

Regulatory Planning and Programme Delivery

A N Y N N N Y Y

Anglian Water

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Regulatory Planning in Anglian Water



21st March 2025 Ed Whittaker – Anglian Water









- About Anglian Water
- Managing Regulatory Submission
 - Value Framework
 - Cost Estimation using Copperleaf Cost
 - Optimisation Predictive Analytics
- What next for Anglian Water and Copperleaf?

About Anglian Water



Our purpose is to bring environmental and social prosperity to the region we serve through our commitment to Love Every Drop. We are geographically the largest water and sewerage company in England and Wales





of England and Hartlepool

We operate and maintain **39,248km**

of water mains. Laid end to end, this is further than a trip to Sydney and back

And we operate and maintain 77,300km of sewers



Laid end to end this is almost twice around the earth's circumference



We employee around **6,000** people, and work alongside a further **3,000** alliance partners and contractors.

Our AMP8 plan will see us create circa **7,000** new jobs across the region



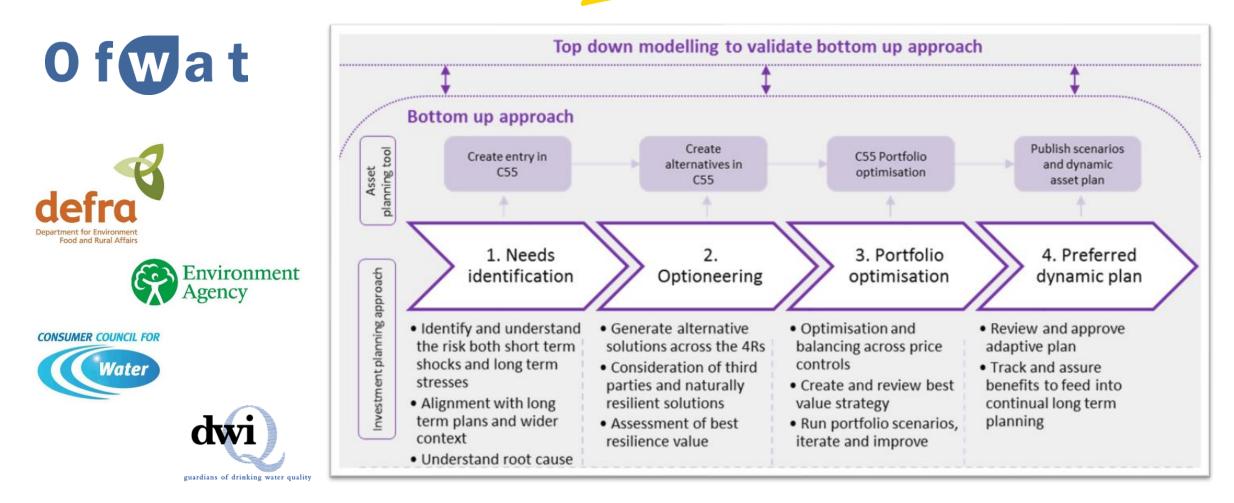
We pump less water into supply every day now than we did in 1989, despite supplying

26% more properties

Since privatisation in 1989, Anglian Water has invested **£16.9 billion** improving services in our region.

Our Business – The Price Review





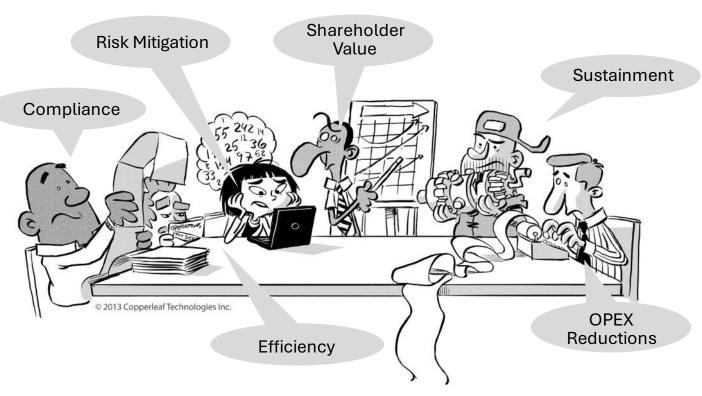
Capital Investment Strategies



Efficient capital investment strategies can optimise resource allocation and improve overall operational effectiveness in businesses.

Depends Who You Ask...

What is "Value"?



Value Framework



- Value is assessed for all investments across the 6 capitals, considering both Societal and Private Value
- Use of a Value Framework enables Anglian Water to make an informed decision, based on value that balance competing constraints



Natural	Social	Manufactured		
Pollution	Water supply	Water efficiency		
Category 1-4	Supply deficit Interruptions to supply Low pressure	Potable water leakage Raw water leakage Consumption reduction		
Permit failures and discharges	Water quality	First time connections		
WRC quality compliance WRC volumetric compliance WTW discharge compliance	Notices Health and regulatory impact Aesthetic impact DWI prosecution	Developer request water Developer request water recycling Section 101a request		
Water resources	Flooding	Business enables		
Over-abstraction Aquifer protection	Internal External Public Areas Dam failure	Information services		
Environmental quality	Customer (BAS and construction)	Security		
Bathing waters River water quality Biodiversity net gain Air quality	PR (only for one off cases) Visual Noise Odour	Operational Security Cyber Security		
Carbon and emissions	Traffic disruption Amenity access	Resilience to climate change		
Capital carbon Operational carbon Process emissions	Customer experience	Resilience to climate change		
Financial	People	Intellectual		
Income	Health, safety and wellbeing	New/different ways of working		
Income protection Renewable generation Bioresources Non-domestic income Domestic income	Physical safety (staff and public) Employee wellbeing	Employee productivity Intellectual property utilisation		
Opex increase				
Additional activity indicators				

Which project would you do first?



Solution

 Each project is assessed against the relevant Value Measures to support the comparison on a common economic scale

Option 1 🚷	Option 2 💿	Option 3 🚳	
Benefits: Prevents any future flooding, health and safety or pollution incidents	Benefits: Reduces the risk of flooding, H&S and pollution to a quarter of original levels	Benefits: Solves the flooding and pollution risk and halves the health and safety	
	Additional benefit: improves employee productivity	Additional disbenefit: will be an eyesore in an area of natural beauty	
Cost: £1m Capex,	Cost: £600k,	Cost: E250k,	
£0 Opex	£5k a year Opex	£25k a year Opex	
Carbon: high	Carbon: low	Carbon: medium	

•	copperies/ Portfolio Investments • Portfolios • Reports •
2	Investments / @ AMPERIood Miliption Value Comparison
) Succes 🖉 1 💭 🖹 Reports
	Corpus Vaux *
	CAPEX
	Natural Benefit
	Social Benefit
	Manufactured Benefit
	Financial Benefit
	People Benefit
	Intellectual Benefit
	Total Benefit

Cost Estimation



Solution

- Generate comprehensive class 4/3 estimates using parameterized cost models
- Automatically calculate costs of intervening on existing assets within Copperleaf
- Review and approve estimates through built-in workflows
- Incorporates Carbon modelling into estimating process

Outcomes

- Supplier alignment across cost profile increases forecast certainty
- All capital projects estimated an assessed for operational and embodied carbon
- Essential part of the business solution to drive down capital carbon by 61% against 2010 baselines

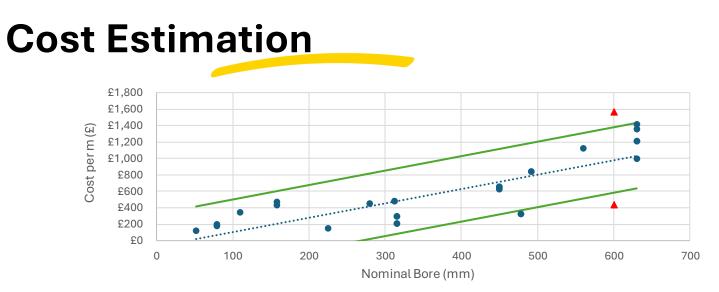
	Cop	perleaf Cost							
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Re	place 2	5m of pipework; i	nstall new moni	toring equip	oment				
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	*	Asset Name		Asset Type Code	Qty	Capital Cost (\$)	Operating & Maintenance Cost (\$)	e	Time Stamps
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0	4	O Wet Well Pump 1		3018	1	4,061.34	133,689.69	2	D Estimate Create
0	*	O Level Control Backup		4103	1	988.72	No model found	1	Last Saved
0	4	O Level Monitor		6345	1	2,882.85	No model found		E Last Generated
۲		O Sewer - Rising Main		94007	1	4,503.26	No model found	Increasing diameter of pipe to hand	 Last Committee ✓ Last Approved
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0		O Float Switch		4103	1	1,014.93	No model found	New monitoring equipment	
0		O Submersible Pump		3018	1	22,128.07	214,669.10)	Copperleaf Cost Fi
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Dia	meter (nor	vinal bore) (mm)				300	350		Facility Code Facility Name
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Len	igth in Road	Type 1 (m)							
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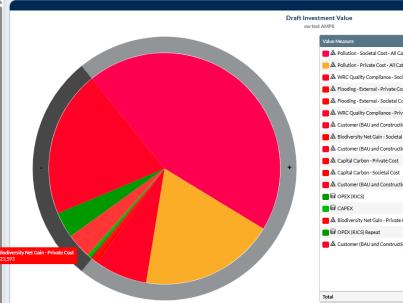
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		and the second						Summary Costs	
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Chenical	Type								
							30	Operating & Maintenance Cost (Outcome)	

Capital Cost			£449,425.06
Group		Calculated On (£)	Amount (£)
Asset Amount			337,704.82
Location Factors - Pas	is 1	337,704.82	14,825.24
On Cost		352,530.06	96,895.00
Subtotal			449,425.06
Operating & Maintenance Cost (I	RICS)		£7,825.96
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Capital Water	m3		32.29
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🛛 🔆 🕹 Asset Name	Asset Type C [†] Functional Location	Qty	Capital Cost (£) Capital C	arbon (T CO Capital Water (PR09	
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Configuration ③ Interventions	butes OPEX G Asset Adjustments Comments Existing Value			New Value	
Name				New Value 1	



Value Measure	Value	
Pollution - Societal Cost - All Categor	298,838	
Pollution - Private Cost - All Categories	126,674	
WRC Quality Compliance - Societal C	48,886	
A Flooding - External - Private Cost	3,692	
Flooding - External - Societal Cost	1,567	
WRC Quality Compliance - Private C	1,182	
Customer (BAU and Construction) - T	0	
A Biodiversity Net Gain - Societal Cost	0	
Customer (BAU and Construction)	-24	
🖉 🛆 Capital Carbon - Private Cost	-143	
🗖 🛆 Capital Carbon - Societal Cost	-194	
Customer (BAU and Construction)	-467	
E OPEX (RICS)	-1,358	
E CAPEX	-2,846	
📕 🗴 Biodiversity Net Gain - Private Cost	-23,593	
OPEX (RICS) Repeat	-24,158	
Customer (BAU and Construction) - T	-137,778	

290,277

OFWAT Assessment criteria



Further cost breakdown requested by OFWAT to demonstrate that our costs are efficient and robust

Table 10: Enhancement deep dive cost adjustment criteria

Enhancement criteria grouping	Category	Cost adjustment	Justification
Need	Pass	0%	The need for enhancement is clear with sufficient and convincing evidence for enhancement need.
	Partial pass	10%-80%	Need for enhancement is partly demonstrated but concerns remain due to lack of supporting evidence. Apply bespoke adjustment based on sufficiency of evidence and degree of investment overlap.
	Fail	100%	Possible investment need, but investment is covered under base activities or previously funded. enhancements or no clear evidence for enhancement need.
Best option for customers	Pass	0%	Sufficient and convincing optioneering evidence provided to support selection of best option.
	Minor concerns	10%	Limited options considered but with evidence or range of options considered with limited supporting evidence.
	Some concerns	20%	Limited options considered with limited/no supporting evidence.
	Significant concerns	30%	No clear evidence of options considered.
Cost efficiency63	Pass	0%	Sufficient and convincing evidence that costs are efficient.
	Minor concerns	10%	Some cost efficiency criteria met with some supporting evidence.
	Some concerns	20%	Several cost efficiency criteria not met with limited/no supporting evidence.
	Significant concerns	30%	No clear evidence of cost efficiency.
Customer Protection	Pass	N/A	Customer protection proposed covering all costs and benefits.
	Some concerns	N/A	Some customer protection provided but does not cover all the benefits/proposed investment.
	Significant Concerns	N/A	No customer protection proposed.

Cost efficiency – Enhancement expenditure requests should be based on efficient costs with sufficient and convincing evidence to demonstrate efficiency. It must be clear how the company has arrived at its option costs, including supporting evidence on calculations and assumptions, there must be evidence that the cost estimates are efficient, for example using similar scheme outturn data, industry and/or external cost benchmarking. The company must provide third-party assurance for the robustness of the cost estimates.

Regulatory Queries



0 fwat

Further cost breakdown requested by OFWAT to demonstrate that our costs are efficient and

robust 0 fwat PR24 Outbound query Ref - OFW-OBO-ANH-216 We are assessing the unit costs for monitors associated to flow monitoring at STWs, PR24 BP reference CWW3.4, CWW3.5 and CWW3.6 and are seeking to understand potential reasons for variations in unit cost for simple meter and complex civil installations (where applicable). Please provide a breakdown of the CWW3.4 - CWW3.5 and CW THU4 suffering queries of these - NEMS/INVE following activities for both simple meter and complex civil in monitors at STWs (as applicable): Table 1 - Monitoring equipment purchase Monitoring equipment installation Operations and maintenance Any other activity included in cost breakdown (please commentary) Please provide a commentary to explain the costs as well as estimates. **Company Response**

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Note: Responses are due within 48 hours.

PR24 Outbound query

Ref - OFW-OBQ-ANH-186

On p.140 and 141 of your enhancement strategy document (ref. "ANH26 Enhancement strategy to drought&flood.pdf"), you list the following schemes:

- Wicken Resilience (Ely)
- Stuntney WR to Haddenham WT (Ely) Resilience
- CV Regional Overheating Protection RW
- CV Reg Temp Related Asset Failure WTW
- CV Region Temp Related Asset Failure TWD
- CV-Condition & Criticality Investigation Water
- "Raw Water Cloves Bridge *"<u>Multidriver</u> scheme 50% allocated in Water WINEP*"
- AW Raw Water End to End Metering

Please provide or explain where the following can be found in your business plan submission:

- A description of all the schemes listed above, including alternative options considered and the outputs of the cost benefit analysis demonstrating that the chosen options are the most cost beneficial;
- 2. An explanation of links to other programmes including climate vulnerable mains;
- 3. A breakdown of casts associated with each scheme (the units of cast provided in table 65 are not clear), which aligns with the overall CW3 AMP8 request, including an explanation of how the costs were arrived at, uncertainties in the estimates and why the costs proposed for those specific schemes are efficient.



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Predictive Analytics



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Asset Registry ▼ Predictive Analytics ▼ Reports ▼

Predictive Analytics

Asset Strategies

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Asset Strategies	Code 49						
Bioresources		imate Vulnerable Mains FINAL					
Borehole Abstraction M&E		Description FINAL cost models used - post 21/02/2023					
Borehole Abstraction M&E What Base Buys	77,2160	77,216 CV mains only					
Exs24 (JB) NIC	Analysis Base Fiscal Year • FY23	•	<u>(1)</u>				
GRAFWW	Planning Horizon Years • 50						
GS (JB) NIC	Calculation Horizon Years 100	Calculation Horizon Years • (Default = 100, Min = 100, Max = 100)					
GS_TR_UN (JB) NIC	Asset Selection Criteria	Asset Selection Criteria * 📝 Edit Selection Criteria O 77216 Asset(s) Selec					
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PR24 Climate Factor Impact		latch all		Operator Value			
	*						
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Predictive Analytics – Climate vulnerable mains



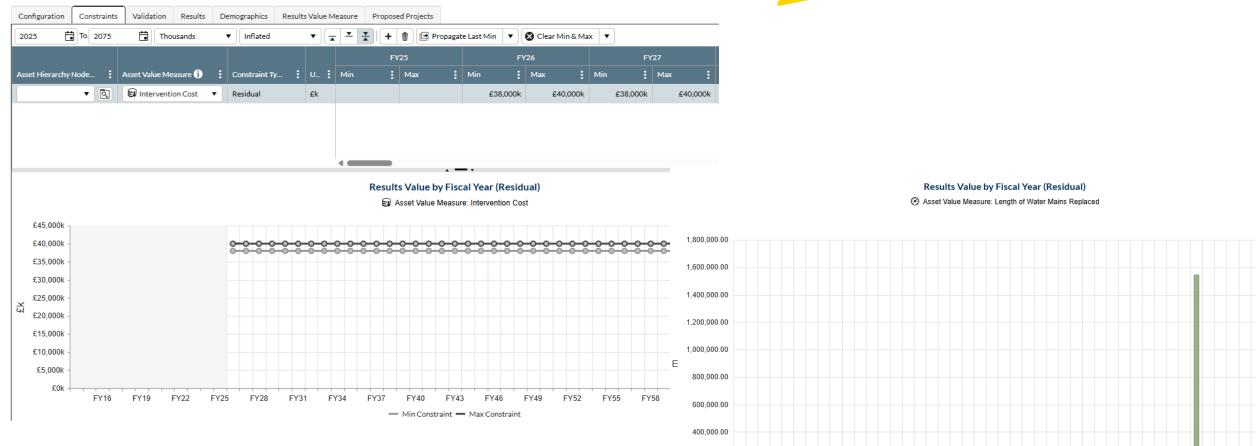
Demographics Results Value Measure Proposed Projects

Code	530		
Name•	Max value -replacing CVM between 2025-2060 (£40m/yr)		
	Max value - replacing a % CVM between 2025-2060 (£40m/yr)		
Description			
Value Function•	Private and Societal (PA)		
Inflation Rate Set•	Inflation Rate Set - PA Inflation Rate		
Resource Pricing Set•	Default Resource Pricing Set		
Intervention Type•	Replacement (AUTO solution only) 🗙		
Earliest New Spend Fiscal Year•	FY26 •		
Repeated Interventions per Asset			
Use Asset Groups			
Stochastic Sampling	Sample %		
Cost Modelling (all models)			
RPE and Productivity Factors	▼		
Deterioration Modelling (all infra models)			
AMP Period	AMP8 V		
Deterioration Modelling (modelled non-infr	a only)		
Refurbishment Ruleset Data Table			
Deterioration Modelling (water infra only)			
Climate Scenario	rcp26 🔹		

Climate	MAT	Minimum_Diameter	Maximum_Diameter	SS_WC20 🔻	Decade 💌	Month 💌	Rate 💌
rcp45	PVC		0 165	5	2030	1	1.050856
rcp45	PVC		0 165	5	2040	1	1.054741
rcp45	PVC		0 165	5	2050	1	1.057213
rcp45	PVC		0 165	5	2060	1	1.061628
rcp45	PVC		0 165	5	2070	1	1.063217
rcp45	PVC		0 165	5	2080	1	1.05739
rcp60	PVC		0 165	5	2020	1	1.046442
rcp60	PVC		0 165	5	2030	1	1.05015
rcp60	PVC		0 165	5	2040	1	1.054388
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rcp60	PVC		0 165	5	2060	1	1.061805
rcp60	PVC		0 165	5	2070	1	1.064277
rcp60	PVC		0 165	5	2080	1	1.058096
rcp85	PVC		0 165	5	2020	1	1.048384
rcp85	PVC		0 165	5	2030	1	1.053682
rcp85	PVC		0 165	5	2040	1	1.060039
rcp85	PVC		0 165	5	2050	1	1.065513
rcp85	PVC		0 165	5	2060	1	1.061981
rcp85	PVC		0 165	5	2070	1	1.069928
rcp85	PVC		0 165	5	2080	1	1.053329
rcp26	PVC		0 165	6	2020	1	1.021403
rcp26	PVC		0 165	6	2030	1	1.025215
rcp26	PVC		0 165	6	2040	1	1.029932
rcp26	PVC		0 165	6	2050	1	1.032918
rcp26	PVC		0 165	6	2060	1	1.031532
rcp26	PVC		0 165	6	2070	1	1.031158
rcp26	PVC		0 165	6	2080	1	1.029399

Predictive Analytics – Climate vulnerable mains





200,000.00

FY28

FY33

FY38

FY43

- Asset Value Measure: Length of Water Mains Replaced

FY48

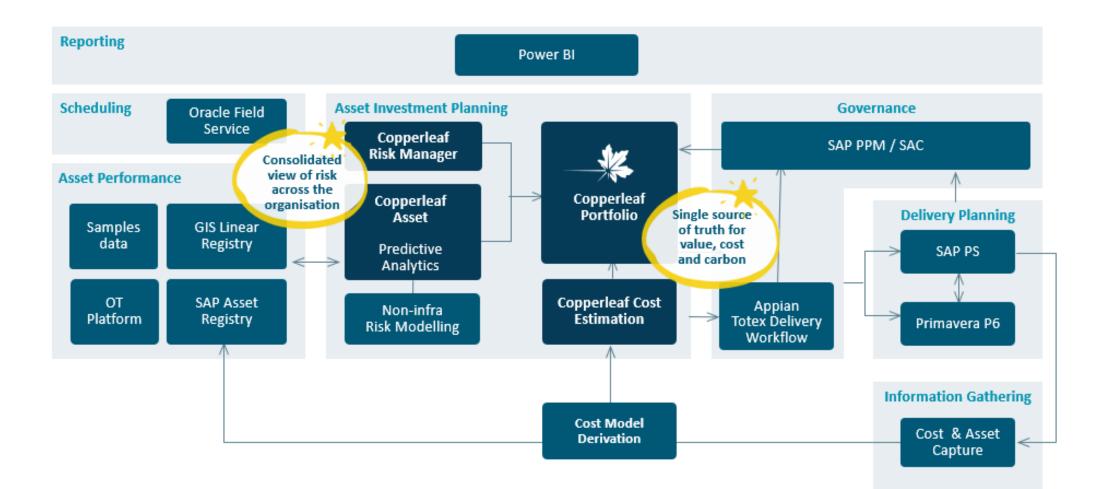
FY53

FY58

FY63

The Copperleaf solution is integrated across the enterprise

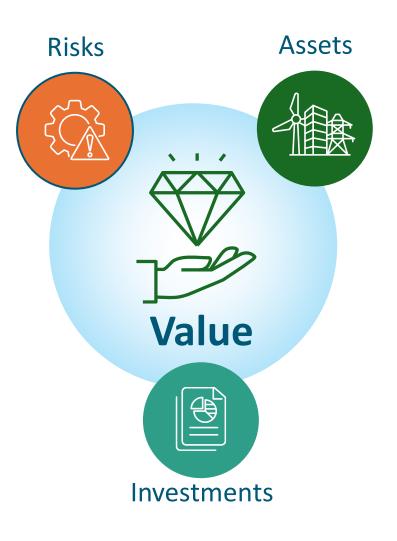




What's Next? Risk Manager



- Identify, manage and track risks with clarity, consistency, and constancy; in equal consideration of assets, service and strategies
- **Direct line of sight** visibility through the risk lifecycle: risks, controls and mitigations impacting the overall risk profile
- **Optimised risk exposure** with end-to-end management, from identification through mitigation
- **Promoting the right candidate investments** improved risk prioritisation and optimisation enables delivery of greater value for same level of expenditure
- **Improved performance** against regulatory performance commitments/ODI's etc, maximise rewards ad minimise penalties





Thank you for listening