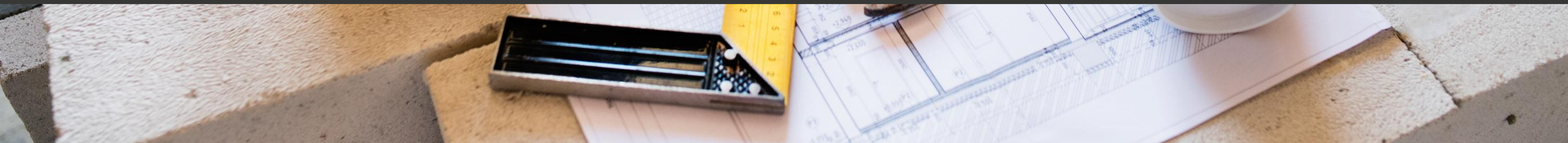




SAFETY IN DESIGN

18 June 2026

SHARING CURRENT SAFETY IN DESIGN PRACTICES



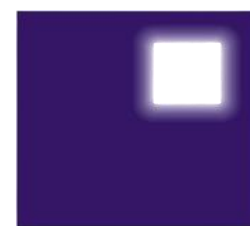
Agenda

- 4:30pm Networking
- 4:45pm Host Welcome and Introductions
- 5:00pm Speaker 1 - Andrew Hope
- 5:15pm Speaker 2 - Andrew Barron
- 5:30pm Speaker 3 - Anthony Kitchener
- 5:45pm Speaker 4 - Sophie Scott
- 6:00pm Panel Discussion
- 6:25pm Close

Doug Ray

Chair

Safety in Design Chair



**Construction
Clients' Group**
CONSTRUCTING EXCELLENCE





Safety in Design

Session 2 | 18 June 2026

Construction Clients Group

Doug Ray, SiD Chair

“Good tactics can save even the worst strategy.
Bad tactics will destroy even the best strategy.”

George S. Patton

Organisational Safety in Design

Initiative

Needs
Possibilities
Influencers

Delivery

Resources
Feed back / Feed forward communication
Scope is actionable

Result

Needs Satisfied
Customer & Client Value
O&M & Future Impact

Clear problem statement
Where are we trying to get to
How will we know we got there
What matters most
Deciding what not to do

raison d'être parameters 'what/why'

Early choices to accept
Open to change and challenges
Where are the unknowns and the hazards
Deciding with imperfect information
Solutions of the need

leadership glue 'how'

In future in this space
At another location
Changes if we did this again?
Scalable or reusable?
Share / standardise / simplify?

benefit review 'outcome'

“Vision without execution is hallucination.”

Thomas Edison

“Plans are only good intentions unless they immediately degenerate into hard work.”

Peter Drucker

Andrew Hope

Guest Speaker

Design Manager & Civil Team Leader



Health and Safety by Design

Update from T+T



AGENDA



Background



Tools



Challenges



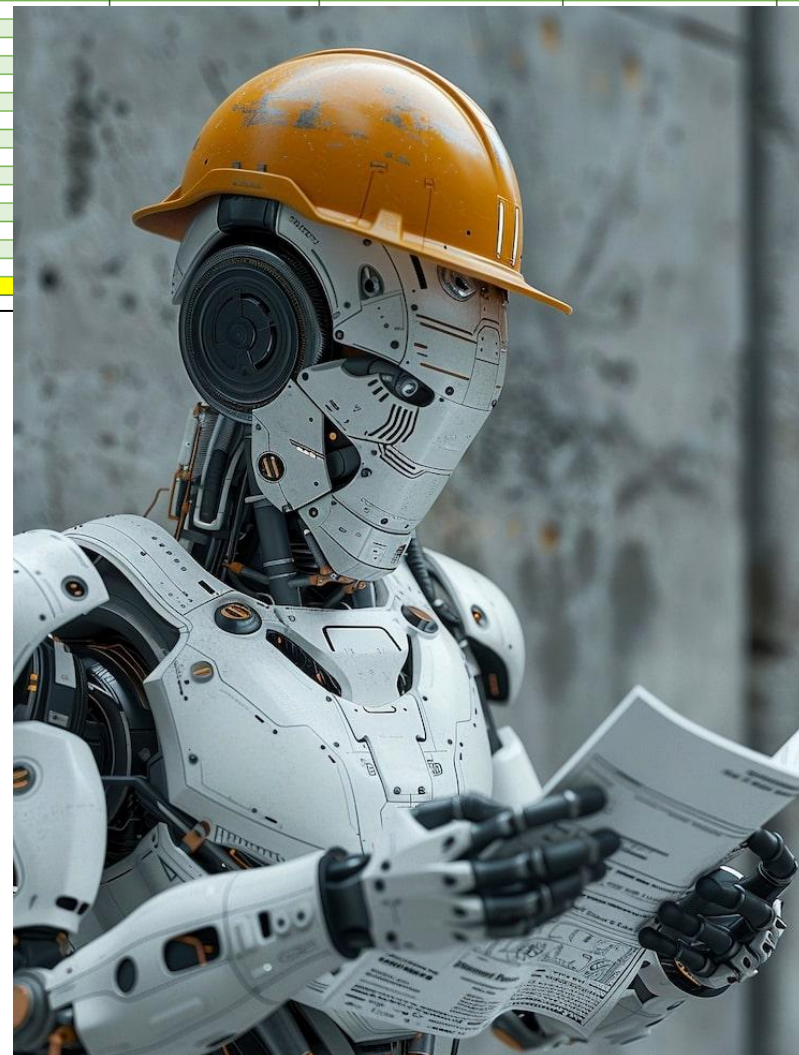
BACKGROUND

- Aging documentation
- Learnings from projects
- Staff & constructor feedback
- Industry Guidance
 - ENZ Practice Note 4
 - CHASNZ Report



TOOLS

Project Name		Purpose of Health and Safety by Design Health and Safety by Design (HSbD) aims to eliminate or minimise risks to people through better supports that goal by helping project teams: 1. Identify activities and situations where people interact with the design. 2. Recognize risks that could cause harm. 3. Assess and implement design changes to eliminate or reduce those risk, so far as is reasonably practicable. 4. Communicate any residual risks to downstream stakeholders. 5. Document decisions for transparency and assurance.				
Project Number						
Design Phase						
Client						
Last Update Date						
Update By						
Reviewed By						
File Location						
Step 1: Identification of HSbD Risks						
Risk Number	Lifecycle Phase	Human Activities / Situation / Work	Risk to People	Harm / CONSEQUENCE of the Risk	Duration and level of exposure / LIKELIHOOD	Exposure / Likelihood
		What are the activities that people will carry out across the lifecycle of the building/structure/plan?	What are the safety risks that may cause harm/injury/death to people undertaking these activities?	What is the potential level of harm to people if the risks occur?	How many people are exposed to the risk and for how long?	List initial risk
e.g. R001	e.g. Operations	e.g. Cyclists using bridge	Cyclists collide with pedestrians or other users on the bridge	serious harm/injury to bridge cyclists/users	Few people for a short duration at irregular intervals	At sh
R001						
R002						
R003						
R004						
R005						
R006						
R007						
R008						
R009						
R010						
R011						
R012						
R013						
R014						
R015						
R016						
R017						
R018						
R019						
R020						
ABOVE						



Health and Safety by Design

Standard Operating Procedure

Prepared for
Tonkin & Taylor

Prepared by
Tonkin & Taylor Ltd

Date
June 2025

Job Number
IIITGD.0460 v0.1

Together we create and sustain a better world
www.tonkintaylor.co.nz

MAIN TOOLS

- HSBD Standard Operating Procedure
- HSBD Risk Register
- AI Assistant

EXAMPLE – INDUSTRIAL LANDFILL ACCESS

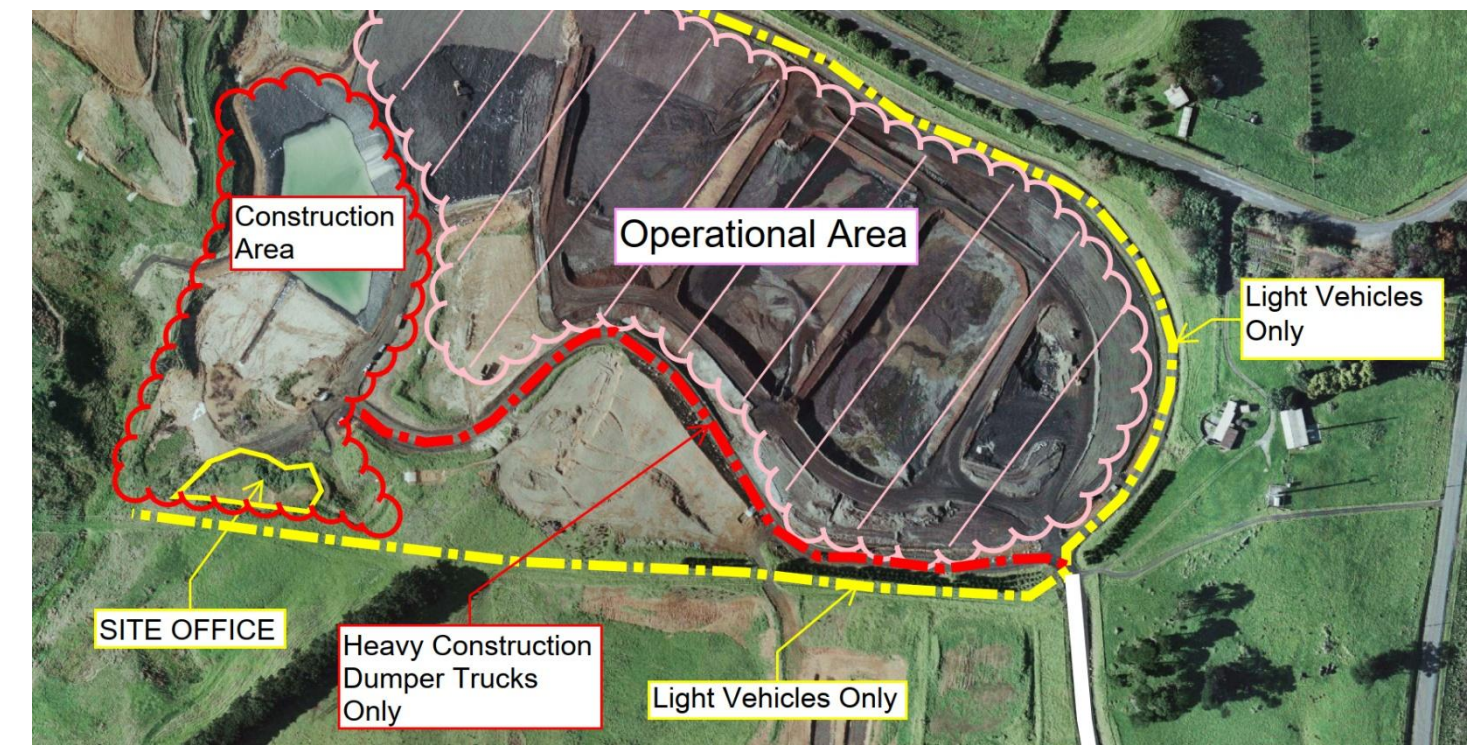
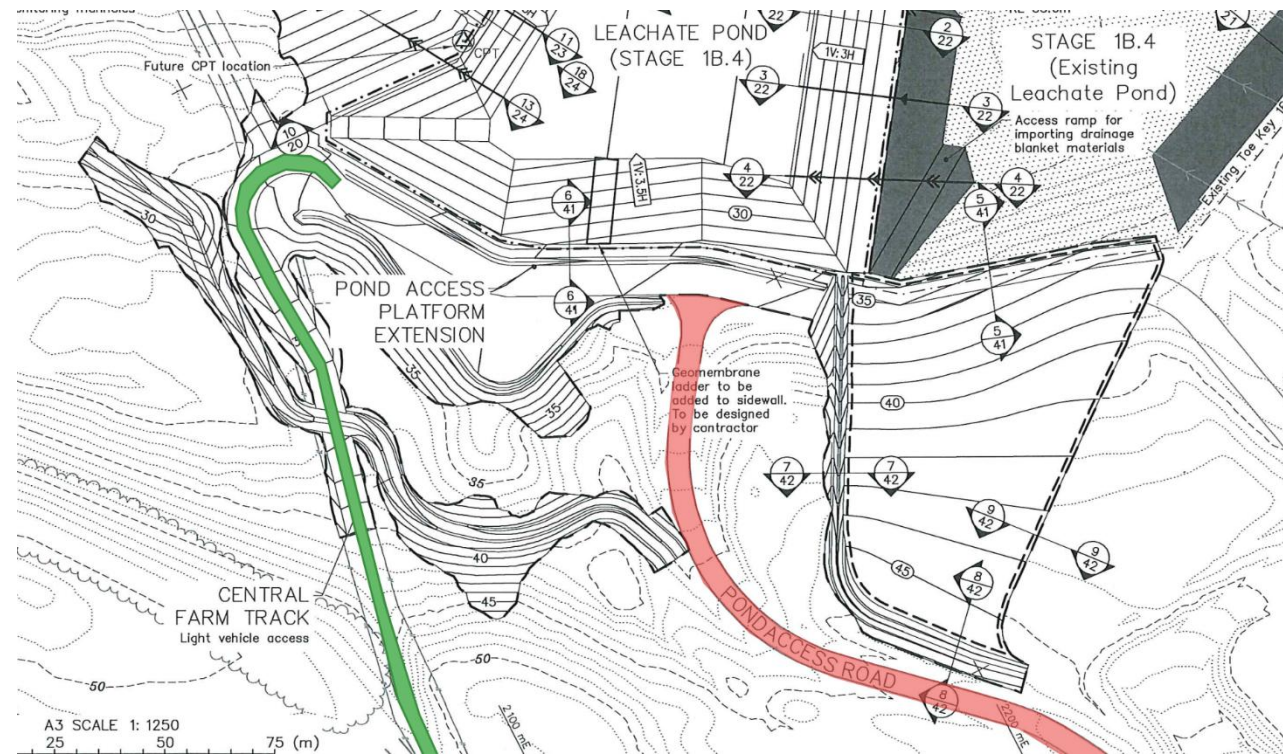


Step 1: Identification of HSbD Risks

Step 2: Initial Risk Assessment

Lifecycle Phase	Human Activities / Situation / Work	Risk to People	Harm / CONSEQUENCE of the Risk	Duration and level of exposure / LIKELIHOOD	Existing Design Features / How is this risk mitigated in current design?	Risk
-Construction -Operation	Light vehicles using steep winding haul road to get to site alongside construction & operational traffic	Light vehicle collides with 60T truck	Serious harm or death to light vehicle driver	4-6x per work day	Quickly drive onto road shoulder	16 High Threat

EXAMPLE – INDUSTRIAL LANDFILL ACCESS



Step 3: Design Actions to Address HSbD Risks

Step 4: Residual Risk

Proposed Design Changes	Are these changes practicable?	If not, why not?	Action	Action owner	Residual Risks	Residual Risks Communication Method	Risk
Additional access road for light vehicles only	Site has sufficient space. Road design less constrained as only for light vehicles. Client has cheap aggregate source and contractor on site	-	Designers to provide road design, client to arrange construction ASAP	Client's PM	Light vehicles could still use haul road	Design report, client briefing, signage on site	Low threat

EXAMPLE – STREAM SAMPLING

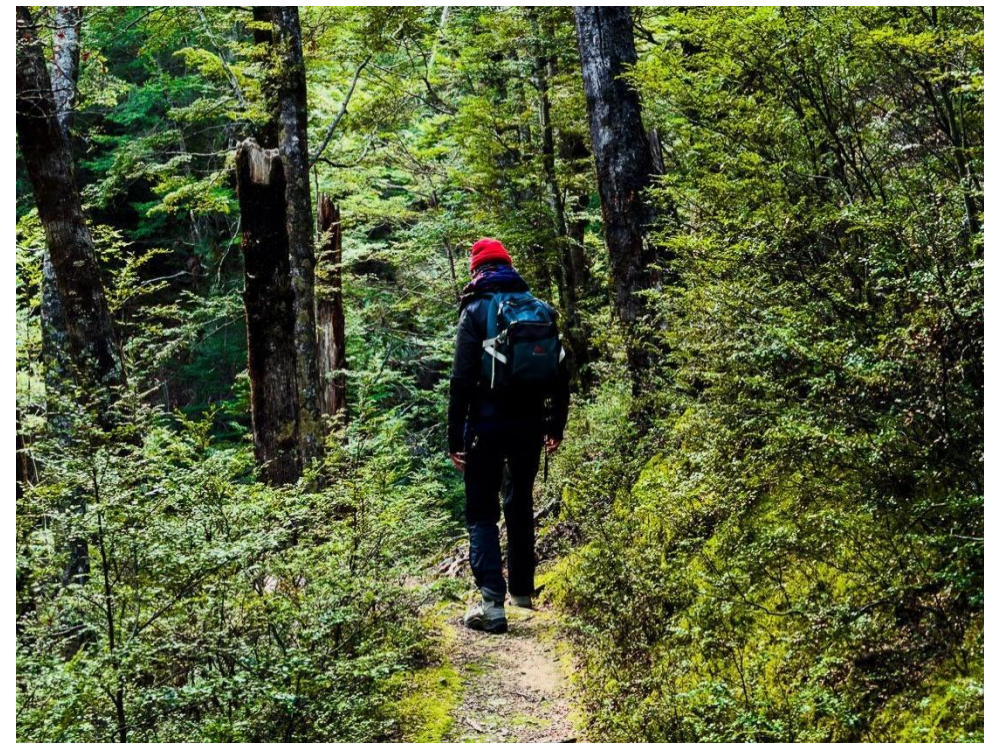


Step 1: Identification of HSbD Risks

Step 2: Initial Risk Assessment

Lifecycle Phase	Human Activities / Situation / Work	Risk to People	Harm / CONSEQUENCE of the Risk	Duration and level of exposure / LIKELIHOOD	Existing Design Features / How is this risk mitigated in current design?	Risk
-Construction -Operation	<i>Ecologists with gear scrambling down steep bush tracks to streams to carry out sampling</i>	<i>Slips/falls – particularly in wet weather</i>	<i>Fall resulting in sprain/stitches/broken limb</i>	<i>Few people for a short durations at regular intervals</i>	<i>Work boots, moving slowly & carefully</i>	Medium threat

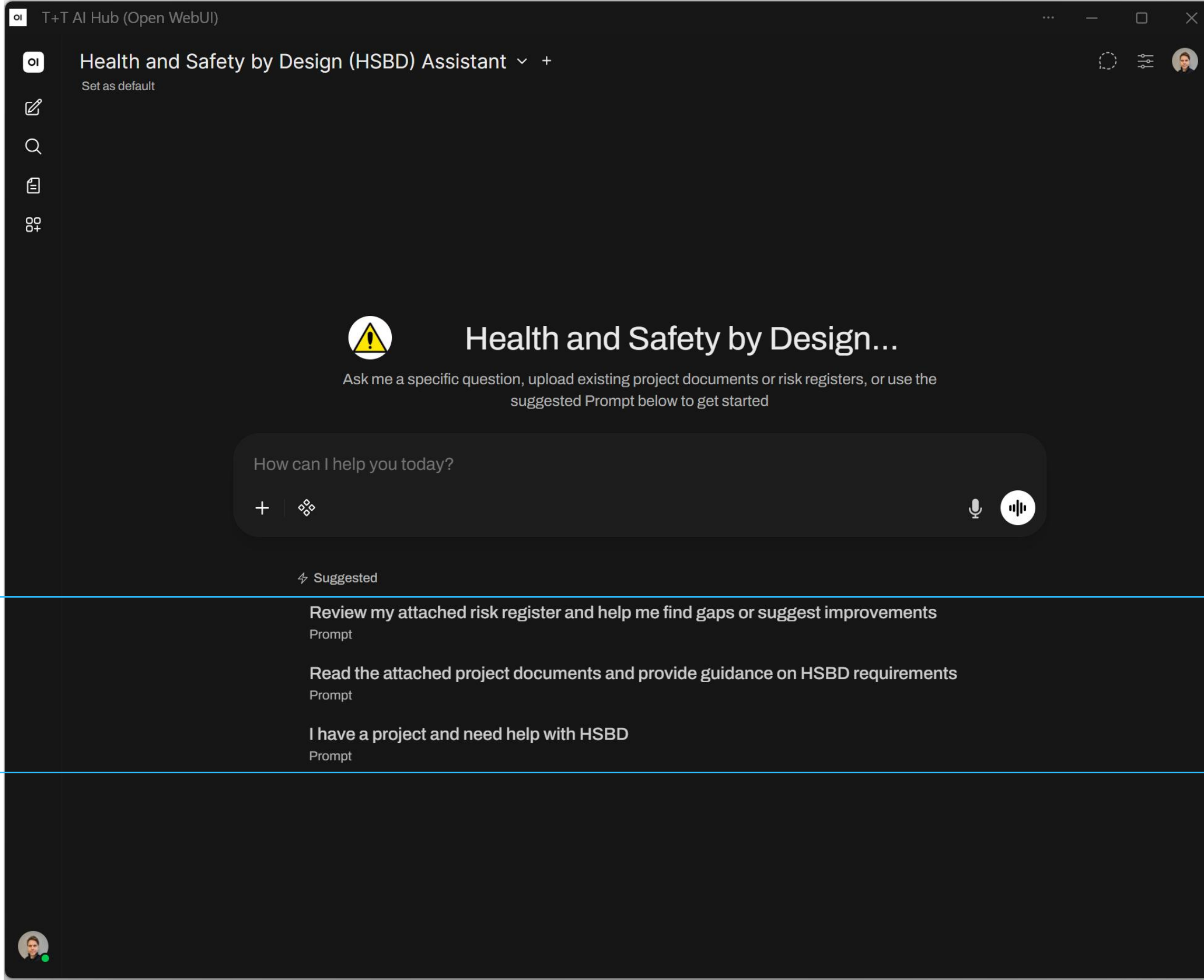
EXAMPLE – STREAM SAMPLING ACCESS



Step 3: Design Actions to Address HSbD Risks

Step 4: Residual Risk

Proposed Design Changes	Are these changes practicable?	If not, why not?	Action	Residual Risks	Residual Risks Communication Method	Risk
<i>Upgrade to formed tracks with aggregate base and steps where needed</i>	<i>Difficult to design, construction constrained as protected bush areas require minimal disturbance</i>	-	<i>Designer to collaborate with subcontractor on site to agree design & build approach</i>	<i>Wet conditions are still slippery</i>	<i>Design report, signage on site</i>	Low threat



T+T AI Hub (Open WebUI)

Health and Safety by Design (HSBD) Assistant Set as default

Health and Safety by Design...

Ask me a specific question, upload existing project documents or risk registers, or use the suggested Prompt below to get started

How can I help you today?

+

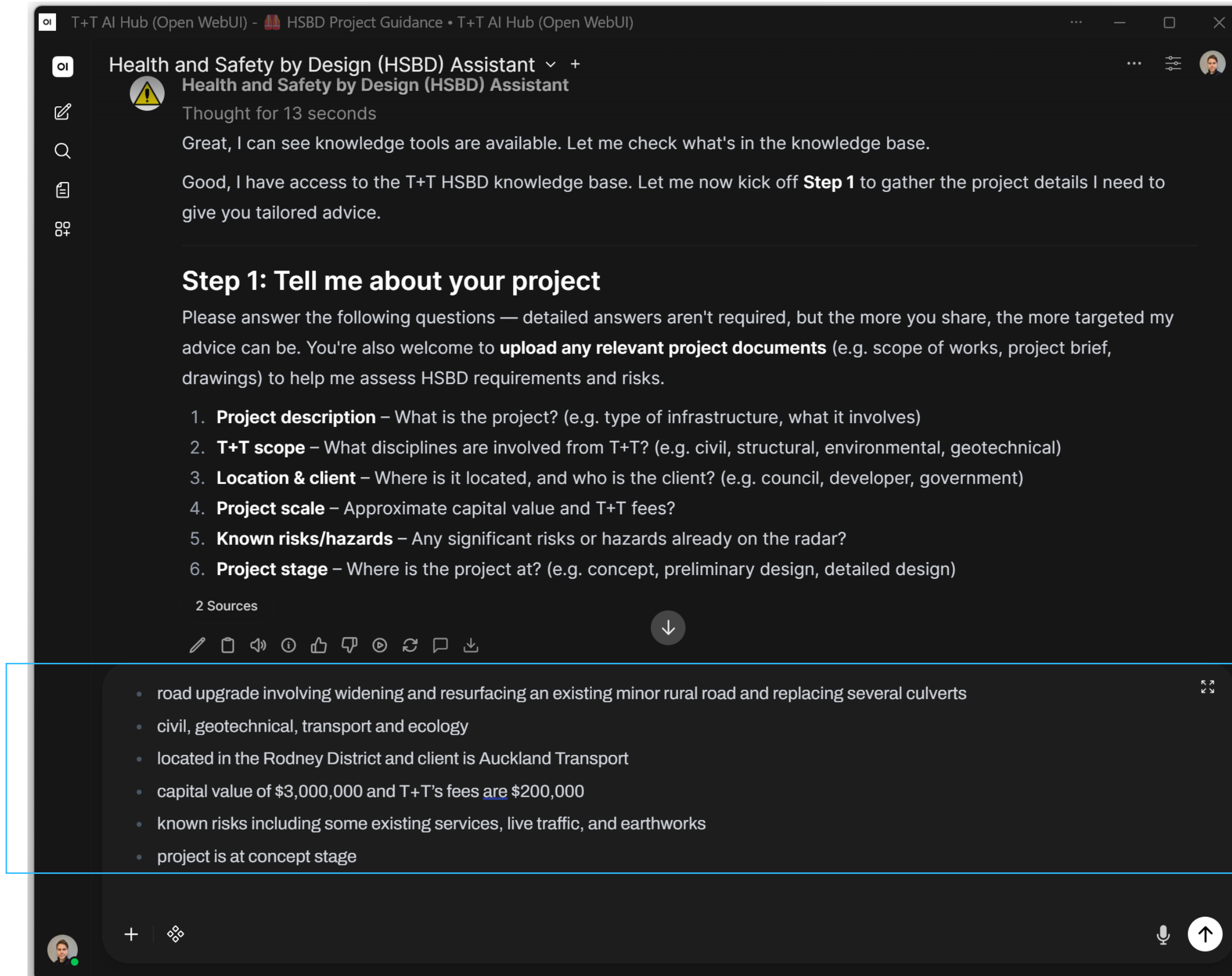
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⚡ Suggested

- Review my attached risk register and help me find gaps or suggest improvements
Prompt
- Read the attached project documents and provide guidance on HSBD requirements
Prompt
- I have a project and need help with HSBD
Prompt



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Health and Safety by Design (HSBD) Assistant ▼ +
Health and Safety by Design (HSBD) Assistant

Thought for 13 seconds

Great, I can see knowledge tools are available. Let me check what's in the knowledge base.

Good, I have access to the T+T HSBG knowledge base. Let me now kick off **Step 1** to gather the project details I need to give you tailored advice.

Step 1: Tell me about your project

Please answer the following questions — detailed answers aren't required, but the more you share, the more targeted my advice can be. You're also welcome to **upload any relevant project documents** (e.g. scope of works, project brief, drawings) to help me assess HSBG requirements and risks.

1. **Project description** – What is the project? (e.g. type of infrastructure, what it involves)
2. **T+T scope** – What disciplines are involved from T+T? (e.g. civil, structural, environmental, geotechnical)
3. **Location & client** – Where is it located, and who is the client? (e.g. council, developer, government)
4. **Project scale** – Approximate capital value and T+T fees?
5. **Known risks/hazards** – Any significant risks or hazards already on the radar?
6. **Project stage** – Where is the project at? (e.g. concept, preliminary design, detailed design)

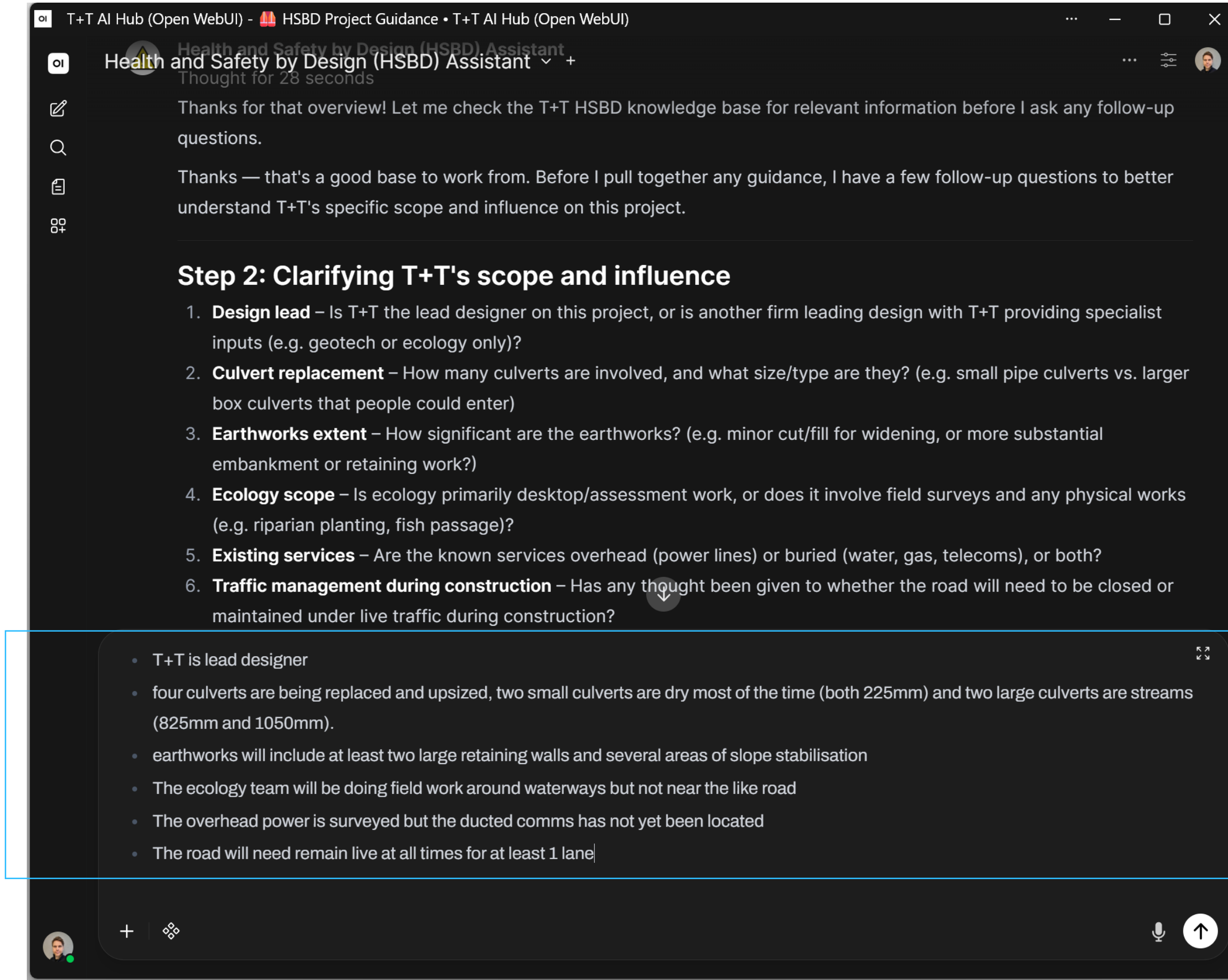
2 Sources

↓

- road upgrade involving widening and resurfacing an existing minor rural road and replacing several culverts
- civil, geotechnical, transport and ecology
- located in the Rodney District and client is Auckland Transport
- capital value of \$3,000,000 and T+T's fees are \$200,000
- known risks including some existing services, live traffic, and earthworks
- project is at concept stage

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Health and Safety by Design (HSBD) Assistant
Thought for 28 seconds

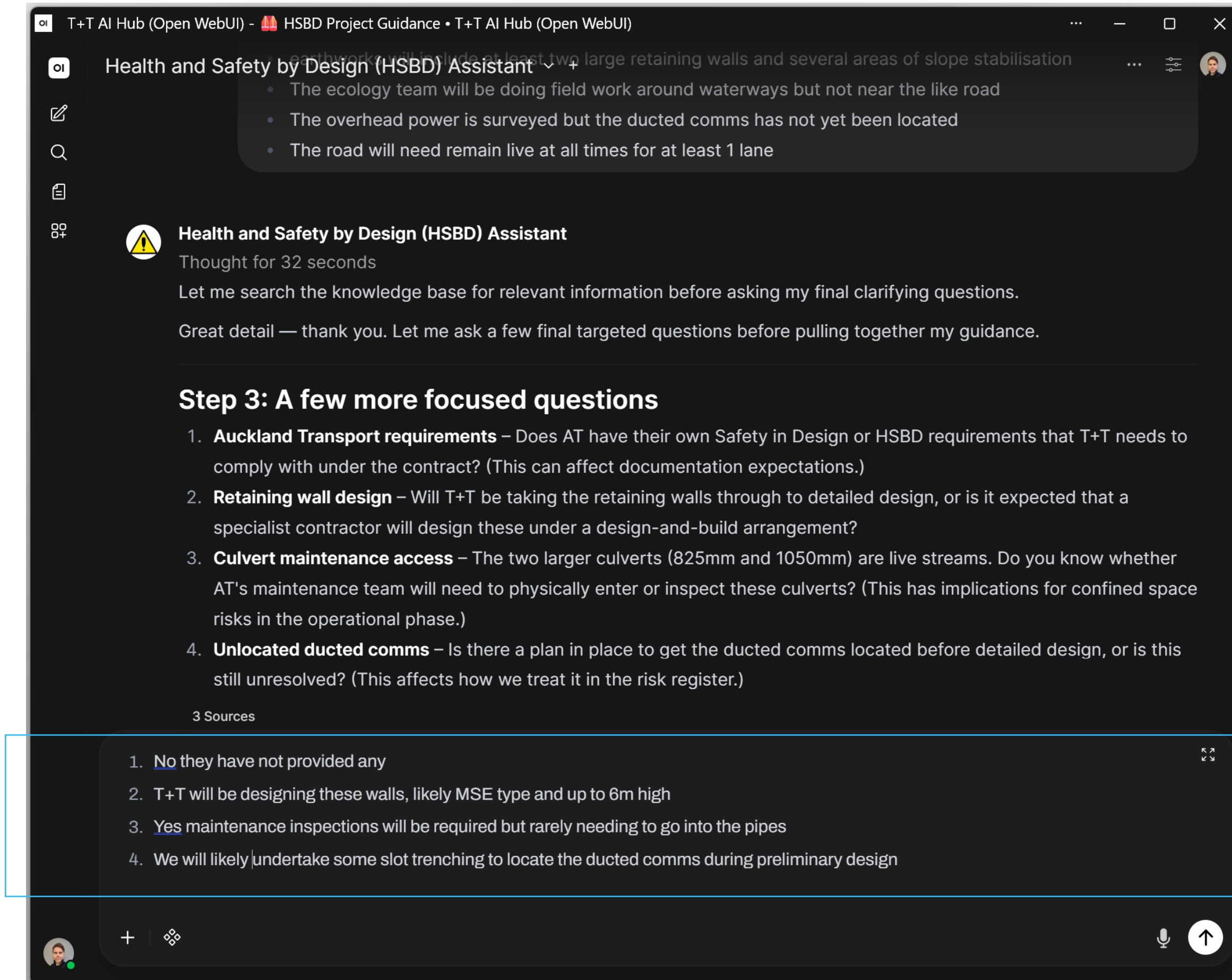
Thanks for that overview! Let me check the T+T HSBG knowledge base for relevant information before I ask any follow-up questions.

Thanks — that's a good base to work from. Before I pull together any guidance, I have a few follow-up questions to better understand T+T's specific scope and influence on this project.

Step 2: Clarifying T+T's scope and influence

1. **Design lead** – Is T+T the lead designer on this project, or is another firm leading design with T+T providing specialist inputs (e.g. geotech or ecology only)?
2. **Culvert replacement** – How many culverts are involved, and what size/type are they? (e.g. small pipe culverts vs. larger box culverts that people could enter)
3. **Earthworks extent** – How significant are the earthworks? (e.g. minor cut/fill for widening, or more substantial embankment or retaining work?)
4. **Ecology scope** – Is ecology primarily desktop/assessment work, or does it involve field surveys and any physical works (e.g. riparian planting, fish passage)?
5. **Existing services** – Are the known services overhead (power lines) or buried (water, gas, telecoms), or both?
6. **Traffic management during construction** – Has any thought been given to whether the road will need to be closed or maintained under live traffic during construction?

- T+T is lead designer
- four culverts are being replaced and upsized, two small culverts are dry most of the time (both 225mm) and two large culverts are streams (825mm and 1050mm).
- earthworks will include at least two large retaining walls and several areas of slope stabilisation
- The ecology team will be doing field work around waterways but not near the like road
- The overhead power is surveyed but the ducted comms has not yet been located
- The road will need remain live at all times for at least 1 lane



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Health and Safety by Design (HSBD) Assistant

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- The ecology team will be doing field work around waterways but not near the like road
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- The road will need remain live at all times for at least 1 lane

Health and Safety by Design (HSBD) Assistant
Thought for 32 seconds

Let me search the knowledge base for relevant information before asking my final clarifying questions.

Great detail — thank you. Let me ask a few final targeted questions before pulling together my guidance.

Step 3: A few more focused questions

1. **Auckland Transport requirements** – Does AT have their own Safety in Design or HSBG requirements that T+T needs to comply with under the contract? (This can affect documentation expectations.)
2. **Retaining wall design** – Will T+T be taking the retaining walls through to detailed design, or is it expected that a specialist contractor will design these under a design-and-build arrangement?
3. **Culvert maintenance access** – The two larger culverts (825mm and 1050mm) are live streams. Do you know whether AT's maintenance team will need to physically enter or inspect these culverts? (This has implications for confined space risks in the operational phase.)
4. **Unlocated ducted comms** – Is there a plan in place to get the ducted comms located before detailed design, or is this still unresolved? (This affects how we treat it in the risk register.)

3 Sources

1. No they have not provided any
2. T+T will be designing these walls, likely MSE type and up to 6m high
3. Yes maintenance inspections will be required but rarely needing to go into the pipes
4. We will likely undertake some slot trenching to locate the ducted comms during preliminary design

STEP 4&5

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Health and Safety by Design (HSBD) Assistant

Thought for 1 m 5s

Perfect — I have everything I need. Let me pull the relevant information from the T+T knowledge base now.

I now have everything I need. Here is my full HSBG guidance for your project.

Step 4: HSBG Summary

Project: Rodney District Rural Road Upgrade | **Client:** Auckland Transport | **Stage:** Concept

At \$3M capital value with T+T as lead designer across four disciplines, this project warrants a structured HSBG process — a Risk Register, workshop(s), drawing annotations, and a handover meeting. This isn't a project to manage with just a quick call; the combination of live traffic, unlocated services, large retaining walls, stream culverts, and slope stabilisation creates meaningful lifecycle risks across all phases.

Construction Phase

RISK AREA	KEY CONCERNS
Live traffic	Single-lane operation throughout construction. Plant and workers adjacent to moving vehicles. High consequence risk. Design should optimise geometry to maximise working clearances and consider staging to minimise conflict.
Unlocated ducted comms	Until slot-trenched during preliminary design, location is unknown. Risk of accidental strike during bulk earthworks or culvert trenching. Flag on drawings once located; design should route new works around services where possible.
Overhead power	Already surveyed, but plant (particularly excavators for retaining walls and earthworks) working near lines. Clearance zones should be clearly shown on construction drawings.
MSE retaining walls (up to 6m)	Construction of 6m-high MSE walls involves significant working at height, staged construction, geogrid placement, and heavy plant on potentially unstable fill. Constructability should be considered in the design to reduce risk of worker exposure at height.
Slope stabilisation	Working on steep rural slopes — risk of workers and plant on unstable ground, particularly during wet weather. Design should consider access requirements and minimise the need for workers to operate on steep faces.
Culvert replacement (stream culverts)	Trench excavations for the 825mm and 1050mm culverts involve working in/near live streams. Flash flooding, trench instability, and stream diversion are key risks. Culvert design should minimise trench depth and consider temporary stream diversion requirements.
Dry culverts (225mm)	Lower risk but trench instability and proximity to road still relevant.

Operations & Maintenance Phase

RISK AREA	KEY CONCERNS
Road geometry and user safety	Upgraded alignment, sight distances, shoulder widths, and transitions should be designed to reduce long-term crash risk for all road users including cyclists and farm traffic.
MSE retaining wall inspection	Maintenance personnel will need to access wall faces for routine inspections. Design should include safe access provisions — consider inspection platforms or anchor points where walls are high or inaccessible.
Stream culvert inspection (825mm & 1050mm)	AT maintenance teams will occasionally need to inspect these culverts. While full entry may be rare, the 825mm culvert in particular is borderline confined space. Design should maximise inspection access from headwalls, and clearly communicate confined space obligations to AT in handover documentation.
Slope stabilisation maintenance	Stabilised slopes will need periodic inspection (post-storm events etc.). Design should consider safe inspection access — avoid designs requiring rope access or steep climbing unless unavoidable.
Drainage maintenance	New roadside drainage will need regular maintenance. Design should ensure catch pits, sumps, and outlets are accessible without exposing workers to live traffic unnecessarily.

Decommissioning Phase

RISK AREA	KEY CONCERNS
Culvert removal	Future culvert replacement will involve working in/near waterways and potential confined space entry. Design documentation should note pipe materials and bedding to assist future contractors.
Retaining wall decommissioning	MSE walls are typically long-life assets, but eventual removal involves significant earthworks at height. Not a near-term risk but worth noting as a residual risk in the register.

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Health and Safety by Design (HSBD) Assistant

Step 5: Practical Next Steps

- 1. Start the HSBG Risk Register now (concept stage)**

Begin populating a Risk Register with the key risks identified above. At concept stage, the focus is on identifying risks and initial design responses — it doesn't need to be fully resolved yet. Assign the civil lead or design manager as the primary owner of the register.
- 2. Hold a concept-stage HSBG workshop**

Given the multi-discipline scope and number of significant risks, run a short internal workshop (1–2 hours) with the civil, geotech, and transport leads. Key agenda items: live traffic interface, retaining wall constructability, culvert replacement near streams, and the unlocated comms services. You don't need AT at this stage, but consider whether to include them at the preliminary design workshop.
- 3. Include AT in an HSBG workshop at preliminary design**

Once the design has progressed and the ducted comms are located, run a preliminary design workshop with AT. This is the right time to walk them through the key residual risks (especially MSE wall maintenance access and culvert confined space obligations) and get their input.
- 4. Annotate construction drawings with HSBG hazard symbols**

Once at detailed design, ensure drawings flag: overhead power clearance zones, unlocated/located services, retaining wall construction sequence requirements, culvert stream diversion requirements, and any confined space designations. Refer to the LEAD Alliance drawing example on Connect for guidance.
- 5. Pre-construction handover meeting**

Before the contract goes to tender, hold a brief handover meeting with AT (and ideally the construction team if known). Walk through the residual risks in the register — particularly the MSE wall maintenance access and the 825mm/1050mm culvert confined space obligations.
- 6. Update the Risk Register at each design phase**

Review and update the register at concept → preliminary → detailed design → pre-construction. It's a live document, not a one-off exercise.

All HSBG resources including the latest SOP and Risk Register template are on the T+T Connect page:
[Health and Safety by Design \(HSBD\) – T+T Connect](#)

Would you like me to prepare a draft HSBG Risk Register for this project? I can pre-populate it with the key risks identified above, ready for your team to review and refine.

4 Sources

yes prepare draft risk register

AI ASSISTANT – RISK REGISTER

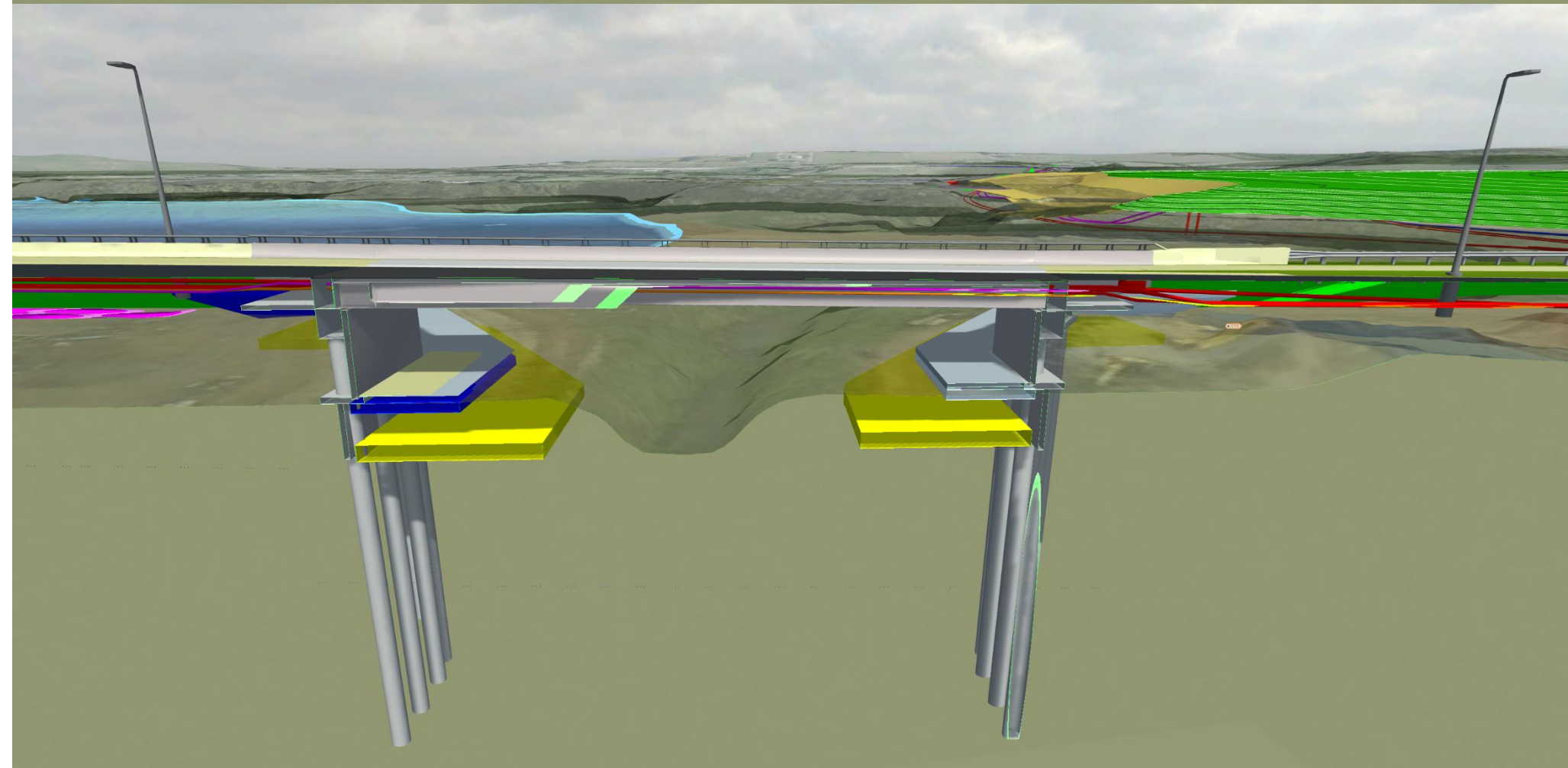
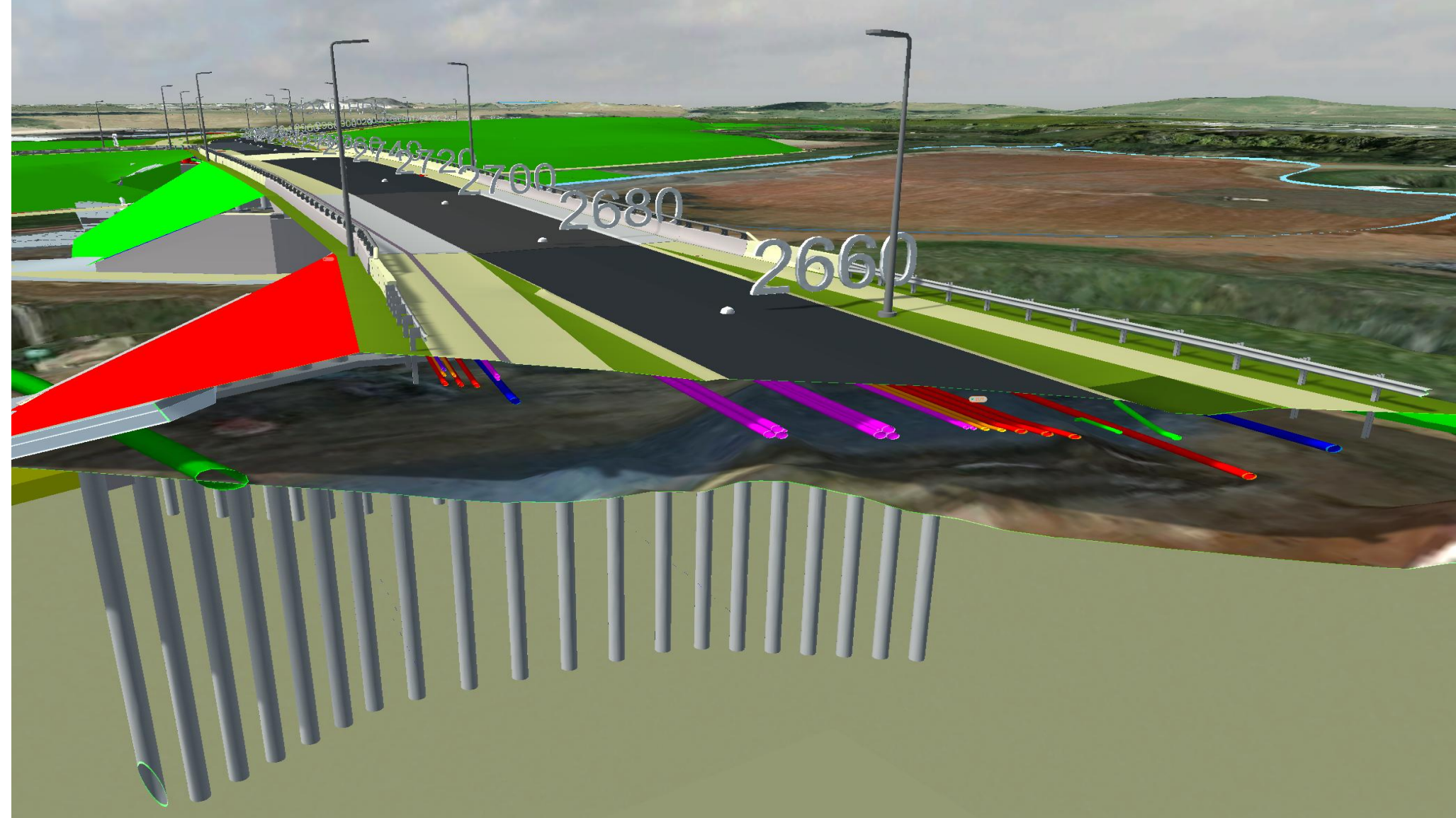
Step 1: Identification of HS&D Risks										Step 2: Initial Risk Assessment			Step 3: Design Actions to Address HS&D Risks					Step 4: Residual Risk		
Risk Numl	Lifecycle Ph	Human Activities / Situation / Work	Risk to People	Harm / CONSEQUENCE of the Risk	Duration and level of exposure / LIKELIHO	Existing Design Features / How is this risk mitigated in cur	Initial Likelihood	Initial Consequence	Initial Risk	Proposed Design Changes	Are these changes practicable?	If not, why not?	Action	Action Owner	Residual Risks	Residual Risks Communication Method	Residual Likelihood	Residual Consequence	Residual Risk	
P001	Construction	Construction workers and road users sharing a single-lane live road corridor throughout construction	Workers or road users struck by moving vehicles	Fatality or permanent disability	Construction workforce (10-20 people) exposed daily throughout the construction programme (12 months)	None identified at concept stage. Road geometry upgrade may improve sight distances.	4. Likely - The event will probably occur once in the next 1-2 years.	5. Severe - Fatality or permanent disability / illness.	Extreme	Design passing bay locations and clear sight distance requirements to inform TMP; specify minimum lane widths for live traffic lane and construction access; design physical separation barriers where practicable; include pedestrian/cyclist. Design temporary stream diversions to enable dry working in culvert replacement zone; specify seasonal working windows and maximum allowable flow conditions for in-channel works; design culvert headworks to minimise time spent in	Yes	—	Include passing bay locations and TMP performance criteria in design drawings and report; annotate drawings with HSE hazard symbols at traffic interface zones	Civil Design Lead	Design report, drawing annotations, HSE handover meeting with AT and contractor	3. Possible - The event could occur more than once every 3 years.	4. Major - Temporary major injury / illness (i.e. with full recovery).	High		
P002	Construction	Construction workers replacing and upsizing the 825mm and 1050mm stream culverts, requiring work within live stream channels during autumn/winter	Workers caught in rapidly rising water or swept away during a flood event	Drowning / fatality	Small crew (2-5 people) working within stream channel over several weeks in autumn/winter	None identified at concept stage. Site not known for flash flooding.	3. Possible - The event could occur more than once every 3 years.	5. Severe - Fatality or permanent disability / illness.	High	Include stream diversion methodology on design drawings; specify maximum flow conditions and seasonal constraints in design report; include real-time flood monitoring requirement. Flag autumn/winter risk at HSE handover	Yes	—	Include HSE hazard notation on design drawings; specify construction sequencing notes and exclusion zones in design; consider access staging provisions in wall face design; specify minimum setback from road edge to Commission underground services location survey for comms ducting prior to detailed design; show confirmed service locations and exclusion zones on design drawings; specify hand-digging show overhead power line locations and heights on design drawings; designate plant exclusion zones (minimum 4m horizontal clearance) on drawings; design haul routes and work areas to avoid plant operating directly below power lines where practicable; investigate temporary Longlife geotechnical site investigation to characterise slope conditions prior to detailed design; design stabilisation solutions with clear construction exclusion zones; include ground condition trigger levels for work.	Civil Design Lead / Hydrology Lead	Design report, drawing annotations, HSE handover meeting	2. Unlikely - The event could occur more than once every 10 years.	5. Severe - Fatality or permanent disability / illness.	High		
P003	Construction	Construction of 4.5m MSE retaining walls including foundation excavation, geogrid placement, and erection of precast face panels. Excavation works throughout road corridor (road widening, culvert replacement, retaining wall foundations) in areas where comms ducting has not	Workers falling from height during panel placement; excavation or face panel collapse during construction	Fatality or permanent disability	Wall construction crew (5-10 people) working over several weeks per wall at two or more locations. Excavation crew exposed throughout the construction programme wherever comms ducts may be present — location currently uncertain	None identified at concept stage. MSE wall type selected; heights and locations to be confirmed in detailed design.	3. Possible - The event could occur more than once every 3 years.	5. Severe - Fatality or permanent disability / illness.	High	Include HSE hazard notation on drawings at all wall locations; specify construction sequence requirements and exclusion zones in design report; complete geotechnical investigation prior to detailed design — include underground services location survey in next scope discussion with AT; annotate design drawings with confirmed service locations; include HSE hazard notation at service risk zones	Yes	—	Some uncertainty may remain for services that cannot be precisely located; residual strike risk during construction	Geotechnical Lead / Civil Design Lead	Design report, drawing annotations, HSE handover meeting	2. Unlikely - The event could occur more than once every 10 years.	4. Major - Temporary major injury / illness (i.e. with full recovery).	Medium		
P004	Construction	Operation of cranes, excavators, tipper, and other tall plant near overhead power lines in the road corridor	Workers striking unlocated underground comms ducting with excavation plant	Injury from service strike; potential for electric shock depending on service type	Plant operators and ground workers in the corridor throughout construction; overhead power present along the full length of the corridor	Overhead power has been surveyed. Comms ducting not yet located.	4. Likely - The event will probably occur once in the next 1-2 years.	3. Moderate - Medical Treatment required (e.g. Doctor visit with treatment, Emergency Clinic, Physiotherapy etc.)	High	Include geotechnical site investigation in design programme; include HSE hazard notation on drawings at all slope stabilisation areas; specify minimum setback distances and exclusion zones during earthworks	Yes	—	Residual risk of overhead line contact during construction remains; contractor to implement spotters and height restriction bars	Civil Design Lead / Project Manager	Design drawings, design report, HSE handover meeting	2. Unlikely - The event could occur more than once every 10 years.	3. Moderate - Medical Treatment required (e.g. Doctor visit with treatment, Emergency Clinic, Physiotherapy etc.)	Medium		
P005	Construction	Earthworks for road widening, batter grading, and slope stabilisation works across multiple unstable slope areas	Ground collapse, batter failure, or unexpected ground conditions injuring or burying workers	Burial / fatality or serious injury	Earthworks crew (5-10 people) over several weeks across multiple slope stabilisation areas	Geotechnical investigation planned; stabilisation type to be confirmed in detailed design.	3. Possible - The event could occur more than once every 3 years.	5. Severe - Fatality or permanent disability / illness.	High	Raise maintenance access requirements with AT at next design meeting; include access track and headwall safety provisions in detailed design drawings; annotate drawings with maintenance requirements with AT; include anchor points and crest edge protection in detailed design; include inspection requirements in asset handover	Yes	—	Residual fall risk during wall inspection, particularly on steep terrain adjacent to wall faces	Civil Design Lead	Design drawings, asset handover documentation, HSE handover meeting	2. Unlikely - The event could occur more than once every 10 years.	3. Moderate - Medical Treatment required (e.g. Doctor visit with treatment, Emergency Clinic, Physiotherapy etc.)	Medium		
P006	Operations & Maintenance	AT maintenance crews inspecting, clearing debris from, and maintaining culvert headwalls — particularly the two larger stream culverts	Falls into waterway, struck by debris during flood events, or injury accessing steep or confined headwall locations	Drowning, fall injury, or serious injury	Maintenance crews (1-3 people) visiting culvert headwalls several times per year, particularly after storm events	None identified at concept stage. Difficult headwall access acknowledged.	4. Likely - The event will probably occur once in the next 1-2 years.	4. Major - Temporary major injury / illness (i.e. with full recovery).	High	Transport team to confirm design speed and geometry meet applicable standards; include road safety audit in design programme; include key safety features on design drawings	Yes	—	Residual risk of driver error or non-compliant behaviour; rural roads inherently carry higher crash risk than urban roads	Civil Design Lead / Geotechnical Lead	Design drawings, asset handover documentation	2. Unlikely - The event could occur more than once every 10 years.	3. Moderate - Medical Treatment required (e.g. Doctor visit with treatment, Emergency Clinic, Physiotherapy etc.)	Medium		
P007	Operations & Maintenance	AT maintenance crews and engineers inspecting 4.5m MSE retaining walls at regular intervals and following significant events	Falls from height during inspection of wall face and crest; access difficulties on steep terrain adjacent to walls	Serious fall injury or fatality	Inspectors (1-2 people) visiting walls annually or after significant events	None identified at concept stage. No maintenance access provisions designed yet.	3. Possible - The event could occur more than once every 3 years.	4. Major - Temporary major injury / illness (i.e. with full recovery).	High	Ensure field survey findings (bank stability, flood risk areas, access hazards at culvert locations) are formally fed into design inputs to inform construction	Yes	—	Standard remote fieldwork risks remain; covered by T+T fieldwork safety procedures	Civil Design Lead	Design drawings, asset handover documentation, HSE handover meeting	2. Unlikely - The event could occur more than once every 10 years.	3. Moderate - Medical Treatment required (e.g. Doctor visit with treatment, Emergency Clinic, Physiotherapy etc.)	Medium		
P008	Operations & Maintenance	Road users (vehicles, cyclists, pedestrians, farm vehicles) using the upgraded rural road post-construction	Road traffic crashes due to changed road geometry, alignment, or driver expectation	Serious injury or fatality	All road users exposed continuously post-construction	Road upgrade and widening will generally improve road safety conditions relative to the existing road. T+T standard fieldwork safety procedures and lone/remote worker protocols apply.	3. Possible - The event could occur more than once every 3 years.	4. Major - Temporary major injury / illness (i.e. with full recovery).	High	Ecology team to complete T+T field safety planning prior to surveys; document site hazard observations (bank stability, access, flood exposure) for	Yes	—		Transport Lead	Design report, signage/line marking plans, asset handover documentation	2. Unlikely - The event could occur more than once every 10 years.	2. Minor - First Aid Treatment.	Low		
P009	Investigation / Survey (Current)	T+T ecology team conducting field surveys in and around stream channels adjacent to the road corridor	Slips, falls into waterway, isolation in remote rural location, or encounter with unexpected site hazards	Injury from fall, drowning, or delayed emergency response due to isolation	Small ecology team (1-3 people) over several field days working in waterway margins	T+T standard fieldwork safety procedures and lone/remote worker protocols apply.	3. Possible - The event could occur more than once every 3 years.	3. Moderate - Medical Treatment required (e.g. Doctor visit with treatment, Emergency Clinic, Physiotherapy etc.)	Medium		Yes	—		Ecology Lead	Field safety plan, design inputs report					
P010																				
P011																				
P012																				
P013																				
P014																				
P015																				
P016																				
P017																				
P018																				
P019																				
P020																				
INSERT ROWS ABOVE																				



CHALLENGES

CHALLENGES - WORKSHOPS

- Right scale
- Right attendance
- Right level of detail
- Right information - Revizto (or Revit / Navisworks)





CHALLENGES - STANDARDS

- Compliance \neq guarantee HSBD
- HSBD baked in vs going beyond
- Typically for final product – not constructability
- Risk of changes



CHALLENGES – STANDARDS: EXAMPLE

- Proprietary balustrade failed
- Complaint panels with supplier PS1
- Poor connection detail
- Screws cracked and corroded
- Industry wide use



FREQUENTLY ASKED QUESTIONS

- How do I get early contractor input?
- But I'm an [ecologist/planner/coastal scientist...]
- What does *reasonably practicable* mean on my project?





WHERE TO NEXT

- Internal training
- Advancing AI tool
- Small project guidance
- Recording positive observations
- Industry engagement



Andrew Barron

Guest Speaker

Manager Projects





Safety in Design

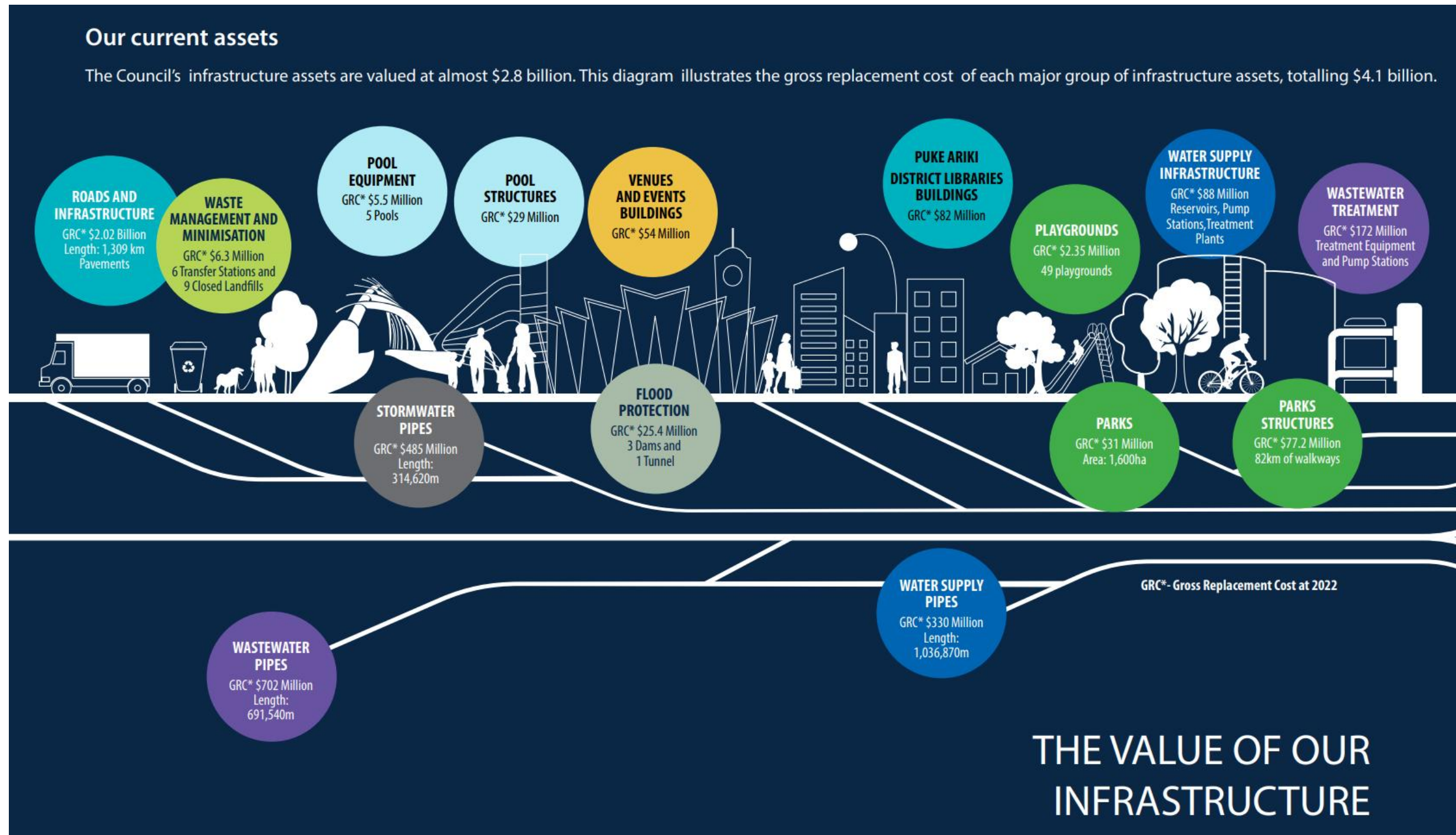
NPDC (Client) Perspective



Te Kaunihera-ā-Rohe o Ngāmotu

**New Plymouth
District Council**

NPDC Asset Base



Introduction



Safety in Design procedure introduced in 2017



Improve our health and safety outcomes in project delivery



To align with requirements under the Health and Safety at Work Act 2015



Current State

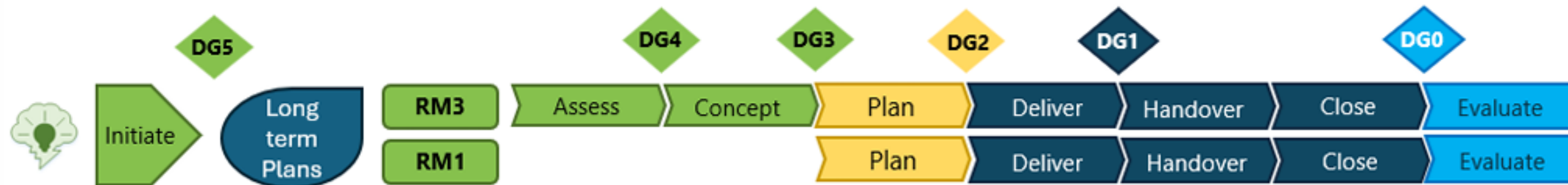
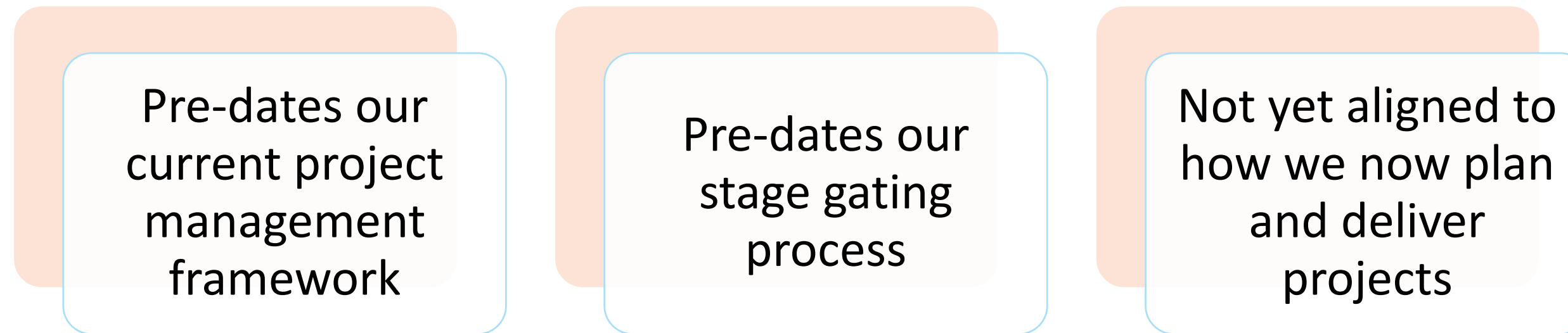
The procedure is being used across projects

Implementation is inconsistent from project to project

Ownership defaults to the consultant by absence, not by design



Procedure Pre-dates Our Framework



Use in Optioneering Unclear

Procedure does refer to optioneering

Coverage is light – limited detail on how it should be applied

Written before our project management framework

Where it fits in the project lifecycle is ad-hoc



Improvement Focus

- **Process**
 - Update procedures to align with our project management framework
 - Earlier integration of safety in design into projects
- **Assurance**
 - Decision gate reviews and health checks for consistent application
- **Capability & Ownership**
 - Training for project managers
 - Make it more client led



Over to the Consultants

- Where do clients add value to safety in design – and where do we get in the way?
- Where is ownership unclear between client and consultant?
- What good practice are you seeing from other clients?



Anthony Kitchener

Guest Speaker

Senior Advisor Health & Safety Portfolios



DEPARTMENT OF
CORRECTIONS
ARA POUTAMA AOTEAROA





ARA POUTAMA AOTEAROA
DEPARTMENT OF CORRECTIONS

Safety in Design

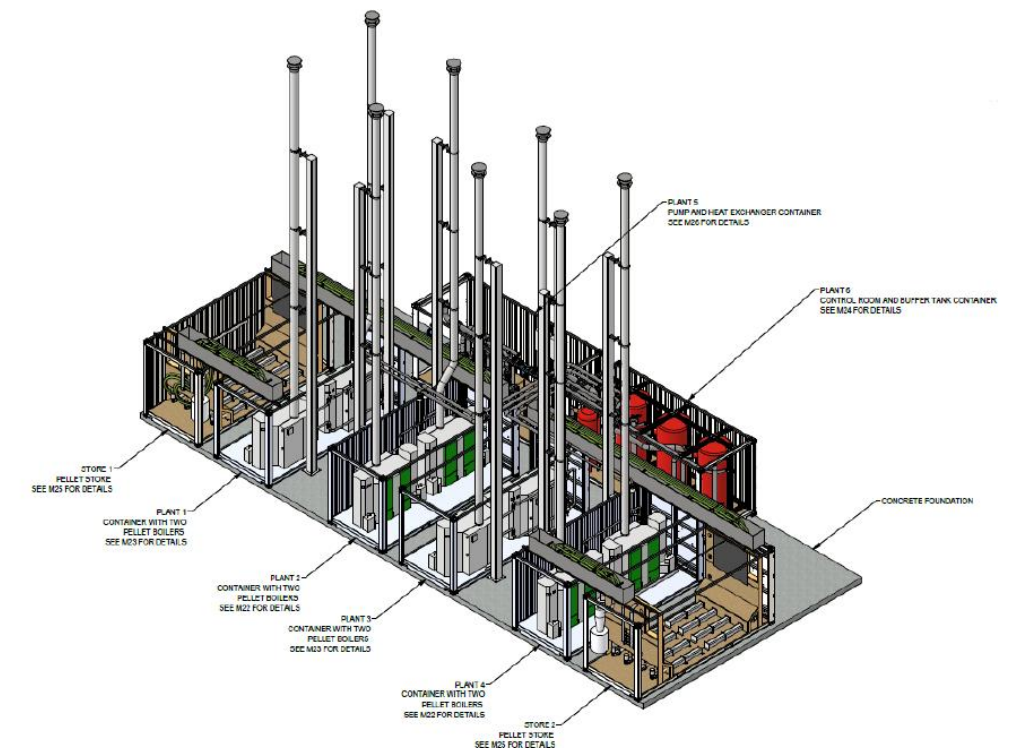
Department of Corrections

About Me



ARA POUTAMA AOTEAROA
DEPARTMENT OF CORRECTIONS

- Senior H&S Advisor Portfolios at Department of Corrections
- Role covers several investment portfolios: infrastructure, digital, people, and systems and strategy.
- Responsible for developing SiD process across asset management and other investment portfolios

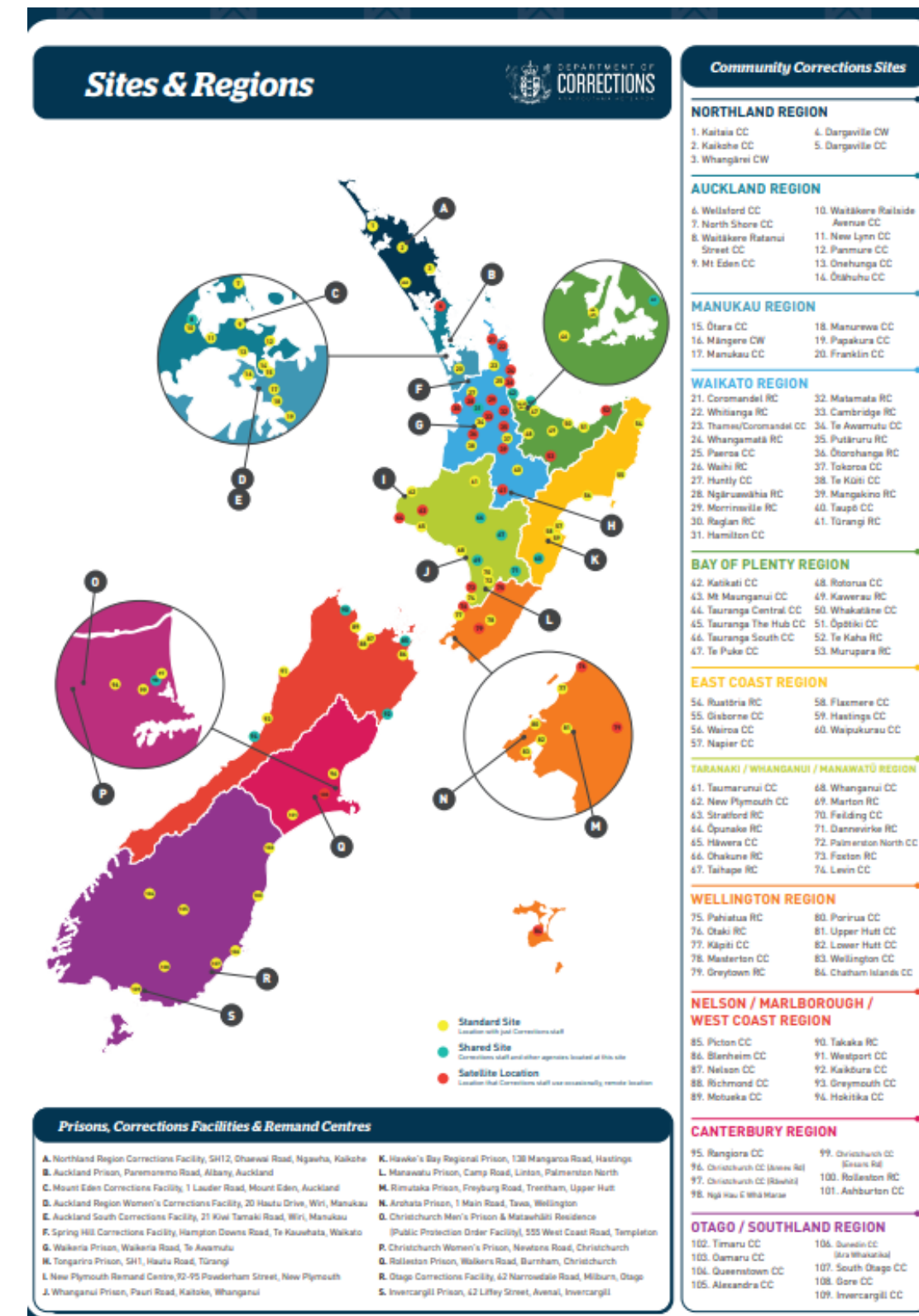


About Corrections



ARA POUTAMA AOTEAROA
DEPARTMENT OF CORRECTIONS

- Employs over 11,000 staff working across 19 prison sites and 109 community corrections sites.





- SiD embedded within Asset Management
- A H&S Risk Review process
- SiD is baked-in to our procurement processes
- Minimum of two SiD reviews required: one at concept design, and one at detailed design.
- Emphasis on relevant stakeholders

SiD at Corrections

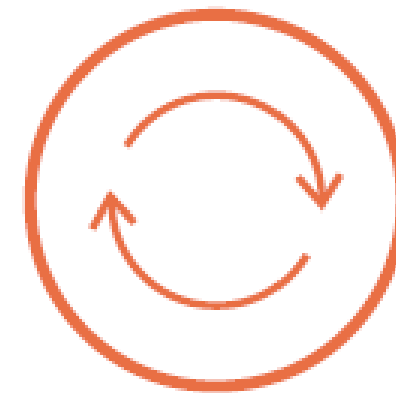


ARA POUTAMA AOTEAROA
DEPARTMENT OF CORRECTIONS



RISK MANAGEMENT

A risk management
approach
Lifecycle



QUALITY MANAGEMENT SYSTEMS

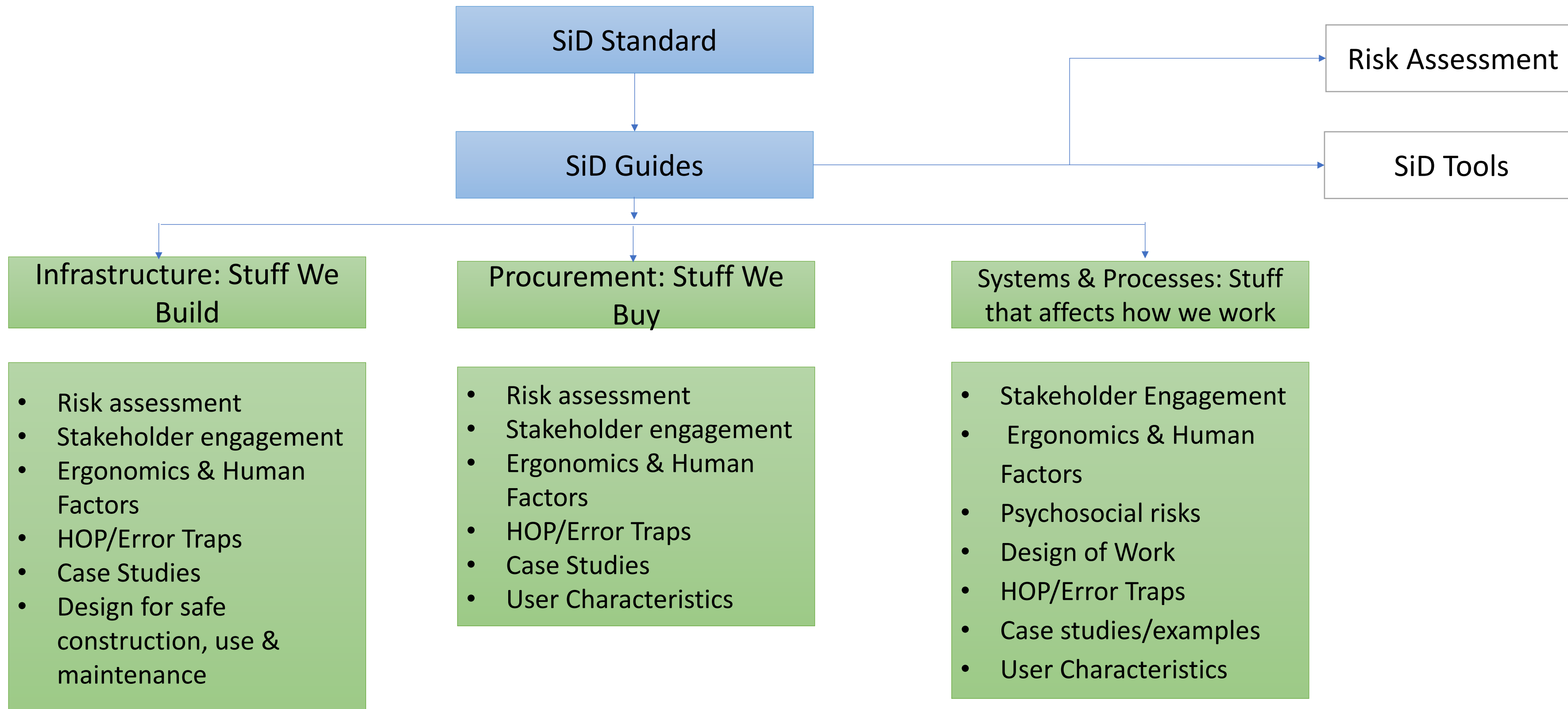
Good documentation
and communication
Frequent monitoring
and review



PEOPLE

A capable team

Where we are at



Three Questions about SiD

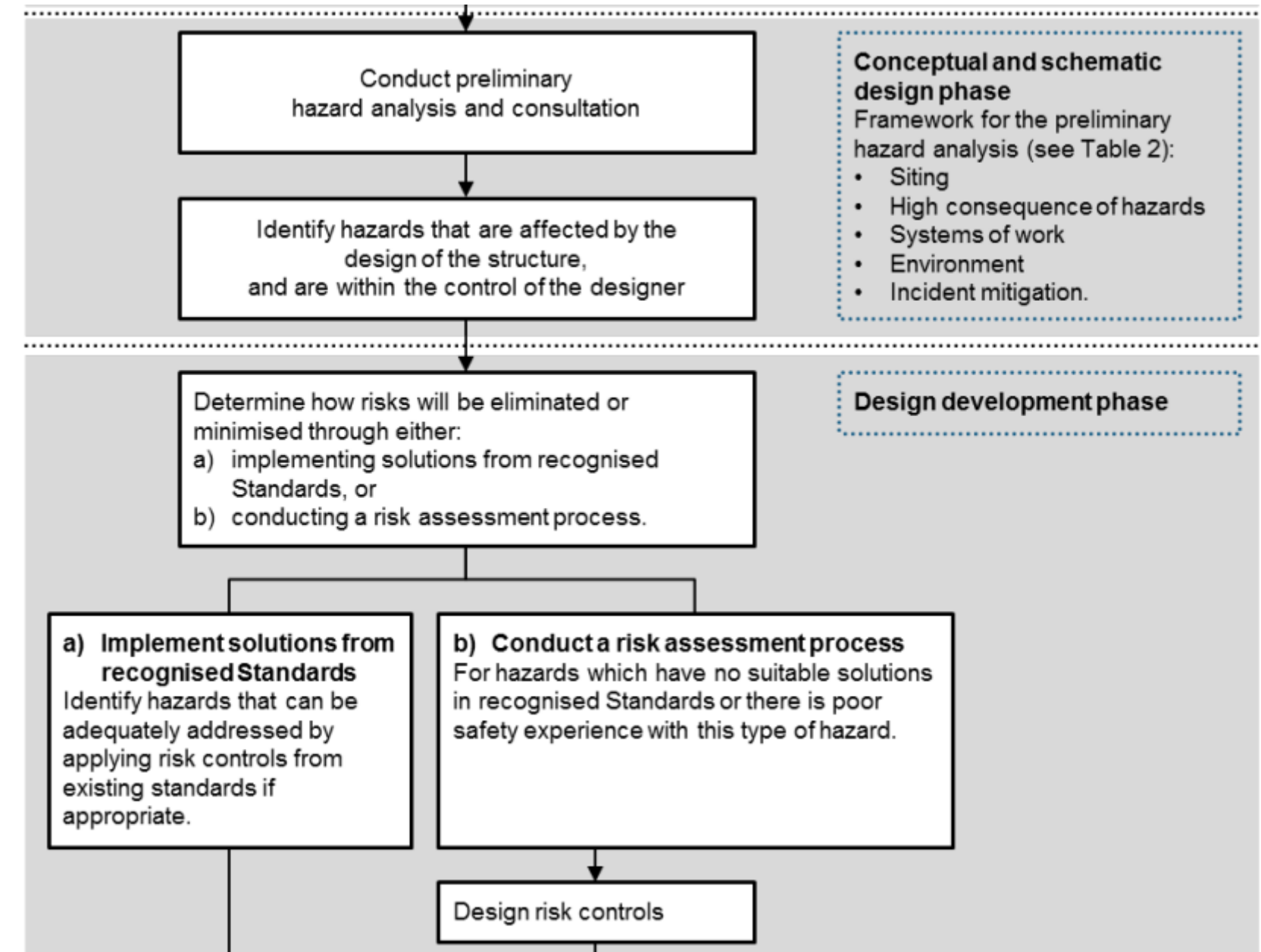


1. What's Reasonably Practicable

What is the status of the benchmark standard?

DESCRIPTOR	DEFINITION
Defined standard	Minimum standard is specified in Acts, Regulation, Safe Work Instruments, ACOPs or WorkSafe best/good practice guidelines
Established standard	Information that is known or accepted in New Zealand and/or in the specific industry, such as: <ul style="list-style-type: none"> - fact sheets/quick guides/technical bulletins/safety alerts or other material published by WorkSafe. - codes of practice (other than ACOPs) - material freely available in similar overseas jurisdictions (for example, Australia, UK or Canada) - readily available Standards (for example, NZS/AS/ISO/ILO/BS/CEN/IEC/API) providing specific advice on health and safety controls - guidance or good practice from industry or other organisations if it is common and well-known.
Interpretative standard	Any other standards, including interpreted from first principles and/or not published or available generally.

Benchmark standards. Enforcement Decision Making Model (P.16), WorkSafe NZ. May 2025.



Recognised standards. Safe Design of Structures COP (P.17). SafeWork Australia. November 2024.

Three Questions about SiD

1. What's Reasonably Practicable

As part of our Safety in Design process, we are considering implementing:

1. Requiring lead designers/consultants to provide a Design Safety Report at concept design stage.
2. Develop a post-occupancy SiD evaluation/review



Three Questions about SiD

2. SiD Registers - Are SiD registers meeting their intended objective of changing the design to eliminate or minimise H&S risks?

SiD register outputs do not result in design changes that are effective in eliminating or minimising risk

SiD is often used as a compliance activity

Contractor's motivation can tend towards optimising construction over managing risks later in the

SiD registers often include controls that sit outside of the hierarchy of controls

Risk shuffling can occur – reducing risk in one phase of the asset lifecycle inadvertently increases risk in another.

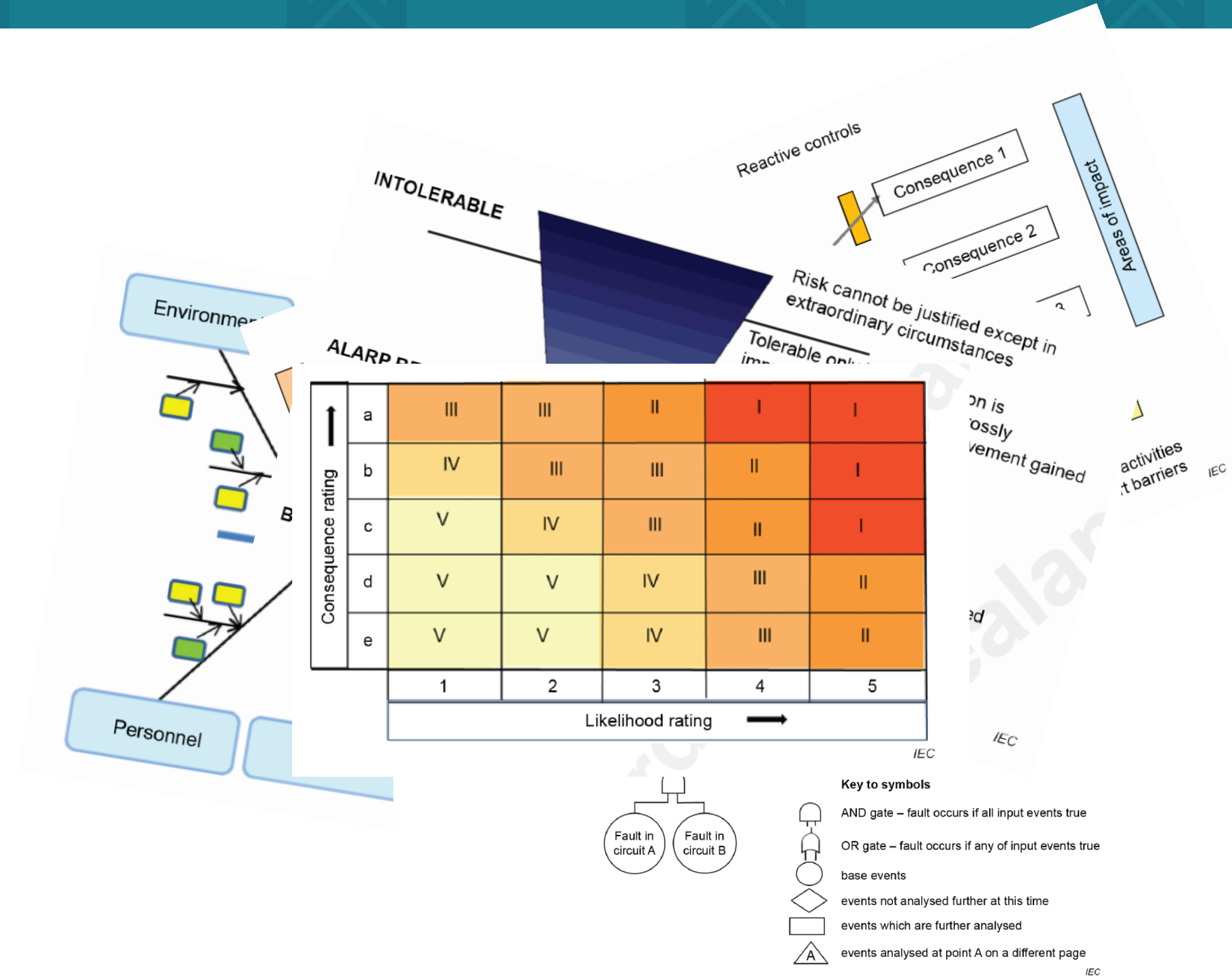
“Messages to the future” are commonly used to influence safety in later lifecycle phases such as

Three Questions about SiD



3. Risk assessment techniques:

- a variety of risk assessment techniques should be used
- AS/NZS IEC 31010:2020 – Risk Management – Risk Assessment Techniques provides an abundance of techniques for assessing risk, such as...



Three Questions about SiD



3. Risk assessment techniques:

Risk registers and matrices are one of the more common techniques used in Safety in Design

Technique has known limitations:

- Can be ineffective when used for risks with negatively correlated probabilities and severities.
- Difficult to apply a common risk matrix/scales across a range of risk circumstances
- Assessment results greatly differ depending on how the matrix cells are weighted.

Thanks for Listening



ARA POUTAMA AOTEAROA
DEPARTMENT OF CORRECTIONS

Now that I've posed the questions, I'm hoping you will have some answers!



ARA POUTAMA AOTEAROA

DEPARTMENT OF CORRECTIONS



Follow us [@CorrectionsNZ](https://twitter.com/CorrectionsNZ) or visit
our website www.corrections.govt.nz

New Zealand Government

Sophie Scott

Guest Speaker

Technical Principle Safety in Design

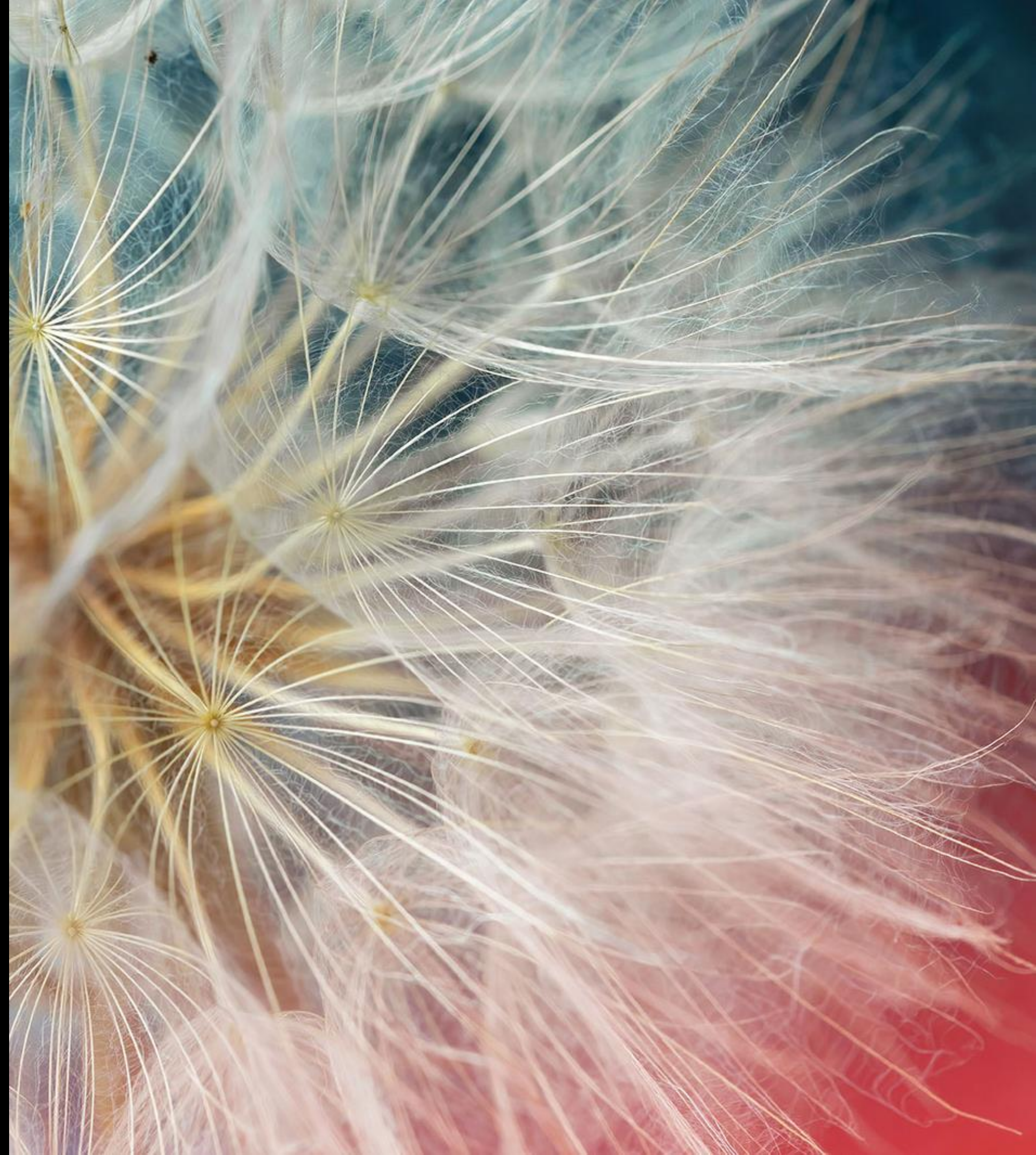




SAFETY BY DESIGN

CCG SID HUI 2

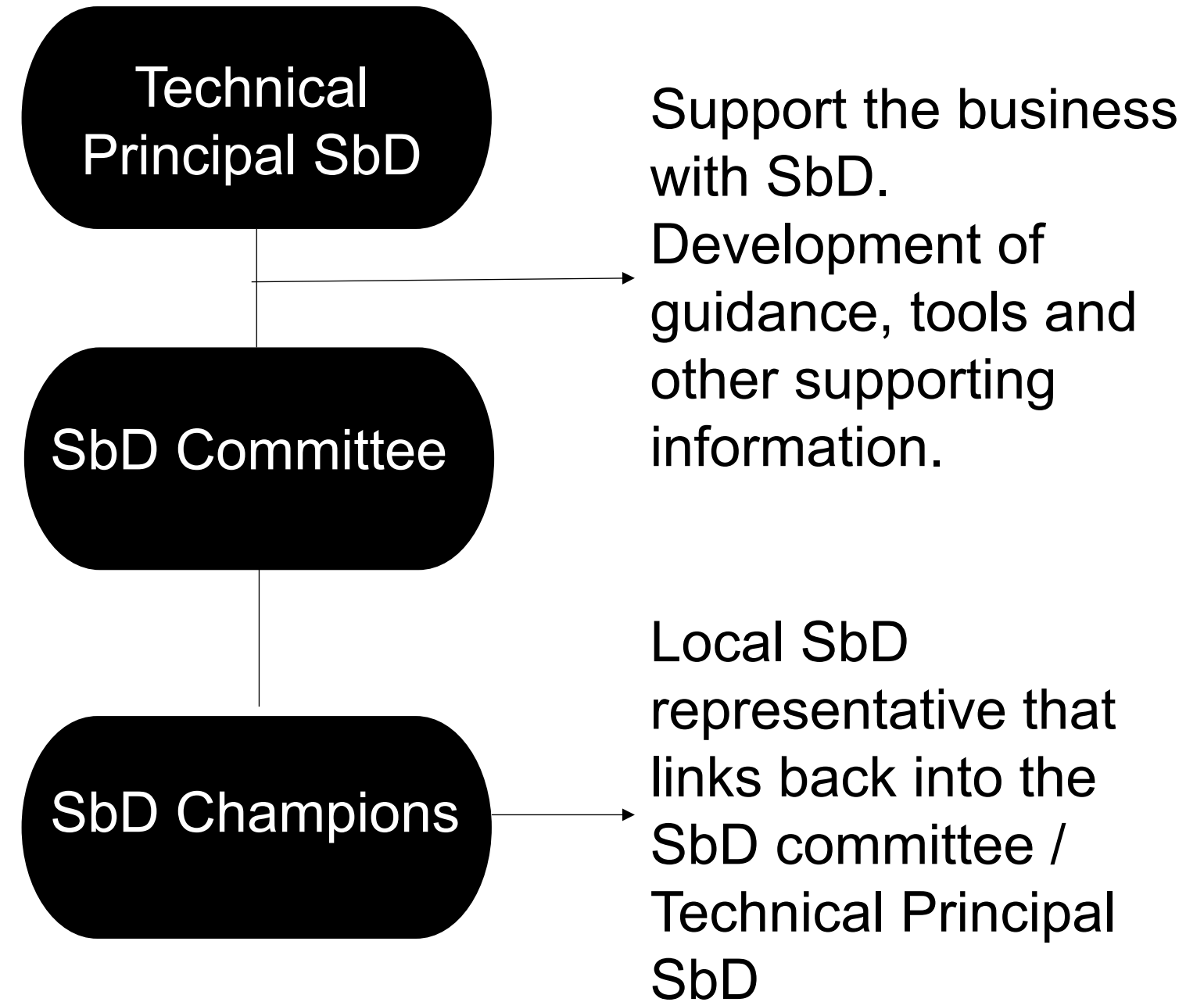
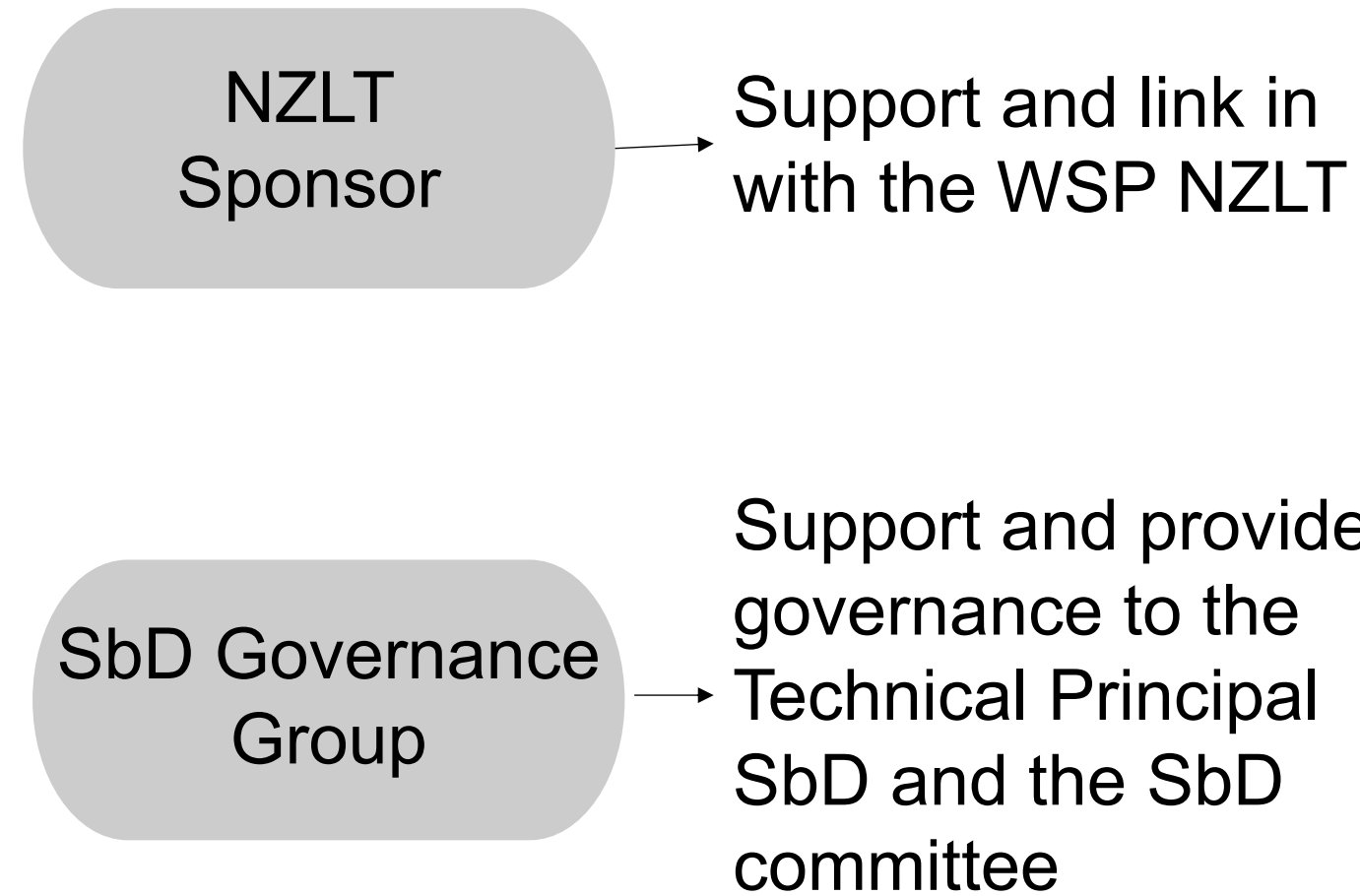
Sophie Scott Technical Principal Safety by Design | June 2026



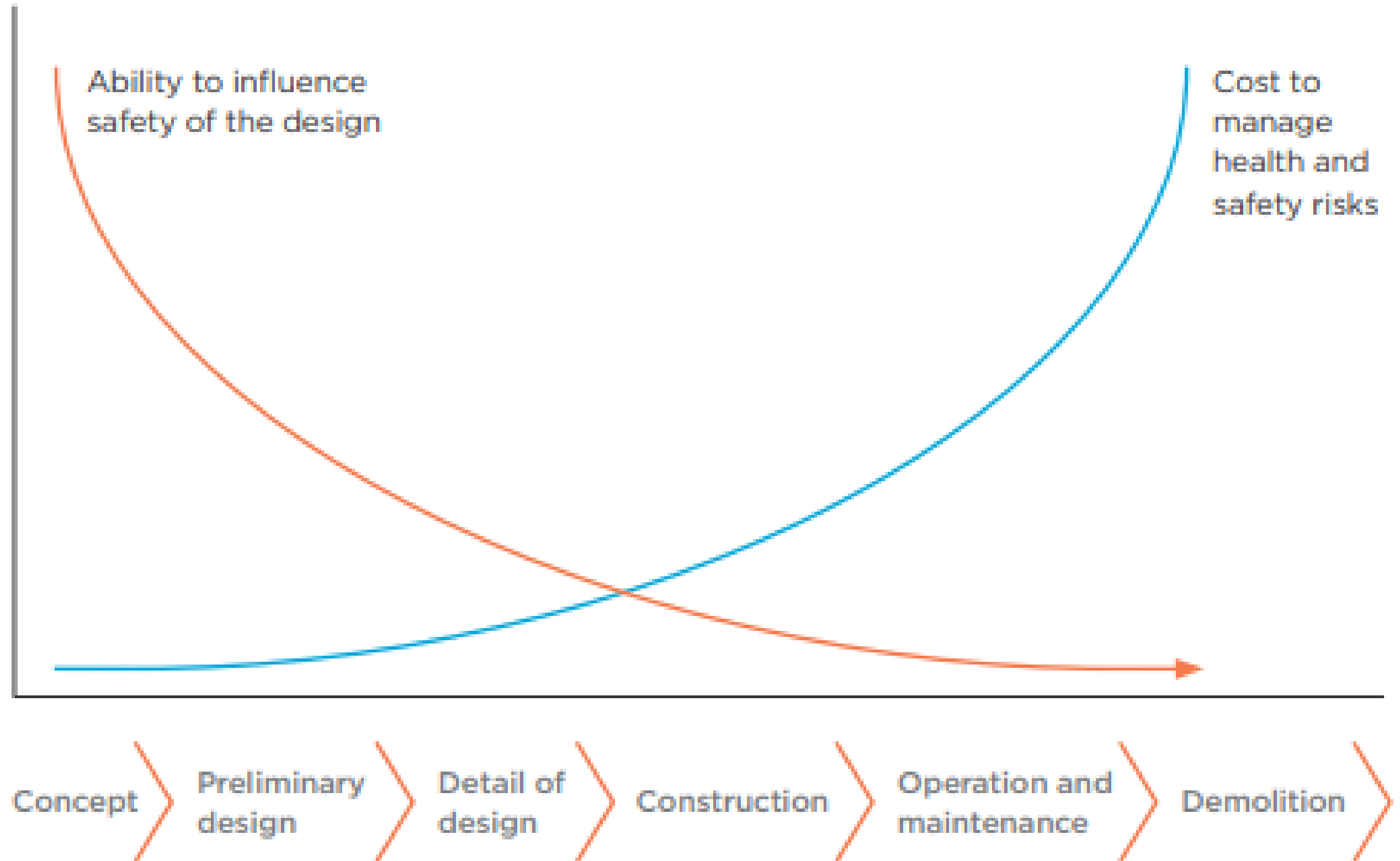


Sophie Scott

Technical Principal Safety by Design

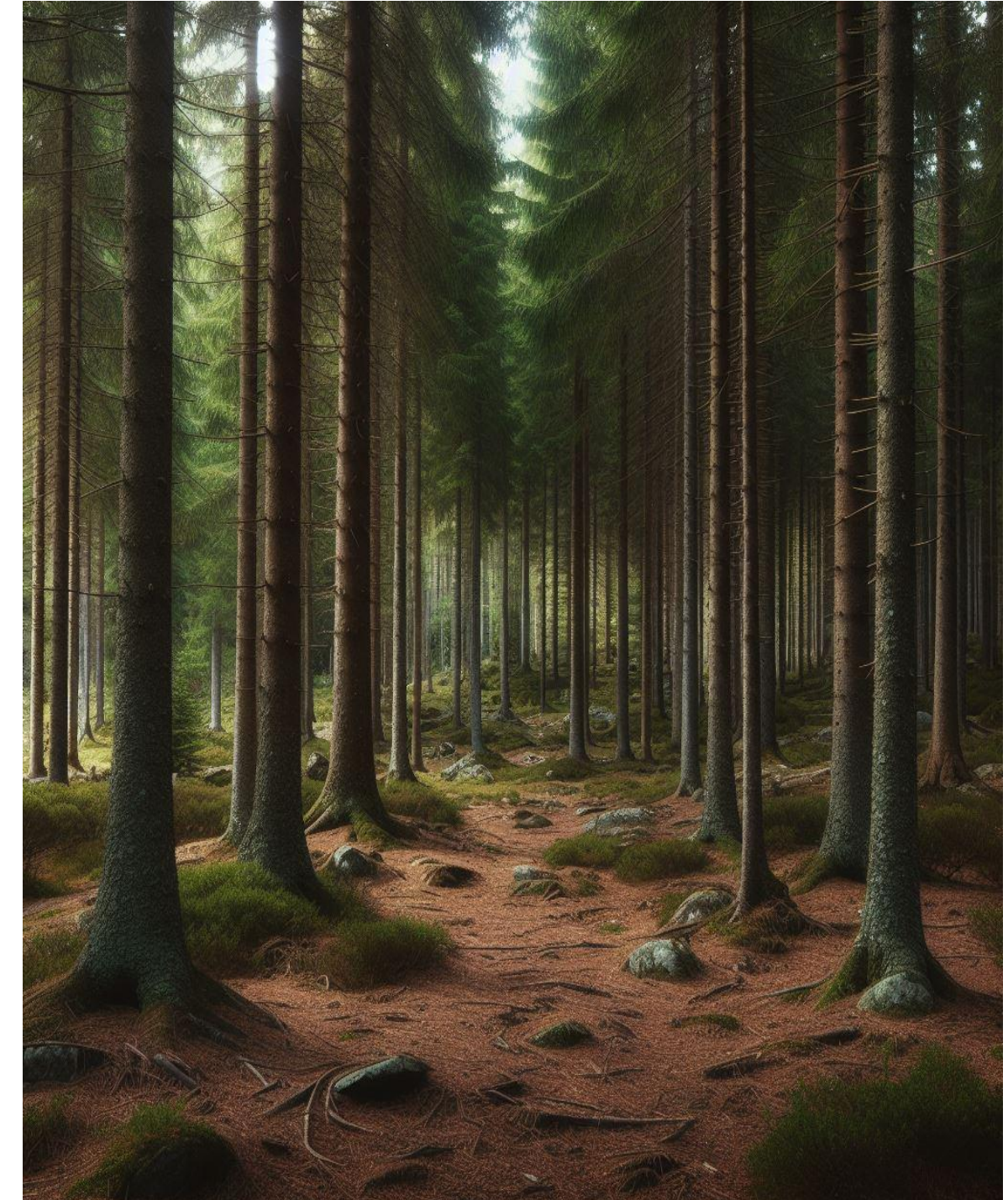
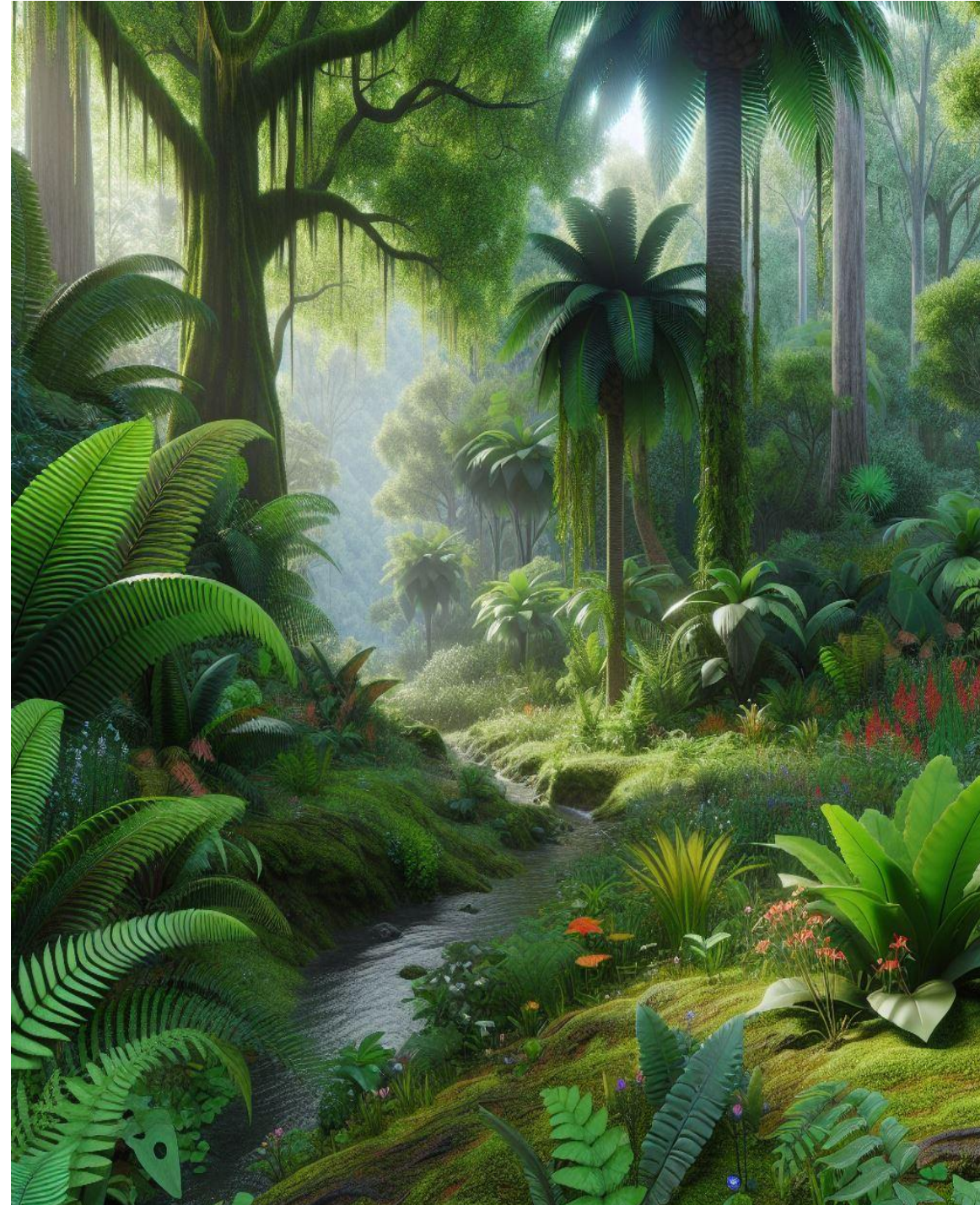


Start Early



Diversity of Input

- Involve people who understand the range of downstream users:
 - Contractors.
 - Maintainers.
 - Operators.
 - Users.
 - Human Factors input.
- Get this input as early as possible.



Right Size

- Inclusion in MCA
- Meeting minutes
- Sections in a report
- Notes on drawings/sketches
- Detailed SbD register
- Standalone SbD report



The evidence needs to be recorded and communicated

How do we close the loop?

- What happens after design?
- Understanding the impact design decision have had?
- Was there a better solution in hindsight that we can learn from?



Panel Discussion

Sharing



Learning

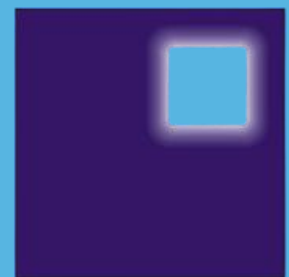


Innovating



Together

Thank You



**Construction
Clients' Group**
CONSTRUCTING EXCELLENCE



vector