

15 - 16 November, Wembley Stadium, UK



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An extended 'Project Controls' capability:
Portfolio optimisation to achieve strategic
outcomes

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 **Project Controls**
EXPO
London, UK

 **ADEPT**
MANAGEMENT

Adept Management Limited: What we do



TRANSPORTATION



INFRASTRUCTURE



BUILDINGS



UTILITIES

Outcome focused

- ♦ Income creation
- ♦ On-time delivery
- ♦ Conditions of satisfaction

Reduce risk / increase certainty

- ♦ Assets
- ♦ Processes
- ♦ People

Programme Governance & Assurance

- ♦ Assurance to enable governance
- ♦ Optimised delivery
- ♦ Embracing Complexity

Workflow 'flow' control



Design / Project Management



Project Controls



Simple model:
Three integrated pillars

Our Tools & Technology (current & future)

- ♦ Unique management approaches - ADePT
- ♦ In-house development team
- ♦ Patented technology - Flow

Our Experience & Industry Knowledge

- ♦ Trading for 20 years
- ♦ Work globally & sector agnostic
- ♦ Asset care to mega-projects / programmes

Our People (30+ internal: extended capability brings +60)

Presentation context

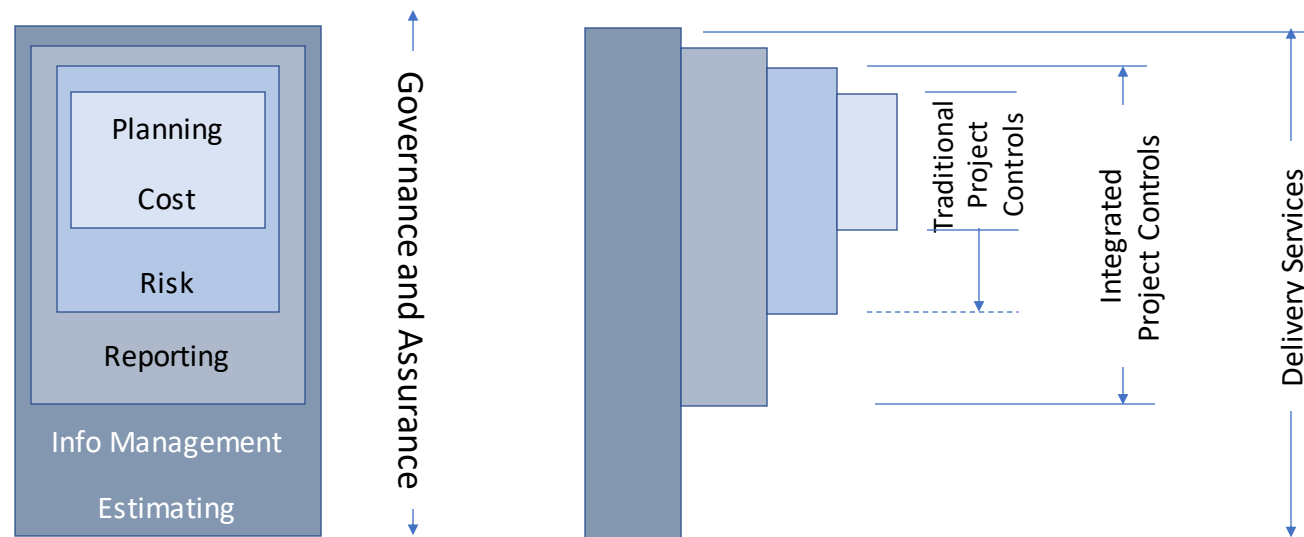
- In addition to providing Project Controls, Design and Project Management, and 'Flow' SaaS to projects, AML engages in the provision of Programme management in large portfolios of work
- Our engagement covers a variety of sectors, regulatory regimes, operational models, and contractual forms.
- Irrespective, these portfolios and programmes are consistent in that:
 - They support thousands of assets covering multiple facilities and / or distribution networks, each enabling the operators to deliver a mission.
 - The assets are degrading at varying rates toward a point when the risk of failure is intolerable.
 - The wider site / networks need to maintain operation as projects are undertaken.
 - They are funding constrained in terms of budget availability and, typically, funding is annualised which is not conducive to programmatic approaches.
 - In spite of the in year funding constraints, all investment MUST contribute to the 'big picture' and enable achievement of the long-term strategic plan.
- **Strategic outcomes (benefits) are the driving force, projects are merely a means to an end.**

Extended 'Project Controls': Vision

Extend the role of the integrated projects controls team to create an ecosystem in which individual elements of work are brought into alignment to satisfy potentially competing objectives and, in so doing, achieve the strategic outcomes of the whole.

The organisation, processes, and systems that underpin this ecosystem will set and maintain an agreed delivery 'rhythm' that will be sustained by all parts of the organisation whilst enable calibration and adaptation to respond to changing demands, constraints, recommendations, and opportunities – both internal and external to the operating environment.

Comparison of 'Project Controls' models

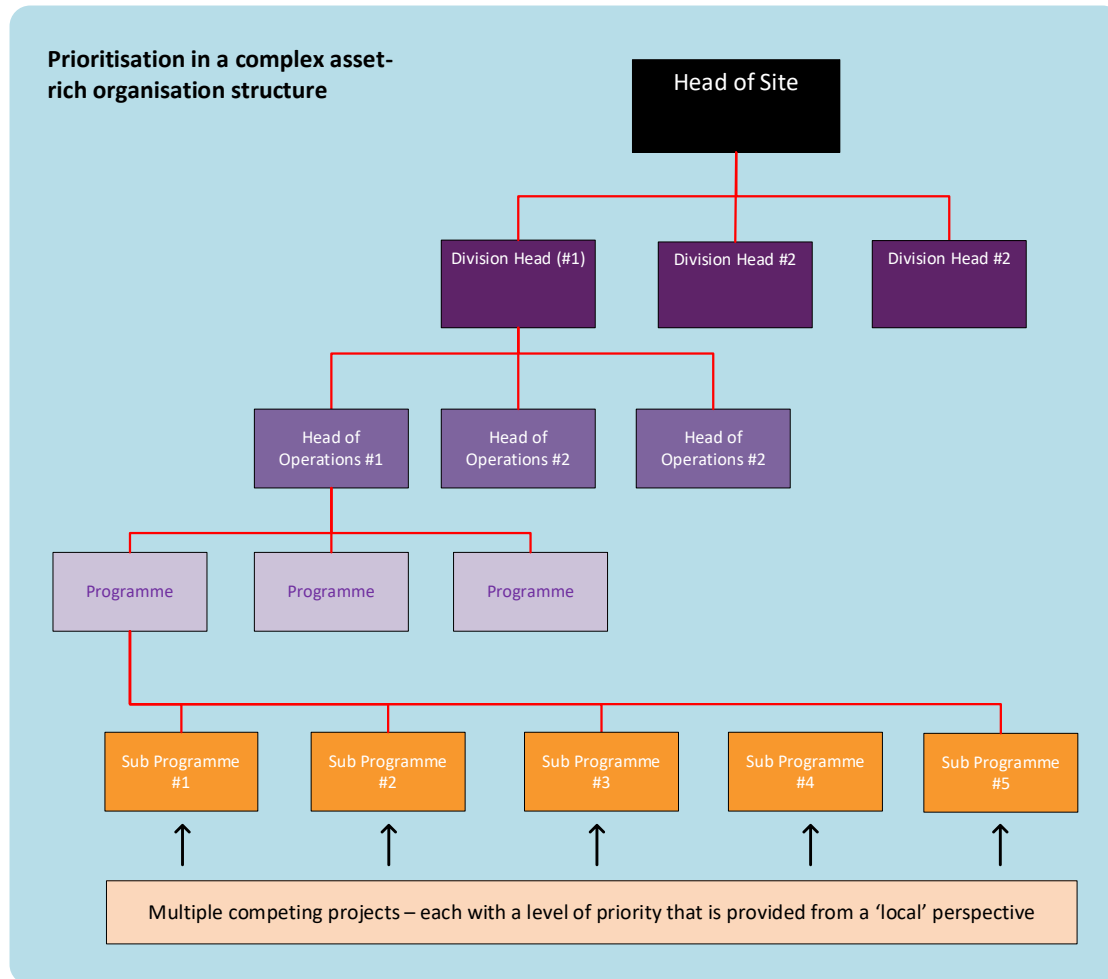


- These variants are insufficient to manage and control outcome-focused programme delivery
- An extended capability is required to ensure return on investment

Starting point: Understand the 'asset health' landscape

- Maintaining all asset information within a single asset management database is essential
- Attribute data can be many fold and varied, much of it being collated piece meal over decades
- Whilst assets are tagged and referenced, the supporting data tends to vary in completeness / quality
- Collaboration between the system / plant engineers and asset managers is critical to maintaining asset data:
 - System health reports
 - Asset life-cycle modelling
- Degradation curves can be utilised to forecast expected service life – but calibration can be applied (e.g., PPM cycles)
- Wider insights provided by maintenance data and consistent loss-logging (not always included)
- We need to leverage the asset information to achieve organisational outcomes via the effective deployment of projects to mitigate against and / or avoid failure and unplanned outages.

Breaking down the organisational biases



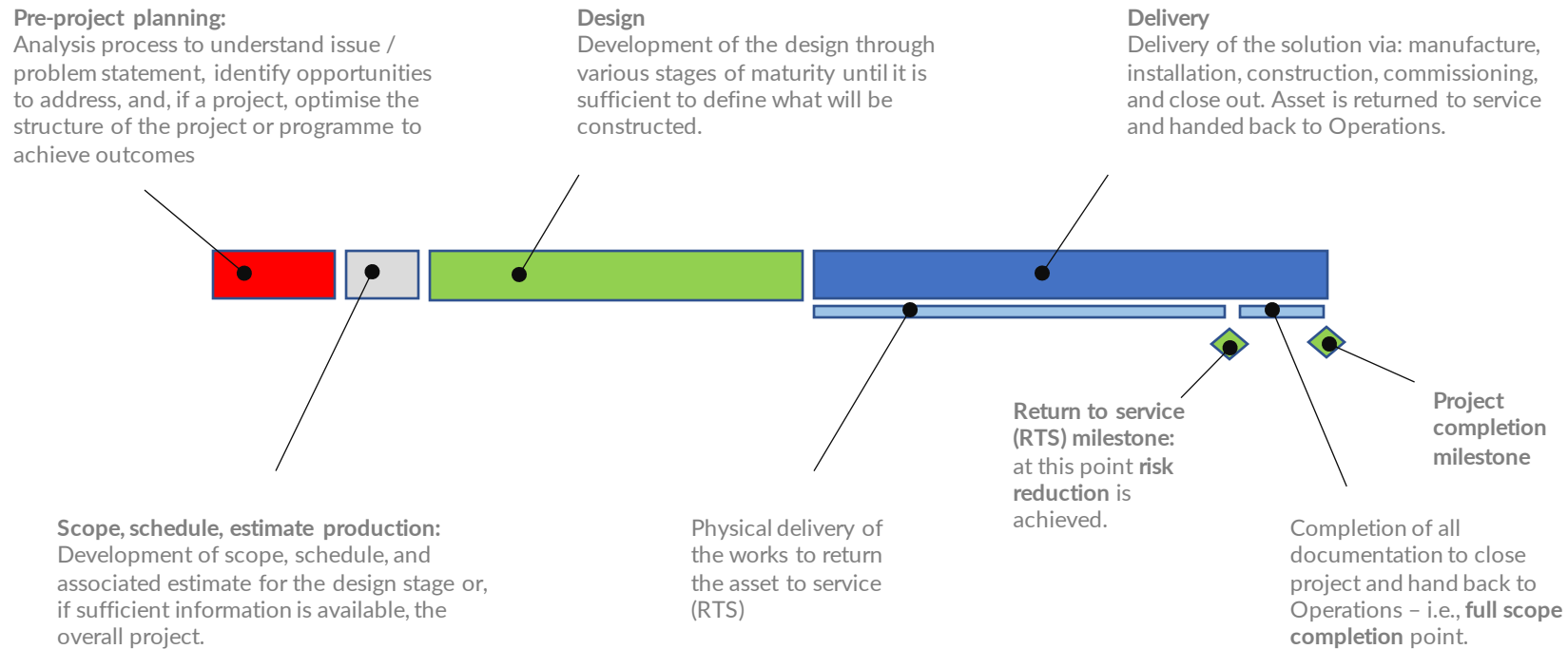
- Assets support the operation of multiple operating units
- Assets exist, they are located in facilities, and utilised by a team of Operators, so who needs to be engaged:
 - Asset Owner
 - Facility Owner
 - Asset Operator
- Financial headroom is limited...it needs to be distributed
- Who makes the call on prioritisation?
- Objective means of allocation is essential to work load prioritisation and generate long-term capital investment plans
- So what is the common currency for objective prioritisation in an asset-rich environment?

A common currency for objective prioritisation

- The health of a system or asset is assessed in terms of the level of risk that it poses to Operations / the business.
- Risk score (risk units or £s) = Probability of occurrence x Impact of occurrence:
 - Probability considers: Design life; Age; Current asset condition.
 - Impact considers: Scale; Extent; Escalation factors.
- Current (pre-mitigated) and future state (post mitigated) risk scores generated
- **The vast majority of projects are the mitigation actions**

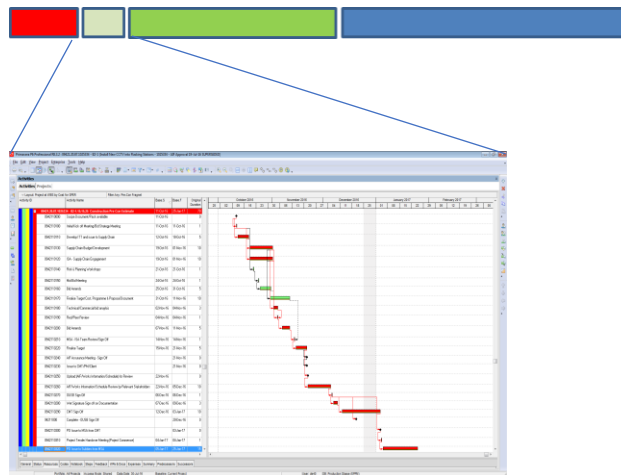
- However, the asset management database holds asset data only – it does not specify the work that needs to be done in response to an asset issue. The project delivery team does this and specifies the response.
- With thousands of concerns across a portfolio of assets, it is not possible to specify all required work (in terms of scope, schedule, budget) to create a detailed medium / long term delivery pipeline.
- Thus, develop an array of project delivery templates (resource and cost loaded) to utilise as the basis for generating the delivery pipeline (the integrated work programme).

The base building block: a simplified project lifecycle



Starting point: templates to standardise

- The simplified 'project lifecycle' is a starting template for high volume, low / med value projects [different approach for high value, low volume].
- Resource loaded, cost loaded - then refined through application (enabling RCF data to be compiled and 'should cost' modelling to be embedded)
- An array of templates is then derived based on a 3 x 3 classification.
- A discussion with the asset owner enables an informed selection of which template to utilise
- The template is then added to the EPS and adjusted as deeper insights become available.

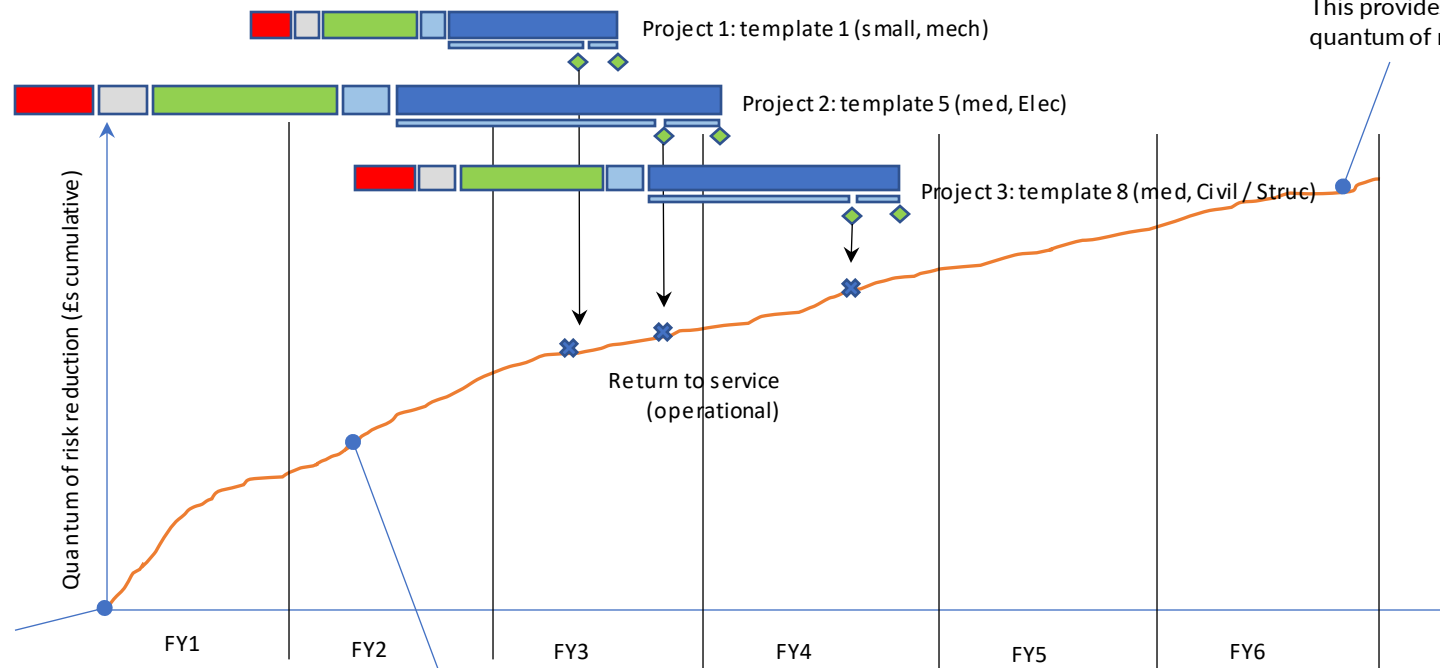


	Small	Med	Large
Mechanical	1	2	3
Electrical	4	5	6
Civil / Structural	7	8	9

Objective prioritisation to generate work plan / budget

100+ projects progressing at any point in time. Each project delivers risk reduction when it reaches returns the asset to service

Risk reduction points for each project are plotted based on when the asset breaches its return to service date (i.e., the tolerable risk level is breached). This provides an aggregate profile and quantum of risk reduced (£s).

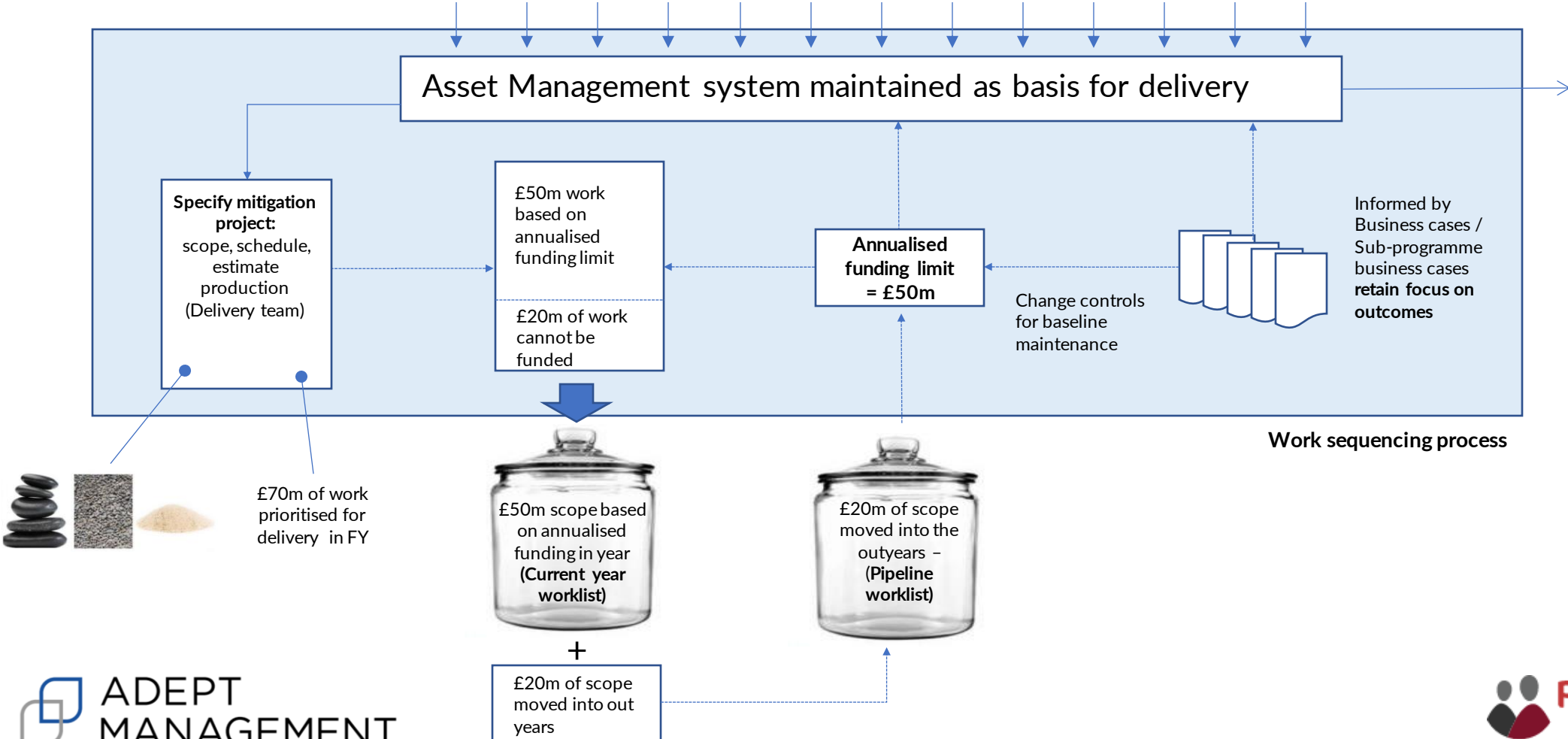


NOTE:
the starting point is never zero as work is always in progress – the starting point of zero is utilised for illustration purposes only.

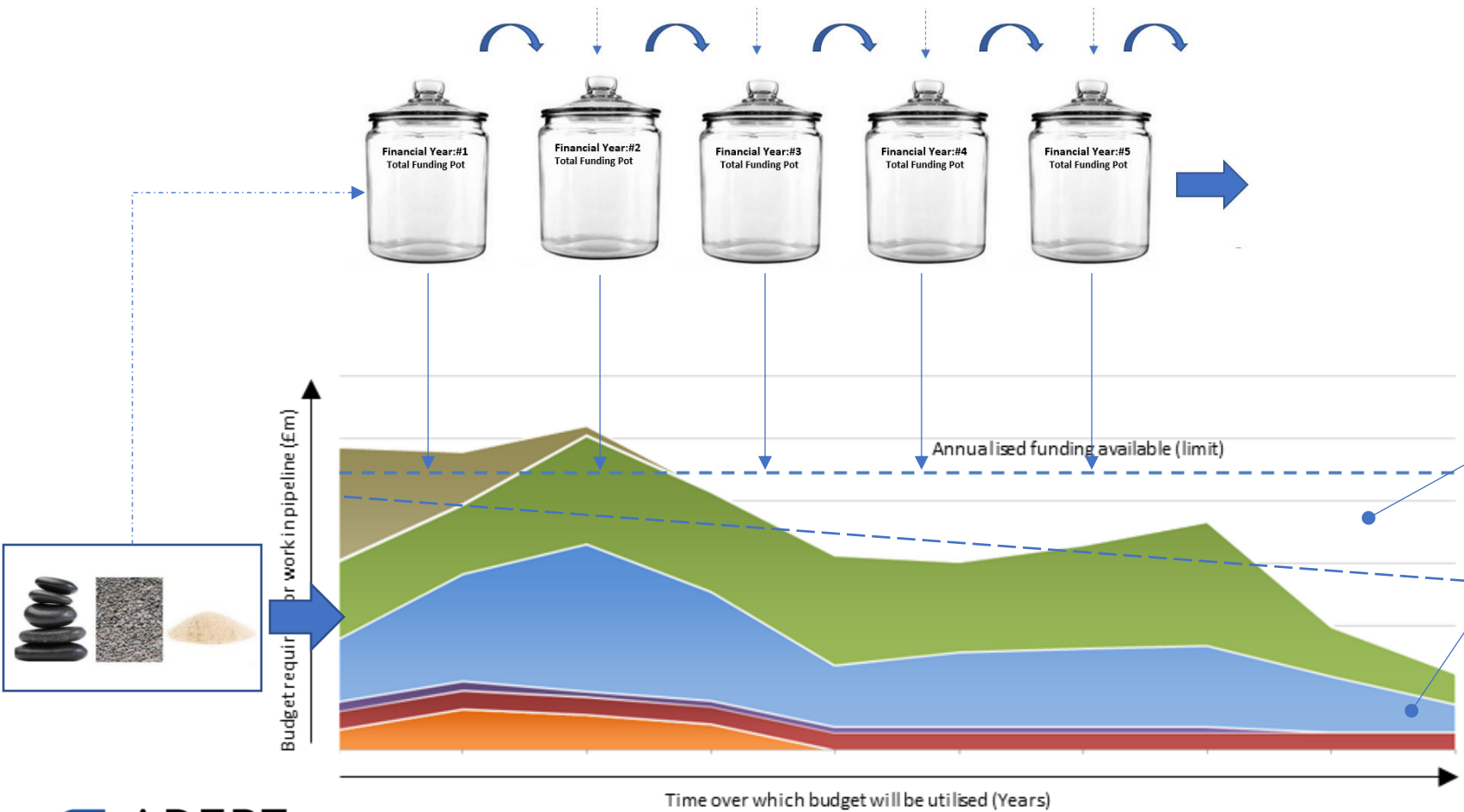
When these risk reduction milestones, and the risk reduction quantum, associated with all projects in the asset management database (live and future) are plotted over time, a cumulative risk reduction curve is generated alongside an annualised budget requirement.

Balancing budgetary against affordability constraints

Data-driven predictions are only as good as the data they utilise. Thus, maintaining the quality and integrity of information entered into the Asset Management database is critical.

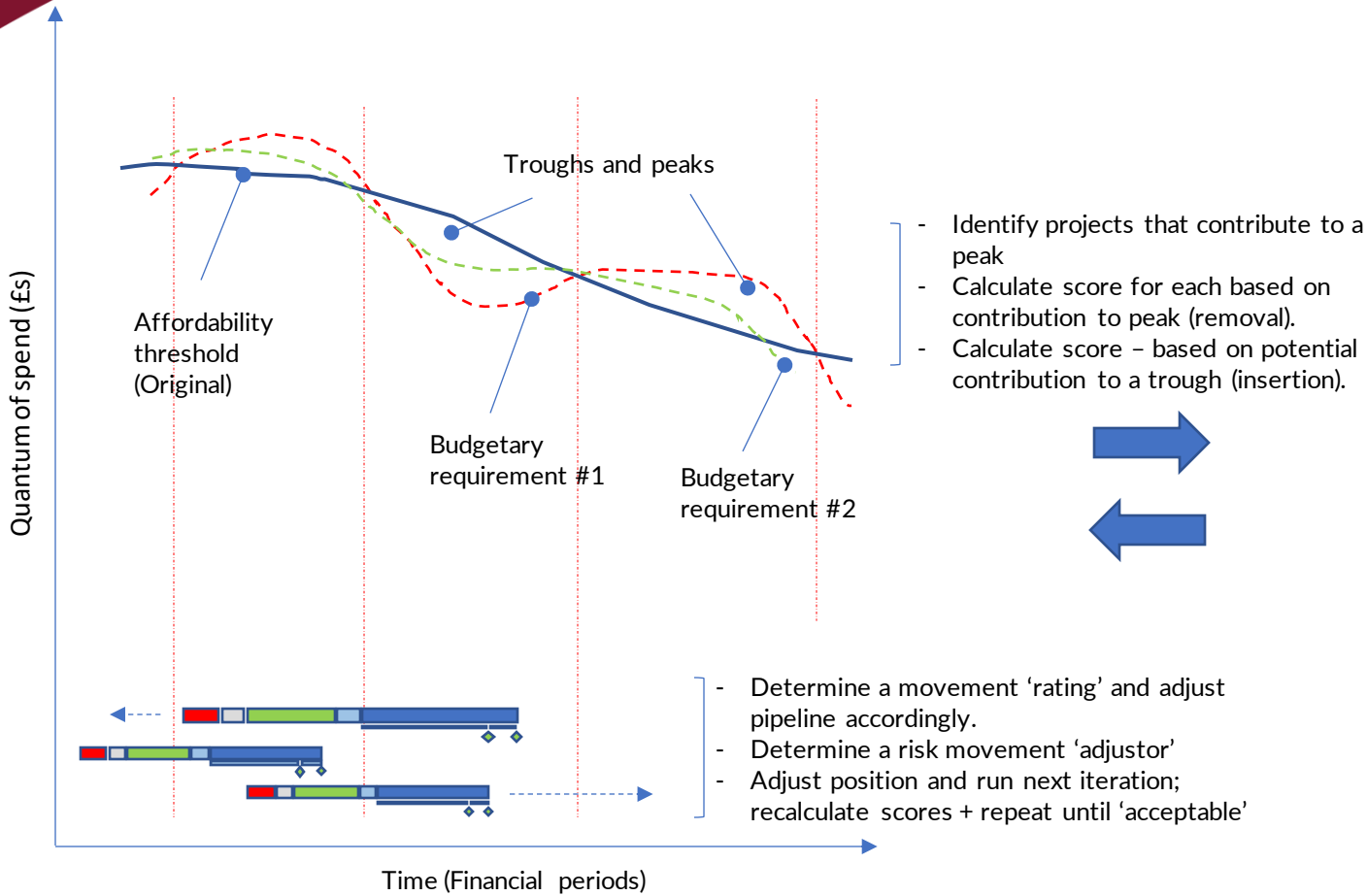


Baseline budget versus work planning

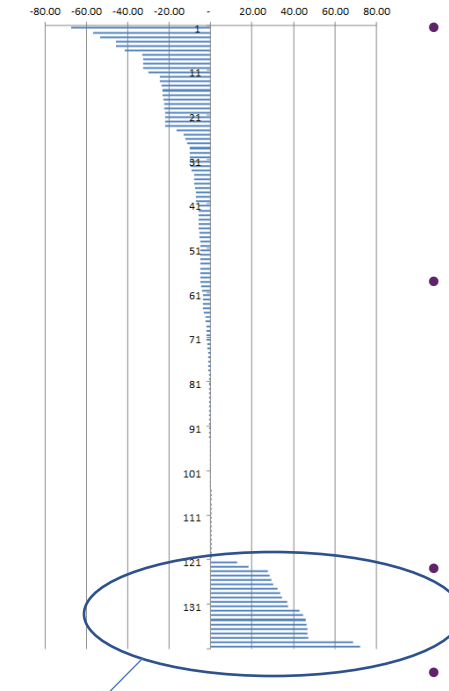


- Risk-based asset prioritisation, coupled with delivery estimate (schedule, cost, and contingency) specifies budget requirement
- Budget requirement and funding availability are different things – both will vary over time.
- Utilising all factors will enable decision-makers to prioritise projects and plan long-term capital investment.

This is a rule-based optimisation problem!



Cross check RTS date alignment

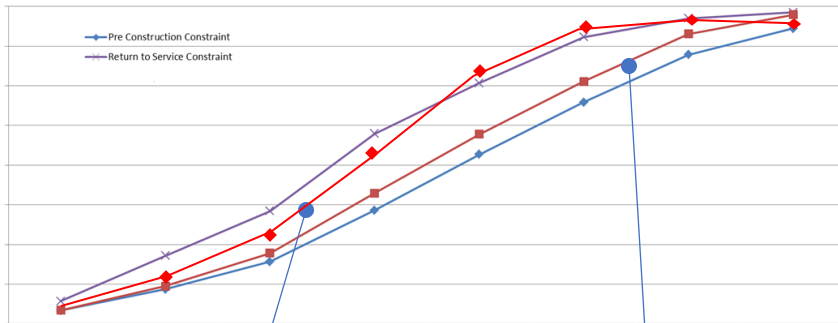


Options to address these pinch-point projects (engagement with O&M)

- Balancing deliverability (resource and timescales), with risk tolerance, and the affordability ceiling is an iterative process.
- Schedule analysis used to identify conflicts:
 - conflicts resolved (where possible) collaboratively
 - Resolution enables profiles to be smoothed
- Project start date, durations, and estimates are fine-tuned
- **Output approved as the baseline worklist config**
- **Config control commences**

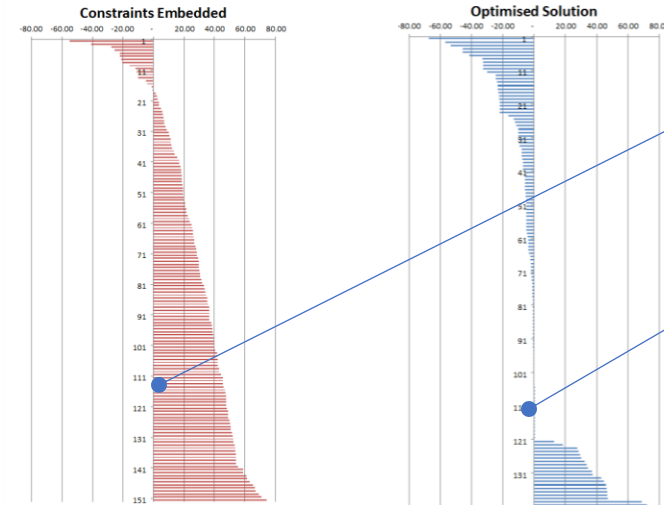
Summary of optimisation process

1. Build & test the envelope



Iteration 1: outside of the tolerance envelope
 Iteration 2: adjust, test impact against envelope
 Iteration n+1: until profile is acceptable

2. Review the impact on risk return to service date



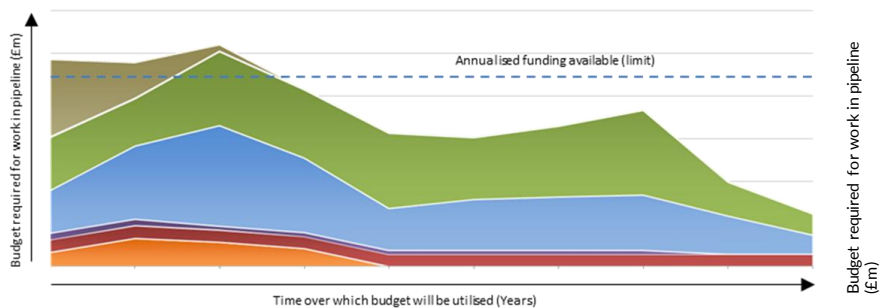
Does the sequence and timing enable issue resolution on or before the Return to Service date?
 If no, adjust and run a further iteration



3. Assess affordability



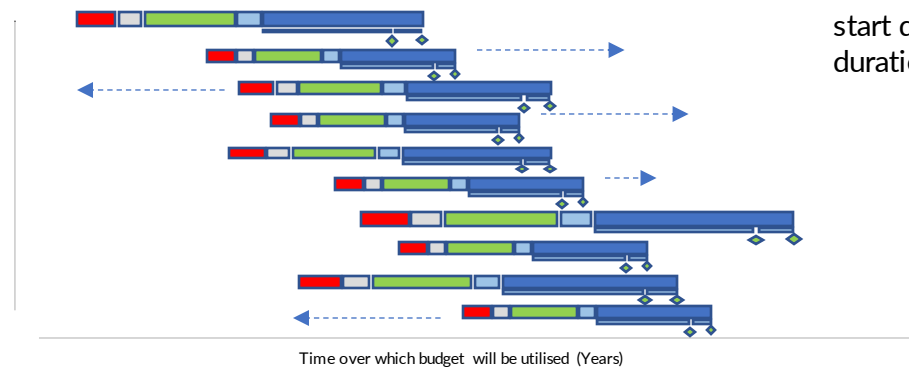
Review the budget profile against the available funding limit to test affordability



3. Adjust the portfolio (Config control)



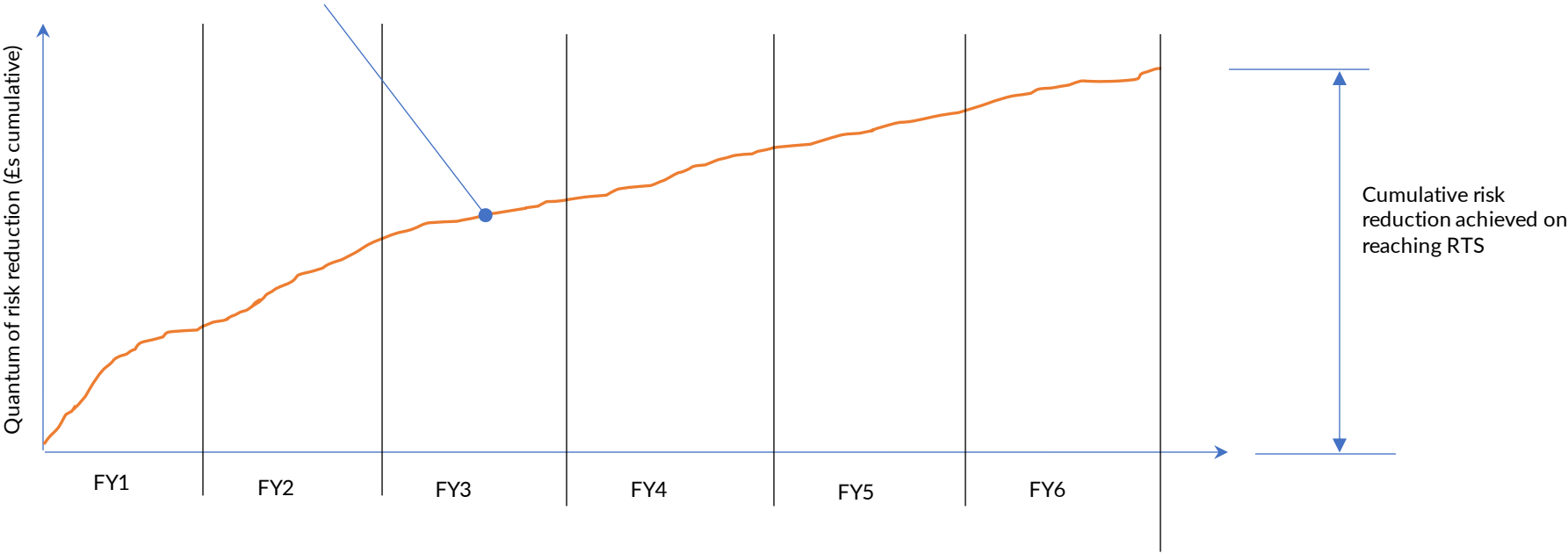
Review and tweak: start date, finish date, duration, and so on



Fine-tune via iteration and maintain the model!

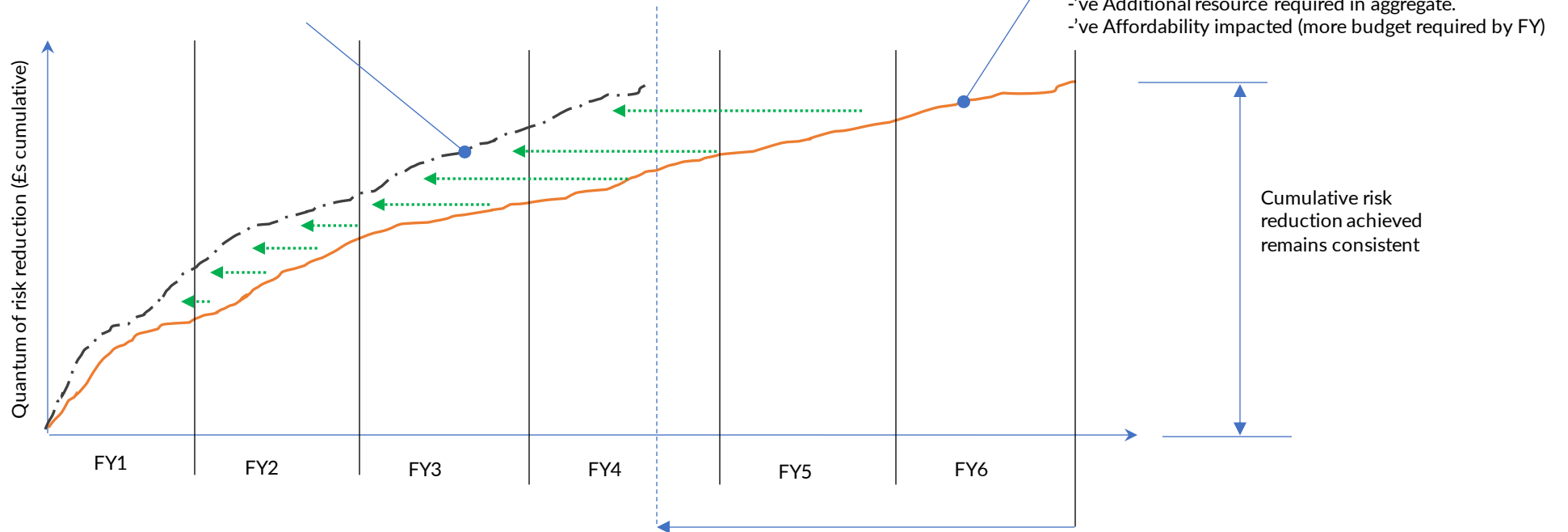
Config control: change impact assessment

Baseline profile (Original config) comprising multiple projects with the sequence and timing being set via the optimisation process outlined previously



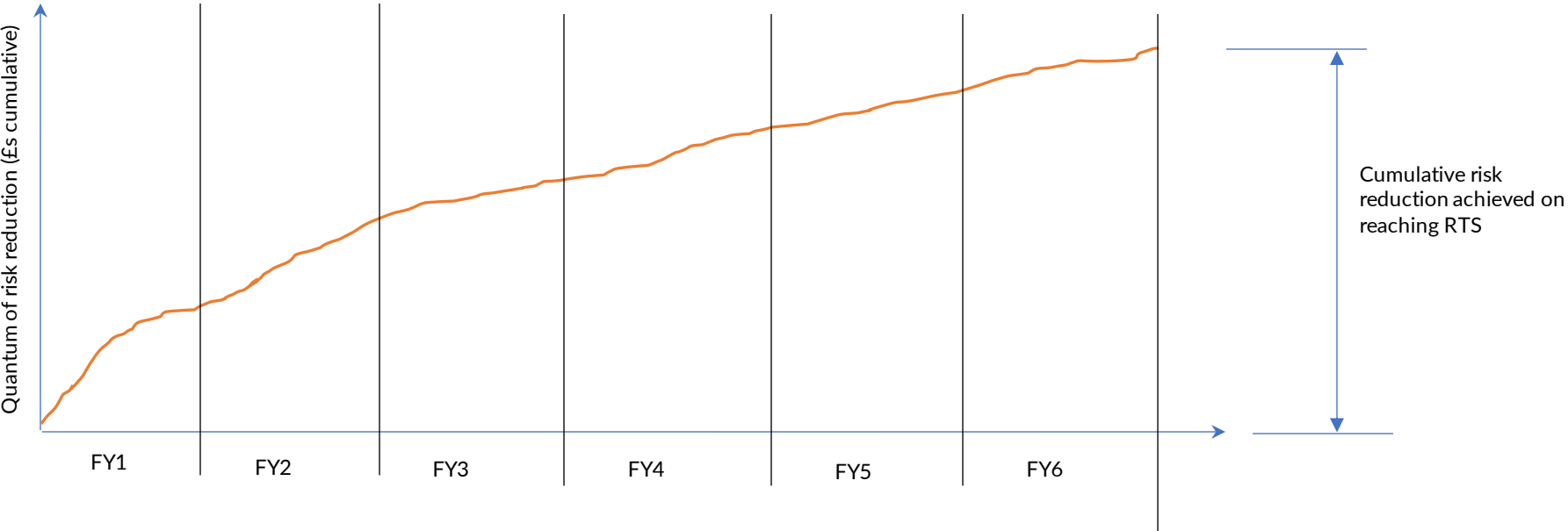
Config control: Impact of acceleration

Sub-programmes comprising multiple projects are brought forward. Work is commenced earlier (thus finished earlier), so risk reduction is achieved sooner. Delivery is accelerated



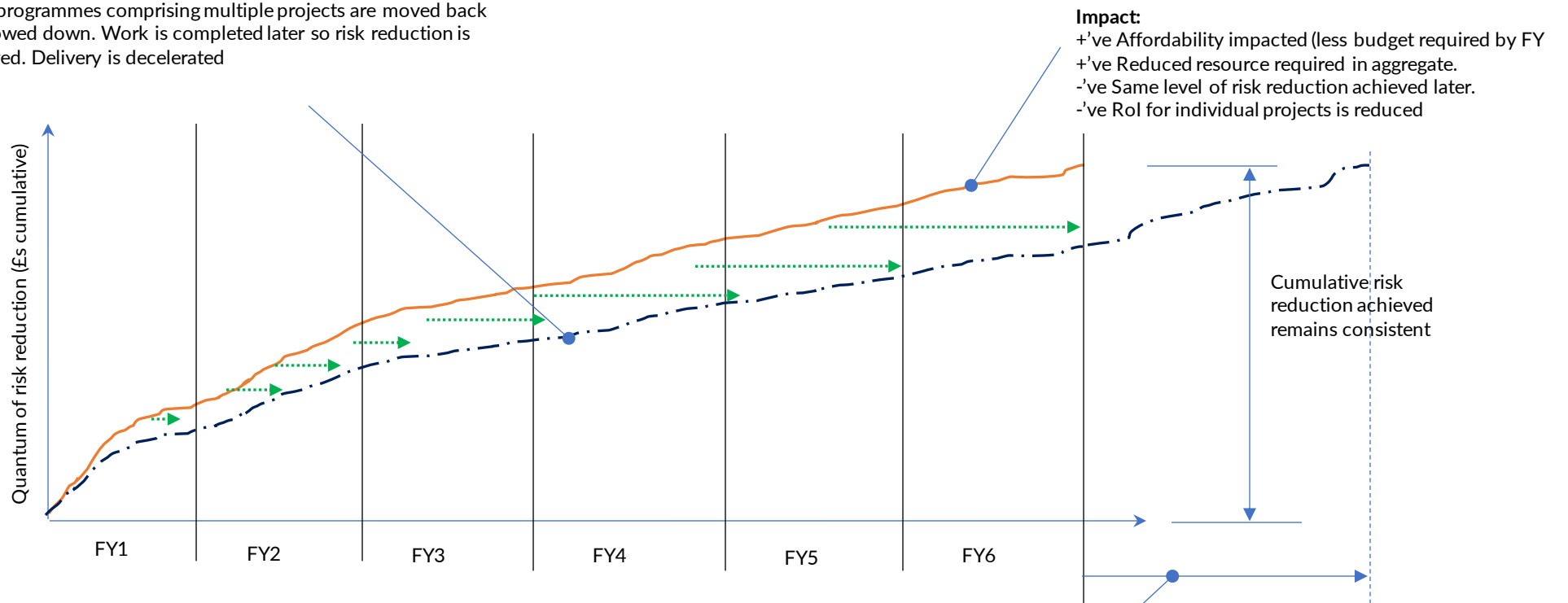
Rate at which the risk reduction is achieved is accelerated, risk of failure is mitigated sooner, and cost to deliver is reduced accordingly.

Config control: Impact of deferral



Config control: Impact of deferral

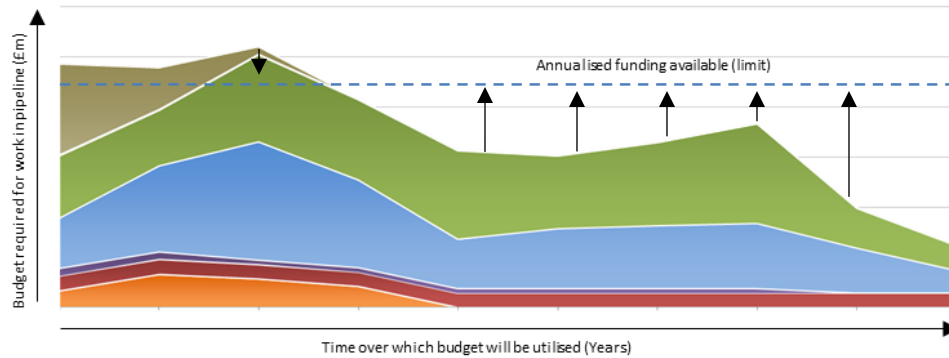
Sub-programmes comprising multiple projects are moved back or slowed down. Work is completed later so risk reduction is delayed. Delivery is decelerated



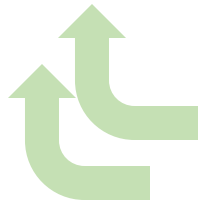
Rate at which the risk reduction is achieved is reduced, Operators need to tolerate risk of failure for longer, and cost to deliver is increased accordingly.

Config control: continuous process

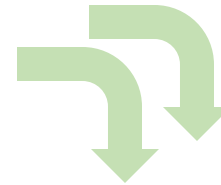
Investment prioritisation is a continuous process thereafter as work emerges and change impacts the baseline.



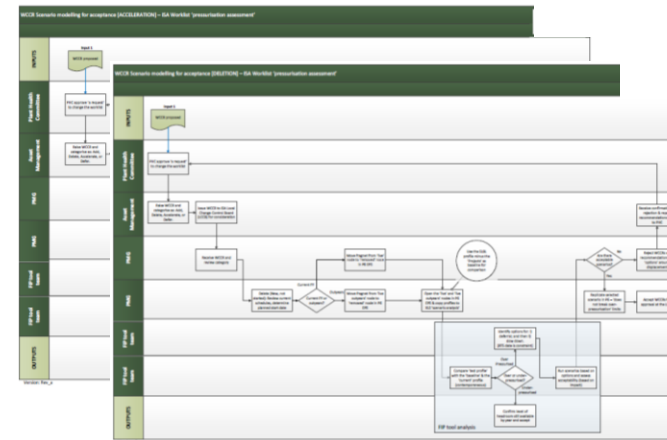
Model the impact of change and emerging work on all output parameters – manage and maintain portfolio configuration control within tolerances



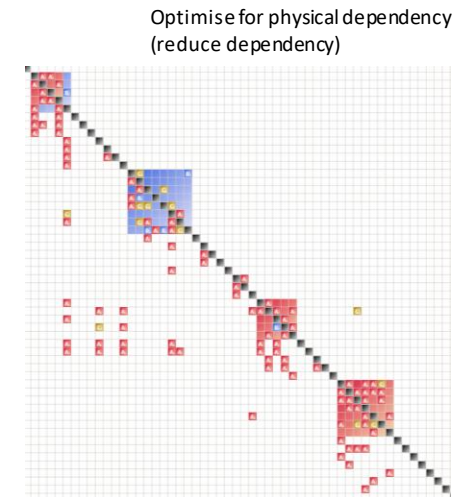
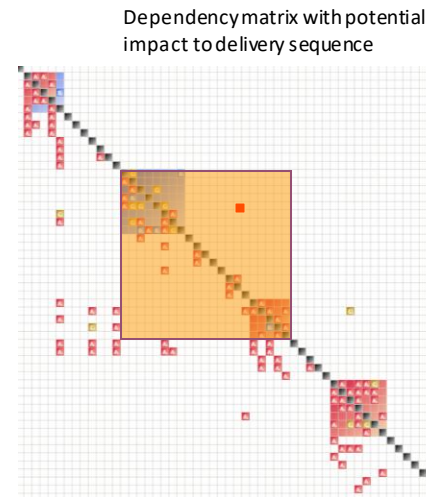
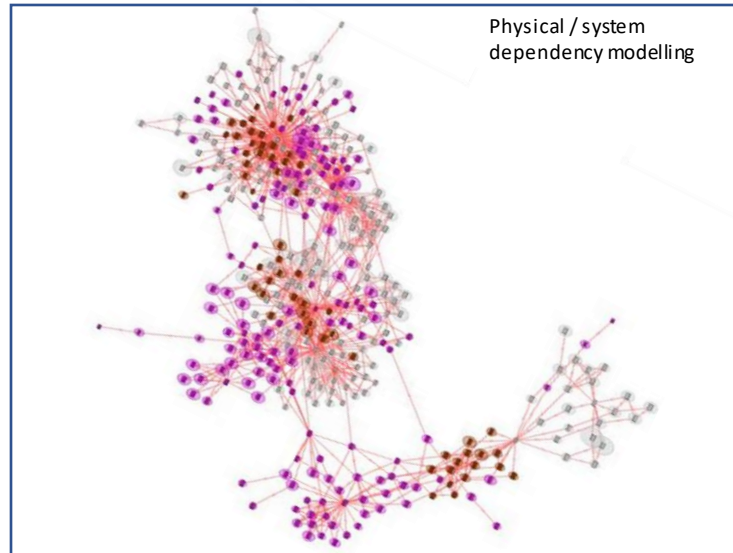
'Should cost' modelling used to drive improved forecasting
Asset risk-reduction driven (ROI)
Config management to control



Balancing risk mitigation, resource, funding availability to maintain Investment prioritisation

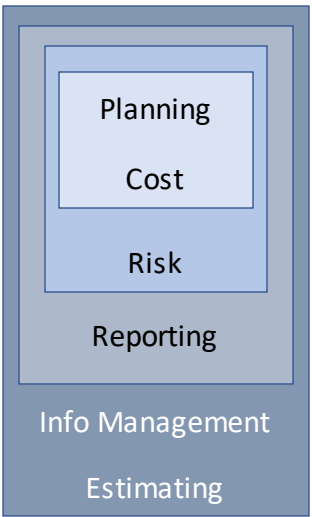


Current development: sequencing for operations

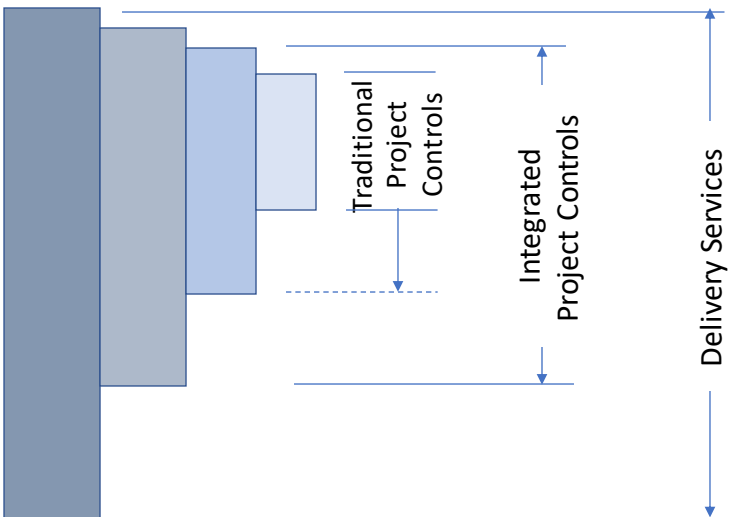


- Link in with GIS data to demonstrate physical locations of planned works (dependency modelling across the network).
- Consider the physical dependency between assets (and systems of assets) to identify where temporary works are required to avoid potential schedule conflicts (multi domain mapping)
- Utilise to optimise delivery, ensure uninterrupted operations, and minimise planned outages

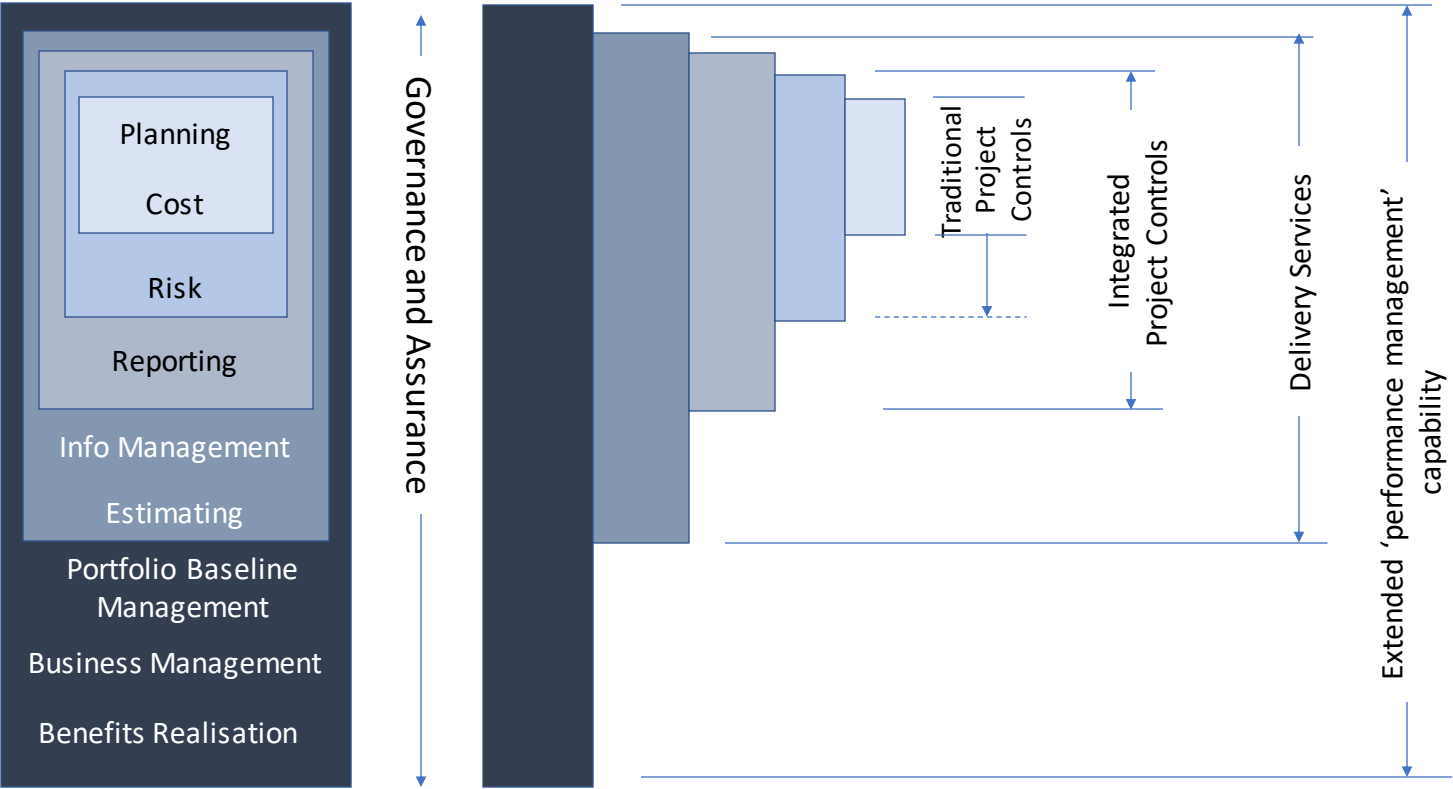
Comparison of 'Project Controls' models



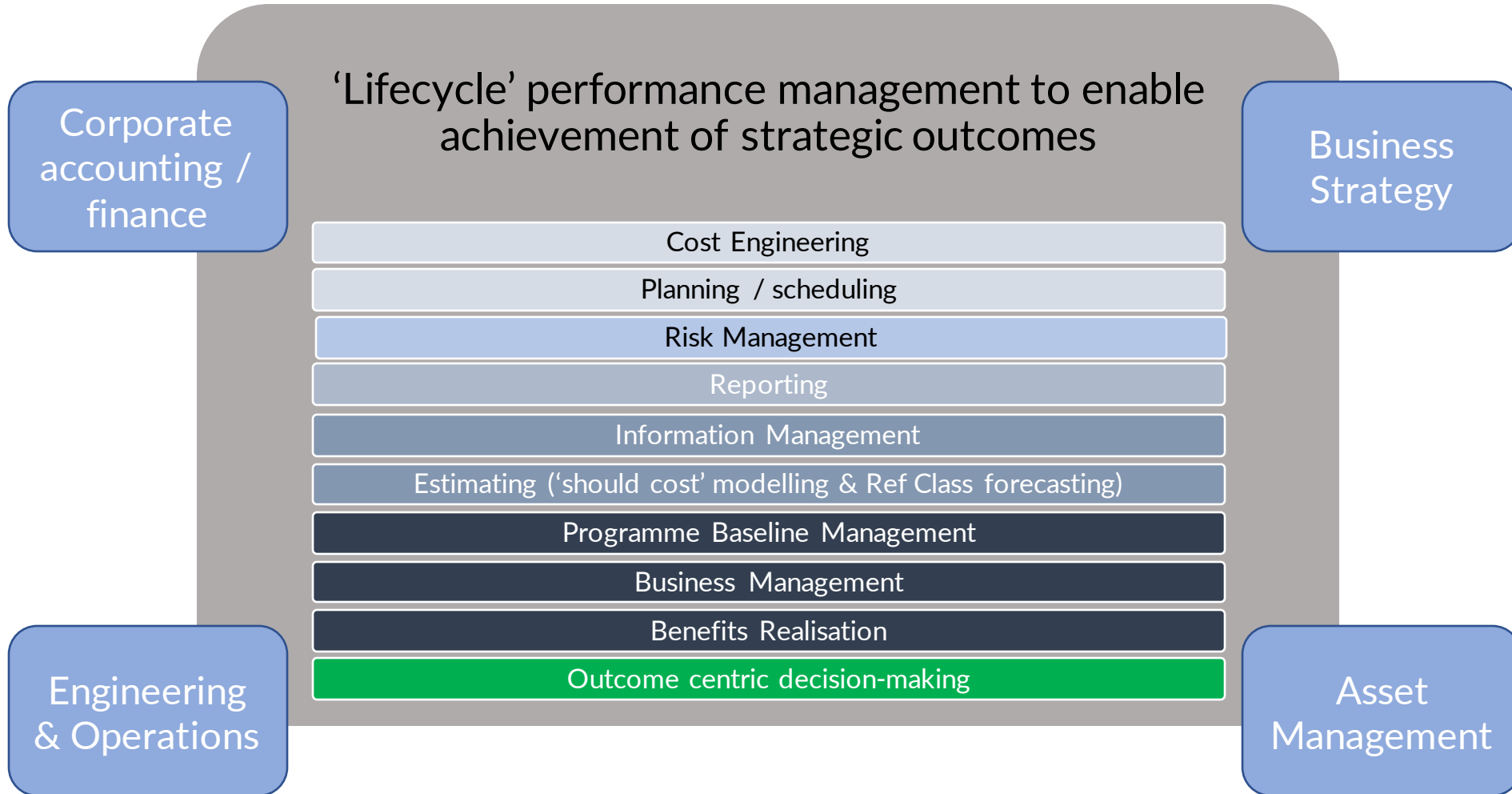
↑ Governance and Assurance ↓



Extended 'Project Controls' model



Ultimate end state: performance management



Key learning point: Focus on outcomes not outputs

- *“...we need to be outcome, rather than output, focused, delivering our projects in ways that are genuinely sustainable, so that we create a viable future for generations to come.*
- *“We may be building a dam, but what we’re really doing is improving livelihoods by providing more reliable water supplies, whether for drinking, industry or growing food.*
- *“We may be implementing a renewable, affordable electricity supply, but what we’re really doing is giving people access to technology and the opportunity to study.”*
- *“We may be building a road or a bridge – the output, but what we’re really doing is connecting communities, improving access to markets, enhancing economic efficiency and improving people’s lives – **the outcome.***

Keith Howells
(158th) President of the ICE

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THANK YOU



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