

Appendix U Safety in Design Register

Client Name **Ashburton District Council**
 Project Name **ATC 2nd Bridge DBC**
 Project Number **310205125**
 SID Facilitator **Ali Siddiqui**

Location **Ashburton**
 Date **Thursday, June 30, 2022**
 Project Component **All**
 Design Stage **DBC**

SID Review Team		Name Company		Name Company	

Ref	PRELIMINARY HAZARD IDENTIFICATION					RISK ASSESSMENT			PROPOSED MITIGATION		RESIDUAL RISK ASSESSMENT				HANDOVER			
	Area / Activity	Hazard Category	Hazard Sub Category	Nature of hazard	Possible effect of hazard	Consequence	Likelihood	Assessed Risk	Proposed Treatment / Remedial Action	Hierarchy of Control	Consequence	Likelihood	Assessed Risk	Nature of Residual Risk	Phase Affected	Status	Remarks	Owner
1	General / Whole Site	Existing_Services	Underground - Electricity	Unidentified underground services	Electrocution, damage, power outages	Major	Possible	H	Request updated service plans and on site location of services. Service provider stand over used during excavation phase.	Control (Engineering)	Major	Unlikely	M	This can still happen	Construction	Active		Contractor
2	General / Whole Site	Existing_Services	Aboveground- Electricity	Plant strike	Electrocution, damage, power outages	Major	Possible	H	Positive marking of overhead cables (tiger tails, buntlings etc). Service provider stand over used during excavation phase. Propping of poles in accordance with utility providers' requirements when excavating nearby.	Control (Engineering)	Major	Unlikely	M	This can still happen	Construction	Active		Contractor
3	General / Whole Site	Access_and_Traffic	Traffic circulation	Construction works cause detours to be in place	Drivers confusion, restriction on access to properties, long detour routes	Minor	Possible	M	Ensure road closure and detours are in place for minimal amount of time. Make sure TMP considers detour route suitability keeping local residents informed of progress and times and duration of detours and restrictions.	Control (Engineering)	Minor	Unlikely	L	This can still happen	Construction	Active		Contractor
4	General / Whole Site	Access_and_Traffic	Access and Egress from Site or Adjacent Properties	Limited space to undertake work may restrict access or necessitate difficult traffic management	Traffic crashes due to unexpected movements	Major	Possible	H	Undertake detailed planning and sequencing of works for all site access points (SAPs) including haul routes, equipment circulation, traffic management planning, worker pedestrian routes, work exclusion zones and selecting plant that is suitable for the available work space. Ensure access to private properties is clear and unambiguous.	Control (Engineering)	Major	Unlikely	M	Risk remains if there is failure to adopt controls and follow planned work methods.	Construction	Active		Contractor
5	General / Whole Site	Access_and_Traffic	Traffic circulation	Wider safety impacts of traffic using the Chalmers Avenue second bridge	Safety improvements would be expected on the SH through travel reductions. However, a diversion of traffic onto the local road network could increase the safety risk on other parts of the network.	Moderate	Possible	M	Designer to consider network safety, ongoing monitoring post construction, and potential local road mitigation required particularly if only part of the corridor through to Grahams Road is constructed.	Control (Engineering)	Minor	Possible	M	There can still be general hazards associated with traffic on roads	Operations	Active		ADC
6	General / Whole Site	Access_and_Traffic	Traffic Management Requirements	Maintenance repairs to damaged flexible barrier requires maintenance personnel to work near live traffic	Struck by passing vehicles	Catastrophic	Possible	H	Where flexible barriers are used, a safe repair methodology should be developed (pre-planned) such that it is ready when routine or emergency repairs are required.	Substitute	Moderate	Very Unlikely	L	Risk remains if barrier is installed that requires maintenance and there is failure to adopt safe TTM controls	Maintenance	Active		Maintenance Contractor
7	General / Whole Site	Ground_Stability	Steep / Unstable Slopes	Slips, falls, rolling equipment	Broken limbs, crush injuries	Catastrophic	Possible	H	Design to consider the angle of slopes and ensure steep slopes are either maintenance free (or have fall protection mitigation - e.g. fencing).	Isolate	Moderate	Very Unlikely	L	Slip or fall would be limited due to design (shallow) slope and fall protection mitigation	Maintenance	Active		Maintenance Contractor
8	General / Whole Site	Hazardous_Construction	Temporary works (e.g. propping, jacking, bracing)	Potential collapse during construction	Crush injuries	Catastrophic	Possible	H	Undertake appropriate design for all temporary works giving consideration to all potential loading situations (e.g. including wind and seismic)	Control (Engineering)	Moderate	Very Unlikely	L	Residual risk largely managed assuming temporary works design is adequate	Construction	Active		Contractor
9	General / Whole Site	Hazardous_Construction	Pressure systems (e.g. concrete pumping)	Pressure hose failures	Flying debris, broken limbs	Catastrophic	Possible	H	Plan all pumping activities and use appropriate safe work methods. Ensure all pumping equipment (pipes, pumps, connections) are well maintained	Control (Engineering)	Moderate	Very Unlikely	L	If pumping equipment is well maintained and appropriate safe working methods adopted then the residual risk is minimal	Construction	Active		Contractor
10	General / Whole Site	Hazardous_Construction	Working around mobile plant	Limited space to undertake work may put workers in close proximity to moving plant	Hit/struck by moving plant	Catastrophic	Possible	H	Undertake detailed planning and sequencing of construction works including haul routes, equipment circulation, traffic management planning, pedestrian routes, work exclusion zones and selecting plant that is suitable for the available work space.	Control (Engineering)	Major	Unlikely	M	Risk remains if there is failure to adopt controls and follow planned work methods.	Construction	Active		Contractor
11	General / Whole Site	Maintenance_Refurbishment_Repair	Maintenance Access (e.g. for cleaning, removal / replacement of plant)	Completed works will require maintenance access throughout the service life of both the roads and structures	Traffic crashes, traffic delays, pedestrian/cyclist injuries	Major	Possible	H	Design to include access arrangements for all future routine maintenance activities and that maintenance site access points (SAPs) and parking bays are located in logical areas, allow for the type and size of plant requiring access, and can be accessed in a way that does not pose a hazard to passing traffic and public	Isolate	Moderate	Very Unlikely	L	Risk remains if there is failure to adopt controls and follow planned work methods.	Maintenance	Active		Maintenance Contractor
12	General / Whole Site	Maintenance_Refurbishment_Repair	Lighting (e.g. bulb replacement)	Lighting maintenance may necessitate working at height in difficult to access areas (e.g. above the bridge parapet over the Ashburton River)	Falls from height, dropped objects	Catastrophic	Possible	H	Designer to consider how bulbs will be maintained and utilise LED bulbs that have long maintenance intervals. Develop appropriate procedures for working at heights.	Control (Engineering)	Moderate	Very Unlikely	L	Risk remains if there is failure to adopt controls and follow planned work methods.	Maintenance	Active		Maintenance Contractor
13	General / Whole Site	Landscaping	Maintenance of landscaping	Maintenance of landscaping may necessitate working in difficult to access areas	Traffic hazard	Catastrophic	Possible	H	Designer to consider how landscaping will be maintained e.g. use of appropriate landscaping for various scenarios (e.g. minimal maintenance, landscaping on steep slopes, low maintenance shrubs and ground cover on moderate slopes, grasses restricted to flat areas that are easy and safe to access).	Control (Engineering)	Moderate	Very Unlikely	L	Risk remains if there is failure to adopt controls and follow planned work methods.	Maintenance	Active		Maintenance Contractor
14	General / Whole Site	Hazardous_Environment	Contaminated Ground / Land (tar, arsenic, metals, etc)	Locating unidentified old dump and waste sites on rural land	Contamination of the environment, biological issues for staff members, illnesses, additional disposal costs and risks	Major	Likely	H	Discussions with landowners, searching ECAN database for HAL sites, contingency plans in place for the safe removal and disposal of hazardous waste	Control (Engineering)	Moderate	Possible	M	This can still happen.	Construction	Active		Contractor
15	General / Whole Site	Proximity	Fragile foundations / roofs / buildings (inc rot)	During earthwork phase, undermining or damaging root bulb of tall trees	Unexpected falling of trees across work site causing crushing and injuries to work staff	Major	Likely	H	Ensure arborist assesses trees. Earthworks are kept at safe distance from trees which are to remain in place. Undertake tree clearance works prior to full establishment on site to separate work streams.	Control (Engineering)	Major	Unlikely	M	This can still happen.	Construction	Active		Contractor
16	General / Whole Site	Working_Conditions_or_Location	Noise	Noise during construction from operating plant and equipment	Issues with surrounding neighbors, public perception, media	Moderate	Likely	H	Establish standard working hours. Only use plant with mufflers and low noise equipment, limit operations to day time hours for noisy operations / plant	Control (Engineering)	Minor	Possible	M	This can still happen.	Construction	Active		Contractor
17	General / Whole Site	Working_Conditions_or_Location	Vibration	Vibration during construction from operating plant and equipment	Issues with surrounding neighbors, damage to property, public perception, media	Moderate	Likely	H	Complete pre-work inspections / surveys of properties that are close to the construction site. Ensure plants which create vibration are kept at safe distance away from fragile structures. Limit operations to day time hours.	Control (Engineering)	Minor	Possible	M	This can still happen.	Construction	Active		Contractor
18	Roads	Existing_Services	Underground - Watermain	Known high pressure underground watermain in the area. Could result in unexpected high pressure water 'explosion'	Flying debris, injuries, contamination of the watermain	Major	Possible	H	Services investigation at detailed design stage to identify location and depth of watermain. Design to consider relocation / isolation prior to construction works. Realigned watermain to be located in safe and easily maintainable location (e.g. relatively shallow and clear of live traffic). Construction methodology to include safe work method for working around the watermain (where required) e.g. exclusion areas, etc.	Isolate	Minor	Unlikely	L	Residual risk largely managed by service location before works begin.	Construction	Active		Contractor
19	Roads	Existing_Services	Underground - Wastewater / Stormwater	Biological	Illness, damage to services, contamination of surrounding environment	Moderate	Possible	M	Services investigation at detailed design stage to identify location and depth of sewer. ADC to discuss sewer location with project team to ascertain extents of relocation / protection works.	Eliminate	Moderate	Very Unlikely	L	Residual risk largely managed as realigned service would be outside the impact area of the project.	Construction	Active		Contractor

