

Safety in Design Review

Project Name Rotorua Eastern and Central Water Supplies Fluoridation

RLC Central WTP - HFA

Safety in Design Review

Project Number

231006

Date

16/09/2024



Ref.	Generic Keywords	Keyword considerations	Identified Hazards	Hazard Management	Residual Risk & Additional Requirements	
A	Generic Keywords					
1	Size	Width of road way leading into the site has been adjusted to tie into the bunded area.	Traffic restrictions, large vehicle access		Low	Vehicle tracking to be completed, road widening to tie in to new delivery bunds as required
		Height of retaining to be checked (Can it be lowered by uphill battering)			Low	Chesters to review height of retaining wall and to determine whether they can remove the subsoil and make it a swale for diverting stormwater behind the retaining wall 02.
2	Access	Ensure enough space between transfer pump stations and tank.	Operational access constraints. Equipment installation and feasibility	Model clearances review	Low	Design to be reviewed to check suitable access to tank. Is there a suction lance through the top that would need to be removed and length of which would clash with the roof height? Make sure that the section of handrail is removeable on the front edge of the tank bund for removal.
		Site access into existing plant	Clearance around proposed structures	Vehicle tracking	Low	Vehicle tracking. Consideration around the location of the stair into the new tank area Lighting - above tank and floodlight over the load out bay
3	Materials of Construction	Sealing of bunded areas Painting of ceiling and walls	Chemical attack	Painting selection	Low	Confirm type of paint for walls and ceiling for the dosing room. Lining of the partition wall - Dampness rating Alignment - differential settlement and flexibility of pipework
		Compatibility	Corrosion, chemical attack	Material selection	Low	Material of Construction - Cabinets - Stainless, Pipework - PVC Vermin protection - Cables and materials etc
4	Position/Location	Site procedures signage (deliveries and isolating valves)	Chemical spills to environment	Onsite signage	Low	New custom signage to display alignment of strowmater / catchment position of valves on the rear wall for use during delivery procedures
5	Ergonomics	Chemical cabinets Bunding in dosing cabinets is sufficient. Displayed dosing cabinets	Leaks/spills Operator use and access	Cabinets self bunded in excess of day tank volumes Windowed doors for visibility inside prior to opening	Low	Transition details between neat chemical and carrier water to be detailed
		Above ground dosing pipework	Leaks/sprays		Medium	Splash guards on the internal pipework when exiting the existing duct into the pump shed. Check where drips could land on existing pipework and corrosion risks. Is there a suitable coating or small permanent spool to bring connection
		Buried chambers			Low	Get details from Steve for lid manufacturer. Outside of roodways Class B (Pedestrian aluminium). In roadway Class D. Water ingress, pits and water table. Check to make sure water ingress into the pits will not be an issue with containment 'pits'
		Coated flooring	Slips		Low	Antislip coating
		Drainage (analysers)	Slips		Low	Analysers drain - Where do the analysers drain to? Discussion to leave as is and use drainage that exists
6	Use	Public unauthorised entry	Harm to public, damage to equipment / process		Low	Permanent security fencing is installed
	Reasonably Foreseeable Misuse	Public unauthorised entry	Harm to public, damage to equipment / process		Medium	Removeable handle for the stormwater diversions / catchment valve. Chain link fence around the bulk chemicals raised platform
7	Construction - Load/Force	Central bridge access	Overweight, turning radius		Low	Permitrequired for heavy vehicles across the bridge. To consider based on equipment required on site
8	Environmental Conditions	Noise discussed - Mitigation hours of day.			Low	Site offices and laydown area considerations. On the end of the road to the farm behind the site. Or up top? To discuss later. Council to revert.
9	Abnormal Environmental Events	Inclement weather	Flooding, slips		Medium	Central site can flood within pump station. Outside of main works area. Considerations for sediment control during construction works to prevent ingress into stream
10	Chemical	Storage	Spills	HAZOP / SID	Medium	Covered within design review Cabinets vented to prevent gas buildup inside
		Use	Handling	HAZOP / SID	Medium	Covered within design review and to be included in O&Ms
11	Timing	Commissioning	System integration to existing plant controls		Medium	SCADA tie ins and controls required prior to commissioning (parts within client scope). Note, the graphics on the local HMI will need to be carried out by us which would be tied into the existing PLC by third party. Use and propose drawings / SCADA standards to council prior.
12	Energy	Power failure	Backup power system (UPS)		Low	Discussion around power failure. What happens with the PLC upon power failure and a UPS back-up. Is this something to included? To discuss with RLC

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13	Maintenance/Repair	Annual maintenance. Carrier water to remove the majority of the replacement requirement			Low	Maintenance schedules to be provided in O&Ms
14	Demolition/Disposal		Nil demoworks planned		Low	
15	Critical Risk Activities	Initial chemical delivery		Review by IXOM (supplier) and assessor prior to first chemical delivery to confirm necessary measures and precautions are in place	Low	Early engagement with parties to incorporate necessary measures into design
		Hot commissioning	Over dosing, public health risk		Medium	Commissioning methodology developed in advance and reviewed with client. System pre-tested under cold commissioning under water to confirm operation
16	Emergency requirements	Response plan			Low	Emergency response plan to be provided for chemical store. To discuss with standalone or update to existing site ERPs

B Review Prompt Words

17	Noise				N/A	
18	Manual Handling				Covered above	
19	Vibration				N/A	
20	Heat				N/A	
21	Hyperbaric Atmosphere		Nil expected		N/A	
22	Chemical	Concrete HFA	Burns, sickness, damage to equipment / environment		Covered above	Handling procedures and washout availability on site when materials in use. Trained handlers for higher risk materials like HFA
23	Biological	Contamination	Public health risk		N/A	Cleanliness procedures for tools, materials and personnel to be observed when working on potable water system
24	Working at height or depth		Nil expected		Covered above	
25	Working over/near water		Nil expected		N/A	
26	Adjacent construction sites and land use	RLC operations (plants online throughout works)	Clash with operations activities		N/A	Coordination meetings between parties
27	Underground excavations and works				N/A	
28	Ground conditions			Geotechnical investigations and report completed prior to site works	Covered above	
29	Services and utilities	Buried services strike	Service interruption, harm to plant and personnel		Covered above	Services scans and marking prior to ground disturbance works.
30	Confined spaces	Leak detection pits, Matipo dosing chamber	Gas build up, Overhead obstacles		Covered above	Get details from Steve for lid manufacturer. Outside of roadways Class B (Pedestrian aluminium). In roadway Class D. Lids open over full/majority extend of chamber footprint
31	Heavy lifting				Covered above	
32	Temporary works	Retaining walls	Slips		Covered above	Temporary works design to be reviewed with civil subcontractor
33	Working in and around mobile plant				Covered above	
34	Demolition				Covered above	
35	Emergency requirements				Covered above	
36	Existing structures	Old fluoride building and retaining wall	Instability		Covered above	Design of new works prevents undercutting near existing structures
37	Existing information				Covered above	

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38	Prescribed methods of working/construction				Covered above	Method statements to be developed. High risk activities (e.g tie-ins) to review SWMS with RLC
39	Existing and future operational and maintenance issues				Covered above	
40	Live traffic				Covered above	
41	Natural Hazards				Covered above	
42	Competence				Covered above	Training and handling procedures to be provided