More than staging plans:

The hidden value of detailed landfill planning

Alison Horlyck

Technical Director – Waste Management



Staging plans vs landfill masterplan

Shows spatial extents for planning and approvals:

- Cell footprints
- Final landform
- Broad sequence
- When supporting infrastructure is required, decommissioned, relocated

Provides a practical framework for:

- Optimising performance throughout site development
- Knowing when decisions need to be made
- Understanding development constraints
- Making better informed decisions
- Improving environmental outcomes
- Reducing whole of life costs

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Landfill masterplan

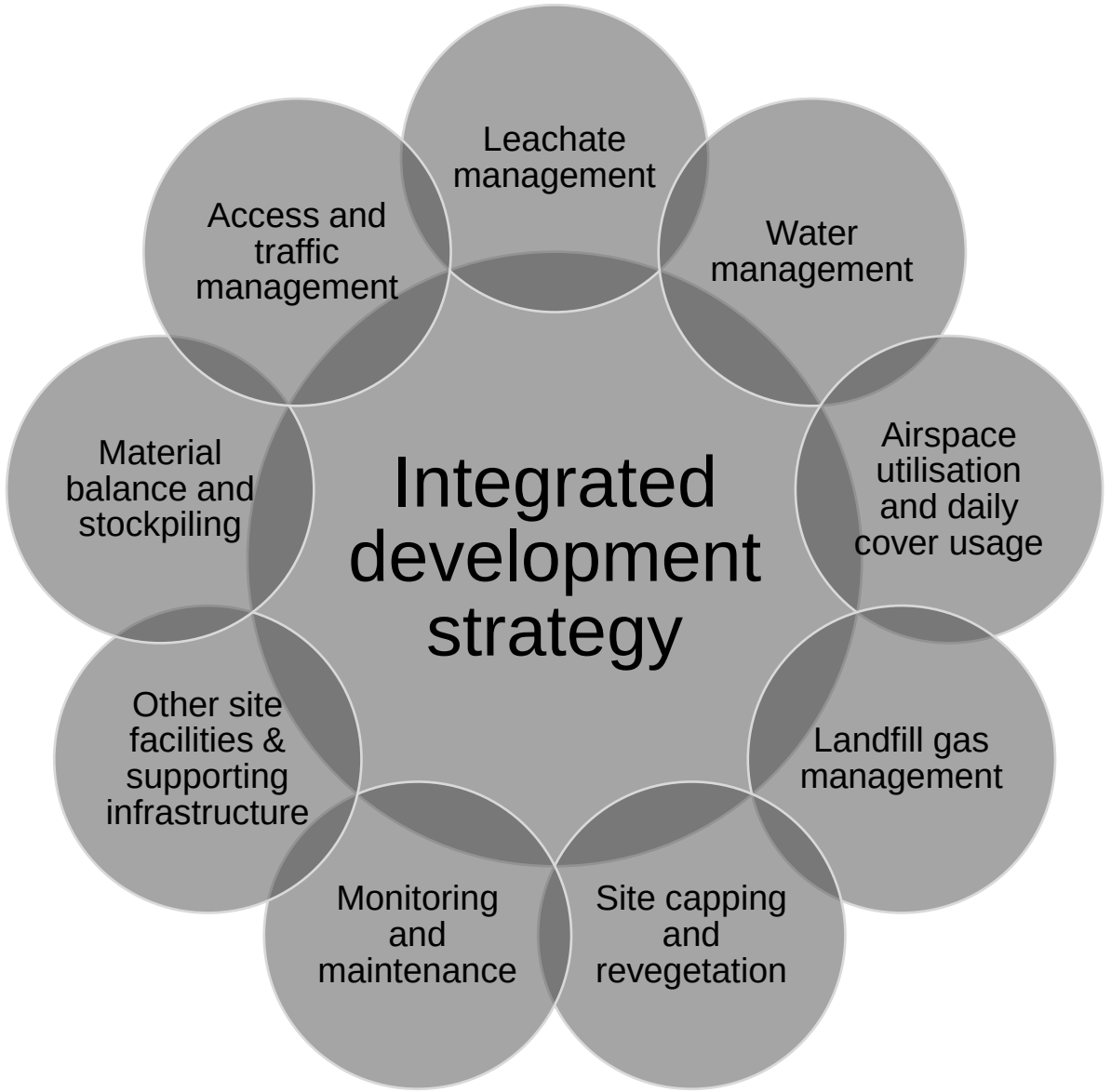


- Define the destination
  - Start with the end
- Work backwards
  - How will we get there?
- Optimise arrangements
- Review and recalibrate

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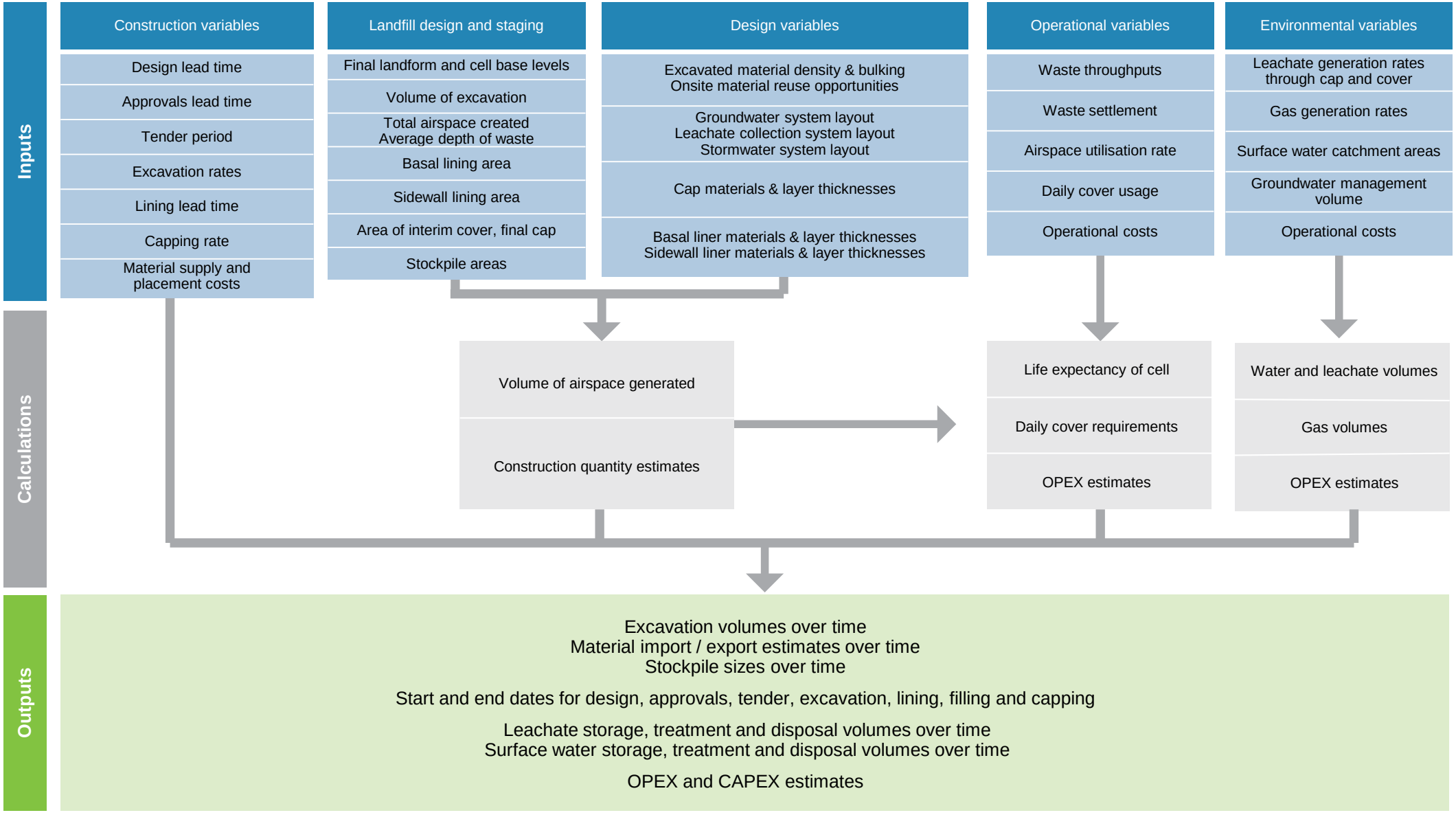
How will we get there?
(more than cell staging)





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Landfill Operational Model Inputs and Outputs



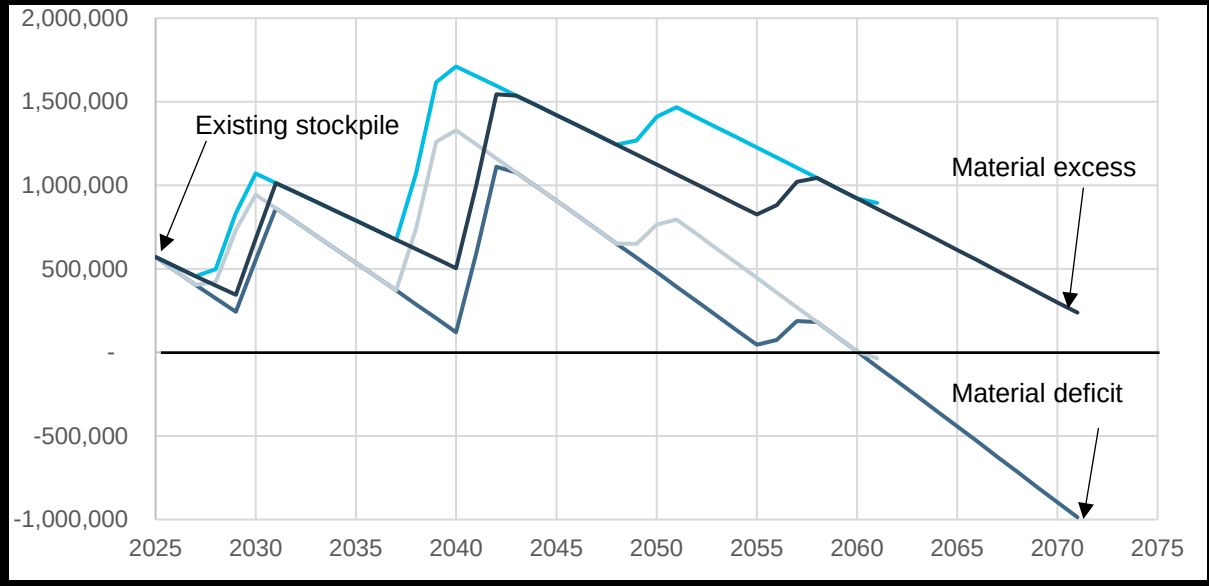
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Case study #1

- Excavation occurs early
- Current high rates of cover soil usage
- Capping demand arrives much later
- Temporary stockpile areas on future cell areas

A positive material balance can still create a timing problem



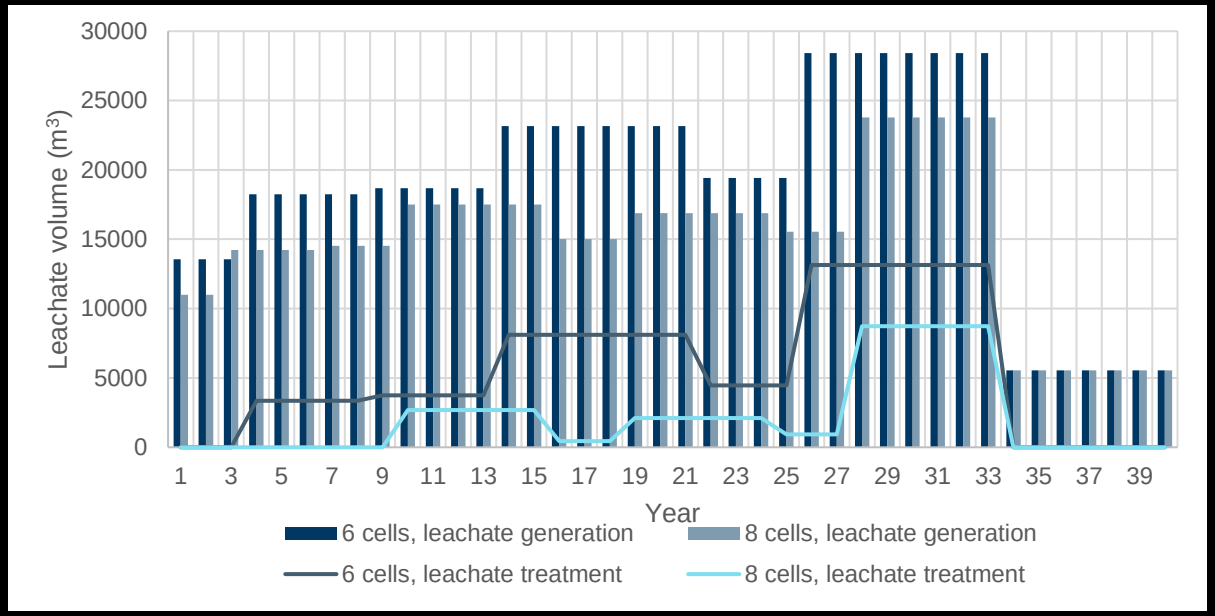
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Case study #2

- Leachate volumes increasing at site, capping works not yet undertaken
- Future generation uncertainty
- Sub-staging of cells reduces future generation, allows for data gathering period before committing to infrastructure upgrades

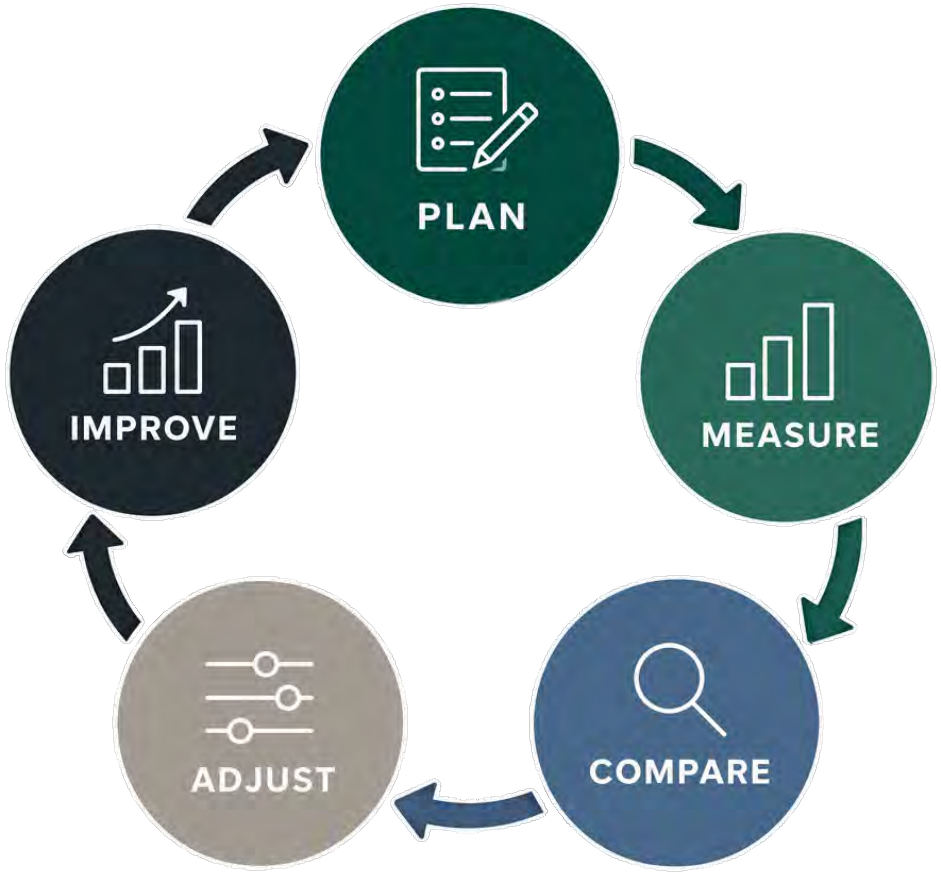
Detailed planning and optimisation can improve environmental outcomes and reduce costs



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Planning is a prediction

To realise the value in planning, performance needs to be tracked against forecasts





A forecast should set a direction, not become an unquestioned promise

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Track what changes the decision

DATA	QUESTION	ACTION
Survey + tonnage	Are we consuming airspace as expected?	Review density, lift geometry and timing
Cover + stockpiles	Are stockpiles matching the forecast?	Adjust placement, supply and storage
Rainfall + leachate	Are exposed areas driving excess inflow?	Change drainage, staging or capping
Program + cost	Will the next asset be ready in time?	Bring work forward or defer spend

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Using technology

- 3D terrain and capacity models
- Scenario testing in minutes
- Forecast and actual comparisons
- Clearer communication of outcomes

AI accelerates analysis.

It does not replace verified data, engineering judgement or operator knowledge.

It still needs to be reviewed and challenged.



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Value of detailed planning

- Plan first
- Consider the whole system
- Understand the constraints and sensitivities
- Measure actual performance
- Keep the plan alive and relevant
- Communicate the plan



Thank you