Project Risk

- Learnings from LGWM and Waka Kotahi
- Two Project Time Risk Control Methodologies

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Greater Wellington Te Pane Matua Taiao

Absolutely Positively Wellington City Council
Me Heke Ki Pōneke

Introductions

Bettina Reiter BSc, MSc (Hons)

- Manager, Risk & Reporting (acting),Principal Risk Advisor – NZUP
- Risk Management since 2001 – local & central government, consulting - environmental, transport, roading and health infrastructure, digital business transformation

Shane Bidois *Ngāti Ranginui, Ngāti Rangiwewehi*

- ***PMO Lead**, Let's Get Wellington Moving*
- *Involved in risk management & assurance for over 12 years*
  - *Clinical*
  - *Science & technology*

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New Zealand Government

Programme and Project Risk & Challenges

Ongoing cost pressures from persistent inflation in the construction market

- Resourcing - through high demand for people, plant and materials at all stages of the infrastructure life cycle
- Tight labour market
- Supply chain constraints, and
- Ongoing Covid-19-related disruption
- Legislative change
- Ground conditions".
- Geopolitical events

Responding the right way

- Highly dynamic and fast-moving environment
- Requires a pragmatic and right sized approach that allows the programme to respond to emerging challenges with agility
- Instead of paralysing it with overcomplicated process
- Whilst providing enough tools for effective risk management
- Case Study on effective project risk management – NZ Upgrade Programme

New Zealand Upgrade Programme Risk Management Approach

- Government's 10-year, $8.7 billion investment in rail, public transport, walking, cycling and safer roads that better connect people and businesses jointly delivered by Kiwirail and Waka Kotahi.
- The New Zealand Upgrade Programme (NZUP) will provide growing communities across the country with better and safer travel choices connect people and businesses.
- It will support economic growth, responding to the impacts of travel on the environment and helping enable housing.
- The transport improvements are in our main growth areas - Auckland, Waikato, Bay of Plenty, Manawatu-Whanganui, Wellington, Canterbury, Queenstown and a number of regions.

Let's Get Wellington Moving

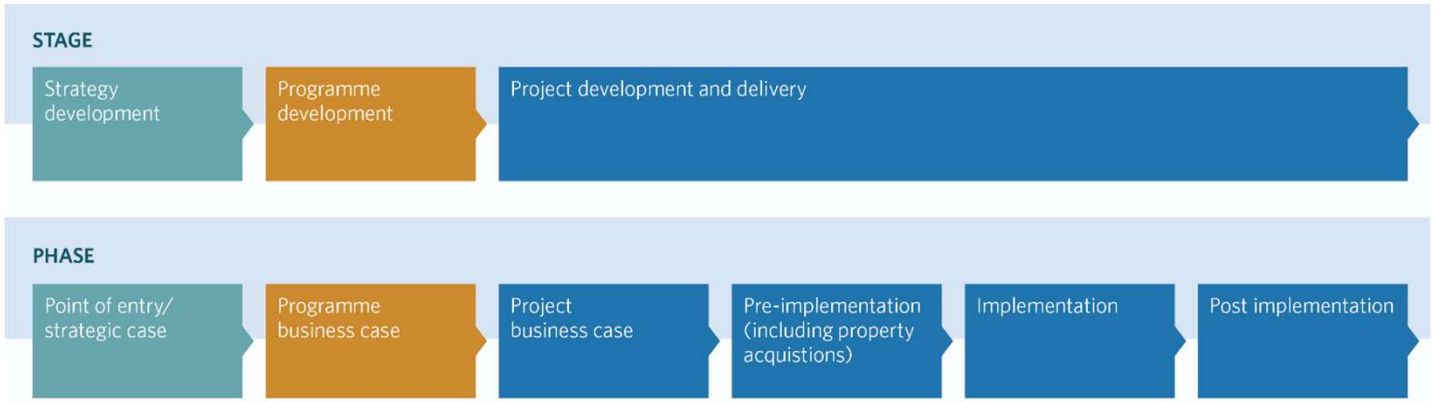
A little about the LGWM – website www.lgwm.nz

- Partnership between Wellington City, Wellington Regional Councils and Waka Kotahi, and Mana Whenua
- $6.4 billion over 25 years across three programmes: 3-Year, Transformational and City Streets.
- Objectives:
  - greater liveability, including enhanced urban amenity and enables urban development outcomes
  - more efficient and reliable access
  - reduced carbon emissions by increasing mode shift away from reliance on private vehicles
  - improved safety for all users, and
  - resilience and adaptability to disruptions and future uncertainty.

Let's Get Wellington Moving

Breakdown of projects and phases

- Project lifecycle uses the Better Business Case model
- Breakdown
  - One Indicative Business case
  - 2 projects in Implementation
  - 2 projects in Pre-Implementation
  - 8 projects either in Strategic Case or Single Stage Business Case



Risk Management across the phases

Starts at the beginning

- Two challenges with this approach:
  - PMs tend to concentrate on the current phase risks and not across the lifecycle of the project
  - Risk can start as a siloed activity rather than being integrated activity across all activities

6.3 Right sizing the engagement

Who are the key stakeholders and how will they be engaged?

What public engagement is proposed to understand further the key opportunities, constraints and wider objectives of the community to inform the indicative business case?

Will this be a high profile activity?

6.4 Risk management

Highlight any risk management issues associated with developing the indicative business case.

How are you going to manage your risk?

6.5 Estimated investment required

Set out the estimated funding required to develop the programme business case/indicative business case, together with a break down of the scope and how this figure has been arrived at.

- Two key notes:
  - there are risks to achieving the benefits of the investment and context
  - then there are risks in the “management of a project” that might adversely affect the return on the investment (PRINCE2 is a process-based method for effective project management)

Integrating risk management

Project controls framework

- **The Project Controls functions**, defined in the classical sense as estimating, planning and scheduling, cost control, risk analysis and related reporting functions, have been clearly demonstrated to provide cost benefits to a project. If embraced as a set of required functions in the project environment, the question frequently arises as to what resource level should be expended in order to receive those benefits.

  - Heywood, G. E. & Allen, T. J. (1996). Project controls: how much is enough? *PM Network, 10*(11), 40–41.

- **Integrated Project Control** is a systematic combination of five logical and proven techniques:
  - Data Integration. Pre-planning of all data collection for storage in a compatible form.
  - Hierarchical Project Structure. A planned formal work breakdown structure (WBS) for orderly data summarization at all project supervision and management levels.
  - Incentives. Rewards and penalties representing the value of surpassed or missed goals. Proper incentives communicate to lower-level supervision user needs, management strategy and other external conditions.
  - Full-Range Inputs. Joint consideration of all execution alternatives, instead of examining one alternative per activity at a time.
  - Optimization. Mathematical procedures to search out and identify the best project actions.
    - Hollander, G. L. (1978). Integrated project control—the management concept. *Project Management Quarterly, 9*(2), 43–49.

Example: Time Risk

Is it a dependency (predecessor or successor) or a risk to be managed?

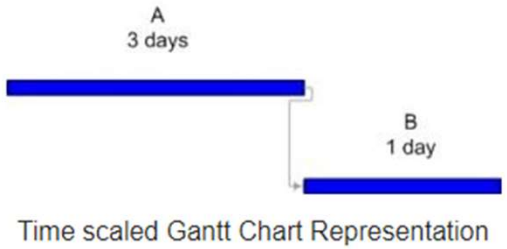
Definitions:

- A **project dependency** can defined as an association between two activities, in which one activity requires input from the other. It simply means that one activity is reliant on the other for its start or completion.

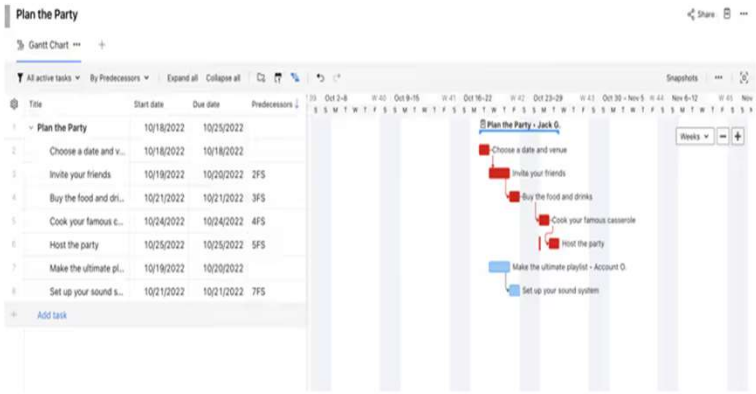
- **A risk** is an event or condition that is likely to happen, which can impact at least one of the project objectives. Just like assumptions and constraints, risk can happen due to many factors. Schedule dependency is just one of them.

    - The Ultimate Guide On Project Dependencies With Examples by Praveen Malik, PMP

Question: If we have a risk that has a time impact on the project's critical path and is likely to occur, how do we reflect this in the schedule?



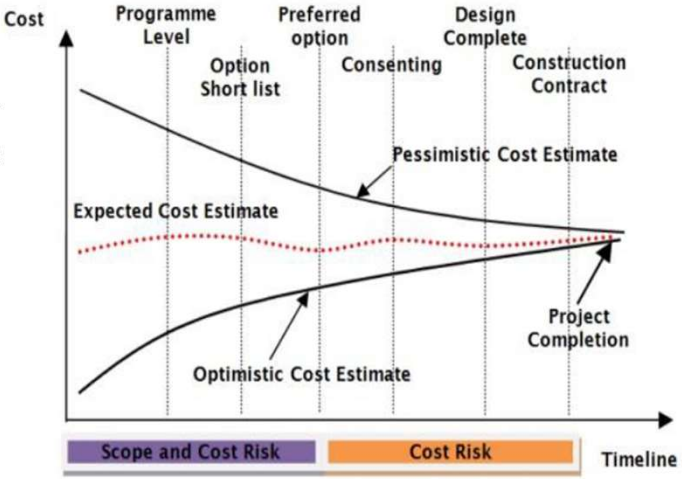
Time scaled Gantt Chart Representation



Control integration – risks with time impact

Option 1: Risk Adjusted Schedule

Risk adjusted project schedule is **generated based on results of project risk analysis o the original schedule**. The resulting schedule then provides alternative models of a proje based upon the results of a Monte Carlo schedule risk analysis.



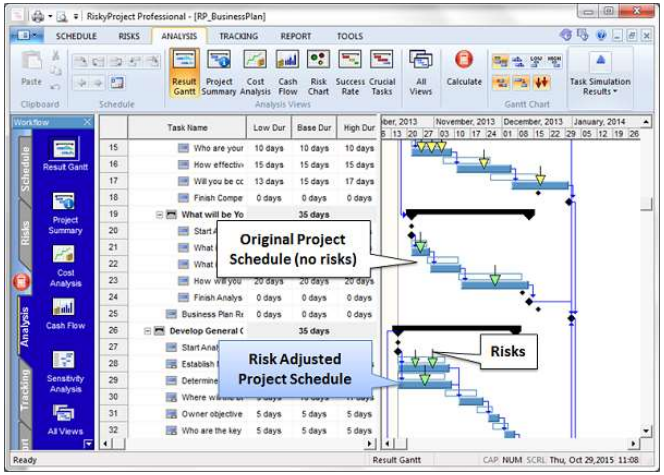
How?

1. Use the risks contained in the relevant risk register; base, current and residual milestones and contract/construction and completion dates (P5mean, P95).

2. The calculated risk delay is risk likelihood x time risk impact

3. Scenarios to be considered for current and target milestones and completion dates include most likely and worst case.

4. The calculated risk delays for most likely scenarios use the mostly likely time pact of the three point estimates. Calculated risk delays for worst case scenarios use the worst-case time impact of the three-point estimates.



- Example of Risk Adjusted Schedule – Invater Institute http://intaver.org/index-riskadjustedschedule.html

Control integration – risks with time impact

Option 2: Time Risk Cost

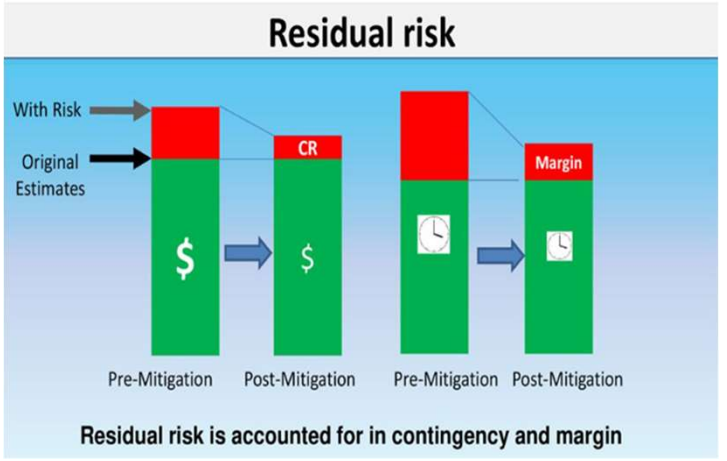
Time cost risk is useful to allocating potential costs to contingency and managed through change control.

How?

Time risk cost ($) is where time related risks affect critical path activities that may result in delay to milestone or project completion that time risk cost is generated. Time related costs may relate to items such as management cost, allocation costs, etc. It is a specialist activity and requires some care.

1. Time risk (t) = project increase from threats – project decrease from opportunities

2. Time risk cost ($) = time risk (t) x cost of operations ($/t)



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