



smp  
alliance

Deltek.

# National Highways & Deltek Working Together To Improve Project Schedules

# National Highways

- A Government's Arms' Length Body charged with operating, maintaining and improving England's motorways and major A roads
- Our ambition is to ensure our major roads are more dependable, durable and most importantly safe
- Our priorities are Safety, Customers and Delivery
- We are currently in Road Investment Strategy (RIS) 2 running from 2020-2025



# Improving socioeconomic outcomes from our road network

## Key facts and figures for the second road period (2020–25):

<b>£24bn<sup>1</sup></b> to be invested	<b>£10.5bn</b> for major projects
<b>£10.8bn</b> for operations, maintenance and renewals	<b>£956m</b> for designated funds <sup>2</sup>

<sup>2</sup> We use standalone, or designated, funds to deliver activities beyond the traditional focus of road investment, investing in our surrounding communities and built, natural and historic environments.

## Financial highlights 2021–22

<b>£144bn</b> value of assets managed 2020–21: £132bn	<b>£4.4bn</b> of total expenditure 2020–21: £4.5bn
<b>£12m</b> of daily expenditure 2020–21: £12m	<b>£259m</b> of efficiencies generated 2020–21: £243m

## Our delivery progress so far in the second road period

<b>£3.8bn</b> invested in enhancement schemes In-year 2021–22: £1.8bn Second road period target: £10.5bn	<b>19</b> road schemes opened or starting construction In-year 2021–22: 11 Second road period target: 52 opened, 12 started	<b>£52.4m</b> invested in 240 safety schemes In-year 2021–22: £18.8m No target	<b>£502m</b> of efficiency savings achieved In-year 2021–22: £259m Second road period target: £2.1bn
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## Our social impact progress so far in the second road period

<b>447</b> biodiversity units delivered In-year 2021–22: 299.8 Second road period target: no net loss	<b>83</b> projects completed for walkers, cyclists and horse riders In-year 2021–22: 6 No target	<b>3,178</b> quieter households In-year 2021–22: 1,067 Second road period target: 7,500	<b>146</b> innovation and modernisation schemes supported In-year 2021–22: 66 No target
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## Where we spent our money in 2021–22

National <b>£1.36bn</b> 2020–21: £580m (including PFI service payments, national projects and support costs)	North West <b>£447m</b> 2020–21: £404m	North East <b>£436m</b> 2020–21: £602m	East <b>£468m</b> 2020–21: £459m
	South West <b>£332m</b> 2020–21: £329m	Midlands <b>£514m</b> 2020–21: £670m	South East <b>£816m</b> 2020–21: £1.46bn



# Deltek PPM at-a-glance

## 39 Years in Business



- » Millions of users - customers range from 1 - 50,000 users
- » 3,700+ Deltek PPM customers in over 30 countries
- » Offices – UK, AUS, USA (HQ DC), Europe

## Deltek PPM solutions

- » Schedule: Acumen Fuse & 360, Touchstone, Open Plan
- » Cost: Cobra, PM Compass,
- » Risk: Acumen Risk



## More Than Software



- » Local Community
- » Clarity Report
- » Conferences & User groups
- » Organizational change management

## PPM Customer Footprint

THALES

JACOBS



LOCKHEED MARTIN



GENERAL DYNAMICS



ARUP



COBHAM



# NH Our Journey with Deltek

- Through RIS1 NH focused on improving its Project, Programme and Portfolio Management **organisational maturity** and developing its Integrated Project & Programme Controls
- Our approach – was to build a capable client team, with **clear repeatable and trusted processes**, systems and tools, whilst improving its **people capabilities**
- Specific to this presentation was our aim to **improve consistency** and the **technical quality** of each of our **supply chain schedules**
- We have managed several types of contracts including **traditional contracts, D&B**, and now operating an **Alliancing form of contract**

**Seven Members**

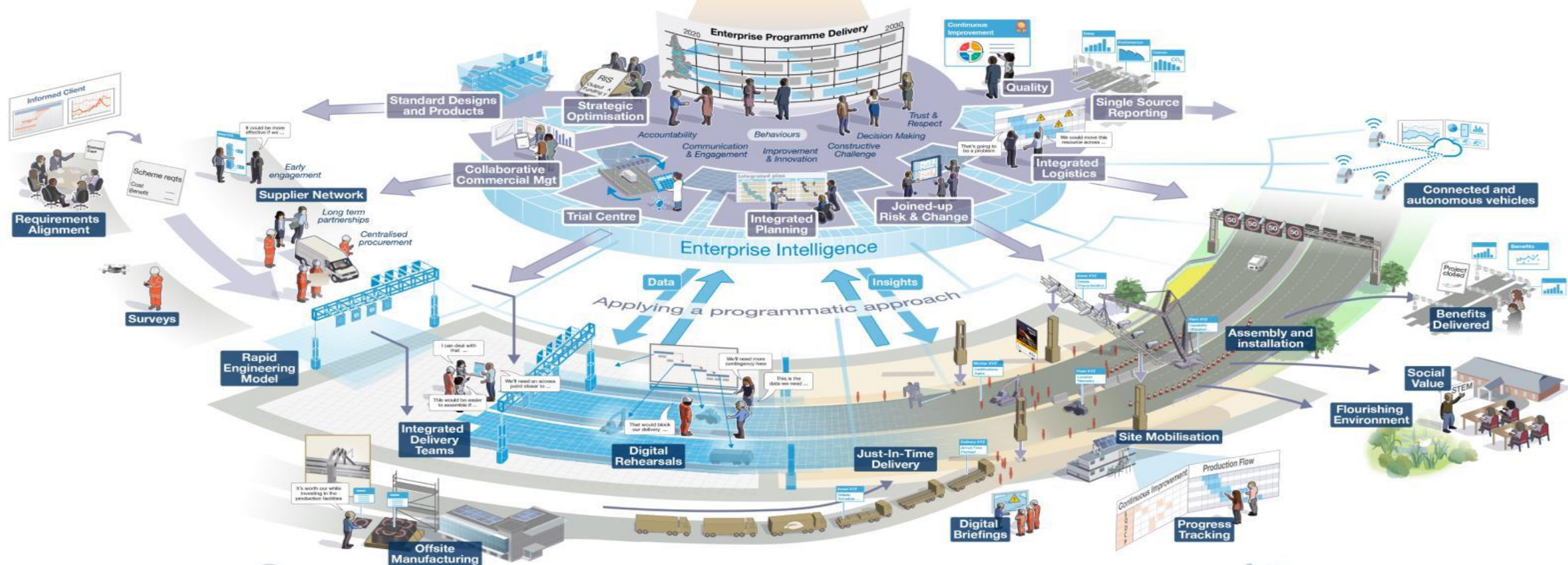


**SMP Alliance**



**Aligned Goals**

**Six Outcomes**



Standardised End-to-End Production Lifecycle

# Stage 1 – Acumen Fuse

- In 2017 the NH Smart Motorway, Programme Management Office (PMO) collaborated with **Deltek** to introduce **Acumen Fuse**
- What is Acumen Fuse – a **data quality assurance** and schedule diagnostics tool
- The aim – to improve the **consistency** and **quality** of our supply chain schedules so as to provide more **reliable unconstrained** insights

	2020		2021		2022		2023		2024	
<b>Ribbd</b>										
<b>Score</b>										
1. Total Activities	0	0%	599	29%	908	45%	34	2%	0	0%
2. Milestones	0	0%	0	0%	268	24%	24	24%	2	100%
3. Missing Logic	N/A		1	7%	1	0%	1	3%	N/A	
4. Logic Density™	1		2.29		3.04		5.86		1.5	
5. Critical	0	0%	1	7%	68	6%	18	31%	2	100%
6. Hard Constraints	N/A		0	0%	4	0%	3	6%	1	50%
7. Negative Float	0	0%	0	0%	0	0%	0	0%	0	0%
8. High Float	0	0%	0	0%	74	9%	0	0%	0	0%
9. Insufficient Detail™	N/A		0	0%	0	0%	0	0%	N/A	
10. High Duration	0	0%	0	0%	7	1%	0	0%	0	0%
11. Number of Lags	0	0%	0	0%	1	0%	0	0%	0	0%
12. Number of Leads	0	0%	0	0%	1	0%	0	0%	0	0%
13. Merge Hotspot	N/A		0	0%	33	4%	13	45%	N/A	
14. Diverge Hotspot	N/A		N/A	0%	18	2%	8	28%	N/A	
15. Logic Hotspot™	N/A		0	0%	3	0%	2	6%	N/A	
16. Riding Data Date	0	0%	0	0%	0	0%	0	0%	0	0%
17. Schedule Overrun	0	0%	3	21%	6	1%	0	0%	0	0%
18. Invalid Actual Dates	N/A		0	0%	1	1%	N/A		N/A	
<b>Score</b>	100		100		93		97		50	
<b>Phase Analyzer</b>										



# How are we using it

- We worked with our supply chain to create a banding of metrics to analyse our schedules
- We ran all of our programmes through this software monthly to get a near instant score based on the metrics we chose
- We were managing >25 projects schedules with an activity in excess of 18'000 per schedule
- As part of our assurance and schedule quality monitoring we obtained a highlight of key focus areas;

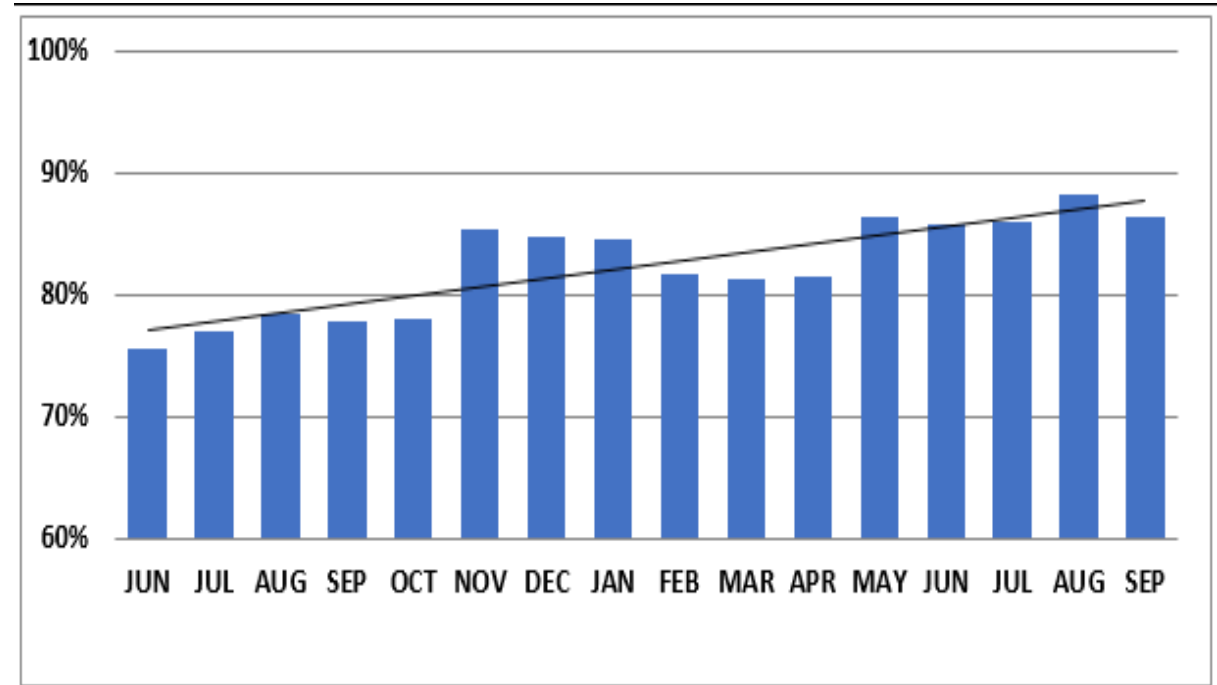
1. Total Activities	2. Milestones	3. Missing Logic	4. Logic Density™	5. Critical	6. Hard Constraints	7. Negative Float	8. High Float	9. Insufficient Detail™	10. High Duration	11. Number of Lags	12. Number of Leads	13. Merge Hotspot	14. Diverge Hotspot	15. Logic Hotspot™	16. Riding Data Date	17. Schedule Overrun	18. Invalid Forecast Dates	19. Invalid Actual Dates	Score
11517 100%	1710 15%	116 1%	3.17	6 3%	54 0%	0 0%	38 35%	2 0%	5 5%	172 2%	72 1%	1,543 14%	1,761 16%	244 2%	1 1%	29 0%	0 0%	0 0%	84

# The outcomes of Fuse

- Fuse has provided **project intelligence** and **insights** into how to improve **project schedule quality**
- This **wasn't an instant change**, more a gradual improvement over a period of time, as can be seen by the graph. Over a period of 2017 to 2022 we **averaged improvements of ~20%** in our quality metrics
- This has allowed us to focus on getting the **right information** into our **schedules ensuring sound logic**

*"Using Acumen Fuse has made a considerable impact in the standard of programmes submitted. During the first 12 months there was a 16.5% increase in programme quality"*

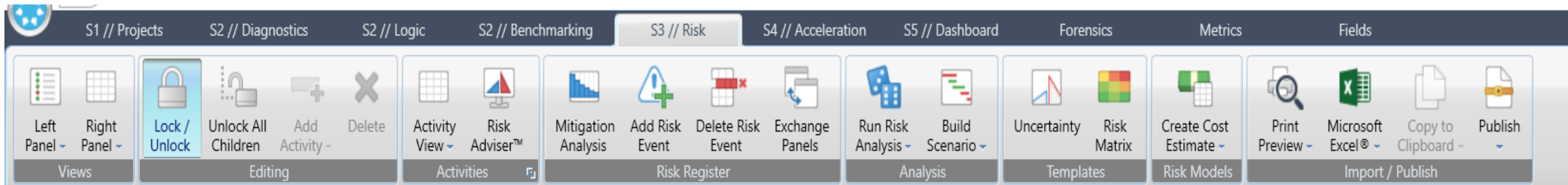
*National Highways Head of Planning*





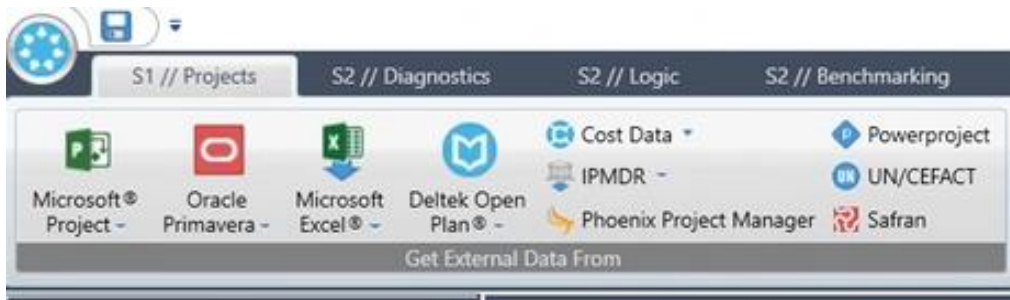
## Stage 2 – Acumen Risk

- On achieving improved schedule quality we introduced Quantitative Schedule Risk Analysis (**QSRA**) tools
- After a considered selection process Deltek was introduced for QSRA, '*Acumen Risk allowed us to do everything under one roof*'
- **Acumen Risk** allowed us to import the **full schedule** without modifications **saving time and improving accuracy of the results**



# Deltek Acumen

- **Quantitative Schedule Risk Analysis**
- Combines the **Schedule** and **Risk Register** to enable scenarios and reiterations to establish a risk based planned completion and ultimately the time risk allowance (TRA) we should allow in the **Contract Programme**.
- Deltek Acumen allows the import of schedules, including file types; **P6, MS Projects, Deltek Open Plan, Powerproject**
- We can then **import risk registers** into the same software



# How NH uses Acumen Risk

- With the **imported schedule** we run our normal Fuse score to **check the quality**
- We then **import our risk register** via excel
- **Identify Duration Uncertainties** at WBS Level (Link/Phases etc)
- **Assess Risk Probability** of Occurring (Very Low <10% to Very High >75%)
- **Assess Schedule Impact** (Very Low <20days to Very High <100days)

Uncertainty Factor™ Editor

Template

Open Save Apply Manually Add a Risk Distribution 1 Size 9

Name	Type	Min	Most Likely	Max	Mean	Standard...
Better	Triangle	75%	100%	100%		
As Planned	Triangle	90%	100%	110%		
Risky	Triangle	100%	100%	125%		

Probability / Scoring Template

Name	Min Value	Very Low	Low	Medium	High	Very High
Very High	>75%	4	10	15	20	25
High	>50%	3	8	12	16	20
Medium	>25%	2	6	9	12	15
Low	>10%	1	4	6	8	10
Very Low	<=10%	0	2	3	4	5

Event Impact Template

Name	% Based	Prefix	Suffix	Very Low	Low	Medium	High	Very High
Schedule	<input type="checkbox"/>		d	<20d	<40d	<60d	<80d	<100d
Cost	<input type="checkbox"/>	£		<£5,000,000	<£10,000,000	<£15,000,000	<£20,000,000	<£25,000,000

# P6/Risk Mapping Session

- Duration Uncertainty Factor inputted
- P6 schedule and risk register imported into Deltek Acumen
- Risks allocated to Activities
- Risk register holds the mapping to activity ID's to make it easier on future programmes

The screenshot displays the Deltek Acumen software interface. The top navigation bar includes tabs for S1 // Projects, S2 // Diagnostics, S2 // Logic, S2 // Benchmarking, S3 // Risk, S4 // Acceleration, S5 // Dashboard, Forensics, Metrics, and Fields. Below the navigation bar is a toolbar with various icons for actions like Lock/Unlock, Add/Delete, Risk Register, and Mitigation Analysis.

The main interface is divided into two primary panels:

- Risk Register:** A table listing risks with columns for Risk ID, Name, Shape, Probability, Schedule, and Cost. A 'Current' column shows a risk level (e.g., Medium, High). A 'M' column indicates mapping status. A '15' is visible in the right margin of this panel.
- Activities:** A tree view showing a hierarchy of activities. The 'Mapped' section is expanded, showing a list of activity IDs and descriptions, such as 'Equipment Site 310/48+21 - GY32 (2\* A) - Helical Piles & Grills' and 'M... El 06 S8'.

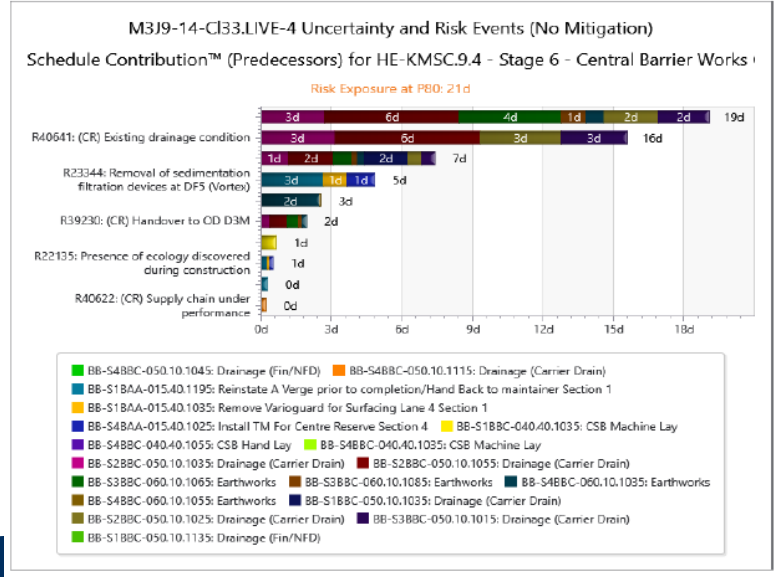
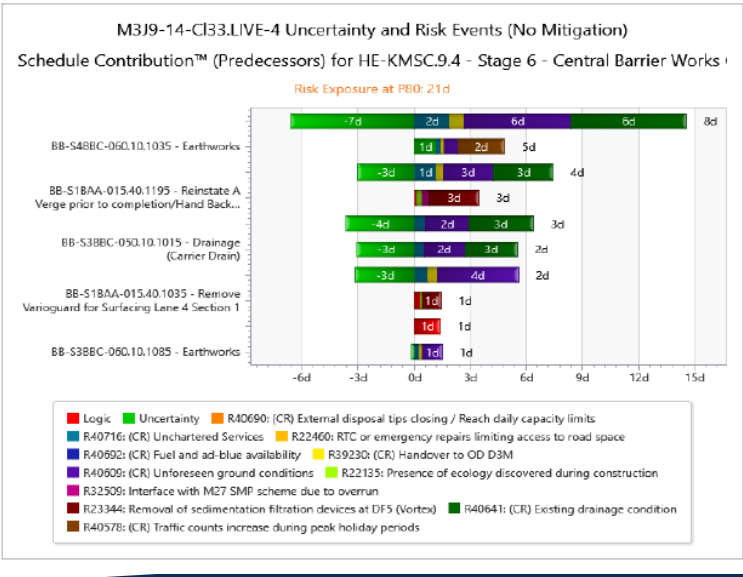
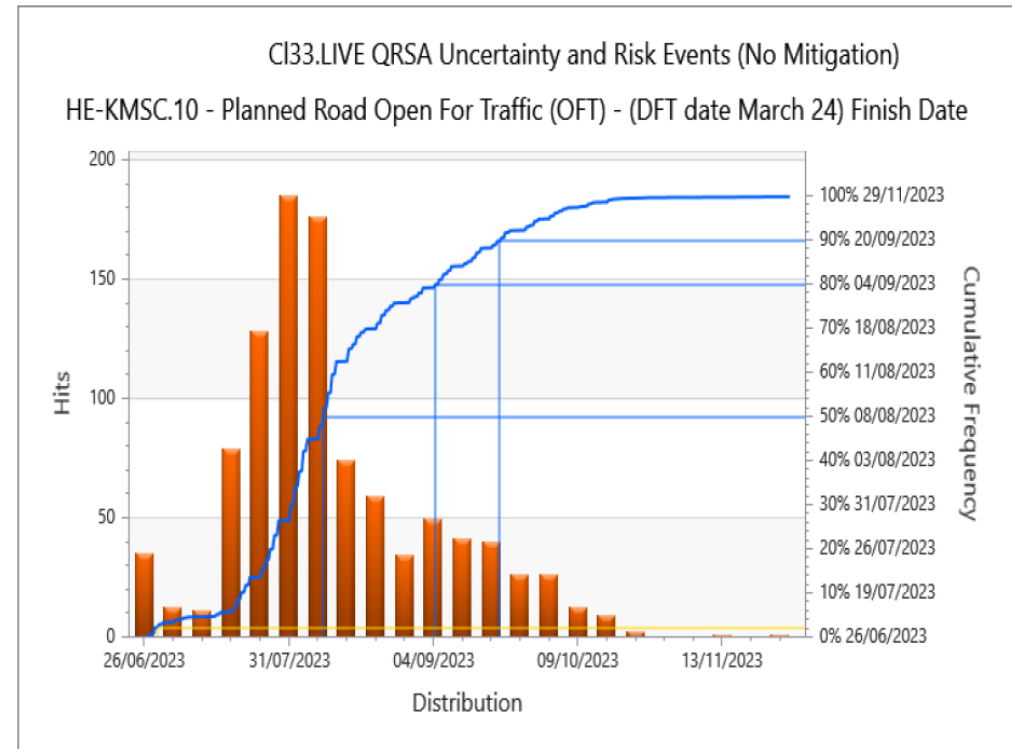
At the bottom, a 'Construction of Gantry GY03' section is visible, with a 'Mappings' tab selected. This tab shows a table mapping risks to activities, with columns for Risk ID, Activity ID, and various duration and probability metrics.

The screenshot shows the 'Activities' panel in Deltek Acumen. It displays a list of activities with columns for Id, Description, Remaining..., and Duration Uncertainty. The activities are organized in a hierarchical tree structure. Each activity has a corresponding duration uncertainty bar, which is a horizontal bar with a color gradient from green to red, indicating the level of uncertainty. The 'Remaining...' column shows the duration in days (e.g., 607d, 135d, 317d).

Id	Description	Remaining...	Duration Uncertainty
M6J21-26-CL33.17-1	M6J21-26-CL33.17-1 Project	607d	[Bar]
M6J21-26-CL33.17-1	M6 J21-26-CB33.17-March 2022 (data d...	607d	[Bar]
M6J21-26-CL33.17-1.1	Phase 2	607d	[Bar]
M6J21-26-CL33.17-1.1.1	Procurement	135d	[Bar]
M6J21-26-CL33.17-1.1.2	Construction	317d	[Bar]
M6J21-26-CL33.17-1.1...	Early Works	0d	[Bar]
M6J21-26-CL33.17-1.1...	Link 1 - J25 to 26 Ch. 50700 - 56500	273d	[Bar]
M6J21-26-CL33.17-1.1...	Link 2 - J24 Ch. 49400 - 50700	138d	[Bar]
M6J21-26-CL33.17...	Link 2 Central Reserve (Ch 48900 to 507...	0d	[Bar]
M6J21-26-CL33.17...	Link 2 Northbound Verge (Ch 49400 to...	136d	[Bar]
M6J21-26-CL33.17...	Link 2 Southbound Verge (Ch 50700 to...	138d	[Bar]
M6J21-26-CL33.17-1.1...	Link 3 - J23 Ch. 47300 - 49400	317d	[Bar]
M6J21-26-CL33.17...	Link 3 Central Reserve (Ch 46800 to 489...	58d	[Bar]
M6J21-26-CL33.17...	Link 3 Northbound Verge (Ch 47300 to...	184d	[Bar]
M6J21-26-CL33.17...	Link 3 Southbound Verge (Ch 49400 to...	183d	[Bar]
M6J21-26-CL33.17...	Commissioning & Handover (Links 3+4...	142d	[Bar]
M6J21-26-CL33.17-1...	Link 4 - J22 & RL5A Ch. 42200 - 47300	207d	[Bar]
M6J21-26-CL33.17...	Link 4 Central Reserve (Ch 42700 to 468...	79d	[Bar]
M6J21-26-CL33.17...	Link 4 Northbound Verge Ch 42200 - 4...	189d	[Bar]
M6J21-26-CL33.17...	Link 4 Southbound Verge Ch 47300 to 4...	207d	[Bar]
M6J21-26-CL33.17-1...	Link 5 - J21a Ch. 39000 - 42200	212d	[Bar]
M6J21-26-CL33.17...	Link 5 Central Reserve (Ch 39700 to 427...	91d	[Bar]
M6J21-26-CL33.17...	Link 5 Northbound Verge (Ch 39000 to...	190d	[Bar]
M6J21-26-CL33.17...	Link 5 Southbound Verge (Ch 42200 to...	212d	[Bar]

# Executive Report

- Deltek Acumen issues an executive report using 1,000 iterations of the schedule to provide likelihood of planned completion by graph time/probability percentage
- P80 is generally used in Civil Construction
- Highlights highest risks impacting schedule (top 10)
- Highlights which activities impacted by risks (top 10)





# Summary Overview

- Acumen Fuse / Risk are **practical** and **user-friendly**
- They provide **concise, realistic** and detailed information
- Allows the use of schedules **without having to change formats** or rebuild
- **Encourages Project and Programme collaboration** – bringing risk, planning, construction and design parties closer together to solve challenges
- **Visualises risk** more effectively than in risk registers therefore providing a greater impact on teams

# Any Questions

- Please see us on **The Deltek Stand #33** – where we will be available for the next 45 minutes for any further Q&A
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