

Major Work stream Process Improvement

Mace

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Gateway Atrium Demolition



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Gateway Atrium Demolition



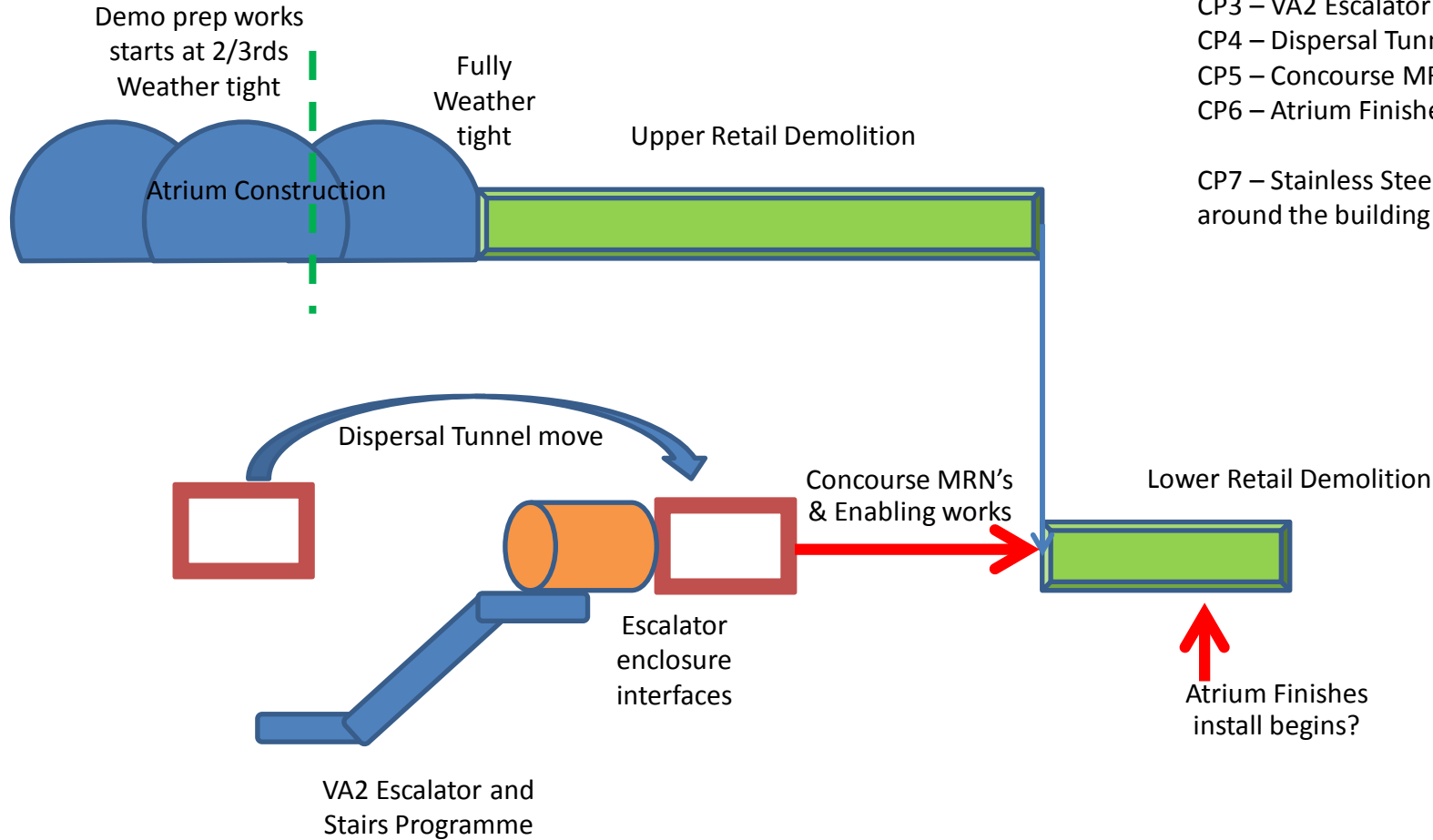
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Critical Path Illustration – Bham Gateway

Critical Paths :-

- CP1 – Atrium Construction
- CP2 – Demolition
- CP3 – VA2 Escalator and Stairs
- CP4 – Dispersal Tunnel move
- CP5 – Concourse MRN's
- CP6 – Atrium Finishes

CP7 – Stainless Steel Façade around the building

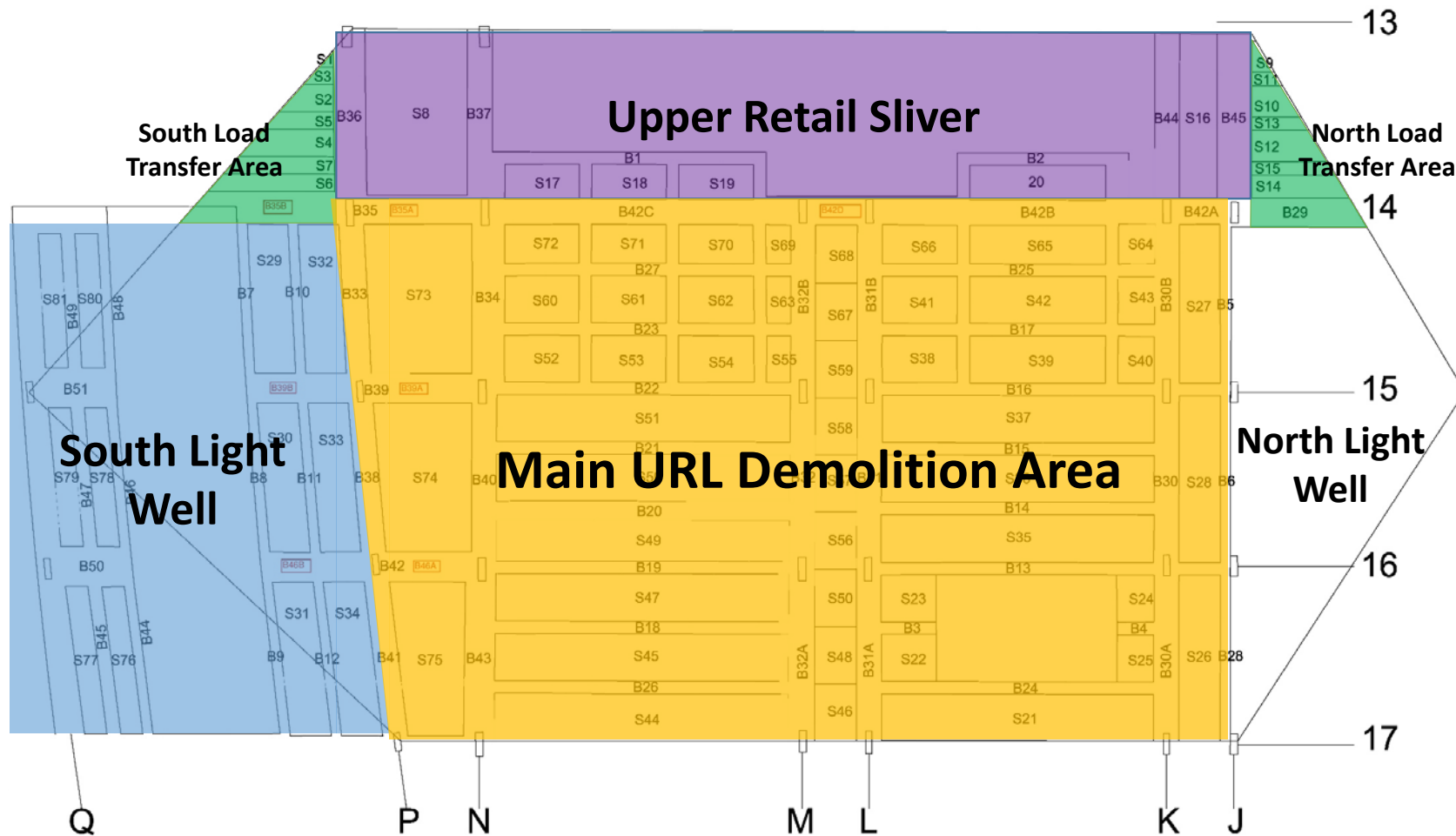


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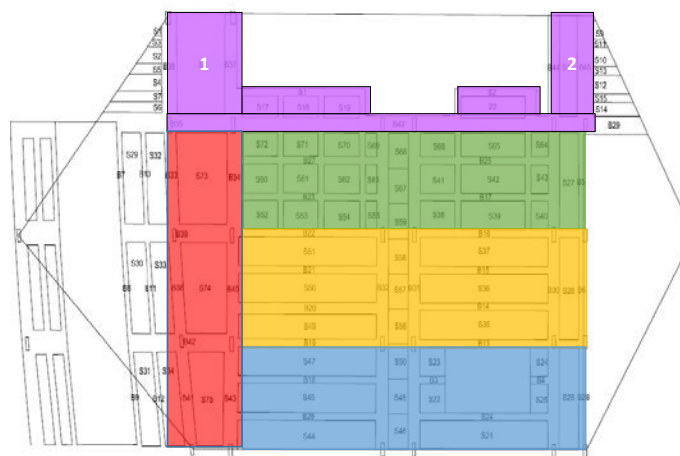
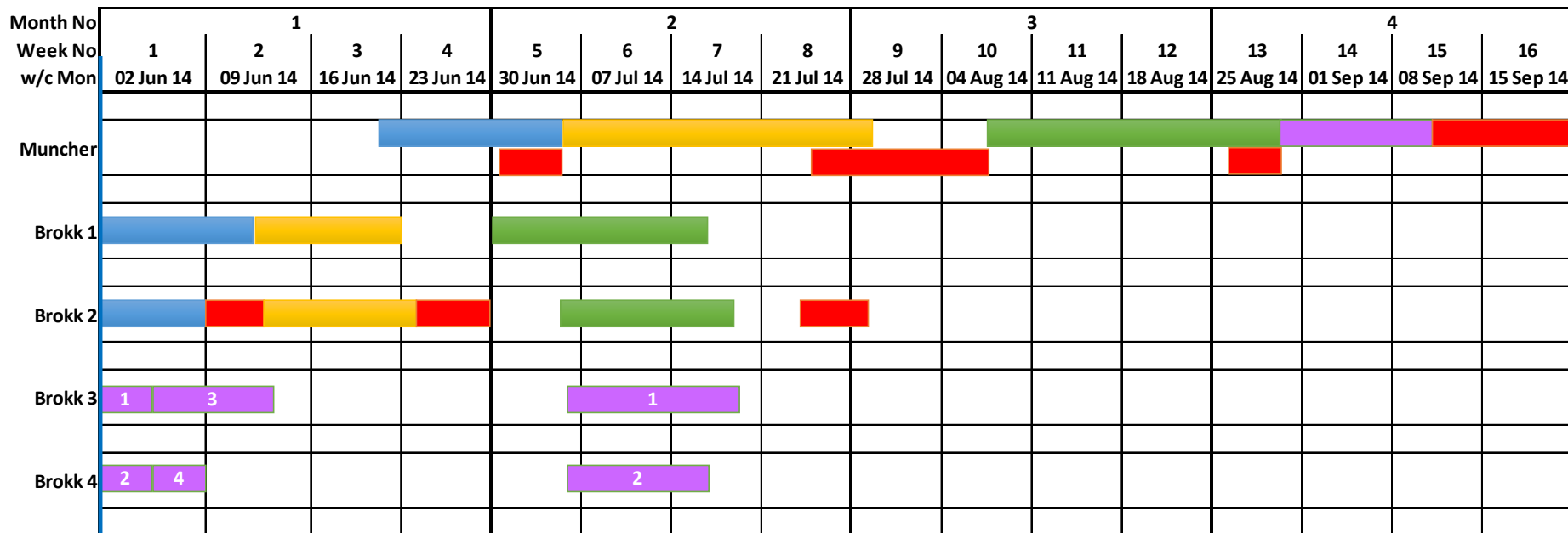
Scope

Upper Retail Area



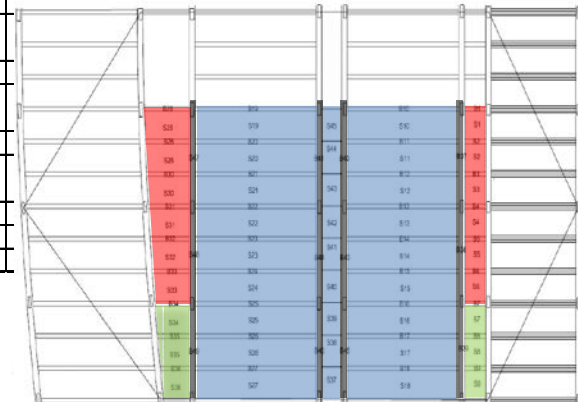
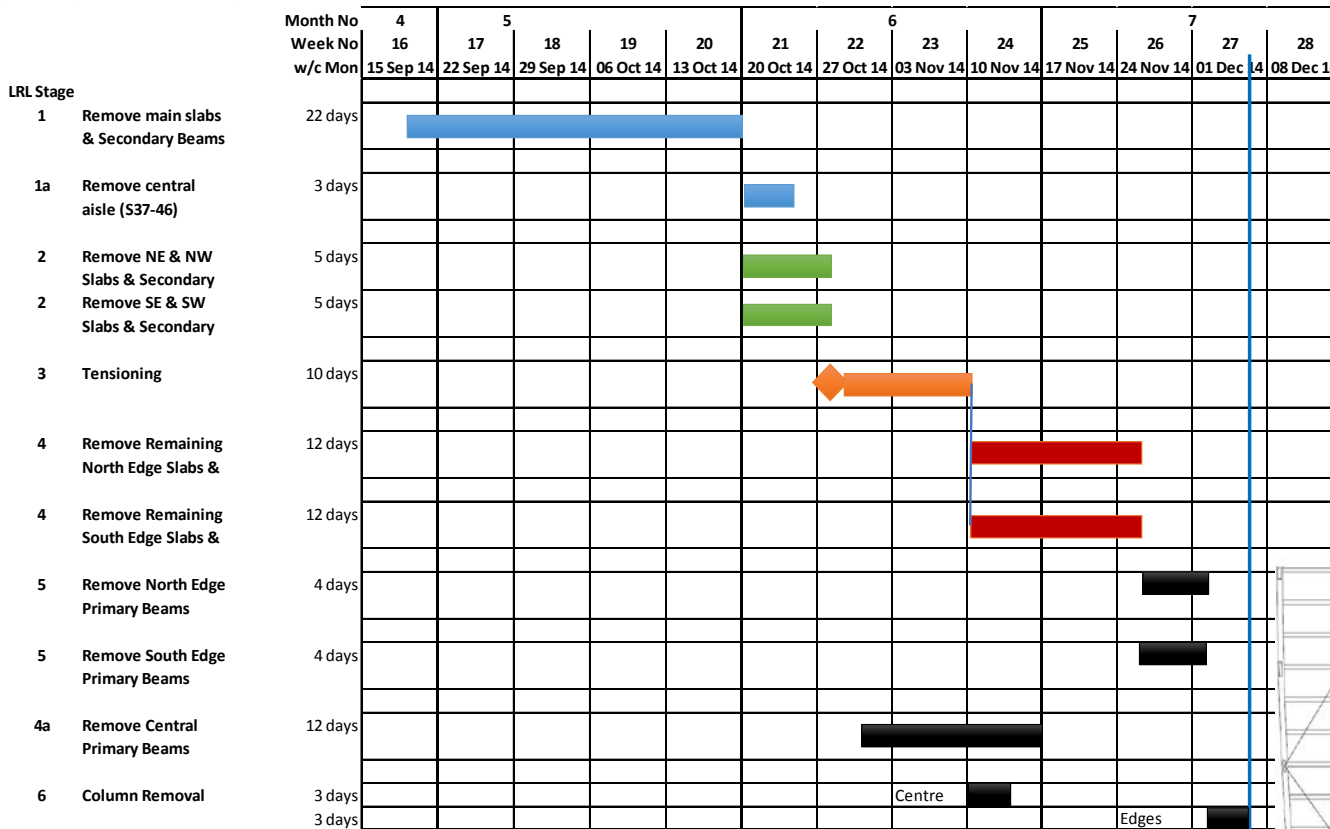
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Upper Retail Level - High Level Programme



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Lower Retail Level - High Level Programme



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Process Improvement Approach

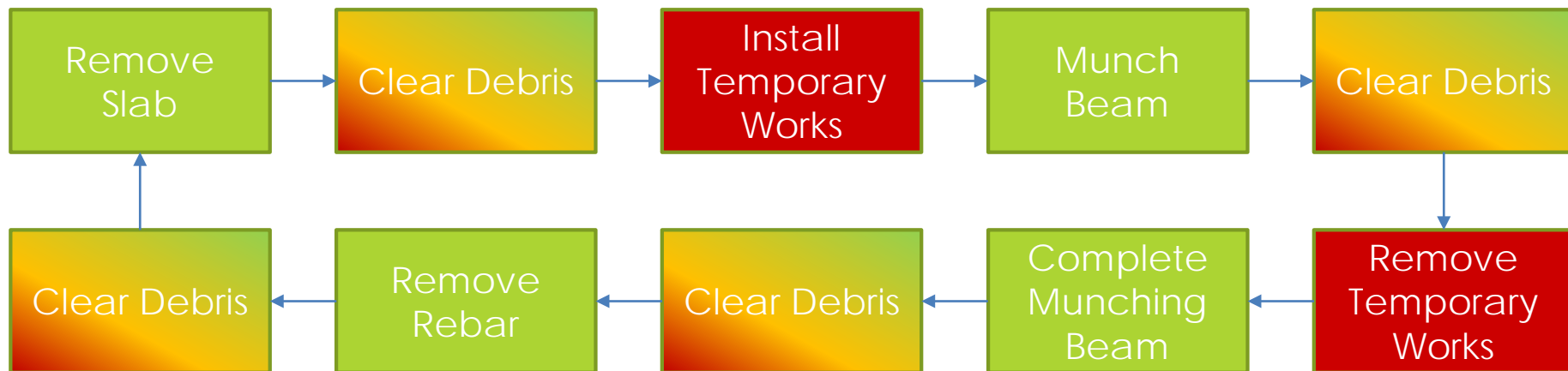
Teamwork and Collaborative working

- Collaborative Planning Workshops to:
 - Understand the high level programme
 - Identify actual process operations
 - Identify key improvement opportunities
 - Build and align the improvement team
- 4D Modelling for Virtual First Run Studies
- Value Stream (Pacemaker) Analysis
- Visual management for works delivery



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Initial Core (Repeating) Process



Key

Value Adding Activity


Non Value Adding Activity

Waste Activity

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Process Analysis – Process Capability

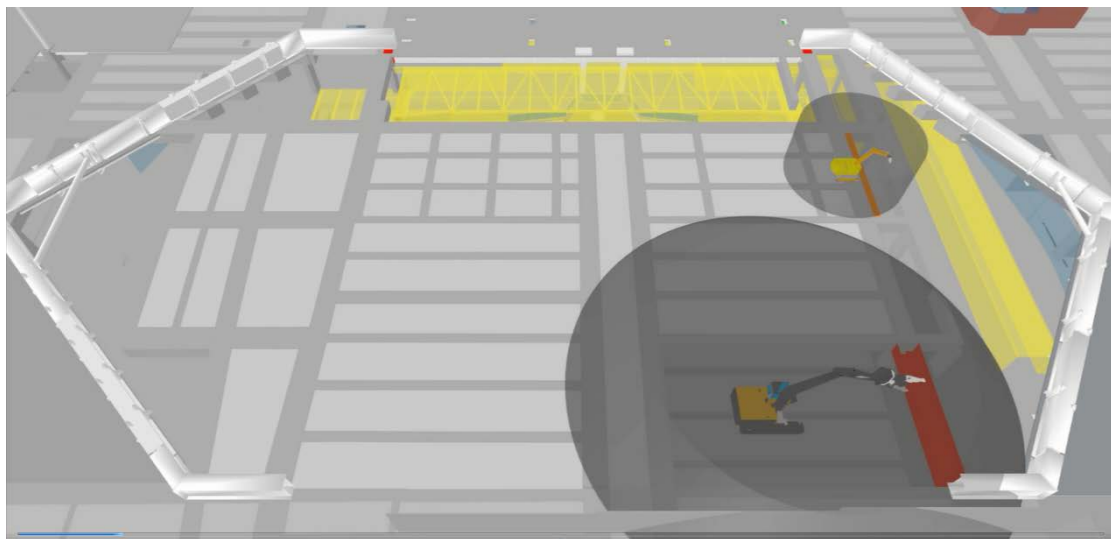
- Desk top studies used to:
 - Understand each element of the programme in detail
 - Identify “clear run” capabilities
 - Analyse all activities contained within each process
 - Build the programme “bottom up”
 - Identify opportunities for improvement through
 - More efficient working
 - Taking activities off-line

AREA		Upper Retail Demolition					STANDARDISED WORK COMBINATION TABLE		DATE - 16 Jan 14																															
PART NAME / NUMBER									VOLUME																															
JOB		18 metre main slab removal							TAKT																															
CONTENT		<u>without</u> edge cutting							TIME UNITS: HOURS																															
Serial	Operation Name	Process Area	TIME				Cum	OPERATION TIME													TIME UNITS: HOURS																			
			Manual	Auto	Wait	Walk		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																	
Current Process																																								
1	Remove 6 metres of slab	Internal	3.5					3.5	[Green bar from 1 to 3.5]																															
		External						0																																
2	Clear debris	Internal	1.3					4.8	[Red bar from 3.5 to 4.8]																															
		External						0																																
3	Remove 6 metres of slab	Internal	3.5					8.3	[Green bar from 4.8 to 8.3]																															
		External						0																																
4	Clear debris	Internal	1.3					9.6	[Red bar from 8.3 to 9.6]																															
		External						0																																
5	Remove final 6 metres of slab	Internal	3.5					13.1	[Green bar from 9.6 to 13.1]																															
		External						0																																
6	Clear debris	Internal	1.3					14.4	[Red bar from 13.1 to 14.4]																															
		External						0																																

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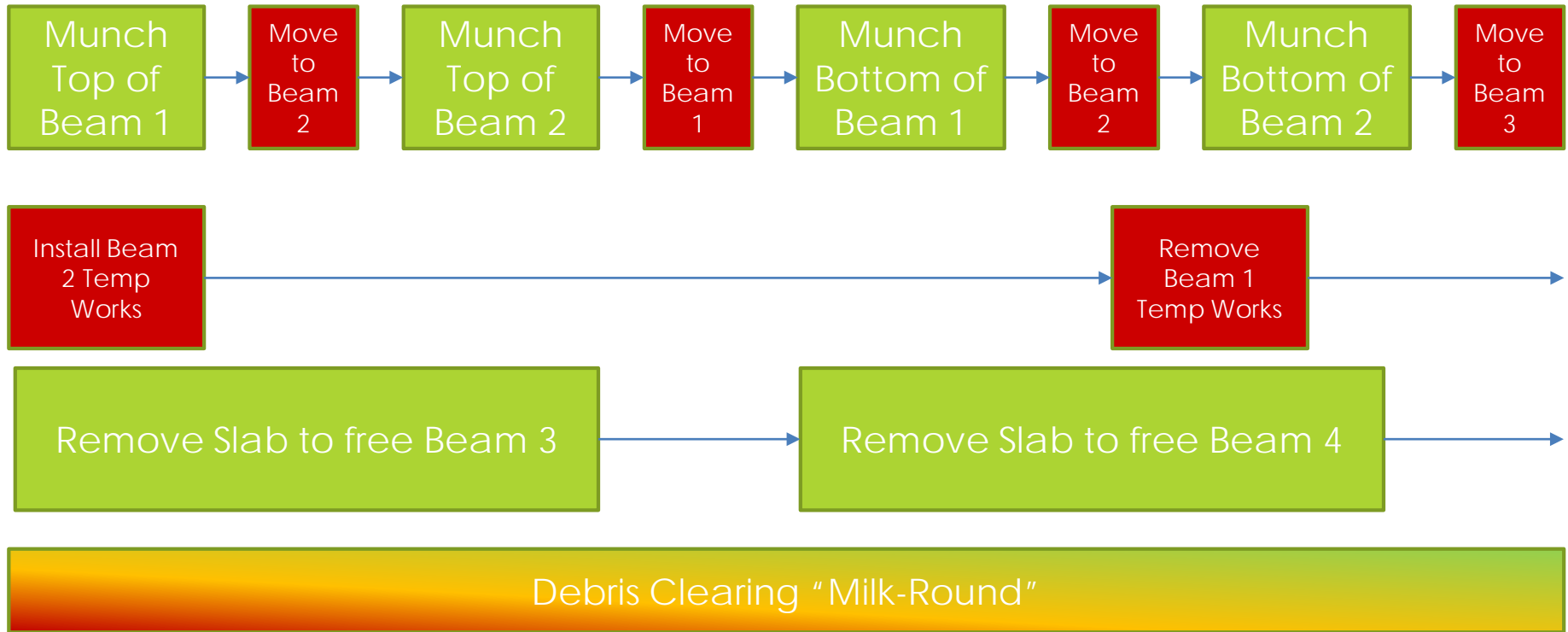
4D Modelling – Visualise & First Run Studies

- Use 4D modelling and animation for virtual first run studies to aid:
 - Testing and refining of overall sequence of works including clash detection
 - Initiate process improvements
 - Early identification of issues and problem solving
 - Produce detailed:
 - Programme Plan
 - Resource Plan



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Improved Core (Repeating) Process with parallel working



Key

Value Adding Activity

Non Value Adding Activity

Waste Activity

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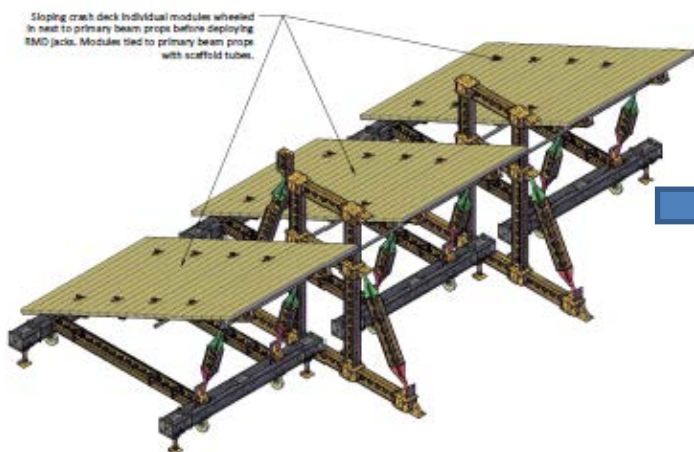
Atrium Demolition Simulation Programme

Steve insert

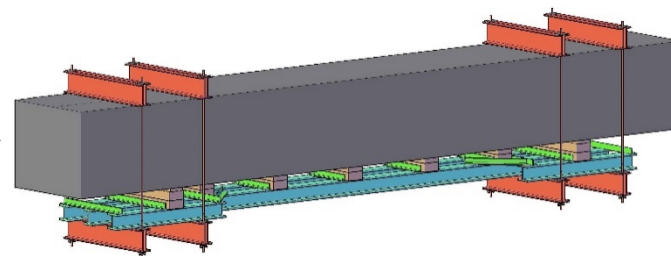
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Structured Problem Solving :- Temporary Works Design

Original Design



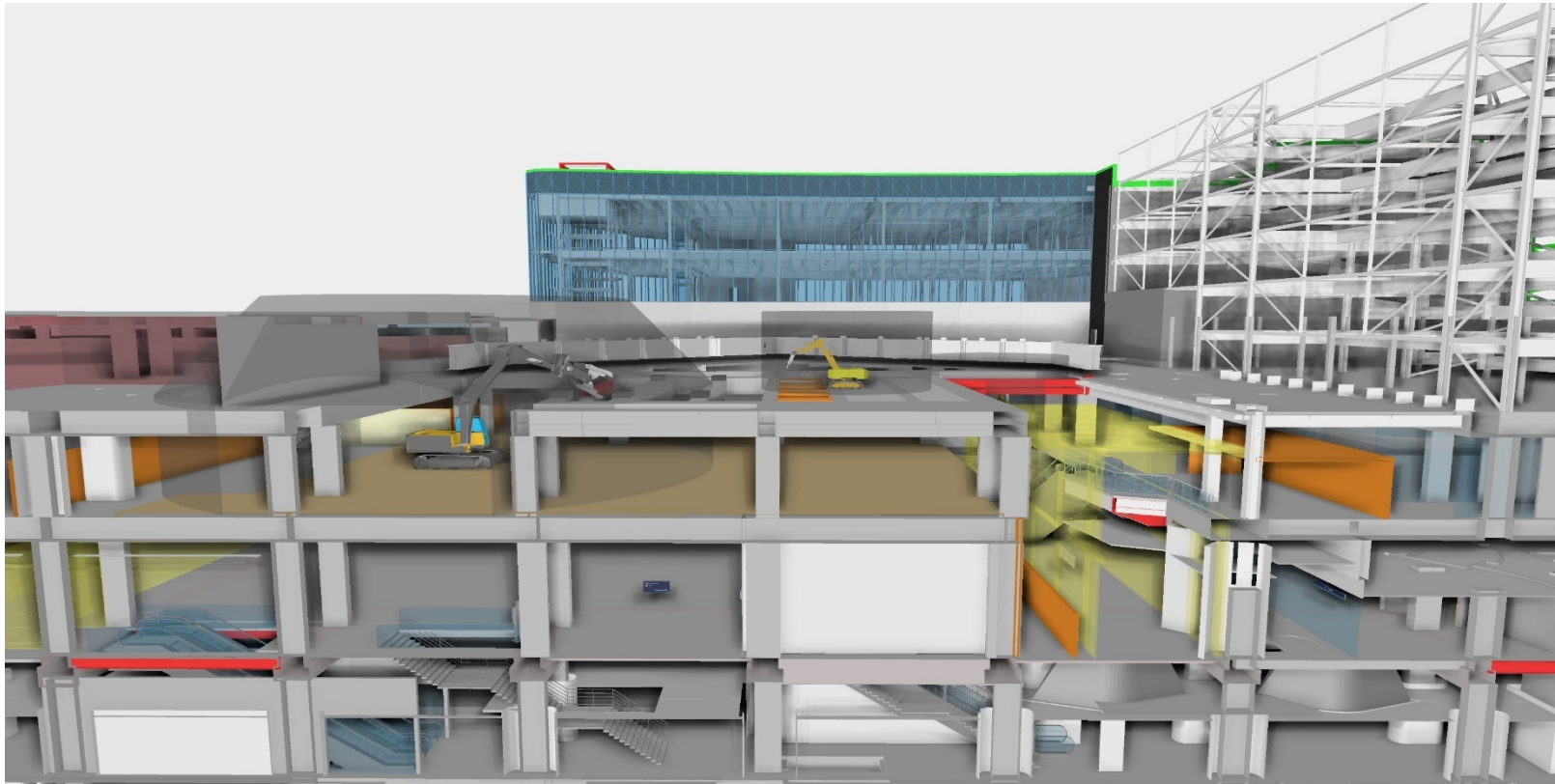
Improved Design



- Team improved the temporary works design
- Benefits achieved were:
 - Quicker installation
 - Improved debris removal through easier access
 - Improved debris floor loadings due to reduced load from temporary works

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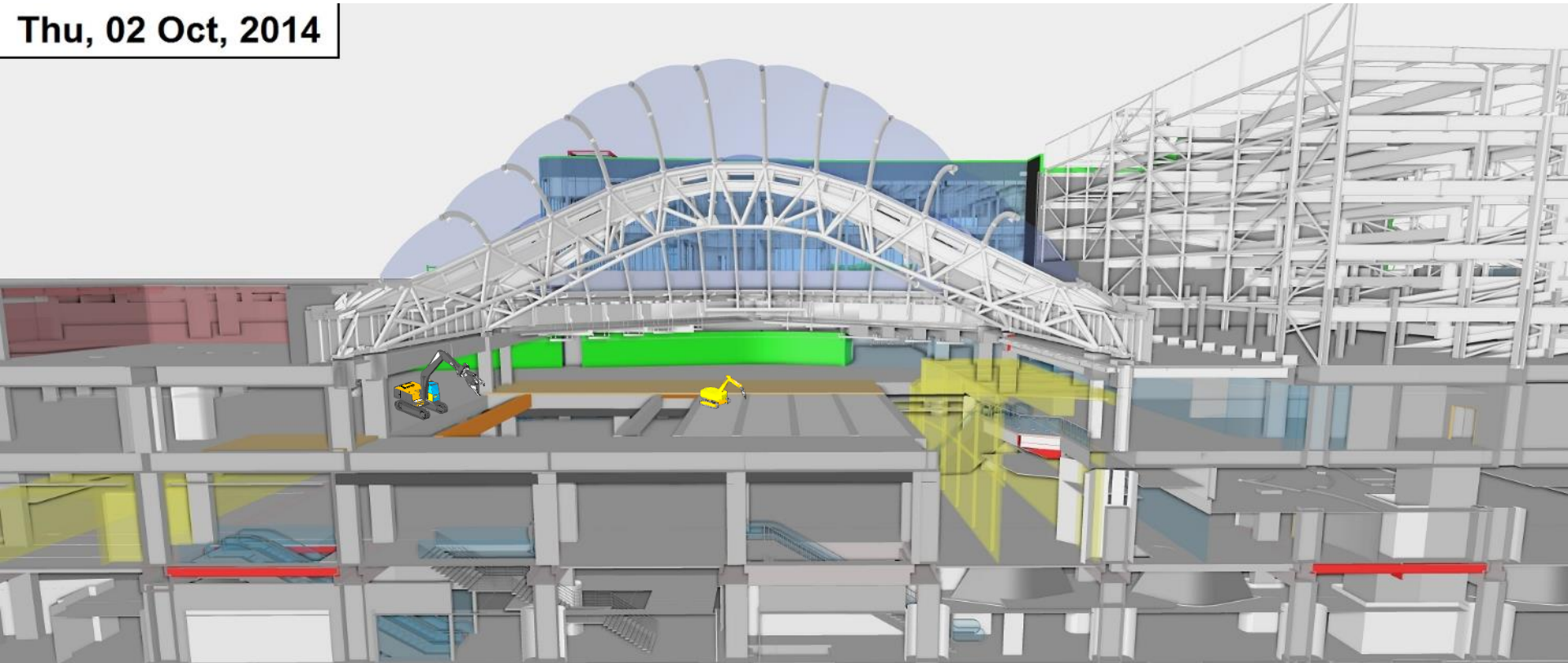
Upper Retail Demolition



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Lower Retail Demolition

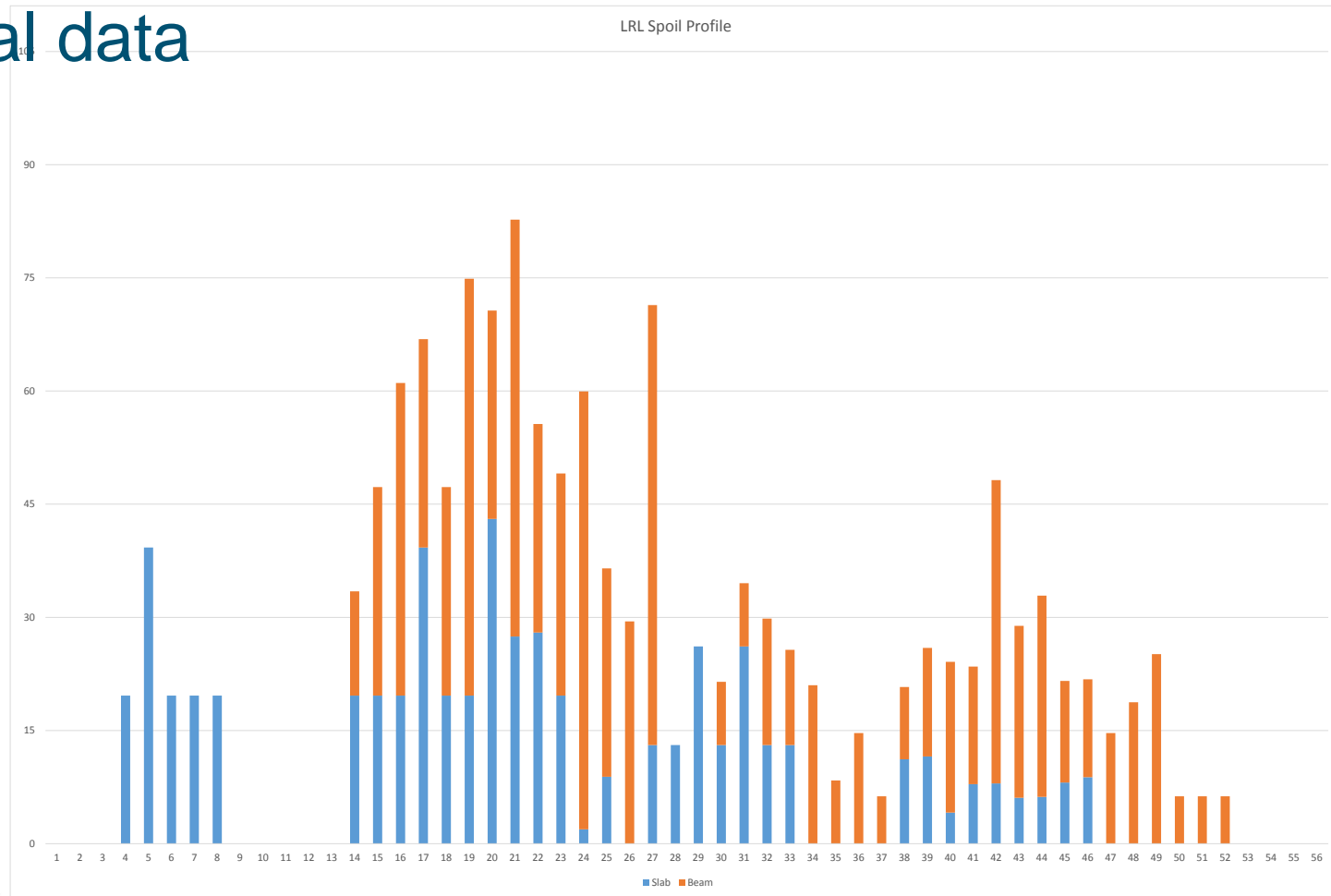
Thu, 02 Oct, 2014



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Key Constraint – Spoil Removal

Actual data



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Spoil Removal via The “Mouse Hole”

- Key Issues:
 - Total daily capacity of the mouse hole
 - Logistics routes
 - Number of Bobcats required to clear debris
- Work study has been carried out and found that:
 - Maximum capacity is 11.25 tonnes per hour
 - Avg time 40 secs to dampen & deposit 125 kg Bobcat load.
 - Assumes continuous working
 - To meet peak demolition loads 5 Bobcats will be required



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Summary

- Start analysis process early,
- Build teamwork and open analysis
- Appreciate its desk top / simulation
 - Test solutions and processes
 - Reality will need reassessment
- Simulation is powerful visualisation tool & speed of scenario testing
- Practical reality of work will need constant review, monitoring & optimisation.

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