KPMG

Assessment of projects for DPC eligibility at PR24

Private and confidential

9 August 2023

NWL internal use only

Important notice

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This Report reflects information received up to 07 August 2023 and does not consider any event and circumstances arising after that date. Further versions of this Report may be issued upon Northumbrian Water Limited's agreement and if additional information will be provided.

In preparing our Report, our primary source has been company internal management information and representations made to us by the management of Northumbrian Water Limited. We do not accept responsibility for such information which remains the responsibility of management. We have not sought to establish the reliability of those sources by reference to other evidence. In addition, references to financial information relate to indicative information that has been prepared solely for illustrative purposes only.

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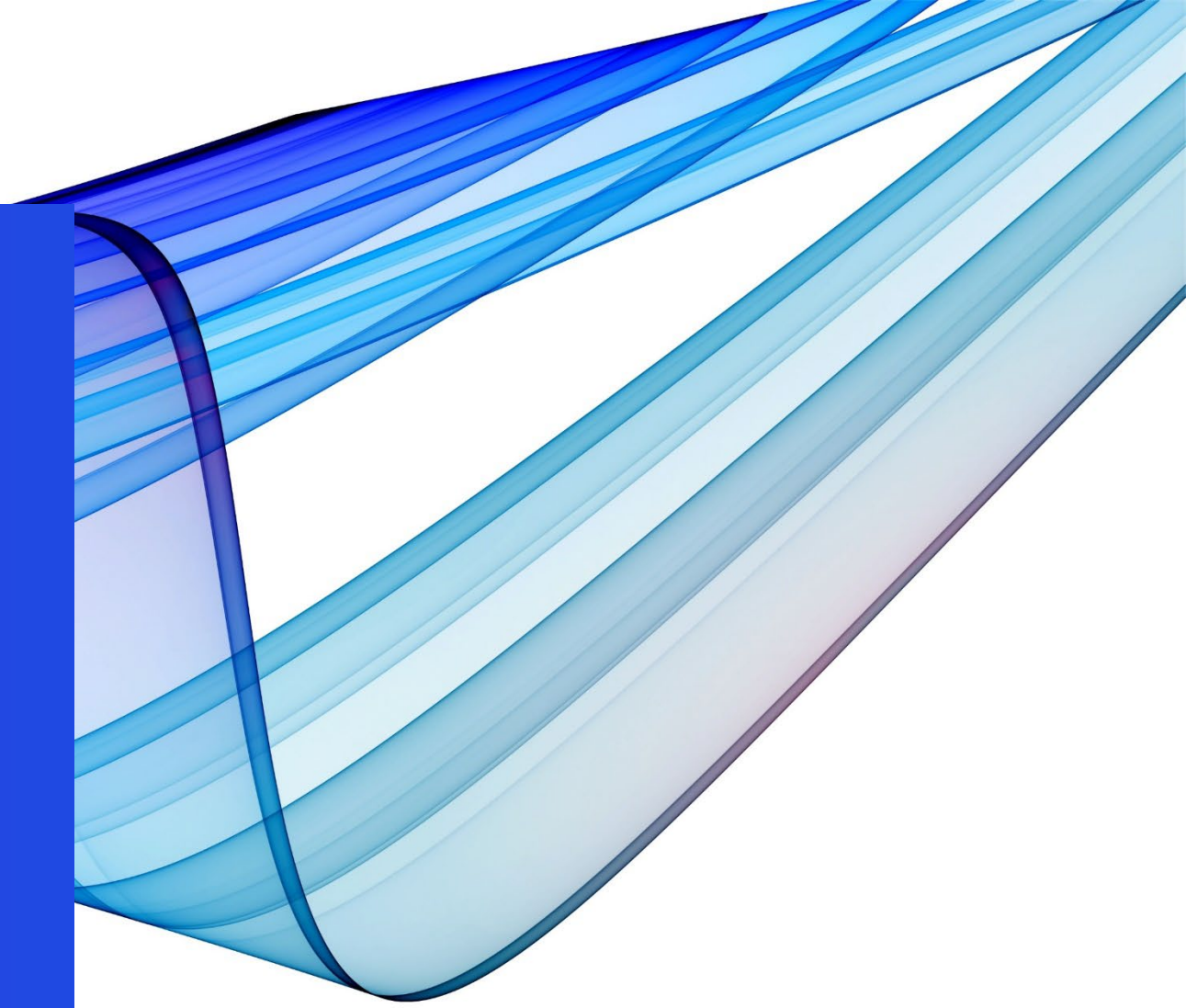
Introduction

Northumbrian Water Limited (NWL) has commissioned KPMG to conduct a review of its PR24 capital programme to identify projects which may be suitable for delivery through Ofwat's Direct Procurement for Customers (DPC) model.

The analysis has been undertaken in stages as NWL has progressed the evolution of its business plan.

- An initial assessment of the business plan to identify potential candidates for DPC.
- Quantitative analysis of the potential candidates identified to explore and refresh the view of DPC eligibility based on updated costs.
- A final, updated eligibility assessment bringing together additional project information and guidance from Ofwat.

This report brings together the assessments conducted to date and presents the outcome of the updated analysis.



Summary of assessment process

The DPC eligibility assessment has evolved in line with the development of NWL's PR24 business plan. The updated assessment is present in the following section. The initial assessment and VfM analysis can be found in the appendices.

Assessment stage	Initial assessment	VfM analysis	Updated assessment
	Conducted earlier - See appendix 1	*Conducted earlier - See appendix 2*	*This report*
Methodology	**Screening of the full investment programme to identify early candidates.** Factors considered: ▪ Project size ▪ Initial views of discreteness using PR19 guidance, assessing against asset type.	**Quantitative, modelled value for money value analysis** ▪ Using Ofwat's VfM assumptions, updated for PR24 where possible. ▪ Adapted the VfM analysis approach to suit assets with shorter lives.	**Updated assessment for shortlisted projects** Factors considered: ▪ Project size ▪ Updated view of discreteness using Ofwat's PR24 guidance and considering exclusions from DPC published in July 2023*.
Projects	**Shortlist identified:** ▪ Lowestoft re-use ▪ Smart metering ▪ Continuous water quality monitoring ▪ Southend-on-sea re-use *(adaptive plan)* ▪ North Suffolk Winter Storage Reservoir *(adaptive plan)* ▪ Caister re-use *(adaptive plan)* ▪ Canvey Island desalination *(adaptive plan)*	**Projects selected by NWL for quantitative modelled VfM assessment:** ▪ Lowestoft re-use (core plan) ▪ Smart metering (core plan) ▪ Continuous water quality monitoring (core plan)	**Projects considered:** ▪ Lowestoft re-use ▪ Smart metering ▪ Continuous water quality monitoring ▪ Marske-by-the-sea SO improvements ▪ Berwick-upon-Tweed SO improvements ▪ Southend-on-sea re-use *(adaptive plan)* ▪ North Suffolk Winter Storage Reservoir *(adaptive plan)* ▪ Canvey Island desalination *(adaptive plan)* ▪ Caister re-use *(future AMPs)*

*On the 3rd July 2023 Keith Mason sent a letter to industry regulatory directors excluding bundles with individual assets below £5-10m and bundles with an overall project life less than an expected CAP agreement term.

Assessment inputs at each stage have comprised: management information, early stage cost estimates, discussions with relevant SMEs and content from NWL and ESW's dRWMP24 submissions.

Executive summary

NWL has a significant capital programme to deliver in AMP8 and beyond. The programme consists of a range of initiatives, including asset upgrades, transfers, water treatment and re-use, resilience, supply and demand management projects. It also includes a series of improvements to tackle discharges at storm overflows.

Following a detailed assessment, none of the shortlisted projects considered from the core plan have been assessed as suitable for progression through the Direct Procurement for Customers (DPC) model. However, there are projects within the adaptive plan which may be suitable for DPC, should they be selected at the relevant decision points.

Core plan	Assessment outcome	Summary rationale
Lowestoft re-use	Not eligible for DPC	Operational and commercial complexities prevent the transfer of O&M to a CAP. Without opex, the project no longer meets the size threshold for DPC. Timing constraints also apply.
Smart metering	Not eligible for DPC	In July 2023, Ofwat published supplementary discreteness guidance which included two additional criteria: ▪ The cost of each discrete asset should be at least £5-10m when considering bundling. ▪ Assets with lives which are materially less than the average expected life of a CAP agreement (25 years +) should not be put forward for DPC. These additional criteria exclude these four projects from being progressed through DPC.
Continuous water quality monitoring	Not eligible for DPC	
Marske-by-the-sea SO improvements	Not eligible for DPC	
Berwick-upon-Tweed SO improvements	Not eligible for DPC	

Adaptive plan	Assessment outcome	Summary rationale
North Suffolk winter storage reservoir	Not eligible for DPC	The project does not pass the size threshold.
Southend-on-Sea re-use	Not eligible for DPC	If selected at the decision point for the adaptive pathway, there will likely be insufficient time to develop for DPC. Operational and commercial complexities will also apply.
Caister re-use	Possibly eligible for DPC	Assessment to be revisited at a later point informed by experience from the delivery of earlier re-use plants (Lowestoft / Southend)
Canvey Island desalination	Likely eligible for DPC	Passes the size threshold, however, a more detailed analysis of discreteness assessment would be required nearer the time of each project's adaptive pathway decision point once more detail is available.

Updated assessment: Core plan

Lowestoft re-use

The project will deliver a new c.10Ml/d water reuse plant and transfer pipeline, creating a new source of supply for Barsham WTW and providing drought resilience in the Suffolk region.

NWL considers it unlikely that risks could be effectively transferred, and that the project's operational complexities will be difficult to mitigate. Excluding opex, totex is below £200m, and capex is also below the original £100m size threshold. The project is not DPC eligible.

Project information

Location	Suffolk, from Lowestoft Water Recycling Centre (WRC) to Ellingham Mill
Deployable output	3.5Ml/d to 11Ml/d, currently assumed 10Ml/d output.
Water quality at source	Treated sewage effluent
Proposed treatment	Water re-use: nitrifying and denitrifying BAFF, fine screening, ultrafiltration, reverse osmosis, UV disinfection.
Benefit	Increased resilience by reduction of source yield constraint at Barsham WtW. Option increases water available for abstraction during drought periods.
Components	Water reuse treatment works at Lowestoft WRC with a pumping station. C.10km treated water pipeline from Lowestoft to Ellingham Mill with outfall.
Delivery timescales	NWL has been allowed accelerated funding to develop the project until an adaptive pathway decision point in 2027. If selected the project will then need to be delivered by 2030/31.

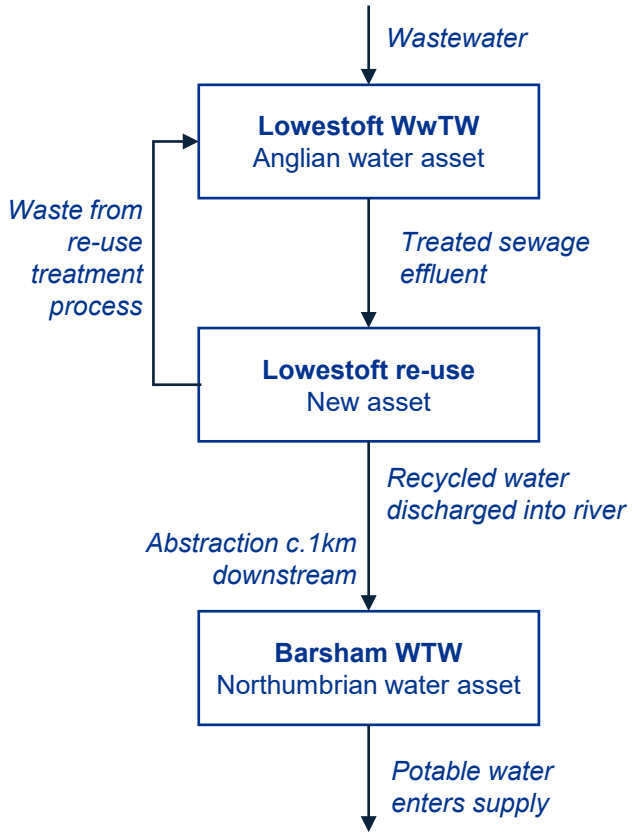
DPC eligibility assessment outcome

Capex (£m)		77.90
Opex (£m) (annual)		3.58
Assumed asset life (years)		60
Whole life totex (£m)	229.56 (incl. opex)	77.90 (excl. opex)
Size test	Pass	Fail
Programme scalability test	Considered as an individual asset. There are no nearby assets to combine with this project.	
Construction risk test	It may be possible to transfer construction risks, however this would be subject to reaching agreement on a number of key issues with Anglian Water beforehand.	
Operations and maintenance risk test	The operating regime required for the asset would result in significant operational and commercial complexity. It is unlikely these risks could be transferred or mitigated effectively. It is assumed that O&M are excluded.	
Discreteness test	Not discrete – O&M risk test failed. Absent opex costs, the asset does not satisfy the whole life totex threshold.	
DPC eligibility	**Not eligible for DPC**	

Lowestoft re-use

The three key factors set out in this slide indicate that the project is not suitable for delivery through DPC.

Assets and flows involved in the project



Factor	Implication for DPC eligibility
Another appointee – Anglian Water – is the sole source of supply for the re-use plant, and would also need to receive the waste from the re-use treatment process. • The currently baseline assumption places the asset on AWS' existing Lowestoft WwTW site. This remains subject to confirmation. **See the diagram to the left for an illustration of the critical role AWS will play in the project's operation.**	**The introduction of a third party into the arrangements is likely to introduce significant operational and commercial complexity into the project which is likely to make DPC more challenging.** • Operational direction and control of the re-use plant would be challenging and complex to co-ordinate between three parties, one of whom (AWS) would not be party to the agreement with the CAP. • NWL would need AWS to agree to a defined envelope for the quality of effluent provided to the re-use plant and for the quality of waste it would be willing to receive. AWS may be unable to commit to this level of specificity, meaning NWL may be left with residual risk which it would be unable to transfer or mitigate. • AWS may be unwilling to allow a third party with whom it has no contractual relationship to operate live assets on its operational sites.
Barsham WTW has limited treated water storage (c.1 day) and no raw water storage. • Barsham WTW is becoming a hub-works for Suffolk, with additional transfers being implemented to manage growth across the region. • The WwTW is also located near to the proposed site for Sizewell C nuclear plant.	**Lowestoft re-use would be a critical source of supply for NWL's network in the region, meaning operational control may be difficult to transfer efficiently.** • A combination of minimal storage and an increasing criticality of Barsham WTW to NWL's regional supply means that service failures present a very real risk to significant interruption of supply in the area. • The future addition of Sizewell C as a recipient of water in the network further reinforces the need to ensure security of supply, as these assets may eventually be classed as Critical National Infrastructure (CNI).
Lowestoft is subject to an adaptive pathway decision in 2027, but is required to be delivered by 2030. • A decision point in 2027 will determine whether Lowestoft or the North Suffolk Winter Storage Reservoir is progressed. • NWL has been given funding to develop both projects up to 2027, such that a decision can be made.	**The adaptive pathway timescales for the project conflicts with the timescales required for the development of the project for DPC.** • In order to begin developing the project for DPC and meet the required delivery timescale (Lowestoft 2030, North Suffolk Reservoir 2032), NWL would need to begin developing the project for DPC now. This could result in abortive costs if the preferred solution changed in 2027. Were development for DPC delayed until the decision point, the 2030 date would be unachievable.

Lowestoft re-use: Construction risks

Risk	Standard DPC allocation			Application to project				
	Cust.	App.	CAP	Cust.	App.	CAP	Assessment	Mitigations
Planning	✓	✓		✓	✓		Assuming a late tender model, NWL would be responsible for securing planning, land and any other necessary consents. This would include determining whether the site would be constructed on AWS' existing Lowestoft site and negotiating any boundaries involved.	N/A
Land	✓	✓		✓	✓			
Other consents	✓	✓		✓	✓			
On time delivery		✓	✓		✓	✓	Whilst the CAP would be responsible for delivery to schedule, residual risk would remain with NWL, particularly involving any co-ordination between NWL and AWS.	Compensation events for delay and cost.
Cost overruns	✓	✓	✓	✓	✓	✓	Following Ofwat's guidance, assumed to be a complex project where cost overruns are shared via a target cost contract.	Contractual pain/gain sharing. Totex sharing with customers.
Site conditions			✓			✓	CAP best placed to manage	Compensation events for ground risk.
Works information		✓			✓		NWL would hold the risk of setting appropriate specifications in the context of the water quality AWS can provide to the plant, negotiating an agreement with AWS to match this. NWL would retain risk that AWS did not adhere to the quality envelope.	Compensation events for delay and cost where inputs fall outside the specification.
Detailed design			✓			✓	CAP best placed to manage, but will price risk if the works information do not give certainty to produce design.	N/A
Third parties		✓	✓		✓	✓	Shared risk of stakeholder and customer engagement during the delivery of the works.	Performance incentive could be applied.
Changes in scope	✓	✓		✓	✓		Risk shared between NWL and customers as per Ofwat's risk allocation.	Contractual variations if required.
Interfaces with Appointee's existing assets		✓			✓		NWL is best placed to manage, but would likely hold additional interface risk arising from AWS' role in the project's operation.	Compensation events for delay and cost.
Commissioning			✓		✓	✓	As per discussion of interfaces, commissioning would require significant co-ordination with AWS, for which NWL would likely hold risk.	Compensation events for delay and cost.
Financing costs	✓		✓	✓		✓	Assuming a target cost contract, it may be necessary to provide an adjustment for financing costs.	Cost of debt adjustment during construction.

Lowestoft re-use: Operations and maintenance risks

Risk	Standard DPC allocation			Application to project				
	Cust.	App.	CAP	Cust.	App.	CAP	Assessment	Mitigations
Cost (opex and maintenance)			✓		✓	✓	Typically, the CAP would be responsible for operating the assets efficiently. However, given the introduction of AWS as a third party critical to the operation of the plant, it is unlikely that NWL will be able to fully transfer operational risk efficiently. The market will likely be unwilling to take risk on a third party being the principal source of supply for the plant, likely resulting in significant risk pricing.	No alternative source of supply is available. Risk cannot be mitigated.
Operational performance			✓		✓	✓		
Compliance with statutory and regulatory obligations which impact the scope of the DPC project		✓	✓		✓	✓	EA discharge permits and/or DWI water quality requirements will likely apply. Whilst some risk may be transferrable to a CAP, residual risks will remain with NWL, particularly in respect of DWI requirements which currently cannot be transferred. Additional complexity will also arise with respect to AWS, for example if a breach by the CAP could be traced back to AWS providing inputs outside of the agreed quality envelope.	CAP likely to be incentivised / penalised under contract for any failures resulting in a breach. It may not be possible to mitigate risks relating to AWS.
Defects during operations		✓	✓		✓	✓	CAP to be responsible for defects up to the statutory time limit, after which responsibility would revert to NWL.	CAP would pay damages if defects were identified within the time limit.
Demand risk	✓	✓		✓	✓		NWL best placed to manage demand risk through water resource planning and scope to match expected levels of demand and utilisation.	N/A
Over-utilisation	✓	✓		✓	✓			
Change in scope	✓	✓		✓	✓		As per Ofwat's risk allocation, NWL best placed to manage.	N/A
Value testing	✓		✓	✓		✓	As per Ofwat's risk allocation, NWL best placed to manage.	N/A
Condition of asset/hand back risk			✓		✓	✓	The CAP would be best placed to manage asset condition, however as per the discussion of asset operation above, the CAP would likely seek certainty that it would be insulated from damage to asset condition arising from parties outside of the contract. The market will likely price risk to account for this additional factor.	The residual value payment could be adjusted to account for condition at hand back, however this may be complex to implement.

Smart metering

The smart metering programme covers all three regions served. It aims to achieve full smart meter penetration by 2035, and is expected to drive a significant demand saving.

Ofwat has excluded smart metering from DPC in guidance published in July 2023. It is also considered that it may be difficult to implement a DPC arrangement alongside / in parallel to NWL's ongoing smart metering rollout via its existing partners.

Project information

Location	The metering rollout is required across both of NWL's regions; North East England, and Essex and Suffolk.
Drivers	In its long term delivery strategy guidance, Ofwat expects Appointees to plan towards full smart meter penetration by 2035 in the faster technology scenario; or 2045 in the slower technology scenario. Metering is also a key driver of reductions in Per Capita Consumption (PCC). NWL targets a demand saving of 33.91Ml/d. The information obtained through smart meters can be useful in the reduction of leakage.
Nature of the works / asset	A combination of: • Whole area metering programmes • Smart meter installation • Meter replacements and meter optants.
Delivery timescales	NWL's objective is to replace all existing meters with smart meters by 2035. The programme is expected to cover 7 years, from year 2028-29 through 2034-35. The total volume of meters required by region is shown below (including household and non-household customers).

North East	Suffolk	Essex
699,447	122,187	560,482

DPC eligibility assessment outcome

Capex (£m)	234.67
Opex (£m) (annual)	0.47
Assumed asset life (years)	15
Whole life totex (£m)	244.10
Size test	Pass (on an aggregate basis only)
Programme scalability test	Excluded from DPC by Ofwat in guidance published 03/07/23.
Construction risk test	A detailed assessment has not been completed as the asset class has been excluded on scalability grounds.
Operations and maintenance risk test	
Discreteness test	Not discrete – programme scalability test failed.
DPC eligibility	**Not eligible for DPC**

Continuous Water Quality Monitoring

The Environment Act and WINEP require NWL to install monitors across the regions at continuous discharges (WwTW) and storm overflows, it serves to improve the understanding of discharges and the impact on river water quality.

Ofwat has excluded water quality monitoring from DPC in guidance published in July 2023.

Project information

Location	The works are required across NWL's North East England region.
Drivers	The requirement to install and monitor is driven by the WINEP and Environment act. The drivers apply to all wastewater treatment works discharges and permitted overflows, including: • Combined sewer overflows (SOs) on the sewer network • Storm discharges at pumping stations • Inlet SOs at wastewater treatment works (WwTW). • Storm tanks at wastewater treatment works. • Continuous discharges at wastewater treatment works.
Nature of the works / asset	Installation of the monitors is likely to involve the construction of a kiosk (aluminium cabinet on an elevated platform) at each site, installation of the monitor(s) and a pump, and the provision of power supply for the equipment. NWL will obligated to collect and publish data in near-real time.
Delivery timescales	Based on the PR24 WINEP driver guidance, NWL has prioritised the delivery dates of sites / clusters across a 10-year period as follows: • 1,187 high priority sites in AMP8 • 951 sites in AMP9.

DPC eligibility assessment outcome

Capex (£m)	251.91
Opex (£m) (annual)	2.25
Assumed asset life (years)	15
Whole life totex (£m)	296.89
Size test	Pass (on an aggregate basis only)
Programme scalability test	Excluded from DPC by Ofwat in guidance published 03/07/23.
Construction risk test	A detailed assessment has not been completed as the asset class has been excluded on scalability grounds.
Operations and maintenance risk test	
Discreteness test	Not discrete – programme scalability test failed.
DPC eligibility	**Not eligible for DPC**

Marske-by-the-sea SO improvements

The project involves a range of targets improvements across the Marske drainage area to manage the flows of wastewater and reduce the frequency of spills from the area's Sewer Overflows (SOs).

NWL identified this project for consideration by virtue of the large, localised capex requirement, however Ofwat has excluded SuDS projects and those with individual assets valued at less than £5m from DPC in guidance published in July 2023.

Project information

Location	Marske drainage community, near Middlesborough.
Drivers	The improvements proposed at Marske are driven by the Environment Act and the WINEP, which require a reduction discharges from Sewer Overflows (SOs) across England.
Nature of the works / asset	At this stage, the exact works proposed across the region have not yet been defined in detail, however they will comprise a combination of green and grey infrastructure: • Limited storm overflow storage • Smart networks • Possible extension of the long sea outfall • Additional surface water reduction schemes Note: green infrastructure includes extensive civils work including the laying of new sewers (re-sewering).
Delivery timescales	The worst performing storm overflows will need to be addressed by 2035.

DPC eligibility assessment outcome

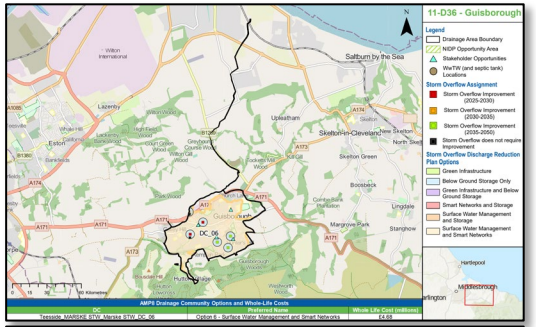
Capex (£m)	270.19
Opex (£m) (annual)	Solution dependent
Assumed asset life (years)	Solution dependent
Whole life totex (£m)	270.19+
Size test	Pass (on an aggregate basis only)
Programme scalability test	Whilst some of the works will be of a value greater than the £5-10m threshold with asset lives >25 years, in practice it would likely be inefficient, impractical and unattractive to the market to subdivide the programme into larger and smaller works. For this reason, the programme fails the scalability test.
Construction risk test	A detailed assessment has not been completed as the asset class has been excluded on scalability grounds.
Operations and maintenance risk test	
Discreteness test	Not discrete – programme scalability test failed.
DPC eligibility	**Not eligible for DPC**

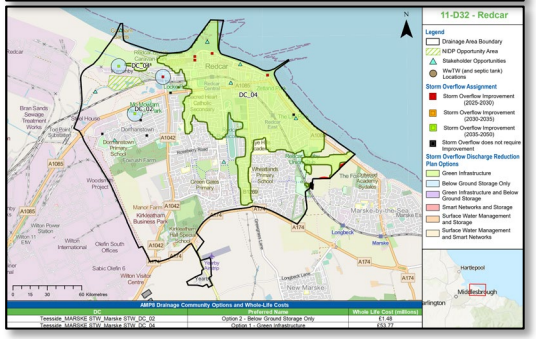
Marske-by-the-sea

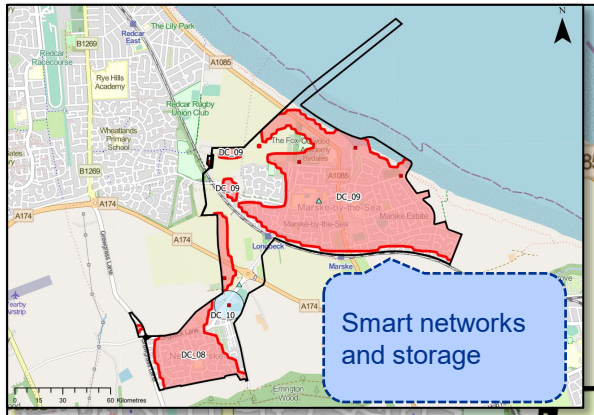
The diagrams illustrate the works required. Marske comprises:

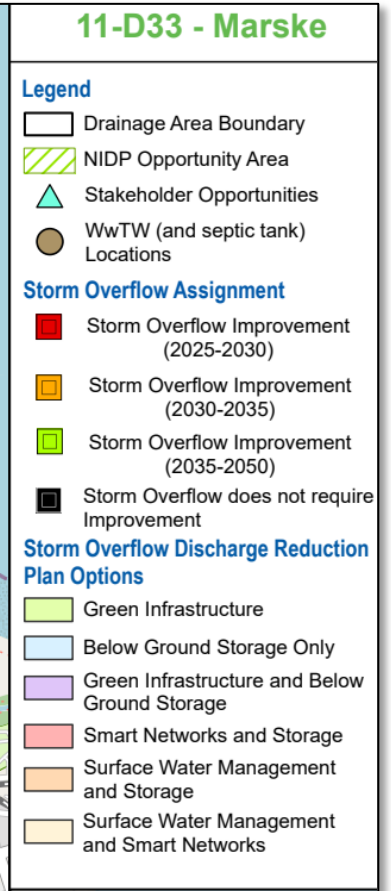
- Green infrastructure works
- Smart networks and storage.

The need for the works is also driven by increased treatment requirements from connecting catchments Guisborough and Redcar (below).









AMP8 Drainage Community Options and Whole-Life Costs

DC	Preferred Name	Whole Life Cost (millions)
Teesside_MARSKE STW_Marske STW_DC_08	Option 4 - Smart Networks and Storage	£1.58
Teesside_MARSKE STW_Marske STW_DC_09	Option 4 - Smart Networks and Storage	£7.30
Teesside_MARSKE STW_Marske STW_DC_10	Option 2 - Below Ground Storage Only	£3.01
Teesside_MARSKE STW_Marske STW_DC_16	Option 1 - Green Infrastructure	£258.30

Berwick-upon-Tweed SO improvements

The project involves a range of targets improvements across the Berwick drainage area to manage the flows of wastewater and reduce the frequency of spills from the area's Sewer Overflows (SOs).

NWL identified this project for consideration by virtue of the large, localised capex requirement, however Ofwat has excluded SuDS projects and those with individual assets valued at less than £5m from DPC in guidance published in July 2023.

Project information

Location	Berwick drainage community,
Drivers	The improvements proposed at Berwick are driven by the Environment Act and the WINEP, which require a reduction discharges from Sewer Overflows (SOs) across the UK.
Nature of the works / asset	The works are comprised predominantly of green infrastructure and below ground storage. The town centre of Berwick has been assessed as being able to support a blue green corridor, including a large proportion of surface water removal via re-sewering and discharging to the River Tweed and North Sea at viable locations. Due to the architecture of Berwick town and limited space available, building network storage is not typically not technically viable. However, the solution identified does use storage through the creation of new assets which will maximise existing sewer capacity through a Smart Network approach.
Delivery timescales	The worst performing storm overflows will need to be addressed by 2035.

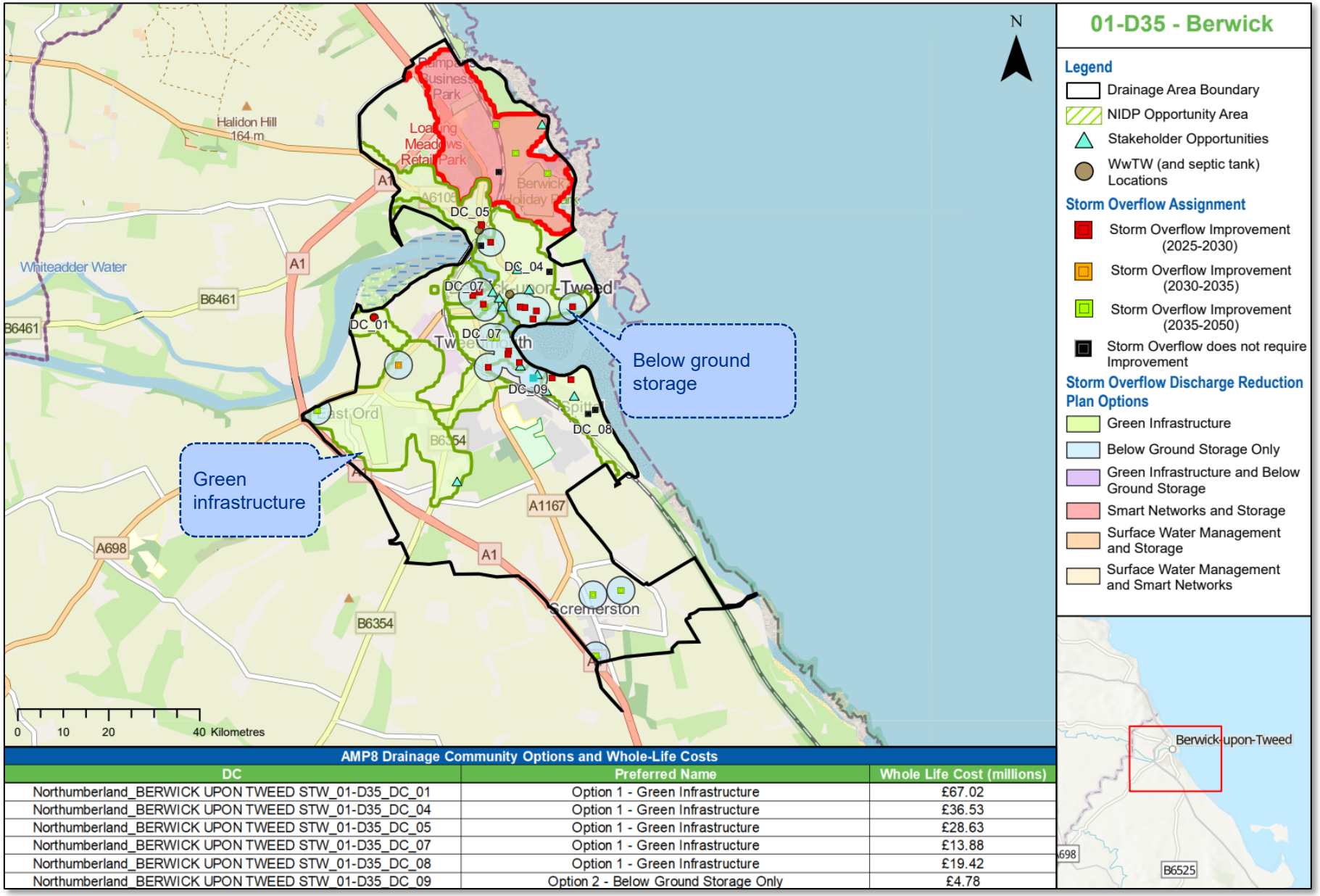
DPC eligibility assessment outcome

Capex (£m)	170.26
Opex (£m) (annual)	Solution dependent
Assumed asset life (years)	Solution dependent
Whole life totex (£m)	170.26+
Size test	Likely pass (incl. opex on an aggregate basis only)
Programme scalability test	Whilst some of the works will be of a value greater than the £5-10m threshold with asset lives >25 years, in practice it would likely be inefficient, impractical and unattractive to the market to subdivide the programme into larger and smaller works. For this reason, the programme fails the scalability test.
Construction risk test	A detailed assessment has not been completed as the asset class has been excluded on scalability grounds.
Operations and maintenance risk test	
Discreteness test	Not discrete – programme scalability test failed.
DPC eligibility	**Not eligible for DPC**

Berwick-upon-Tweed

The diagrams illustrate the works required. Berwick comprises:

- Green infrastructure works
- Below ground storage



AMP8 Drainage Community Options and Whole-Life Costs

DC	Preferred Name	Whole Life Cost (millions)
Northumberland_BERWICK UPON TWEED STW_01-D35_DC_01	Option 1 - Green Infrastructure	£67.02
Northumberland_BERWICK UPON TWEED STW_01-D35_DC_04	Option 1 - Green Infrastructure	£36.53
Northumberland_BERWICK UPON TWEED STW_01-D35_DC_05	Option 1 - Green Infrastructure	£28.63
Northumberland_BERWICK UPON TWEED STW_01-D35_DC_07	Option 1 - Green Infrastructure	£13.88
Northumberland_BERWICK UPON TWEED STW_01-D35_DC_08	Option 1 - Green Infrastructure	£19.42
Northumberland_BERWICK UPON TWEED STW_01-D35_DC_09	Option 2 - Below Ground Storage Only	£4.78

Adaptive pathways

- North Suffolk Winter Storage Reservoir
- Southend-on-Sea Re-use
- Caister Re-use
- Canvey Island Desalination

North Suffolk Winter Storage Reservoir

The Project

A new 3.5Mm^3 winter storage reservoir with a raw water transfer.

NWL has funding to accelerate detailed engineering design for the reservoir and for Lowestoft re-use, leading up to an adaptive pathway decision in 2027.

The project will be delivered for 2045 under the core plan, subject to the application of adaptive pathways.

Not eligible for DPC

This asset is below the size test for DPC and therefore is not eligible for DPC delivery.

Adaptive pathways

North Suffolk Reservoir Adaptive Programme decision date: 2027

Ongoing detailed design work is investigating whether the asset can be delivered more quickly than is currently assumed.

If the design works find that delivery can be accelerated and the NSR adaptive pathway decision is triggered in 2027, the asset will be delivered and operational for 2033.

Habitats regulations sustainability reduction adaptive programme decision date: 2024

Ongoing EA investigations are due to complete in April 2024. These investigations will confirm the size of sustainability abstractions required.

If the worst case scenario is adopted, the size of the sustainability abstraction reductions could cause supply deficits.

In this scenario both the North Suffolk Reservoir and the Lowestoft re-use plants will be required within the core plan.

£158.8m
Capex

£0.18m
Opex (annual)

100 years
Asset life

£176.8m
Whole life totex

Fail
Size test

Southend-on-Sea Re-use

The Project

A new water re-use plant at Southend-on-Sea:

- Phase A would constitute a 20.5Ml/D capacity re-use plant.
- A second phase (delivered in future AMPs if required) would add a further 20Ml/D to create a total capacity of 40.5Ml/D.

The project will be delivered for 2040 under the core plan. If the high PCC adaptive programme is triggered, the project will be accelerated, to be delivered for 2032.

The asset would be a resilience asset, operated at higher capacity in dry weather conditions.

Not eligible for DPC

Although the project's size is above the threshold, this project is likely to have a number of logistical and commercial challenges (akin to this discussed for Lowestoft above) which could make it unsuitable for DPC delivery.

From the point of selection in 2027, time will be insufficient time to deliver under DPC for the 2030 in service date.

Adaptive pathways

Adaptive pathway decision date: 2027

This project is required under several adaptive pathways – high PCC, high climate change, slow technology and high demand.

However, if required the reuse plant would only be required for 2 years to supplement supply before the end of NWL's 20Ml/d raw water trade agreement with Thames in 2035.

Timescales

If required, the project would need to be operational by April 2030, following a 3-year construction period starting in 2027.

Whilst the need for the project will be reviewed annually, the timing of the adaptive pathway decision point in 2027 means that by the time it is possible to say that the option ins required, there will be insufficient time available to develop the project through DPC.

£105.7m
Capex for phase 1

£12.06m
Opex (annual) (20.5Ml/d)

60 years
Asset life

£532.9m
Whole life totex

Pass
Size test

Caister Re-use

The Project

Future project within NWL's core plan.

A new 16.4Ml/D water re-use plant and transfer to Ormesby. The project would replace a reduction in deployable output resulting from planned abstraction licence reductions.

The project will be delivered for 2040. Development work will begin in subsequent AMPs.

Possibly eligible for DPC

The project passes the size threshold, however it faces commercial and operational complexities similar to Lowestoft and Southend re-use which may negatively impact its eligibility for DPC.

As the asset is not required until future AMPs, DPC eligibility should be reassessed at a later point, taking into account any learnings from the delivery of the earlier re-use plants which could affect the project's eligibility for DPC.

£66.1m
Capex

£4.48m
Opex (annual)

60 years
Asset life

£334.9m
Whole life totex

Pass
Size test

Canvey Island Desalination

The Project

Adaptive pathway decision date: 2030

A new 190Ml/d desalination plant

The project will only be required in the event that NWL's abstraction sustainability investigations indicate that high-level abstraction reductions are required - potentially up to 70% of Deployable Output in Essex.

If required development would begin in 2030 and the project would be delivered for 2040.

Likely eligible for DPC

Based on the asset type and costs set out in NWL's dWRMP24, this project would likely be considered 'DPC-by-default'. However, it would be key to consider the plant's centrality to NWL's Essex and Suffolk network to develop a refined view of eligibility for competition.

£893.2m
Capex

£93.4m*
Opex (annual)

60 years
Asset life

£6.5bn
Whole life totex

Pass
Size test

*opex based on a high utilisation scenario.

Initial assessment: capital programme

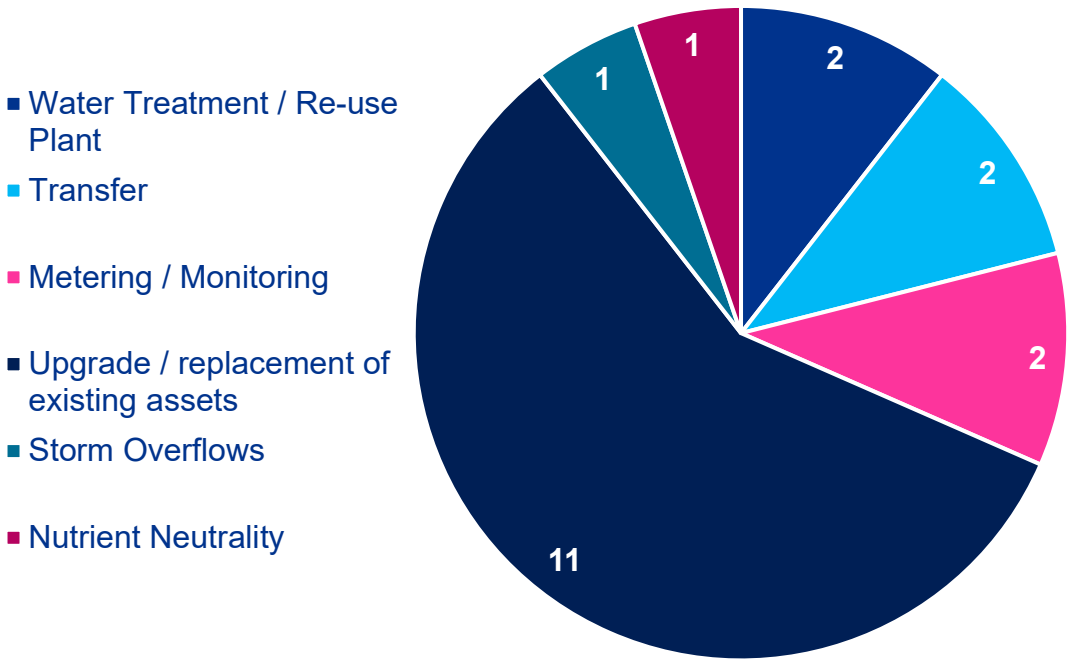
Appendix 1

NWL's investment plan

***Produced for initial assessment in February 2023** – costs values have since been updated in subsequent assessments*

NWL's draft core business plan contains a significant enhancement programme, involving a range of different project types and a total capex requirement of over £2bn. Several additional large projects are also identified in NWL's dWRMP24, which may be required if adaptive pathways are triggered.

Core business plan enhancement programme by project type



dWRMP24 adaptive pathways

NWL's Best Value Plan has been reflected in the core business plan for PR24. However, where aspects of the supply/demand balance vary from expectations (high-PPC, or increased abstraction reductions), additional significant water supply assets are likely to be required in the E&S region, potentially as early as 2032. The size test indicates these assets are likely to be eligible for DPC, and so it may be necessary to consider the implications of competitive delivery should these adaptive plans be triggered.

Project	Adaptive plan	Review point	Capex (£m)	Operational by:
Southend-on-Sea Water Reuse Phase 1	High-PCC	2027	106	2032
North Suffolk Winter Storage Reservoir	North Suffolk Reservoir delivery pace.		159	2035
Caister Water Reuse	High Environmental Destination (Abstraction reductions)		66	2040
Canvey Island Desalination			893	2040

Potential options for competitive delivery (1/2)

***Produced for initial assessment in February 2023** – costs values have since been updated in subsequent assessments*

Source	Project	Capex (£m)	Opex (annual) (£m)	Asset life (years)	Whole life totex (£m)	Size test	Discreteness test	DPC eligible?	Considered further in this assessment	
Core plan	Smart Metering - ESW & NW	154.1	0.43	15	206.8*	Passed	Potentially	**Likely**	Yes	*An assumption of 30% asset replacement during a contract term has been used to generate a whole life totex estimate. This would be subject to further analysis if the projects were taken forward for DPC.
	Continuous water quality monitoring	200.8	0.73	15	271.9*	Passed	Potentially	**Likely**		
	Lowestoft Water Reuse to Ellingham Mill	71.6	0.66	60	111.1	Failed	Potentially	**Possibly**		Renewal capex values are not included in the estimate at this stage, and are likely to increase whole life totex.
	Barsham WTW to Blyth Transfer	35.0	0.11	100	46.0	Failed	Unlikely	**Unlikely**	No	Insufficient whole life totex (note this also applies when assets are considered in combination as Suffolk Strategic Transfers).
	Holton WTW to Eye Airfield Transfer	35.2	0.25	100	60.2	Failed	Unlikely	**Unlikely**		
dWRMP24 Adaptive pathways	Southend-on-Sea Water Reuse (Phases 1 and 2)	256.8	12.06	60	980.4	Passed	Potentially	**Likely**	Yes	Currently not required until 2040, however under adaptive pathway may be brought forward to 2032.
	North Suffolk Winter Storage Reservoir	158.8	0.18	100	176.8	Failed	Potentially	**Possibly**		Currently not required until 2045, however may be brought forward if additional design shows it can be delivered earlier. Decision in 2026.
	Caister Water Reuse	66.1	4.48	60	334.9	Passed	Potentially	**Likely**		Not required until 2040
	Canvey Island Desalination	893.2	93.37	60	6495.4	Passed	Potentially	**Likely**		Decision point is not until 2032 in AMP9.

Potential options for competitive delivery (2/2)

***Produced for initial assessment in February 2023** – costs values have since been updated in subsequent assessments*

Source	Project	Capex (£m)	Opex (annual) (£m)	Asset life (years)	Whole life totex (£m)	Size test	Discreteness test	DPC eligible?	Considered further in this assessment	
Core plan	Linford Water Treatment Works	12.7	0.16	60	22.2	Failed	Potentially	**Unlikely**	No	Insufficient whole life totex
	Bungay to Broome Raw Water Transfer	4.5	0.002	100	4.7	Failed	Potentially	**Unlikely**		
	Storm overflows (Combination of investigations and targeted upgrades, including storage and stormwater treatment).	984.6	0.73	25*	1002.9	Passed	Unlikely	**Unlikely**		*Actual asset lives not known, 25 years is representative of a typical DPC contract term. Would require further investigation to understand suitability for DPC.
	Nutrient Neutrality (targeted upgrades at 16 sites, with several catchment solutions attached).	43.9	5.65	25*	185.0	Failed	Unlikely	**Unlikely**		*Actual asset lives not known, 25 years is representative of a typical DPC contract term. Catchment solutions would require further investigation to understand suitability for DPC.
	Growth at Wastewater Treatment works	57.4	Unknown	Unknown	57.4	Failed	Unlikely	**Unlikely**		
	Nitrates	93.7	Unknown	Unknown	93.7	Failed	Unlikely	**Unlikely**		
	Cryptosporidium	8.4	Unknown	Unknown	8.4	Failed	Unlikely	**Unlikely**		
	Geosmin & MIB	13.6	Unknown	Unknown	13.6	Failed	Unlikely	**Unlikely**		
	Flooding resilience	34.5	Unknown	Unknown	34.5	Failed	Unlikely	**Unlikely**		
	Power resilience	51.0	Unknown	Unknown	51.0	Failed	Unlikely	**Unlikely**		
	Reservoir safety	47.0	Unknown	Unknown	47.0	Failed	Unlikely	**Unlikely**		
	Lead replacement	70.7	Unknown	Unknown	70.7	Failed	Unlikely	**Unlikely**		
	HazRev - Water treatment process climate change resilience	99.5	Unknown	Unknown	99.5	Failed	Unlikely	**Unlikely**		Projects intrinsic to NWL's network. Upgrades on existing assets, growth and resilience. Difficult to carve out a clear DPC scope.
	HazRev - Water treatment process resilience	30.0	Unknown	Unknown	30.0	Failed	Unlikely	**Unlikely**		
	Algae	27.6	Unknown	Unknown	27.6	Failed	Unlikely	**Unlikely**		

Lowestoft Re-use

The Project

A new Water Treatment Works with a capacity of 3.5–11Ml/D, and a transfer pipeline to Ellingham Mill.

The new WTW would be fed from Anglian Water's Water Recycling Centre.

Project includes the treatment process, land, buildings, pumping stations and water mains.

Possibly DPC eligible

Whilst below the whole life totex threshold, the nature of the asset has the potential to be considered discrete, meaning this opportunity could be considered under DPC.

£71.6m
Capex

£0.66m
Opex (annual)

60 years
Asset life

£111.1m
Whole life totex

Fail
Size test

Based on PR19 guidance – analysis undertaken prior to publication of PR24 guidance

Initial discreteness considerations

Criterion	Provisional assessment
Stakeholder interactions and statutory obligations	A defined set of stakeholders exists; principally NWL and AWS. Customer perception / support for re-use schemes needs testing, but is manageable.
Interactions with the network	Asset has a single point of interaction with AWS' (inflow) and NWL's (outflow) networks. Risks could be allocated effectively, and these interactions have been assessed as DPC eligible elsewhere.
Contributions to supply/capacity and ability to specify outputs	Asset output requirements could be readily defined based on the finalised need. It would be possible to accommodate stable and/or variable flows.
Asset and operational failures	Whilst supply to Sizewell Nuclear Plant may place emphasis on operational failures, this risk would exist were the plant not delivered through DPC, and should be manageable contractually.

Other key considerations

dWRMP24 Best Value Plan shows Lowestoft in service by 2032. Depending on further initial design completed by 2026, an adaptive pathway may push the in service date back to 2040 (bringing forward the winter service reservoir).

Renewal capex costs may also form a large part of anticipated project costs, and should be considered when assessing DPC eligibility.

***Produced for initial assessment in February 2023** – costs values and discreteness assessment have been refreshed in the updated assessment.*

Smart metering

The Project

Across the NW and E&S regions, a combination of:

- Whole area metering
- Smart meter installation
- Meter replacements
- Meter optants

Overall goal of replacing all meters with smart meters by 2035. Targeting a demand saving of 33.91Ml/d.

Likely DPC eligible

It is feasible to consider DPC for a smart metering programme. Assuming a 30% asset replacement rate across the term, the programme exceeds the £200m WLT threshold.

£154.1m*
Capex

£0.43m
Opex (annual)

15 years
Asset life

£206.8m
Whole life totex

Pass
Size test

Based on PR19 guidance – analysis undertaken prior to publication of PR24 guidance

Initial discreteness considerations

Criterion	Provisional assessment
Stakeholder interactions and statutory obligations	A smart metering programme could be aligned with statutory rules for providing meters to customers. Consideration would need to be given to the management of CAP – customer interactions.
Interactions with the network	Outside of installation, interaction with NWL's network is expected to be negligible. Meter data format would need to be specified to meet NWL's needs and progress towards a smart network.
Contributions to supply/capacity and ability to specify outputs	Assets do not contribute directly to supply, but may reduce demand. Outputs (meter information) are easily specified.
Asset and operational failures	Impact of an individual meter's failure would be negligible. The impact of a widespread defect could be significant. In either scenario, failure likely would not affect NWL's primary service obligations.

Other key considerations

Given the relatively short asset lives for meters, it would be key to consider the approach to contract length, asset depreciation, replacement and hand back when defining the commercial arrangements for a smart metering DPC project.

The timing of a DPC smart meter procurement would need to be aligned to the expiry of NWL's existing contracts for supply, installation and data management, in 2028.

* Combination of Essex & Suffolk and North East regions. Does not include leakage & water efficiency costs included in enhancement case.

***Produced for initial assessment in February 2023** – costs values and discreteness assessment have been refreshed in the updated assessment.*

Continuous water quality monitoring

The Project

Installation of c.2000 water quality monitors in total, prioritising sensitive waters in AMP8.

Between 573 and 1,187 monitors at high-priority sites in AMP8 (depending upon clustering and outfalls solution selected)

Between 393 and 951 sites remaining to be delivered in AMP9

Likely DPC eligible

It is feasible to consider DPC for a monitoring programme. The programme passes the size threshold as currently configured, and the passive nature of the assets support an assessment that they are discrete.

£200.8m
Capex

£0.73m
Opex (annual)

15 years
Asset life

£271.9m
Whole life totex

Pass
Size test

Based on PR19 guidance – analysis undertaken prior to publication of PR24 guidance

Initial discreteness considerations

Criterion	Provisional assessment
Stakeholder interactions and statutory obligations	The obligation to instal quality monitors is subject to new legislation being passed. Legislative obligations may be stringent, e.g. monitoring information to be available in real-time.
Interactions with the network	Whilst there are several points of interface with the network, assets are passive and require minimal operation, facilitating clear boundaries.
Contributions to supply/capacity and ability to specify outputs	There will be no supply/demand contribution. Outputs will be easily specified based on legislative requirements.
Asset and operational failures	Monitor failure impact upon Appointee operation may be minimal. Failure of monitoring and data publication could have regulatory ramifications.

Other key considerations

The definition of the monitoring programme will be key, potentially reducing the scope and volume of meters required as the legislative requirement develops.

If under DPC, it may be appropriate to consider a different programme schedule for the installation of monitors than the AMP8 / AMP9 split which is currently envisaged.

***Produced for initial assessment in February 2023** – costs values and discreteness assessment have been refreshed in the updated assessment.*

VfM analysis

Appendix 2

Value for Money modelling

Value for money analysis considers the costs to customers under a DPC delivery route (factual) compared to the costs to customers of delivery in-house (counterfactual).

Revenues are calculated under both models and then discounted at the social time preference rate to produce a Net Present Value (NPV).

The NPV between the two scenarios and key value drivers are compared to determine the VfM of each model.

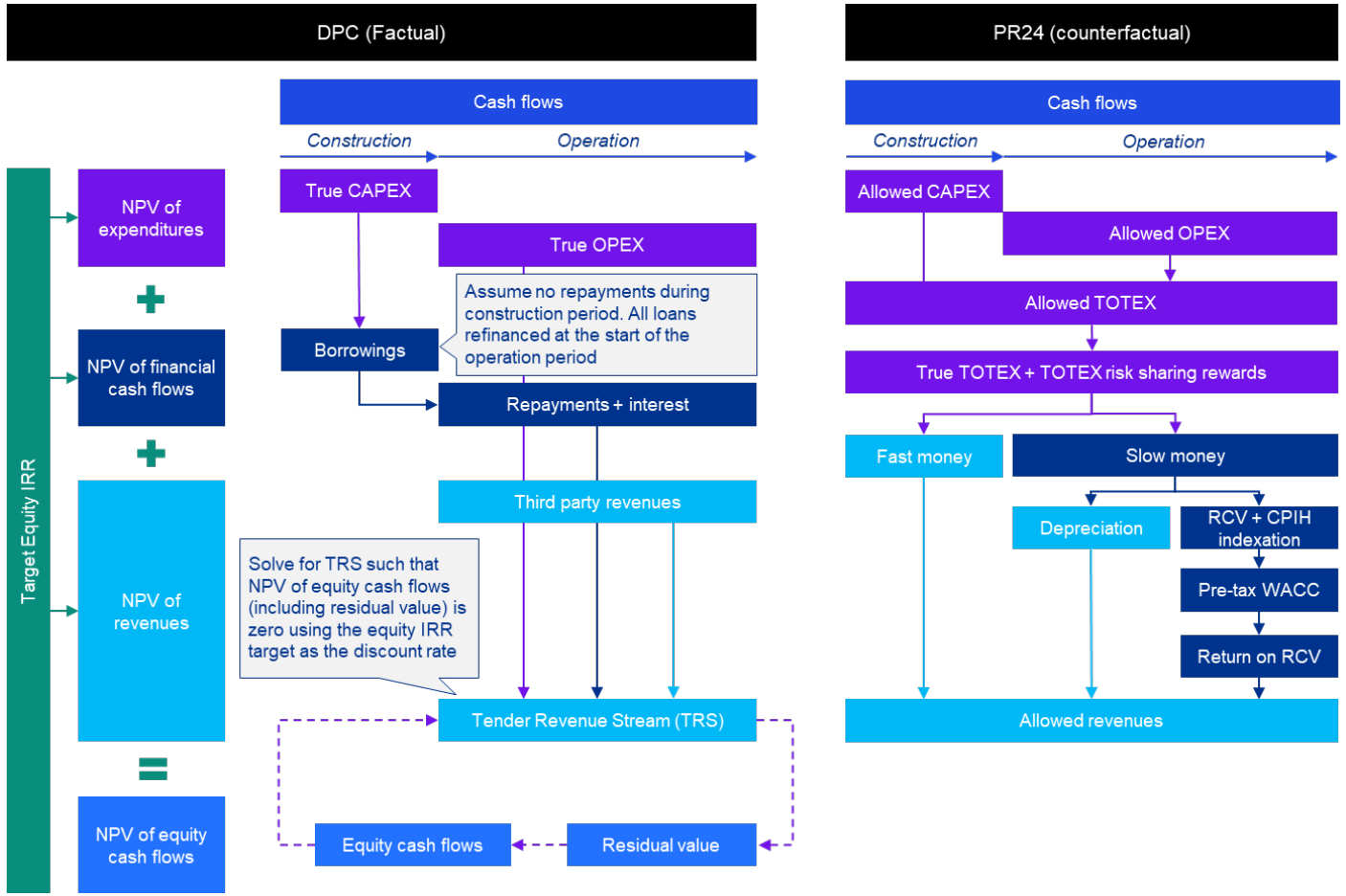
The counterfactual and factual models have different revenue and cost profiles:

- Revenues under the factual (DPC) begin after the commission of the asset post-construction and assume a realistic project finance model with a set tender revenue stream for the project
- Revenues under the counterfactual (in-house) reflect the regulatory model and start revenues earlier with costs to customers peaking at the end of construction

Cost of capital assumptions under the DPC model are based on Ofwat's standard assumptions for debt margins and current market base rates.

Ofwat's standard efficiency assumptions are used for capex, opex and other additional costs, e.g. procurement costs, bid costs and contract management costs.

Assets are depreciated on a straight-line basis over their useful economic lives. The residual value (if applicable) under the DPC model is assumed to equal the undepreciated asset value.



Value for Money assumptions (1/2)

Area	Item	DPC (Factual) Assumptions	In-house (Counterfactual) Assumptions	Updates / changes
Customer payments	Value	Determined by CAP contract payments and Appointee costs	Determined by Allowed Revenues from PR framework	N/A
	Timing	From first payment by customers which would usually be expected after asset completion. If improved contractual terms are identified with earlier payments then these should be considered.	From first payment by customers which would usually be when the Appointee starts collecting from customers as per its business plan 'allowed revenue' profile.	Ofwat update: Revenue commences on acceptance of the asset, except where an alternative approach is demonstrated to deliver better VfM (Sept 2022 DPC guidance, pg. 78)
Contract period	Length	Mid case 25 years, Lower-case 20 years, Upper-case 50 years	Not needed	Ofwat update: 25 years+ (Sept 2022 DPC guidance, pg.33)
PV calculation	Period	From the start of the customer payments until the end of the asset life (or until there is no difference in asset value, maintenance and finance costs)		N/A
	Discount rate	Discount rate of 3.5% real decreasing over time (based on HM Treasury Green Book Supplementary Guidance: discounting) 3.5% 0-30 years; 3.0% 31-75 years; 2.5% 76-125 years		N/A
Indexation		CPIH	CPIH	N/A
Asset depreciation	Method	Straight-line or as per companies policy for asset type, the treatment should be consistent between DPC and in-house delivery		Ofwat update: Straight line (Sept 2022 DPC guidance, pg.43)
	Depreciation rate	Mid-case – as per company policy for this asset type Lower-case +25% faster company policy rate	As per company policy for this asset type	

Value for Money assumptions (2/2)

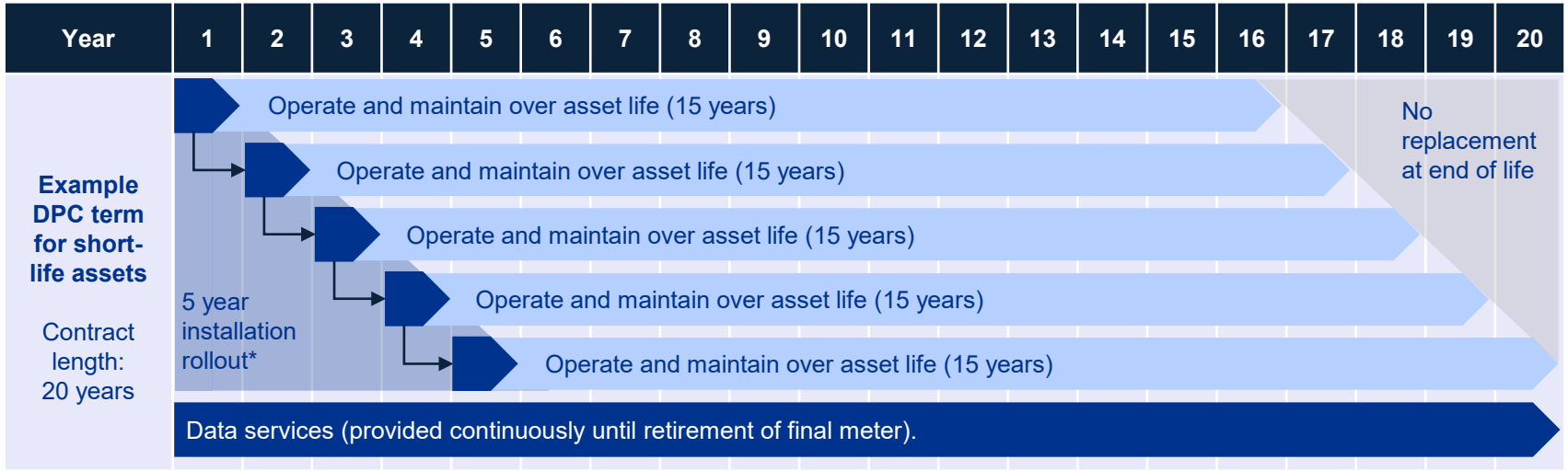
Area	Item	DPC (Factual) Assumptions	In-house (Counterfactual) Assumptions	Updates / changes
Financing costs	Cost of debt	Construction: forward Libor 6m swap + Margin (220bsp –240bsp) Operation: forward Gilt / Libor 6m swap + Margin (120bsp –140bsp) RCV bullet repayment: forward Gilt / Libor 6m swap + Margin (120bsp –140bsp)	Allowed return on debt 2.60% (CPIH real) Allowed return on equity 4.14% (CPIH real including a debt beta) Wholesale allowed return on capital 3.29% (vanilla CPIH real) As per Ofwat's early view of Appointee allowed return set out in Appendix 11 of the PR24 Final Methodology	Project specific update: Ofwat's "early view" of indicative WACC 3.29% from the PR24 final methodology has been used in place of the PR19 WACC.
	Cost of equity	Equity IRR (Real) 8% (Upper case 7%, lower case 10%)		
	Gearing	Mid case 85% (Upper case 90%, lower case 80%) after asset completion	As per Ofwat's notional gearing of 60%	N/A
Cost differentials	Capex efficiency saving	Mid case 10% (upper case +15%, lower case 5%)	In-house is base case	N/A
	Opex efficiency saving	Mid case 10% (upper case +15%, lower case 5%)		
	Additional bidder costs	Additional bidder costs of 2% of capital spend, (Upper case 1%, lowercase 3%)		
	Procurement	Procurement costs of 1% of capital spend (uppercase 0.5%, lowercase 2%)		
	Management	Contract management costs £150k per annum (lowercase £300k per annum for high operational interaction schemes)		
Terminal value	Assumptions	Please disclose clearly any assumptions about terminal value	N/A	N/A

Designing a commercial model for short-life assets

To conduct this initial VfM analysis for smart metering and river water quality monitoring, a single cycle of assets has been assumed. If taken forward for DPC, the commercial model for these assets will require more detailed consideration.

Programmes of several short-life assets such as meters and monitors have several key differences from single large assets:

- A CAP will expect revenues to commence in proportion to the assets delivered (e.g. a payments begin in stages), meaning revenues will begin before the rollout is complete (under a typical project finance model, no revenues would be paid before successful commissioning).
- As revenues commence earlier, the CAP may be able to reinvest early cash flows to finance the remainder of the rollout, potentially reducing the initial borrowing requirement.
- The assets are likely to be fully depreciated within the contract term. Revenues would reduce in the final years of the contract as the assets installed first are retired (and replaced under a new contract). Depending upon contract length, the project may involve one or more cycles of asset replacement.
- In addition to the installation, operation and maintenance of the physical metering/monitoring assets, a data service will need to be provided throughout the life of the contract. Contractual requirements will be required on handover of the data to ensure continuous service.



The rollout profile could be different (possibly faster) under a project finance structure driven by a specialist supplier. A 5-year programme is shown here as an example.

Areas for future consideration

The appropriate commercial model for a metering or monitoring programme should be efficient, attractive to the market and drive value for customers in the long term.

Different models could be investigated further, such as:

- A model akin to that shown to the left, but with a 40 year contract, allowing for a cycle of replacement within the term.
- A model akin to that used for energy meters, whereby a licence to provide metering / monitoring services would be tendered for a defined period (not necessarily linked to asset life), with handover provisions to manage changes in licensee.

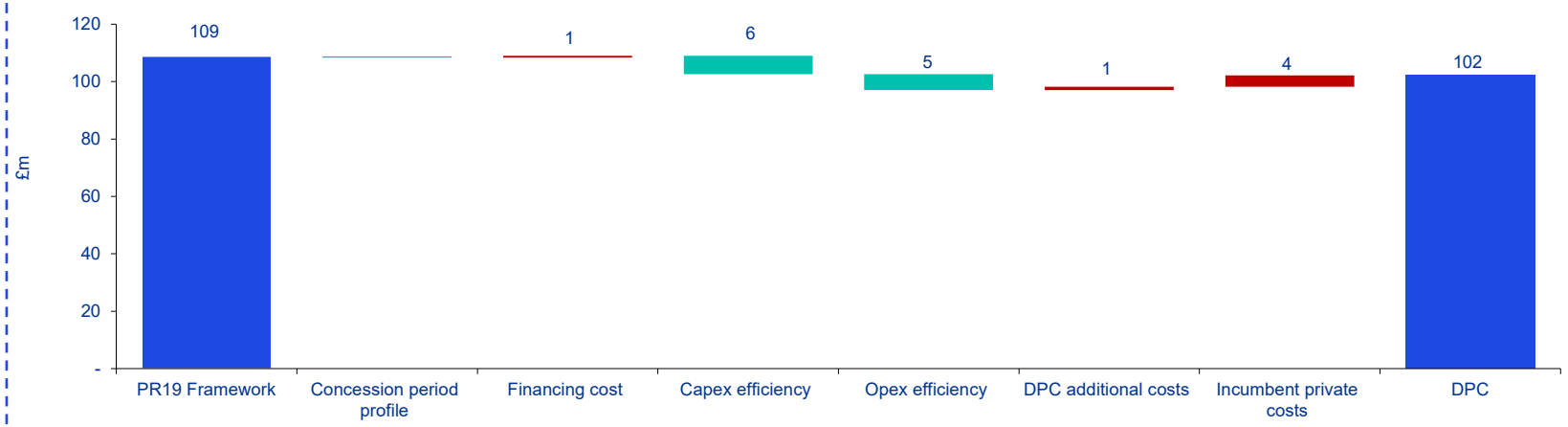
Further analysis could consider the relative VfM of different options.

Market testing different commercial model options may help to ascertain which is most likely to be of interest to bidders.

Lowestoft re-use VfM analysis: mid-case results

The results of the VfM modelling for Lowestoft Reuse are set out below. The results have been prepared using the assumptions set out in the appendix 3 and are comparing DPC to in house delivery.

Value driver analysis



Mid case	£m
NPV in-house	109
NPV DPC	102
Difference	(6.5)
Difference (%)	6.07%

Total costs to customers discounted to the start of construction (2028).

Findings

- The analysis considers a 5 year construction period followed by a 25 year operations period and does not include any renewal capex. Under this (mid case) scenario, delivery under DPC would result in lower costs to customers than if the scheme were delivered by NWL under the PR24 framework.
- The key value drivers under DPC are the benefits from capex and opex efficiencies of £6m and £5m respectively. As the project has a relatively low initial capex requirement, the potential to drive efficiency through the financing of construction is partially reduced (compared to an asset with a higher capex requirement). Given the larger opex costs (as a proportion of total project costs), the opex efficiency assumption drives VfM across the operational phase.
- Financing costs are marginally higher under the factual (DPC) case than under in-house delivery due to recent increases in the cost of debt, which may typically be expected to provide a CAP with a comparatively lower WACC than under the in-house scenario (due to higher gearing). However, this is not the case under the current market conditions.
- These benefits are partially offset by the impact of additional costs from DPC and the incumbent private costs effect (procurement and contract managements costs) which would not be incurred if delivered in-house. The impact of incumbent private costs is larger than would usually be expected because of the project's size.

***VfM analysis conducted in May 2023** – project costs used in VfM analysis align to project costs reflected in the updated assessment.*

Lowestoft re-use VfM analysis: sensitivities

VfM of DPC **improves** vs. mid case

VfM of DPC **deteriorates** vs. mid case

Using the scenario assumptions set out in the table below, sensitivity analysis demonstrates the impact of changing variables on the results of the VfM analysis under the mid-case.

Results under the mid case	(6.5)	NPV of costs to customers under the DPC delivery route minus the NPV of costs to customers under the in-house delivery route (£m)

Variables	**Assumption under different scenarios***			**DPC compared with in-house NPV**	
	Low	**Mid**	**High**	**Low**	**High**
Contract life (years)	20	25	40	(5.6)	(8.9)
Depreciation rate (%)	25%	As per in-house	Not specified	(6.5)	Not specified
Equity IRR, real (%)	10%	8%	7%	(1.2)	(9.3)
Gearing (%)	80%	85%	90%	(2.7)	(10.5)
Capex efficiency (%)	5%	10%	15%	(3.2)	(10.0)
Opex efficiency (%)	5%	10%	15%	(3.9)	(9.3)
Procurement costs (% of capex)	2%	1%	0.5%	(5.7)	(7.0)
Bidder costs (% of capex)	3%	2%	1%	(6.0)	(6.6)
Contract management costs (annual)	£300k	£150k	Not specified	(3.3)	Not specified

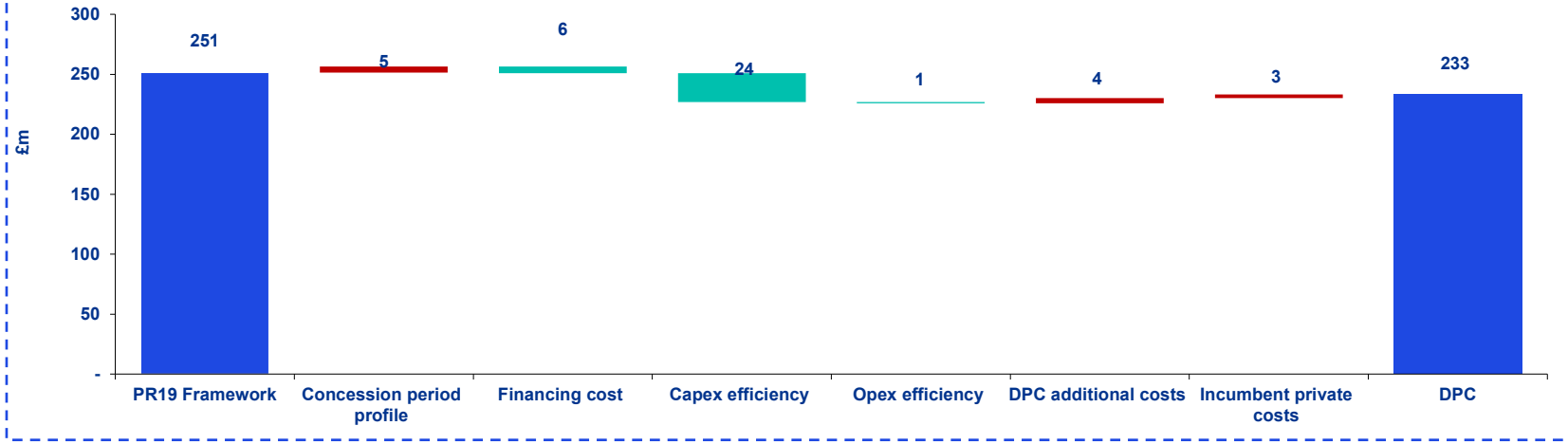
Scenarios are as specified in Ofwat's assumptions within IAP 'Direct Procurement for Customers detailed actions'

***VfM analysis conducted in May 2023** – project costs used in VfM analysis align to project costs reflected in the updated assessment.*

Smart metering VfM analysis: mid-case results

The results of the VfM modelling for smart metering are set out below. The results have been prepared using the assumptions set out in appendix 3 and are comparing DPC to in house delivery.

Value driver analysis



Mid case	£m
NPV in-house	251
NPV DPC	233
Difference	(18.2)
Difference (%)	7.83%

Total costs to customers discounted to the start of construction (2028-29).

Findings

- The analysis considers a 7 year construction period followed by a 15 year operations period for each asset, creating a total period of 22 years. No asset replacement has been assumed. Under this (mid case) scenario, delivery under DPC would result in lower costs to customers than if the scheme were delivered by NWL under the PR24 framework.
- The key value driver under DPC is the benefit from the capex efficiency of £24m. There are also marginal benefits from financing and opex efficiency of £6m and £1m respectively.
- The difference in financing costs between the factual (DPC) case and in-house case is marginal, due to recent increases in the cost of debt. It would typically be expected that the market cost of debt would provide a CAP with a comparatively lower WACC than under the in-house scenario (due to higher gearing). However, this is not the case under the current market conditions.
- These benefits are offset slightly by the impact of additional costs from DPC and the incumbent private costs effect (procurement and contract managements costs) which would not be incurred if delivered in-house.

***VfM analysis conducted in May 2023** – project costs used in VfM analysis align to project costs reflected in the updated assessment.*

Smart metering VfM analysis: sensitivities

VfM of DPC **improves** vs. mid case

VfM of DPC **deteriorates** vs. mid case

Using the scenario assumptions set out in the table below, sensitivity analysis demonstrates the impact of changing variables on the results of the VfM analysis under the mid-case.

Results under the mid case	(18.2)	NPV of costs to customers under the DPC delivery route minus the NPV of costs to customers under the in-house delivery route (£m)

Variables	**Assumption under different scenarios***			**DPC compared with in-house NPV**	
	Low	**Mid**	**High**	**Low**	**High**
Contract life (years)	20	25	40	N/A – Due to asset lifecycle profile, only a low-case has been considered.	
Depreciation rate (%)	25%	As per in-house	Not specified	(18.1)	Not specified
Equity IRR, real (%)	10%	8%	7%	(8.7)	(22.3)
Gearing (%)	80%	85%	90%	(11.1)	(25.5)
Capex efficiency (%)	5%	10%	15%	(5.6)	(30.4)
Opex efficiency (%)	5%	10%	15%	(17.7)	(18.5)
Procurement costs (% of capex)	2%	1%	0.5%	(15.1)	(19.6)
Bidder costs (% of capex)	3%	2%	1%	(16.0)	(20.2)
Contract management costs (annual)	£300k	£150k	Not specified	(18.2)	Not specified

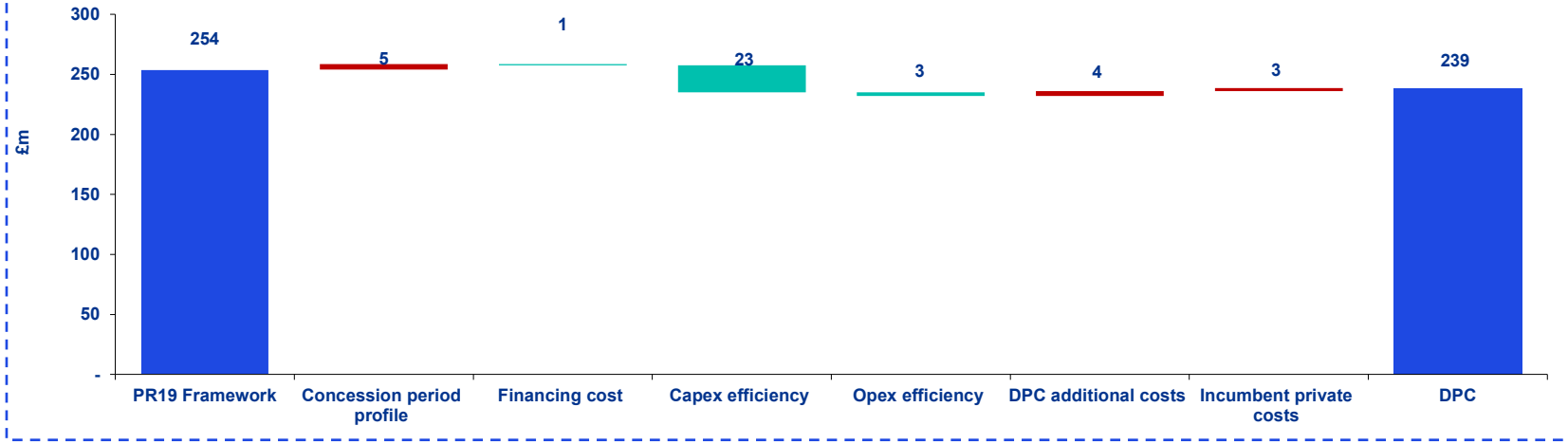
Scenarios are as specified in Ofwat's assumptions within IAP 'Direct Procurement for Customers detailed actions'

***VfM analysis conducted in May 2023** – project costs used in VfM analysis align to project costs reflected in the updated assessment.*

CWQM VfM analysis: mid-case results

The results of the VfM modelling for continuous water quality monitoring are set out below. The results have been prepared using the assumptions set out in appendix 3 and are comparing DPC to in house delivery.

Value driver analysis



Mid case	£m
NPV in-house	254
NPV DPC	239
Difference	15.4
Difference (%)	6.44%

Total costs to customers discounted to the start of construction (2025-26).

Findings

- The analysis considers a single cycle of monitoring assets, installed over a 10 year construction period followed by a 15 year operations period for each asset, creating a total period of 25 years. No asset replacement has been assumed. Under this (mid case) scenario, delivery under DPC would result in lower costs to customers than if the scheme were delivered by NWL under the PR24 framework.
- The key value driver under DPC is the benefit from the capex efficiency of £23m. There are also marginal benefits from financing and opex efficiency of £1m and £3m respectively.
- The difference in financing costs between the factual (DPC) case and in-house case is marginal, due to recent increases in the cost of debt. It would typically be expected that the market cost of debt would provide a CAP with a comparatively lower WACC than under the in-house scenario (due to higher gearing). However, this is not the case under the current market conditions.
- These benefits are offset slightly by the impact of additional costs from DPC and the incumbent private costs effect (procurement and contract managements costs) which would not be incurred if delivered in-house.

***VfM analysis conducted in May 2023** – project costs used in VfM analysis align to project costs reflected in the updated assessment.*

CWQM VfM analysis: sensitivities

VfM of DPC **improves** vs. mid case

VfM of DPC **deteriorates** vs. mid case

Using the scenario assumptions set out in the table below, sensitivity analysis demonstrates the impact of changing variables on the results of the VfM analysis under the mid-case.

Results under the mid case	(15.4)	NPV of costs to customers under the DPC delivery route minus the NPV of costs to customers under the in-house delivery route (£m)

Variables	**Assumption under different scenarios***			**DPC compared with in-house NPV**	
	Low	**Mid**	**High**	**Low**	**High**
Contract life (years)	20	25	40	N/A – Due to asset lifecycle profile, only a mid-case has been considered.	
Depreciation rate (%)	25%	As per in-house	Not specified	(15.2)	Not specified
Equity IRR, real (%)	10%	8%	7%	(5.2)	(19.7)
Gearing (%)	80%	85%	90%	(8.8)	(22.0)
Capex efficiency (%)	5%	10%	15%	(3.5)	(26.9)
Opex efficiency (%)	5%	10%	15%	(13.7)	(16.9)
Procurement costs (% of capex)	2%	1%	0.5%	(12.6)	(16.5)
Bidder costs (% of capex)	3%	2%	1%	(13.2)	(17.4)
Contract management costs (annual)	£300k	£150k	Not specified	(15.2)	Not specified

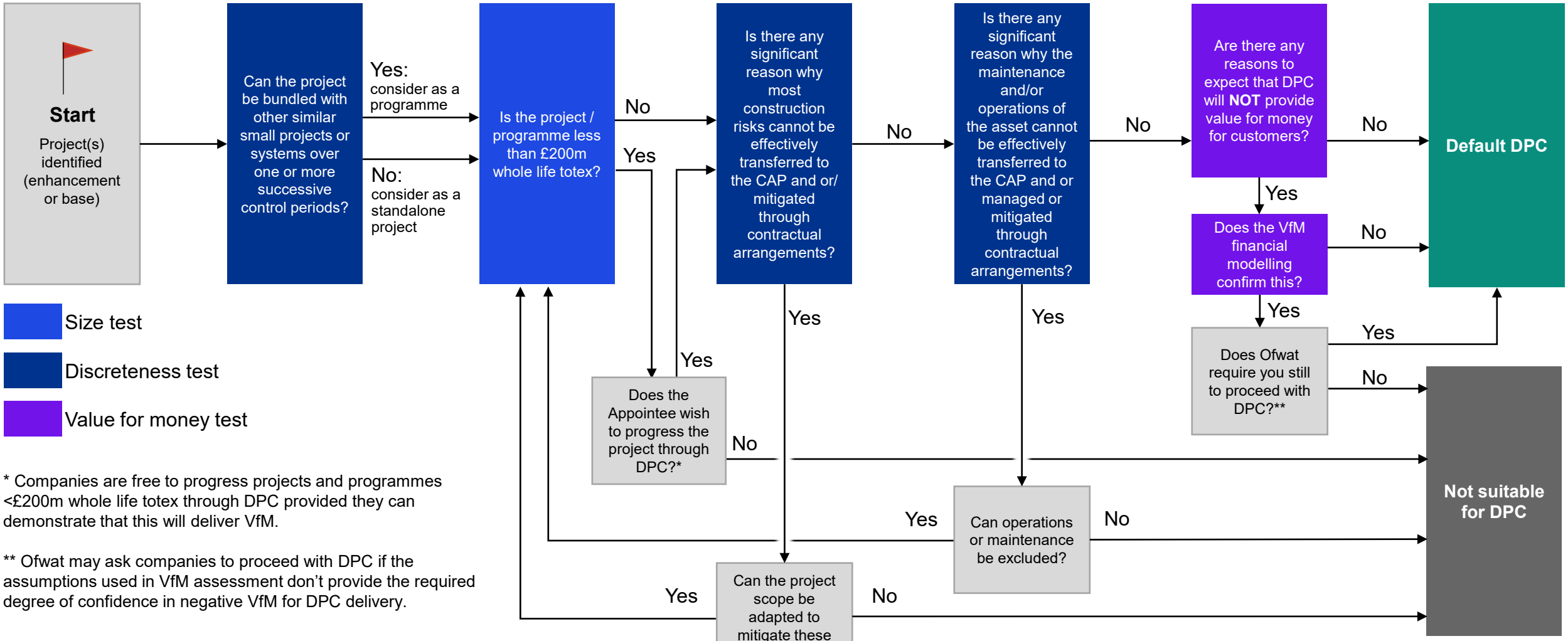
Scenarios are as specified in Ofwat's assumptions within IAP 'Direct Procurement for Customers detailed actions'

***VfM analysis conducted in May 2023** – project costs used in VfM analysis align to project costs reflected in the updated assessment.*

PR24 DPC eligibility assessment methodology

Appendix 3

DPC eligibility assessment methodology flow chart



* Companies are free to progress projects and programmes <£200m whole life totex through DPC provided they can demonstrate that this will deliver VfM.

** Ofwat may ask companies to proceed with DPC if the assumptions used in VfM assessment don't provide the required degree of confidence in negative VfM for DPC delivery.

Size test

Test	Is the whole life totex of the project or programme >£200m?

Yes

Whole life totex of the project (or programme or bundle of similar projects) exceeds £200m threshold.

The project is suitable for DPC and a discreteness test should be performed

- It is expected that companies should consider bundling schemes under the program scalability discreetness test, even when individual projects are over £200m to provide even more cost-effective solutions.

No

Whole life totex of the project (or programme or bundle of similar projects) does not exceed £200m threshold.

The project may not be suitable for DPC, however

- It will be necessary to check if the projects or assets in questions cannot be amalgamated to form a programme with a whole life totex >£200m.
- The companies still may proceed with DPC if they believe that the project is discrete and it's delivering through DPC will bring value for customers or if they believe that project costs could exceed £200m after refinement of the estimation.

Method of application:

- Consider all relevant components of whole life totex when performing the calculation.
  - Initial capex
  - Opex
  - Renewal capex (ongoing, and major renewals)
  - Asset life (defined by the asset(s) which represent the majority of project capex).
- All costs should be presented in real terms.
- Per Ofwat's final methodology, all costs in the business plan data tables, commentary and narrative should be presented in the 2022/23 price base*.

$$\boldsymbol{Whole\ life\ totex = initial\ capex + (annual\ opex \times asset\ life) + renewal\ capex}$$

Factors to consider:

- Have all assets' useful economic lives (UEL) been defined consistently?
  - Where assets with different UELs are combined into programmes, has a consistent methodology been taken to whole life totex, e.g. a weighted average, or the asset with the longest UEL.
- It will be useful to maintain a summary view of the relative costs associated with assets which comprise a packaged programme, so that the impact on the size threshold can be easily understood if one asset is removed (in the application of the subsequent tests).
- Have any relevant projects below £200m whole life totex been considered, where relevant?
- See the programme scalability slide for discussion on packaging for the purpose of the size test.

* Ofwat (2022) PR24 Final Methodology Appendix 9 Setting Expenditure Allowances, pg.85

Discreteness test 1: Programme scalability

Test	For individual projects or assets, is the sum of such systems or similar small projects proposed by a water company over one or more successive control period such that the whole life totex for all those projects or assets combined into a programme is less than £200m?

Yes

Combined projects and/or assets in proposed programme do not meet the whole life totex threshold for consideration for DPC

The project or programme may not be suitable for delivery through DPC.

- It will be necessary to demonstrate why the projects or assets in questions cannot be amalgamated to form a programme with a whole life totex >£200m.
- Conversely, if the preference is to pursue DPC, it will be necessary to provide a business case setting out why the project is discrete and why DPC will deliver value for money for customers.

No

Either single project or combined projects and/or assets in proposed programme meet the whole life totex threshold for consideration for DPC

The project is considered "DPC by default".

- Consider whether the scope could be further expanded to include any additional assets or works.
- The assessment should proceed to the second discreteness test.

Method of application:

1. Develop a comprehensive view of the capital programme across AMP8 and successive price controls.
2. Identify any large discrete projects which exceed the size threshold. Consider whether other local assets or works could be combined to form a larger programme.
    - For example, could a transfer be included in a package alongside a new treatment works?
3. Review smaller projects to identify opportunities to create DPC works packages. Consider on what basis assets or works could be amalgamated to form programmes of works, for example:
    - Preferred solution – e.g. similar assets or works
    - Location – e.g. a range of assets within a defined geography.
    - Risk profile – e.g. where similar risks apply to the assets within the package.
    - Timing – e.g. where there is a logical grouping based on the schedule for delivery.

Factors to consider:

- Highlight any key assumptions made that underline the scope of the project or programme, alongside the change that would be required if the assumption changed.
- Consider whether the project or programme will be attractive to the market as packaged.
- Articulate how the approach to amalgamation has maximised the value for money offered through the use of DPC.

Ofwat guidance update July 2023 - In the application of the scalability test:

- Bundled project: The cost of each discrete asset should be at least £5-10m.
- Asset life vs. contract life: Where the average life of the asset life of the project as a whole is materially less than the expected life of a CAP agreement (25 years + construction), the project should not be put forward for DPC.

Discreteness tests 2 & 3: Construction risk and Operations and Maintenance risk

Test	Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or mitigated through contractual arrangements?

Yes

Some significant construction risks cannot be effectively transferred to the CAP and or/ mitigated through contractual arrangements

Some or all of the project or programme may be unsuitable for DPC.

It will be necessary to demonstrate:

- Why the construction risks cannot be transferred to a CAP.
- Why the risks cannot be managed through the contract or mitigated through other means.

Then, it will be necessary to consider which parts of the project are suitable for delivery by DPC and adapt the scope accordingly. Where scope is reduced, the size and programme scalability tests should be repeated.

No

All significant construction risks could be effectively transferred to the CAP and or/ mitigated through contractual arrangements

The project or programme is suitable for DPC.

- The assessment should proceed to the third discreteness test.

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?

Yes

The maintenance and/or operations of the asset cannot be effectively transferred and or managed or mitigated through contractual arrangements

Some or all of the project or programme may be unsuitable for DPC.

- Consider which parts of the project could be constructed by a CAP but handed back to the Appointee post-construction
- Depending on which responsibilities cannot be transferred, consider DBF, DBFM, and DBFO models.
- Where scope is reduced, the size and programme scalability tests should be repeated.

No

The maintenance and operations of the asset could be effectively transferred to the CAP and or managed or mitigated through contractual arrangements

The project or programme is suitable for DPC.

- Consider whether the scope could be further expanded to include any additional assets or works.
- Consider whether VfM analysis would be valuable at this stage.
- Consider the regulatory allowance required to develop and procure the project.
- Consider the incentives which could be attached to the delivery of the project.

Application: Construction risk and Operations and Maintenance risk tests

Method of application:

1. Set out the relevant risks specific to each project or programme. Begin with Ofwat's table of risks as set out in it's DPC guidance and identify any additional risks which require specific consideration for each project or programme.
    a) Are there any risks specific to the asset type, the nature of the works required or likely tender model which need to be considered.
2. Devise an initial risk allocation for the project between the Appointee, Customers and CAP, comparing against Ofwat's allocation of risks and considering:
    a) Who is best placed to manage the risk and whether the market would be willing to accept responsibility for it.
    b) Whether transferring the risk is likely to drive Value for Money or result in excessive risk pricing in the procurement process.
3. Where applicable, for each risk set out the mitigations assumed which will support the ability to effect risk transfer, e.g.
    a) Activities undertaken to understand risk pre-tender to mitigate risks and enable effective risk pricing (e.g. design, surveys, investigations and planning).
    b) Contractual mitigations to manage risk, e.g. variations, re-openers and compensation events.

Throughout the assessment, set out any key assumptions made which will need to be revisited as the project is developed further. In particular, highlight any assumptions made which may have a significant impact on the ability to effect risk transfer, and therefore upon the project's eligibility for DPC.

Factors to consider in the application of the construction risk test:

- Set out the interdependencies between risks, for example whether mitigation to one risk may affect another.
- Consider how the packaging of a project might affect its technical complexity and the ability to transfer risk.
- Consider whether any external factors have the ability to influence the delivery of the work and require special provision.
- Consider whether the market is likely to accept the risk transfer, and whether transferring the risk to the market is likely to result in excessive risk pricing (reducing incremental VfM).

Factors to consider in the application of the operations and maintenance risk test:

- Consider how the packaging of a project might impact its operational complexity, e.g. the number and type of interfaces to be managed.
- Consider interdependency between risks, for example how operation might influence the need for maintenance.
- Set out the contractual assumptions that underline the division of responsibilities between Appointee and CAP.
- Consider whether the market is likely to accept the risk transfer, and whether transferring the risk to the market is likely to result in excessive risk pricing (reducing incremental VfM).

Construction and asset delivery risks (1/2)

Risk	Description	Standard DPC allocation			Application to project				
		Cust.	App.	CAP	Cust.	App.	CAP	Assessment	Mitigations
Planning	Planning consent is not forthcoming, or conditions require changes to scope of project / impose additional requirements on the project	✓	✓						
Land	Unable to secure appropriate land rights to deliver the project, requiring change to the project.	✓	✓						
Other consents	A project may require a range of other consents to deliver and operate the asset, e.g. abstraction licences, discharge consents etc.	✓	✓						
On time delivery	The works cannot be completed to time		✓	✓					
Cost overruns	The works cannot be completed to budget	✓	✓	✓					
Site conditions	Site conditions (e.g. ground conditions) are different from the information made available by the Appointee during the tender process			✓					
Works information	Inaccurate works information is provided to bidders as part of the tender process. Works information specifies the work required to be delivered and any constraints.		✓						
Detailed design	Detailed design does not meet requirements			✓					
Third parties	Stakeholder and customer management during delivery of works		✓	✓					
Changes in scope (also see changes in law)	Changes to project requirements during construction e.g. because of unforeseen legal/regulatory changes. The Appointee must look for the best way to manage the impact of changes which affect a DPC project, which might mean changes elsewhere in its operations	✓	✓						

Construction and asset delivery risks (2/2)

Risk	Description	Standard DPC allocation			Application to project				
		Cust.	App.	CAP	Cust.	App.	CAP	Assessment	Mitigations
Interfaces with Appointee's existing assets	Mismanagement and/or poor definition of interfaces results in additional work/delays		✓						
Commissioning	Constructed works are not fit for purpose and/or do not meet contractual requirements			✓					
Financing costs	Financing costs are higher than expected and included in the bid revenue stream.	✓		✓					
Refinancing gains	Savings to the CAP's financing costs because of refinancing post construction	✓		✓	✓		✓	**Allocation expected to be as per Ofwat's standard risk allocation in all cases considered.** **Accordingly, these risks are not repeated in the individual assessments**.	Bidders may seek to negotiate
Customer bad debt	Increased under recovery of revenue from customers, e.g. due to higher bills which may be partially riven by the DPC project.	**PR**	✓		**PR**	✓			N/A
Changes in law / regulation which impact the activity being delivered by the CAP in terms of the CAP agreement.	The DPC project is impacted by changes in legislation and/or regulation specific to DPC projects, the water sector and/or structure of the water industry and which have an impact on the requirements for the project.	✓			✓				Contractual variations to manage changes arising from change in law / regulation.
	The DPC project is impacted by general changes in law – not specific to the water industry / DPC project, for example a change to tax law.			✓			✓		N/A
	The DPC project is impacted by general changes in law which requires capex to implement. It is not considered best value to require the CAP to take responsibility for and fund capital changes that may or may not occur over the life of a project.	✓		✓	✓		✓		Contractual variations to manage changes arising from change in law / regulation.

Operations and maintenance risks

Risk	Description	Standard DPC allocation			Application to project				
		Cust.	App.	CAP	Cust.	App.	CAP	Assessment	Mitigations
Cost (opex and maintenance)	Cost of operating and/or maintaining the asset to the required standard exceeds the costs tendered			✓					
Operational performance	Inability to operate the asset(s) to meeting required performance standards in the contract. Even where the CAP is not operating the asset it may still have performance requirements around availability.			✓					
Compliance with statutory and regulatory obligations which impact the scope of the DPC project	The Appointee is unable to meet its statutory and regulatory obligations because of poor operational performance by the CAP. The Appointee cannot contract out of its statutory or regulatory obligations, but the CAP should have responsibility for delivering the asset and services as required by the CAP agreement.		✓	✓					
Defects during operations	Defects appear during operations causing interruptions to service and requiring remedial work.		✓	✓					
Demand risk	Actual demand for use of the asset is lower/higher than expected. The Appointee should scope the project requirements to reflect expected demand.	✓	✓						
Over-utilisation	Demand to operate the asset above the design requirements, resulting in higher incremental unit costs than remunerated through payment mechanics. The Appointee should scope the project requirements to reflect expected demand.	✓	✓						
Change in scope	The Appointee requires the CAP to either operate the works differently and/or invest in the asset to meet new requirements, or due to changes in inputs to the works (e.g. raw water quality, sewage composition, etc.).	✓	✓						
Value testing	The project operational costs do not reflect the actual cost of operations and the CAP includes risk pricing.	✓		✓					
Condition of asset/hand back risk	Asset condition at the end of the contract period is lower than required by the contract.			✓					

Value for Money test

The Value for Money test is not an essential component of the DPC eligibility assessment at PR24.

Test	Compare the Net Present Value (NPV) of the revenue to be recovered from customers over the whole life of the project under DPC and under in-house delivery.

DPC NPV is higher

Based on the modelling assumptions used, the project will be delivered at a higher cost to customers if delivered via DPC.

The project or programme may not be suitable for DPC, however the Appointee may be required to progress under DPC until more detailed analysis can be undertaken.

- Provide robust modelling and evidence to support this conclusion, as well as a clear explanation of why DPC will not deliver VfM.

DPC NPV is lower

Based on the modelling assumptions used, the project will be delivered at a lower cost to customers if delivered via DPC.

The project or programme is suitable for DPC.

- Document the results of the VfM analysis and the assumptions used for reference as VfM is monitored as the project develops.

Method of application:

- Review Ofwat's standard assumptions and assess whether any adjustments will be made to better reflect the nature of the project.
- Enter profiled project costs into the VfM model and calculate the generate the NPVs for factual (DPC) and counterfactual (in-house) cases.
- Review the differences between the two NPVs (presented in the transfer bridge).
- Perform sensitivity analysis (by varying input assumptions) to test the VfM of the project under different scenarios.
- Conclude whether the in-house or DPC delivery route offers greater Value for Money for Customers.
- The CAP revenues produced by the model can be also used for affordability testing as part of the business planning process.

Factors to consider:

- Ofwat's existing (PR19) assumptions were tailored towards more traditional (large, grey) DPC assets. It is therefore key to consider whether the right assumptions been used to match the project type. For example:
  - For opex-heavy projects, is there evidence to assume different levels of opex and capex efficiency?
  - What are the appropriate financing assumptions to use, reflecting current macroeconomic conditions?
- For different types of assets, such as projects which involve cyclical replacement of assets within the term (e.g. monitoring or metering), an adjusted approach to VfM modelling is likely to be required. This may also justify the adoption of different DPC efficiency assumptions.

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