and replacement with and without associated communication pipes.

Based on preferred investment, £76M Capex and £20M pa Opex.

2.3.4 Scheme 4 – Improving Acceptability of Tap Water - Networks (Scheme = Bundled Projects)



Acceptability of water is measured by the number of customer contacts relating to water quality. It is sub-categorised as being related to either discolouration or taste and odour. The focus of this scheme is discolouration, which is our largest contributor to customer contacts.

Discolouration of water at the customer tap is attributed to depositions within the pipeline that are disturbed and conveyed to the customer by agitation within the pipeline. The two key sources are depositions within the treated water from a water treatment works (WTW) most commonly manganese, and the degradation and deposition of solids from unlined ferrous water mains.

This scheme focuses on reducing customer contacts by addressing the degrading ferrous water mains within our network and managing deposits of decolouration material in our pipelines. As such, this scheme targets a 50% reduction in related customer contacts and intervention locations will be geographically spread across the Welsh Water operating region. The technical solutions will need to include innovative cleansing, innovative lifespan extension and mains replacements. The work will require significant planning to co-ordinate investigations with delivery. The reduction of manganese within the conveyed water is addressed in a unique enhancement case under a separate cover.

The preferred investment is shown as £118M enhancement Capex, supported by £34M base Capex.

2.3.5 Scheme 5 – Minimising Environmental Harm from Storm Overflows (Scheme = Bundled Projects)

We have a sewer network of over 36,000km and 60% of this conveys a combination of wastewater from homes and business as well as surface water from rainfall. At times of heavy rainfall, the system can become inundated at which point this combination of rainwater, wastewater and other detritus in the network can be forced back towards customers' homes. To prevent this from happening, Storm Overflows (SOs) act a permitted relief mechanism by discharging flows at designated points to nearby watercourses or the sea. A growing population in our urban conurbations, an increase in impermeable surfaces and more frequent, intense rainfall events because of climate change are increasing the pressure on the system.

This scheme focuses on CSO schemes that aim to minimise environmental harm during storm events and to meet the statutory obligations outlined by NRW as part of the Better River Water Quality Taskforce (BRWQT) action plan. The proposed investment will deliver compliance with regulatory requirements as set out in the NEP and WINEP and begin a step change in the quality of river water in Wales. This bundle of projects constituting the scheme, will be delivered through a mixed technical approach of physical engineering interventions, maintenance, and enhancement during AMP8 (for NEP and WINEP), monitoring overflows, investigation, and design for future (currently underdetermined) AMP intervention programmes. The locations of physical interventions are geographically dispersed across our operating region.

The enhancement case shows that forecast AMP8 Capex will be in the region of £325M for CSO interventions (£299M for NEP and £26M for WINEP). Further Capex for future investigation and monitoring is shown as £36M.

2.4 Our Assessment

This section details the assessments we have made for each scheme (or bundle of schemes).

2.4.1 Scheme 1 Protecting Multiple Adjoining SSSIs near the SECS Main – SECS Main Complete Replacement

2.4.1.1 Financial Threshold

The Capex for mains replacement is c£66M and there is an expected Opex cost of £17M. These values are low compared to the Regulator's thresholds and as such this is not well suited to DPC delivery.

The Capex for mains replacement is c£66M. This value is low compared to the Regulator's threshold and as such this is not well suited to DPC delivery.

2.4.1.2 Similar Characteristics

The activity required is of a nature suitable for delivery by any means of contracting. The new main would, subject to the requirements of NRW and land access/easement, be constructed offline and then connected back into the live system on completion.

Risk in delivery for this scheme are high. Firstly, the full requirements of NRW are not yet understood meaning scope could still change. Secondly, the existing rising main is in poor condition and a burst during construction activity could cause pollution incidents (these BAU operational issues would remain the risk of Welsh Water and could not be transferred to the CAP). Furthermore, land acquisition / new easement may be required to enable the main's construction (again, it would be commercially complex to transfer this risk) and finally, the location in a SSSI adds further complexity in management, reinstatement, and monitoring.

This work is not a repeatable activity. It is likely some Capex replacement will be needed from time to time throughout a longer contract duration for elements of the asset with a shorter asset life. It is unlikely, therefore, that this will be attractive to the market under DPC conditions.

The location is not expected to be an issue for any CAP to provide the required services as it is a single, albeit linear location. However, as noted above, the location is in a SSSI, and this will present certain constraints and risks to be managed through design and construction activity.

2.4.1.3 Control Periods

The activity to replace the SECS main is not required, beyond minor Capex replacements, over multiple control periods – it is a one-off replacement of the main. The programming of work is dependent on requirements of NRW, scope determination and land access/easements. All of these are still to be determined and could impact attractiveness, pricing, and contractual constraints. It is unlikely, therefore, that this will be attractive to the market under DPC conditions.

2.4.1.4 Asset Scale

This scheme does not provide a potential CAP under DPC delivery with volume – once the main is replaced, there will be limited future Capex replacement and no need for O&M work, as this will be retained by Welsh Water due to the sensitive nature of the operation. It is unlikely, therefore, that this will be attractive to the market under DPC conditions.

2.4.1.5 Timescale

A contract could be set up for a longer duration but as the bulk of the work (Capex driven mains replacement) will be required up front in the first 1-2 years with limited ongoing work, it is unlikely, therefore, that this will be attractive to the market under DPC conditions.

2.4.1.6 Significant Risk(s)

This scheme presents several risks, as outlined above. Significant risks during the construction phase are around working in a SSSI and construction-related pollution incidents. This should be controllable by a CAP

provider and could be appropriately priced and managed through a contract. The ongoing risk of the SECS main failing during in operation cannot be transferred to the CAP and will need to be retained by Welsh Water. Should such a failure occur during construction, interface management also becomes a risk. Post-construction operational risk will be retained by Welsh Water (see below). Significant risk remains around the precise requirements of NRW potentially affecting the scope clarity, and around land access/easement/purchase.

2.4.1.7 Risk Transfer

Construction risks, as noted above, are complex but manageable and could be contractually transferred and accordingly priced by a CAP under a DPC delivery model. However, land access/easement/purchase is a risk that Welsh Water will need to retain and will impact the sequencing and timing of work, as will the final scope. These cannot be transferred. Finally, the ongoing operation of the SECS main and its performance is a risk that Welsh Water will need to retain. The main is part of a system with Welsh Water operations both upstream and downstream and this would make interfaces between risk owners complexes. Thus, risk transfer for this scheme does not easily lend itself to a DPC model.

2.4.1.8 Cost Impact

The cost impact of the risks to be transfer could be manageable under a contract of a DPC model. However, it would likely be of a reasonably high cost to Welsh Water due to the risk nature described above and due to the complexity of managing multiple interfaces between Welsh Water operated and CAP operated elements of the system.

2.4.1.9 Scale Impact

The volume of work required for this option could be managed by a CAP under a DPC model. However, it is unlikely to be attractive to a CAP due to the relatively short-term nature of design/construction work replacing the SECS main and the limited post-construction O&M. Whilst the ongoing required Capex replacements are again likely to be a very manageable demand for a CAP, they are unlikely to be attractive because of their complexity and risk for intermittent and likely small-scale activity.

2.4.1.10 Quality Impact

It is likely that a CAP could manage the regulatory and quality requirements during design and construction. Although complex, operating in a SSSI and managing construction-based pollution risk can be done by an appropriate provider. Further complexity would be added if the CAP were to operate and maintain the SECS for an extended contract duration, further complicated by Welsh Water operating assets up and downstream. Overall accountability for quality and regulatory standards for any pollution incident caused during operation of the SECS main would be retained by Welsh Water and interface management between Welsh Water and the CAP would therefore be operationally and commercial complicated.

Alternative contract models are likely to be just as successful from delivery and risk management points of view in delivering the SECS main's replacement and ongoing Capex replacement. With the high level of risk in operations and the ownership/operational interfaces described above, it is likely that alterative models, such as D&B would be preferable to suppliers and Welsh Water, as well as NRW (in terms of their view of managing / interfacing with accountability for performance).

2.4.1.11 Overall Results

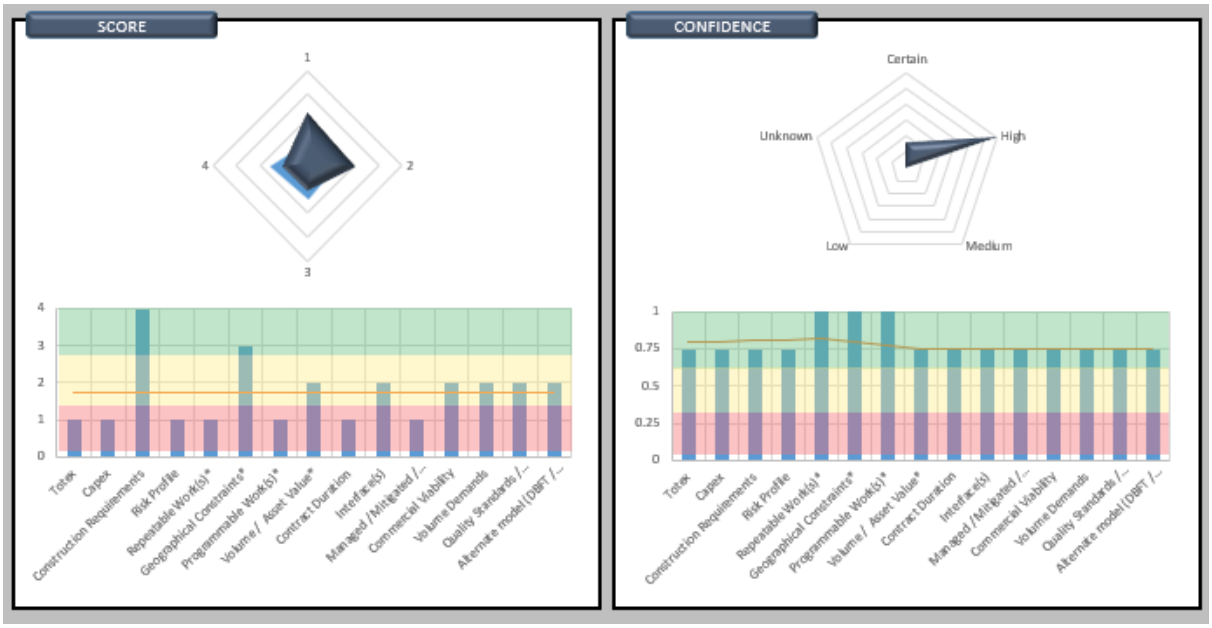


Figure 4: DPC model output for Scheme 1

In summary, the SECS main replacement is less suitable for delivery via the DPC model. Our assessment shows that Totex and Capex values are low compared to the DPC test thresholds and are likely to be unattractive to the market under DPC conditions. Furthermore, the risk profile, risk transfer abilities and lack of long-term O&M activity do not lend themselves to a DPC model.

2.4.2 Scheme 2 Increasing Safety of Impounding Reservoirs

2.4.2.1 Financial Threshold

Based on the below Capex estimate, we can assume with high confidence that the Totex value will exceed the £200M threshold set by the Regulator.

The scheme is likely to yield a high Capex value. Whilst this is an estimated value, it will breach the Capex threshold we have set for a large scheme. This high confidence factor has supported the above Totex estimate decision.

2.4.2.2 Similar Characteristics

The projects and works underpinning this scheme will not necessarily be similar in nature and therefore score lower on this criterion.

Independent Engineers will need to be employed to carry out inspections of each dam in maximum intervals of 10 years. This is a repetitive process, occurring at intervals and cannot be undertaken by the private sector via a DPC model. Whilst there will be some similarities with the works across sites, it is assumed that the requirements will be significantly fragmented, differing in nature and occurring at alternate times.

There are high risk environmental factors, including strict ecology conditions, across 47 assets some of which are in Special Areas of Conservation. Any non-compliance will be publicly reported, and certain works may be significant and carry a ‘danger to life’. This may be unattractive for potential investors in the private market.

There will be a standardised procedure of works. This will allow certain works to be repeated over a period of time. However, the actual nature of the works will not necessarily be similar as each of the 47 assets will have differing requirements following investigation. If each site has a unique scope this will make it more difficult to repeat the works easily.

There are accessibility issues with some our assets. Furthermore, there are 47 sites scattered across the entire country of Wales. Due to the national coverage and/or geographically remote nature of our assets, we have scored this criterion low and do not consider it to form a manageable portfolio of assets for a private sector contractor.

2.4.2.3 Control Periods

Inspecting Engineers are required to inspect each dam in 10-year intervals, identifying a variety of works to be undertaken for each asset. The works will therefore straddle many AMPs with differing works being required which are not known until the Independent Engineer has carried out his/her assessment. This does not lend itself to clear, upfront, programmable works for the private sector to price, manage and undertake.

2.4.2.4 Asset Scale

The quantity and size of our dams demonstrates that there is significant value and volume in relation to the assets forming part of this scheme. In line with the age of some of the dams, the economic lifecycle is likely to be long and have substantial value.

2.4.2.5 Timescale

The scheme and its investment requirements are ongoing/indefinite, demonstrating that this scheme will span multiple AMPs and be of a duration equal to or more than 25-years. However, the works are sporadic and undefined and may therefore make such a scheme unattractive in the private market unless the asset was formally transferred back to Welsh Water after a specific period of time.

2.4.2.6 Significant Risk(s)

Prior to Independent Engineer assessment, we have limited information at this stage. However, given the nature of reservoir works, there is likely to be significant interfaces between our assets and other stakeholders/industries assets. This will include matters such as SSSI designation, drainage works or anything impacting on the protected characteristics requiring a SSSI consent even for maintenance carried out by local teams.

2.4.2.7 Risk Transfer

The type of works expected to be carried out on the assets are likely to be managed, mitigated, or transferred to a relevant third party. However, the exact details are not known and cannot be programmed easily. This may provide difficulties for the private sector in pricing and/or accounting for certain risks during the lifecycle of a contract. Because the exact works are not known, this has scored lower on the scale and provided with an unknown confidence rating, subject to future independent inspections.

2.4.2.8 Cost Impact

The Independent Engineer inspections could identify ‘unforeseen’ risks such as ground risks or significant risk to life/environment. This would substantially alter the commercial profile of a contract should a private sector contractor be required to assume this liability and price for these types of risks. Unforeseeable risks and unexpected costs are not likely to be attractive to the private sector nor provide value for money to the customer.

2.4.2.9 Scale Impact

We have limited information regarding this criterion. However, based on other information we can be confident that 47 dams/reservoirs scattered across the entirety of Wales will provide a substantial volume of work over a large geographic area, some of which are extremely remote. This does not lend itself neatly to a private sector contractor being able to mobilise on time, every time.

2.4.2.10 Quality Impact

There are key regulations to ensure standards and compliance measure are met. This would need to be maintained by the private sector. Whilst this scheme would have significant regulatory impact on quality and safety, we would expect the private sector to be capable of operating in this landscape. It has therefore score on the higher end of the scale with a high confidence rating.

Based on the limited information we have; the on-going operation and maintenance requirements of the assets will be imperative. Furthermore, the construction aspects are unknown and subject to independent inspection. It does not therefore seem plausible to uncouple the construction, operation, and maintenance aspects. If significant construction works are required to a discrete number of dams, it is unlikely that these would satisfy the financial thresholds and/or be of a duration >15years to be delivered via DPC.

2.4.2.11 Overall Results

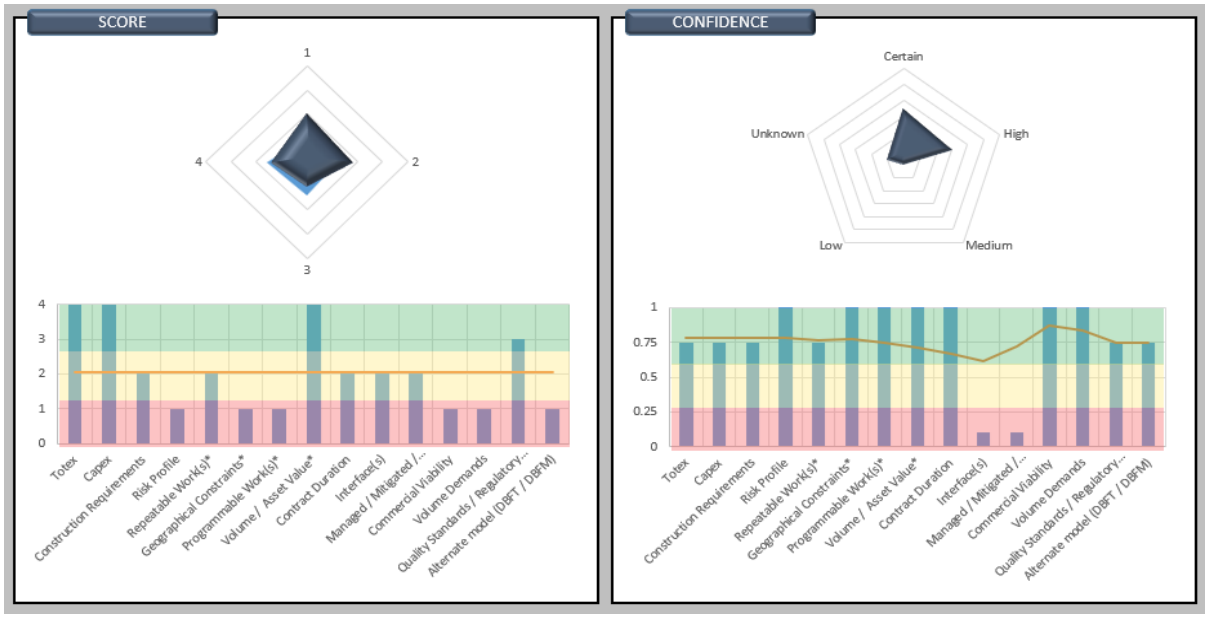


Figure 5: DPC model output for Scheme 2

In summary, our assessment show that the work(s) on impounding reservoirs is generally not well suited for delivery via the DPC model. Whilst Totex, Capex values and Asset Values are befitting the Regulator's thresholds and/or requirements, other test factors, such as: risk profile, geographical constraints, programmable work, commercial viability and volume demands scored poorly.

2.4.3 Scheme 3 Increasing Resilience of Tap Water Supply - Asbestos Cement Mains.

2.4.3.1 Financial Threshold

Based on the type of work set out in our options (predominately replacement) and the significant annual Opex spend, the value of this scheme is more suited to the DPC delivery threshold.

The capex value for this programme is less suited to the DPC delivery threshold that we have set.

2.4.3.2 Similar Characteristics

Construction requirements for this work are predominantly mains replacement through a variety of means – pipe bursting, open cut, drilling and with or without communication pipe replacement. As such, these are similar, repeatable, and programmable activities that would readily lend themselves to DPC delivery.

Construction requirements for this work are predominantly mains replacement through a variety of means – pipe bursting, open cut, drilling and with or without communication pipe replacement. These techniques are common practice and as such, should be achievable by a CAP during construction. Customer interaction, potential interruption and temporary alternative supplies are always a risk but are common practice. With suitable care and planning, these can be managed by a competent CAP. As such, these types of activities would readily lend themselves to delivery via the DPC model.

Construction requirements for this work are predominantly mains replacement through a variety of means – pipe bursting, open cut, drilling and with or without communication pipe replacement. As such, these are similar, repeatable, and programmable activities that would readily lend themselves to DPC delivery.

The mains to be replaced only accounts for circa 13% of the total mains within our operating area. This means that the mains will be spread across a large geographical area. It is expected that these mains will be predominantly in publicly accessible land (highways for example). This will require the DPC provider to have multiple sites working at any one time. The multiple site locations of activity can be programmed and managed effectively with care. Due to the nature of work, some reactive work may be required and further, ongoing modelling may mean the future programme needs to shift, however, this should be broadly manageable by a CAP.

2.4.3.3 Control Periods

Subject to future modelling and reactive work, as noted above, the work can be carried out systematically across multiple periods.

2.4.3.4 Asset Scale

Asset life is of a duration suitable for DPC. However, all work will be upfront Capex investment only with low/no maintenance and Opex requirements. The nature of this work is likely to be unattractive to a CAP and therefore be unsuitable for delivery via the DPC model.

2.4.3.5 Timescale

A contract duration appropriate to a CAP is possible. However, all work will be upfront Capex investment only with low/no maintenance and Opex requirements. The nature of this work is likely to be unattractive to a CAP and therefore be unsuitable for delivery via the DPC model.

2.4.3.6 Significant Risk(s)

There are no significant risks associated with this work. The risks related to these types of activities are in relation to the success of construction techniques and customer impacts. These techniques are common practice and should be achievable by a CAP during construction. However, since the mains to be replaced are interspersed within a wider network, it is impossible for us to enable a CAP to contribute with O&M activities on these mains in the future – the risk of operation cannot be sensibly managed by or transferred to a CAP without complex arrangements and as such this is a risk that cannot be overcome and requires us to retain operational control.

2.4.3.7 Risk Transfer

The risks related to these types of activities relate to the success of construction techniques and customer impacts. These techniques are common practice and should be achievable by a CAP during construction and thus could be transferred. However, as the mains to be replaced are interspersed within a wider

network, the risk of operation cannot be sensibly managed by, or transferred to, a CAP without complex arrangements. As such, this is a risk that cannot be overcome and requires us to retain operational control.

2.4.3.8 Cost Impact

The risks related to types of activities are associated with the success of techniques and customer impacts. These techniques are common practice and should be capable of being undertaken by a CAP during construction with reasonable cost impacts following transfer of such responsibility. However, as the mains to be replaced are interspersed within a wider network, it is impossible for us to enable a CAP to contribute with O&M activities – the risk of operation cannot be sensibly managed by, or transferred to, a CAP without complex arrangements and subsequent high costs. Therefore, this is a risk that cannot be overcome and requires us to retain operational control.

2.4.3.9 Scale Impact

The volume of work is geographically spread across the entire country. Whilst similar and repeatable in nature, is unlikely to be attractive enough at c£84M for a CAP to wish to invest.

2.4.3.10 Quality Impact

A CAP would be able to manage associated quality and regulatory requirements of mains replacement activity. Water quality, materials quality and commissioning present a risk to water supplies, but the activity is considered BAU and therefore manageable. Care is required around customer impacts (supply interruption) and accessing land/highways appropriately, but this work is commonplace in the industry and any provider should be able to do this.

The volume of work is geographically spread across the entire country of Wales. Whilst it is of similar and repeatable nature, is unlikely to be attractive enough at c£84M for a CAP to wish to invest. Other delivery models, such as D&B, are more likely to be successful for this type of work.

2.4.3.11 Overall Results

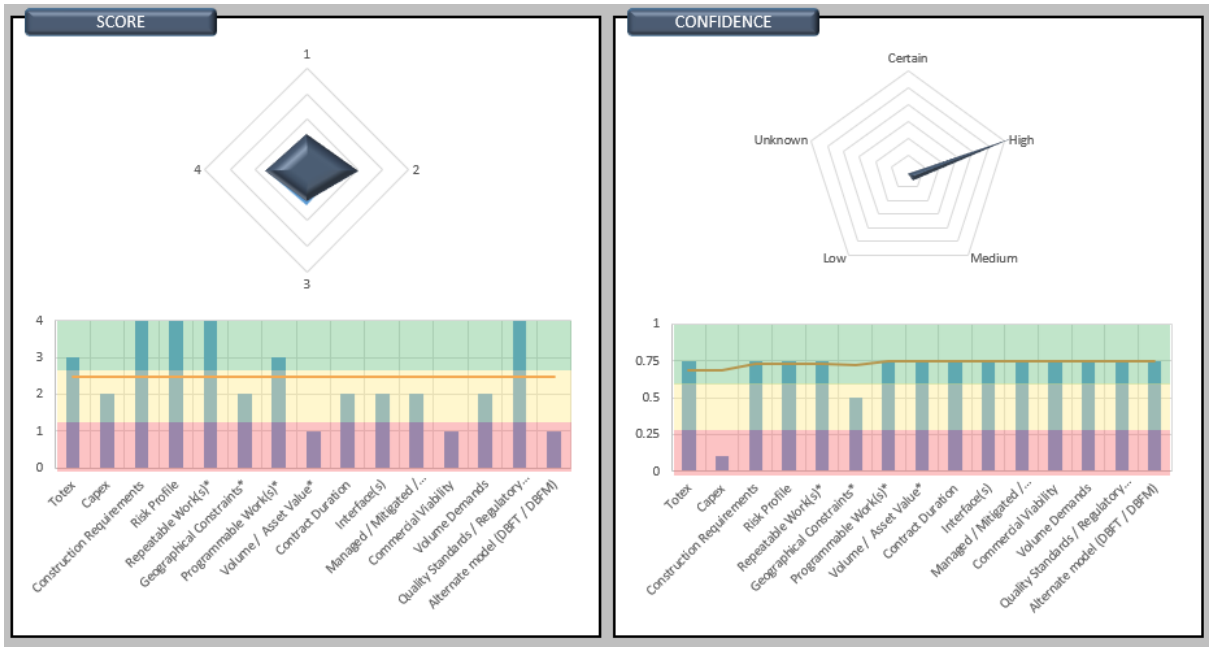


Figure 6: DPC model output for scheme 3

In summary, the water mains replacement scheme is less suitable for delivery via the DPC model. Whilst test factors such as: Construction Requirements, Repeatable Work, Risk Profile and Quality Standards are more appropriate, the Capex of the scheme is low. The Totex value is lifted via the significant Opex but considering the costs, risks and solution profile, this scheme may not be attractive to the market.

2.4.4 Scheme 4 Improving Acceptability of Tap Water - Networks

2.4.4.1 Financial Threshold

The main option cost is c£150M. There is likely to be limited Opex within any option. With work being predominantly Capex (limited/no operational activity and low maintenance requirements over a reasonable contract duration) it is not fully suited to the DPC delivery threshold.

The main option cost is c£150M Capex. This is more suited to the DPC delivery threshold we have set for Capex.

2.4.4.2 Similar Characteristics

Construction activity is likely to be mainly repetitive and of standard type, with some innovative approaches likely included (risk can more than likely be appropriately costed, mitigated and/or transferred). The multiple site locations of activity can be programmed and managed effectively.

Construction activity is likely to be mainly repetitive and of standard type, with some innovative approaches likely included (risk can more than likely be appropriately costed, mitigated and/or transferred). Risk of supply

interruptions, mitigating temporary supplies and planned shutdown will be required but deemed standard work and therefore manageable. The multiple site locations of activity can be programmed and managed effectively. However, site/location detail are still being determined so the impact of, and costs of, the geographical constraints and customer impact mitigation cannot be fully determined at this stage.

Construction activity is likely to be mainly repetitive and of standard type, with some innovative approaches likely included (risk can more than likely be appropriately costed, mitigated and/or transferred). The multiple site locations of activity can be programmed and managed effectively.

Construction activity is likely to be mainly repetitive and of standard type, with some innovative approaches likely included (risk can more than likely be appropriately costed, mitigated and/or transferred). The work will be very geographically spread and will require the CAP to have multiple sites working at any one time. The multiple site locations of activity can be programmed and managed effectively with care. However, site/location detail are still being determined, so the impact of, and costs of, the geographical constraints cannot be fully determined at this stage.

2.4.4.3 Control Periods

Work can be carried out, and indeed will be required, over multiple periods. This is likely to be acceptable to, and manageable by, a CAP. However, due to the number of options available and the long-term programme of requirements yet to be fully determined, the planning, costing and risk assessment of future work will be difficult for a CAP to undertake at this stage.

2.4.4.4 Asset Scale

Options that show as c£150M are likely to be acceptable to and manageable by a CAP. However, due to the number of options available and the long-term programme of requirements yet to be fully determined, the planning, costing and risk assessment of future work will be difficult for a CAP to undertake at this stage. If the preferred option is lower in value (£33M-100M) then the volume / asset scale is unlikely to be attractive for DPC.

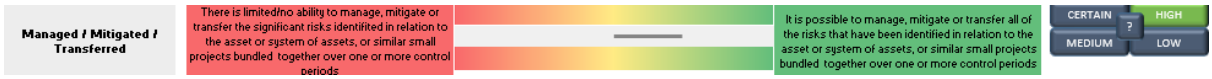
2.4.4.5 Timescale

A contract duration suitable for DPC delivery could be adopted, particularly for the higher value options. It is worth noting that with the number of options under consideration, and the long-term programme of requirements yet to be fully determined, this duration will still need further work to categorically establish it as being appropriate.

2.4.4.6 Significant Risk(s)

As discussed above, risks around customer impacts, temporary supplies/interruptions and innovative technologies can be managed, mitigated and/or transferred. However, two significant risks remain. Firstly, the overall size and duration of the required activities is still being determined and this will impact on the overall attractiveness of this scheme to a CAP - currently it is less suitable for DPC. Secondly, mains cleaning for items such as manganese (Mg) is only a partial solution – the interfaces between transferring the cleaning of the mains versus the ownership/managing the water treatment process at WTWs upstream by us will create difficulties with the CAP.

2.4.4.7 Risk Transfer



See above for significant risk.

2.4.4.8 Cost Impact

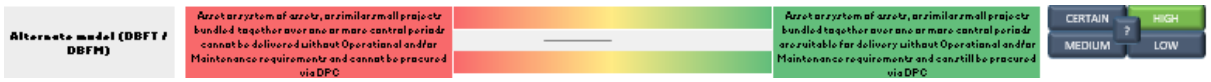
See above for significant risk.

2.4.4.9 Scale Impact

The amount and type of bundled activity for this work would be suitable for delivery via the DPC model, subject to the geographic and programming limitations previously noted. The current lack of long-term clarity of the overall programme and scale of investment required (£33M-£152M) make this less attractive to a CAP.

2.4.4.10 Quality Impact

Compliance and quality issues relate in part to the requirement for customer interruptions and alternative temporary supplies. These would be manageable under all contract models and do not preclude DPC delivery. However, the issues noted in 'significant risks' above, regarding Mg entering the system from WTW, do add to the complexity around programming / sequencing activity and ultimate ownership and transferring of liability. This will likely mean ineffective mains cleaning unless delivered / co-ordinated as an entire package of works.



The activity could be delivered under a normal D&B contract. Such a contract may lend itself to the smaller scale of investment programme options. DPC would be more suited to the options equating to c£152M values, notwithstanding points previously noted about Mg risk.

2.4.4.11 Overall Results

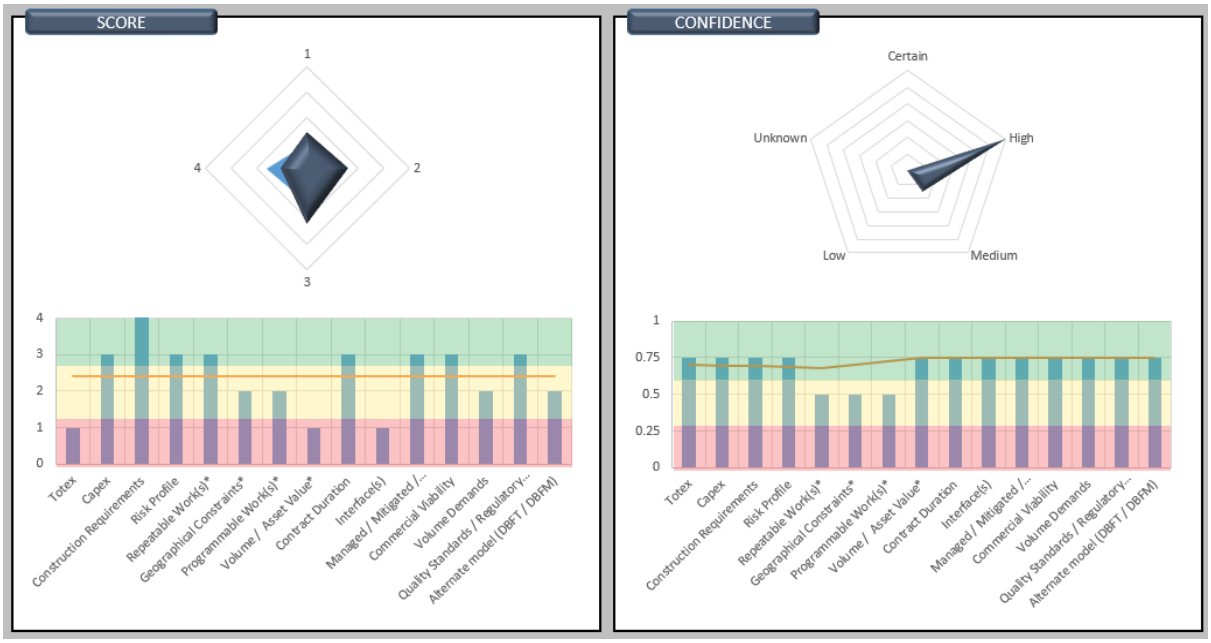


Figure 7: DPC model oputput for Scheme 4

In summary, this scheme is not well suited for delivery via the DPC model. Whilst test factors such as: Construction Requirements, Risk Profile, Repeatable Works, Commercial Viability and Contract Duration could be suitable, other factors do not fit well with the DPC test requirements. Items such as: Volume and Interfaces score poorly against the Regulator's criteria. In relation to value, these are not likely to be high enough to be attractive to the market.

Furthermore, quality and regulatory standards would be difficult to meet. Mg in water systems is generally derived through the WTW processes and cleaning water mains alone will treat the symptoms but not the cause, potentially rendering the cleaning activity of this scheme ineffective and the performance standards for a CAP difficult to attain.

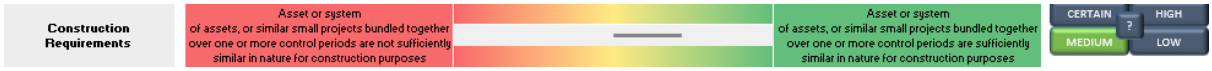
2.4.5 Scheme 5 Minimising Environmental Harm from Storm Overflows

2.4.5.1 Financial Threshold

The value for CSO interventions meets the DPC threshold for both Capex and Totex, although future investigations and monitoring would likely be excluded from any proposed DPC activity (see below). There will be Opex for CSO maintenance over the contract duration, thus meaning the thresholds for DPC would be readily met for Totex.

The value for CSO interventions meets the DPC threshold for Capex and Totex, although future investigations and monitoring work types would likely be excluded from any proposed DPC activity.

2.4.5.2 Similar Characteristics



CSO construction activities would likely be of standard, repeatable types across numerous locations.

The risk profile for CSO activity is two-fold. Construction risk, including land access, pollution control and general risks could be readily transferred to, and managed by, a CAP. However, the ultimate risk of CSO performance failure will always reside with us and cannot be transferred. Furthermore, bearing in mind current public, political and regulatory perceptions of overflow performance, it is unlikely the market would be keen to explore how this risk could be shared. The risk profile therefore is considered unsuitable for the DPC model.

CSO design, construction and O&M activity across multiple sites is considered repeatable and programmable and as such is considered suitable for DPC. However, the inclusion of investigations and monitoring activity is of a very different work type and is not considered suitable for DPC.

The CSO interventions are geographically spread. However, subject to managing timing and any output/outcome constraints, this could be readily managed by a CAP and is therefore considered suitable for DPC. This also includes monitoring aspects. Investigation aspects would be a mix of desk-top and site activity that could be readily managed. The main challenges relate to the geographic aspects of this work and the requirement for a CAP to provide coverage across the entirety of Wales simultaneously.

2.4.5.3 Control Periods

The CSO programme is over multiple AMPs. This would lend itself to a contract duration appropriate to DPC. However, much of the programme for the medium to longer term will need to be determined by the AMP8 investigations, which may affect the size and make-up of future AMP's activity. This may make the overall programme, as opposed to just the shorter term, less attractive to the market as it will be harder to value, price and forecast how to contract and manage the future elements.

2.4.5.4 Asset Scale

The short-term programme of interventions will have a likely clear value that would be attractive to normal contracting methods, but the longer-term clarity is still being investigated and is therefore less attractive at this stage to DPC. The assets involved in this scheme will have long lives in the main, but investigations and monitoring elements do not. The programme is therefore less suitable for DPC.

2.4.5.5 Timescale

The overall programme timescale is suitable for an appropriate DPC contract duration. However, the shot-term programme is clear, but the longer-term programme is still being determined through investigations and monitoring. The low level of Opex and high levels of risk (see above) is less suitable for DPC.

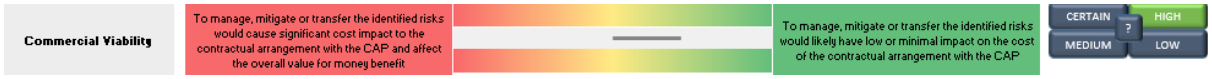
2.4.5.6 Significant Risk(s)

The risk profile for CSO activity is two-fold. Construction risk (including land access, pollution control and general risks) could be readily transferred to, and managed by, a CAP. However, the ultimate risk of CSO performance failure will always reside with us and cannot be transferred. Furthermore, considering of current public, political and regulatory perceptions of overflow performance, it is unlikely the market would be keen to explore how this risk could be shared. The risk profile therefore is considered less suitable for DPC.

2.4.5.7 Risk Transfer

The risk profile for CSO activity is two-fold. Construction risk (including land access, pollution control and general risks) could be readily transferred to, and managed by, a CAP. However, the ultimate risk of CSO performance failure will always reside with us and cannot be transferred. Furthermore, considering current public, political and regulatory perceptions of overflow performance, it is unlikely the market would be keen to explore how this risk could be shared. The risk profile therefore is considered less suitable for DPC.

2.4.5.8 Cost Impact



Most of the required design and construction activity risks could be transferred to the CAP with low/minimal costs impacts. The transfer of operational risk, specifically CSO spills/failures, cannot be transferred. This means that whilst risk transfer could be done for the main part, some risk will need to be retained by us with the contracts and operations aspects being carefully managed between the parties. This is complex but possible so could lend itself to a DPC model when considering risk transfer costs in isolation.

2.4.5.9 Scale Impact

Like geographical constraints, the work locations generally will not be of a scale significant enough to impact a CAP. Subject to managing time and any output/outcome constraints, this could be readily managed by a CAP and is therefore considered suitable for DPC. This also includes monitoring aspects. Investigation aspects would be a mixture of desk-top and site activity that could be readily managed. The main challenges relate to the geographic aspects of this work and the requirement for a CAP to provide coverage across the entirety of Wales simultaneously.

2.4.5.10 Quality Impact

A CAP could manage many of the required compliance, quality and regulatory standards during design and construction meaning such risks could be readily transferred. However, as discussed above, the ultimate risk for performance of any outfall/CSO in operation will have to remain with us. Therefore, the full quality standards and regulatory requirements cannot be transferred to a CAP thus determining this less suitable for DPC.

The activity could be delivered under a normal D&B contract, which may lend itself better to the risk allocation and investigative/future planning nature of the programme.

2.4.5.11 Overall Results

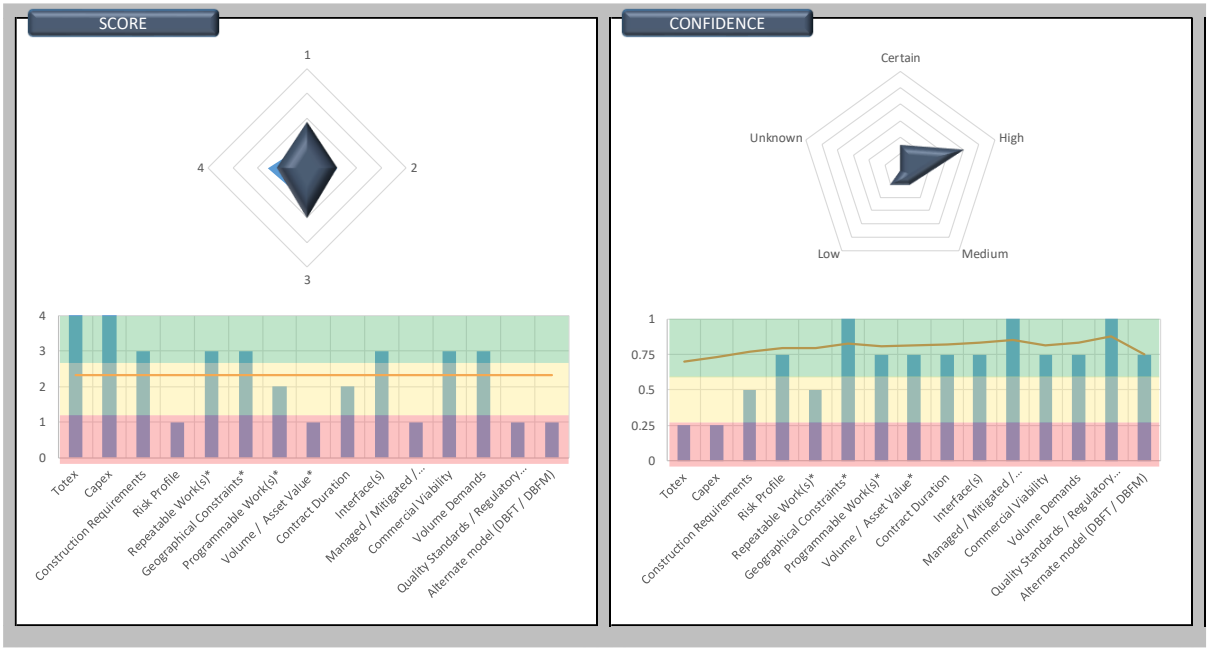


Figure 8: DPC model output for Scheme 5

In summary, the proposed CSO scheme is not well suited to DPC delivery. The scheme Totex values and volume demands are well suited to DPC, as are the Construction Requirements, Geographic Constraints and Commercial Viability aspects. However, other test factors are less suited to DPC delivery. For example, most of the programme is still being determined through monitoring and investigations – this not only makes it difficult for a potential CAP to understand, plan for and price future activity, but it also means there is an inconsistent series of work types required (design, construction, monitoring, investigations). This does not lend itself to the repeatable and predictable model best suited for DPC. Whilst there is a low need for future O&M activity on CSO's, some asset lives (monitors) are short and some are longer (CSO structures) causing inconsistency and undermining suitability for DPC. Finally, the risk profile and transferability are not well suited to DPC – ultimate risk for CSO performance, and potential failure driven pollution incidents, cannot be transferred to a CAP and will need to be retained by us (construction pollution risk could be transferred).

3. Our Recommendations

Based upon our assessments, in relation to the schemes being suitable for DPC delivery through PR24, we found as follows:

3.1.1 Schemes more suitable for DPC

None of our schemes were deemed suitable for delivery via the Regulator's DPC model.

3.1.2 Schemes less suitable for DPC

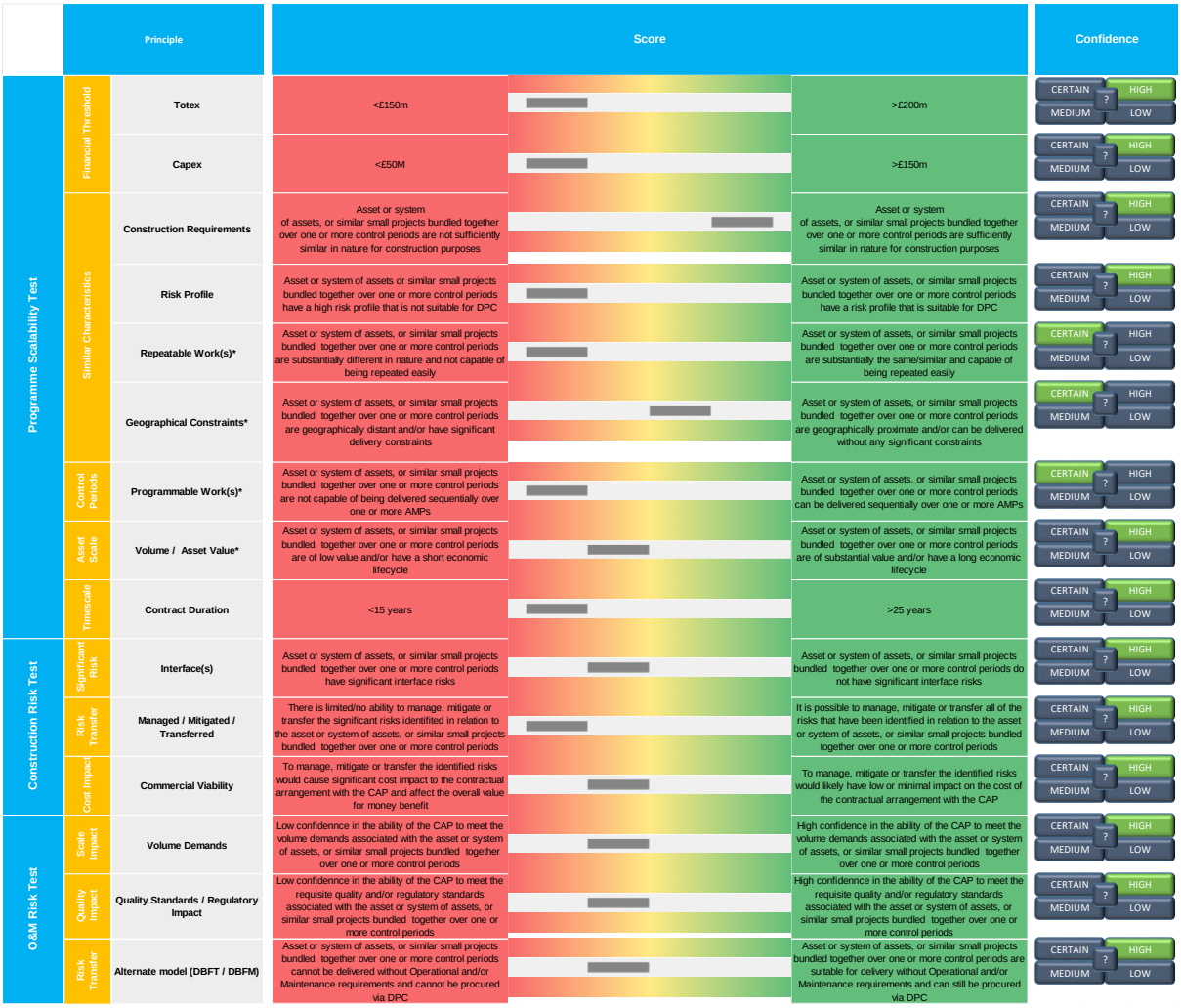
The following schemes were deemed less suitable for delivery via the Regulator's DPC model:

- Scheme 1 – WSH64-PE02 - Protecting Multiple Adjoining SSSIs near the SECS Main
- Scheme 2 – WSH59-RS03 - Increasing Safety of Impounding Reservoirs
- Scheme 3 – WSH62-RS01 - Increasing Resilience of Tap Water Supply - Asbestos Cement Mains
- Scheme 4 – WSH54-CW02 - Improving Acceptability of Tap Water – Networks
- Scheme 5 – WSH70-PE01 - Minimising Environmental Harm from Storm Overflows

4. Appendices

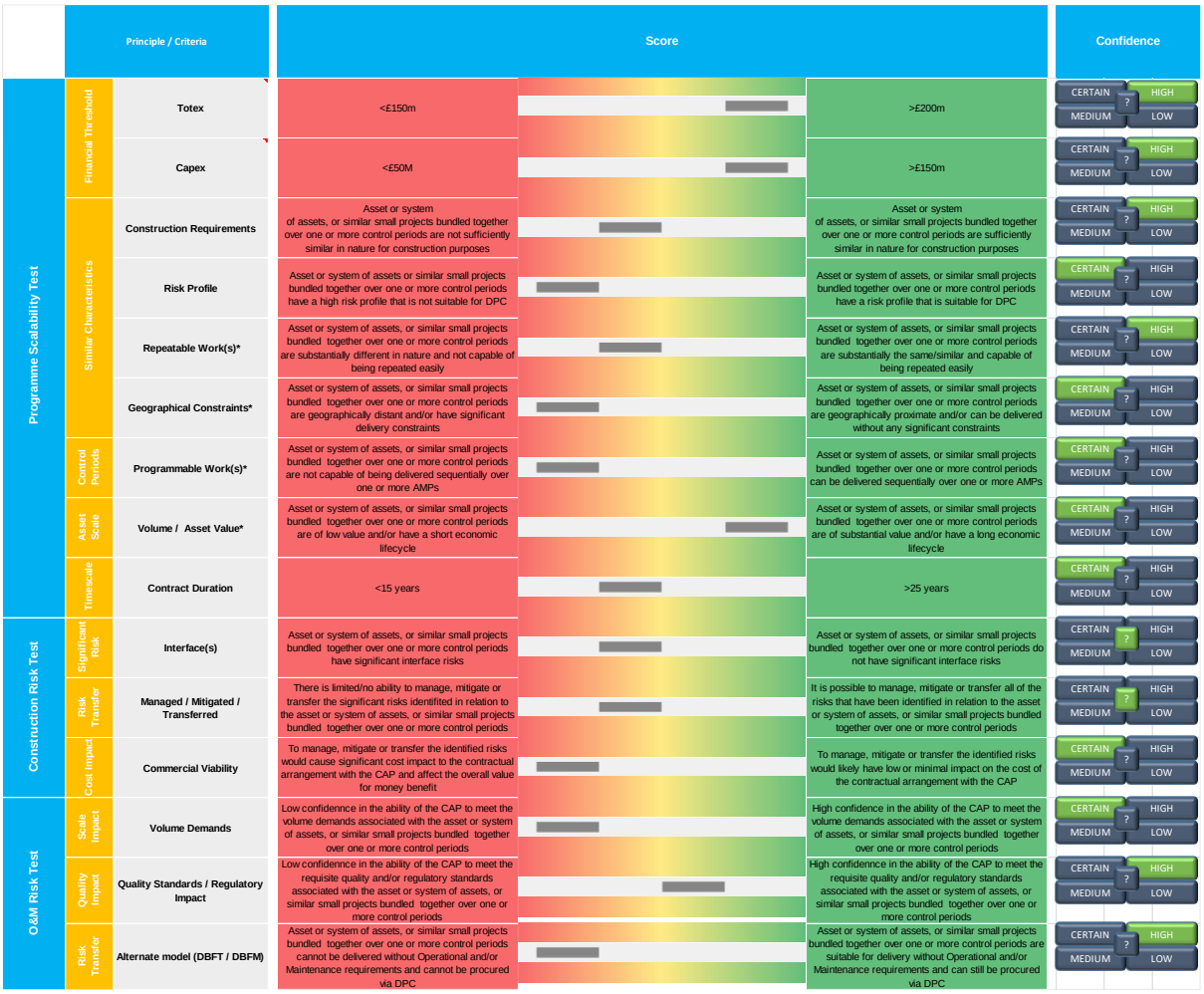
4.1 Appendix A: Scheme 1

Protecting Multiple Adjoining SSSIs near the SECS Main heatmap



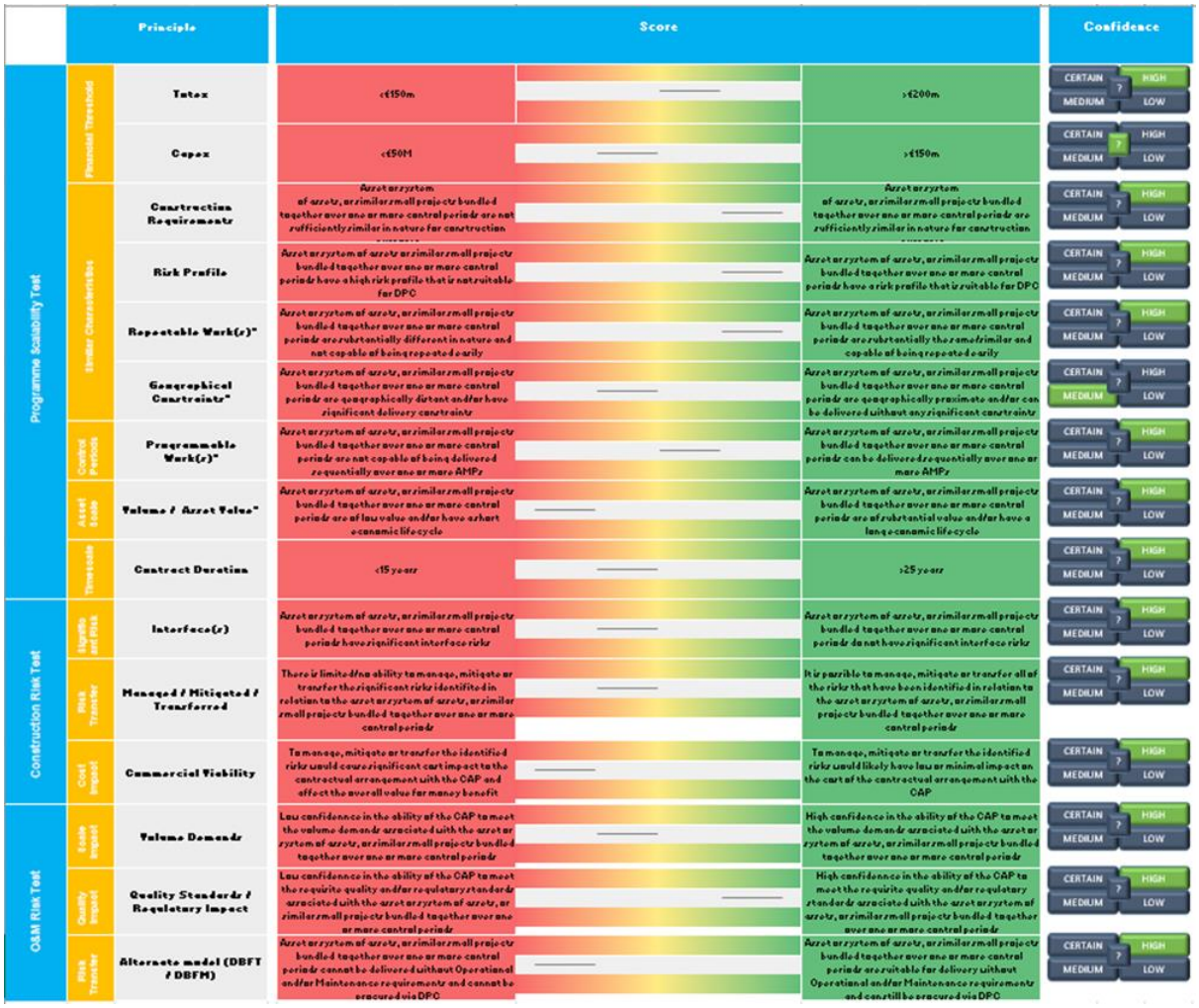
4.2 Appendix B: Scheme 2

Increasing Safety of Impounding Reservoirs heatmap



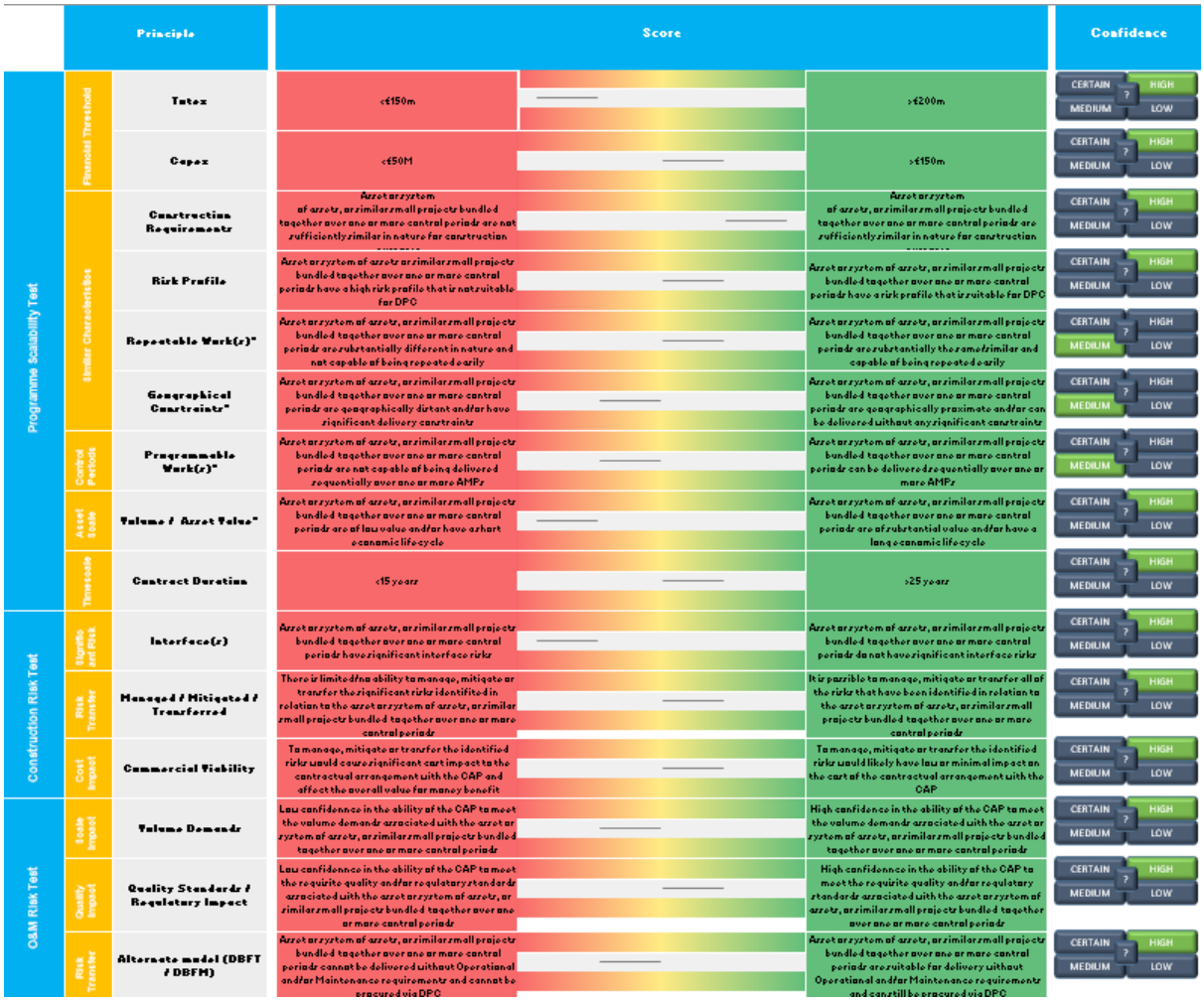
4.3 Appendix C: Scheme 3

Increasing Resilience of Tap Water Supply - Asbestos Cement Mains heatmap



4.4 Appendix D: Scheme 4

Improving Acceptability of Tap Water - Networks heatmap



4.5 Appendix E: Scheme 5

Minimising Environmental Harm from Storm Overflows heatmap