Risk Assessment

Issue Ref #	Hazard Type	Hazard Description	Risk Rating (Current / Without Controls)	Mitigation Actions/Controls	Primary Actionee	Secondary Actionee	Residule Risk Rating (Future / With Controls)	Interim Controls	Location (Pipe number beginning 10m prior to the Te Wairoa Stream Culvert)	Comments
R001	Environmental	Effluent entering the Te Wairoa Stream from damaged pipe - construction and operations	21	1) Run the pipeline on the other side of the road away from the stream. 2) material selection 3) MSQA 4) Contol system response (refer HAZOP) 5) Depth of culvert and cover over pipe, material over pipe.	Contractor	RLC	14	8	550-1900	Residule risks involve: 1) Major earthquake could impact the pipe post-commissioning. Pipes are 100-year rated. 2) 3rd party damage by means of drilling, escavating - controls in place: asbuilts before digging occurs and tracer.
R002	Environmental	Effluent entering the Rotokakahi from damaged pipe	18	1) Run the pipeline on the other side of the road away from the lake. 2) material selection 3) MSQA 4) Contol system response (refer HAZOP) 5) Depth of culvert and cover over pipe, material over pipe.	Contractor	RLC	14	N/A	550-1900	Residule risks involve: 1) Major earthquake could impact the pipe post-commissioning. Pipes are 100-year rated. 2) 3rd party damage by means of drilling, escavating - controls in place: asbuilts before digging occurs and tracer.
R003	Environmental	Acts of God causing major break of pipe	19	1) Pump station would shut down (refer to HAZAOP) 2) Pipe selection	RLC	N/A	14	N/A	Along the length of the system	Residule risk (impact) has been reduced due to pump station shutting down to reduce amount of overflow.
R004	Environmental	Poor response time to spell in an act of God event.	24	1) Operations and maintenance overflow notification proceedure is part of contract. 2) Communications from RLC to RBOC.	Contractor	RLC	15	N/A	N/A	Residule risk involves: 1) Tele-communication breakdown
R005	Environmental	Effluent seepage from small break	18	1) Refer to HAZOP - SCADA to monitor pressure while pumps are off.	Contractor	RLC	14	N/A	Along the length of the system	
R006	Environmental	Effluent laying around immediate area	13	1) Above mitigation actions/controls 2) Investigate cause of effluent 3) HAZMAT clean up	Contractor	RLC	6	N/A	Along the length of the system	
R007	Environmental	Slurry from Drilling entering Te Wairoa Stream	22	1) Run the pipeline on the other side of the road away from the stream. 2) MSQA 3) Site supervision 4) Certification of machinery and operators	Contractor	RLC	15	N/A	550-1900	

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R008	Environmental	Diesel/Petrol Spill entering Te Wairoa Stream	22	1) Petrol tank refueled prior to commencing works at the stream 2) H&S proceedures 3) Contamination cleanup proceedures 4) Handling proceedures	Contractor	RLC	15	N/A	550-1900	
R009	Environmental	Diesel/Petrol Spill entering the lake	15	1) Petrol tank refueled prior to commencing works at the stream 2) H&S proceedures 3) Contamination cleanup proceedures 4) Handling proceedures	Contractor	RLC	15	N/A	550-1900	RLC acknowledges this has been viewed as disastrous. With mitigation, the likihood is extremely unlikely.
R010	Environmental	Breach into stream from drill	15	1) Run the pipeline on the other side of the road away from the stream. 2) MSQA 3) Site supervision 4) Certification of machinery and operators	Contractor	RLC	15	N/A	550-1900	RLC acknowledges this has been viewed as disastrous. With mitigation, the likihood is extremely unlikely.
R011	People	Contractor touching the lake	21	1) Comms 2) Everyone involved will need to undertake a cultural induction by RBOC. 3) MOU	Contractor	RLC	10	N/A	N/A	RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.
R012	People	Contractor distrubing fish in stream	21	1) Comms 2) Everyone involved will need to undertake a cultural induction by RBOC. 3) MOU	Contractor	RLC	10	N/A	N/A	Risk of noise,drilling,vibration - risk is no greater than traffic passing over the stream. RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.
R013	People	Contractor Poaching fish	10	1) Comms 2) Everyone involved will need to undertake a cultural induction by RBOC. 3) MOU	Contractor	RLC	10	N/A	N/A	RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.
R014	People	Contractor taking water from the lake	21	1) Comms 2) Everyone involved will need to undertake a cultural induction by RBOC. 3) MOU	Contractor	RLC	10	N/A	N/A	Water will be brought in from other sources. RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.

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R015	People	Contractor walking beside the stream	21	1) Comms 2) Everyone involved will need to undertake a cultural induction by RBOC. 3) MOU	Contractor	RLC	10	N/A	N/A	Risk of person/contaminants entering stream. When drilling under the culvert, the operator will need to be near the stream to follow the drilling line. RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.
R016	People	RLC staff disturbing fish	21	1) Comms 2) Everyone involved will need to undertake a cultural induction by RBOC. 3) MOU	RLC	N/A	10	N/A	N/A	RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.
R017	People	RLC staff touching the lake water	21	1) Comms 2) Everyone involved will need to undertake a cultural induction by RBOC. 3) MOU	RLC	N/A	10	N/A	N/A	RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.
R018	H&S	Fish eating effluent that whanau take home	21	1) Mitigation for risks R001-R010 2) Communications from RLC to RBOC.	Contractor	RLC	10	N/A	N/A	Rahui/ fishing restiction for whānau from RBOC. RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.
R019	H&S	Koura eating effluent that whanau take home	21	1) Mitigation for risks R001-R010 2) Communications from RLC to RBOC.	Contractor	RLC	10	N/A	N/A	Rahui/ fishing restiction for whānau from RBOC. RLC acknowledges this has been viewed as major. With mitigation, the likihood is extremely unlikely. Cultural monitoring from RBOC is welcome.

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