

Governance, Legislation and Regulatory Frameworks (Pg9)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 29959	
Needs to be able to	Operate the Wastewater Network within any requirements that have been set out in the local bylaws specific to their territorial authority	✓	✓				
	Provide information to the appropriate people regarding the performance of the Wastewater Network to facilitate asset management planning as detailed within the element of competence Error! Reference source not found.	✓	✓	✓			
	Operate the Wastewater Network within the conditions set in the Resource Consent(s) for overflow discharges. The requirements for Wastewater Network Operators are detailed further in the competency framework within the elements detailing Error! Reference source not found. and also for Error! Reference source not found. . Obtain compliance schedules for any buildings within the Wastewater Network that need a Building Warrants of Fitness as outlined within the element for Error! Reference source not found.	✓	✓				
	Safely operate the Wastewater Network in a manner that addresses health and safety and hazardous substances risks. The requirements for Wastewater Network Operators are detailed further in the competency framework within the elements for Error! Reference source not found. , Error! Reference source not found. and Error! Reference source not found.	✓	✓				
It is important to note that the team leader and Plant manager should have an in-depth knowledge and understanding of all these components.							
Needs to know	About the Local Government Act requirement for Councils to identify the level of service to be delivered by the Wastewater Network and to be prudent in the stewardship of critical assets.						
	About the Local Government Act requirement for Councils to set local bylaws, and how the particular bylaws for their area impact on the operation of the wastewater network. Wastewater network issues covered by bylaws commonly include: <ul style="list-style-type: none"> - What wastes are acceptable to discharge to the network, including Error! Reference source not found. restrictions. - Network connection requirements. - Ownership and responsibilities related to laterals. - Error! Reference source not found. management 	✓	✓	✓	✓		
	About the Resource Management Act (RMA) which regulates the discharge of contaminants to water, land and air from the site to conform to the requirements of a resource consent. Along with requiring consents to be held for the discharge of wastewater the RMA also requires Councils to have a District Plan, which will typically reference the required engineering standards to be used in wastewater network construction	✓	✓	✓	✓		
	About the Building Act requirement for a compliance schedule for buildings with specified systems	✓	✓	✓	✓		
	About the Health and Safety at Work Act which is concerned with the Health and Safety of workers and visitors to the site	✓	✓	✓	✓		
	About the Health and Safety at Work (Hazardous Substances) Regulations 2017 which set out the rules for work-related activities involving hazardous substances and replaces the HSNO (Hazardous Substances and New Organisms) regulations for the workplace. Note that in the absence of specific HSWA guidance existing HSNO codes of practice (HSNOCOP) still provide useful guidance	✓	✓	✓	✓		

	About the Hazardous Substances and New Organisms Act which includes the treatment of hazardous residual, wastewater, wastes and sewage sludge that contain hazardous chemicals. This Act also address bioaccumulation and biological hazards that wastewater operators may encounter	✓	✓	✓	✓	
	About the Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999 , which sets out the rules for maintaining equipment like cranes which can be found at Wastewater Pump Stations, or on the back on trucks used for wastewater network maintenance	✓	✓	✓	✓	
	The Role of Resource Consents (Pg11)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Operate, maintain, and monitor the wastewater network in a manner that complies with conditions imposed within any resource consent related to the network	✓	✓	✓	✓ (not absolutely necessary)	
Needs to know	The conditions and requirements of all resource consents related to the network. Consent conditions and requirements can: <ul style="list-style-type: none"> - Prescribe the way in which the wastewater network is to be operated and managed. - Impose limits on parameters that the discharge from overflow points must comply with. These limits could relate to chemical, physical, or biological parameters, including visible parameters like suspended solids, rags, scums, and oils. - Require operations and maintenance manuals, Error! Reference source not found. and monitoring plans to be prepared and complied with. Refer to the elements of competence regarding Error! Reference source not found. and Error! Reference source not found. for more information on these topics. - Require monitoring of potential discharges for the limits specified in the consent. - Require monitoring of the receiving environment to assess whether adverse environmental effects are occurring; and - Require reporting of monitoring data collected to the consent authority 		✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓		
	The actions to be taken in event of an overflow, whether consented or not. These actions may include a requirement to report data such as quantities, time, location, and impact. Reporting may also need to also include what actions the Wastewater Network Operator has taken to stop the overflow, clean-up the impacted site and to prevent future overflows.					
	The regulatory requirements regarding the reporting of non-compliance with Error! Reference source not found.s					
	Te Mana o te Wai (Pg13)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Te Hauora o te Taiao – Wastewater Treatment Operators help to protect the health of the environment by ensuring that the conditions of any resource consent relating to the discharge of contaminants from the site are adhered to	✓	✓	✓	✓	
Needs to be able to	Te Hauora o te Wai – Wastewater Treatment Operators help to protect the health of the waterbody by ensuring the conditions of the resource consent to discharge treated effluent are adhered to. Wastewater Treatment Plants often have water take permits for process and site fresh water. Where this is applicable	✓	✓	✓	✓	

	Wastewater Network Operators need to also ensure that the conditions of consent to take water from the source are adhered to. This also aligns with the Principle of Safe Drinking Water that identifies that protecting the water source is of paramount importance, as detailed in the New Zealand Drinking Water Safety Plan Framework					
	Te Hauora o te Tangata – Wastewater Treatment Operators protect the health of the people by operating the Wastewater Network in a manner that reflects the Site Management Plan	✓	✓	✓	✓	
Needs to know	What te Mana o te Wai means to their community. Under the Freshwater NPS it is up to the community and each Regional Council to consider and recognise Te Mana o te Wai in their regions	✓	✓	✓	✓	
	The conditions of all resource consents related to the operation of the Wastewater Treatment Plant	✓	✓	✓	✓	
	Operational Monitoring and Inspection for Process Control (Pg15)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 29940
Needs to be able to	Obtain, review and interpret trends on SCADA and telemetry systems	Assist ✓	✓			
	Identify target and action limits which identify when intervention may be required	✓	✓			
	Carry out key Error! Reference source not found. using the results to identify issues with performance	✓	✓			
	Assess the condition of the instrument and any supply tubing. Cleaning may be required if a sensor is coated in deposits	✓	✓			
	Identify whether equipment has deteriorated and whether it is still operating in accordance with its design	✓	✓			
	Take representative samples of wastewater from key points within the treatment process, accurately using appropriate sampling equipment	✓	✓			
	Important to note that if escalation is needed then team leader needs to be involved.					
Needs to know	The monitoring and inspection plans documented within the Error! Reference source not found. for the Wastewater Network including knowledge of: <ul style="list-style-type: none"> The parameters to monitor / inspect The purpose of each parameter The method of monitoring including instrument used, location, timing, frequency, by whom, and what needs to be recorded What actions to take in response to monitoring / inspection results Procedures for reporting anomalies The equipment that provides the process 	✓	✓	✓		
	The instruments used to monitor variables in the wastewater treatment process and the basic scientific principles of these key analytical instruments. This may include the following instrument types: <ul style="list-style-type: none"> Flow meters Dissolved oxygen probes Suspended solids probes Level meters Temperature meters Analytical instrument controllers such as pH, dissolved oxygen (DO), etc Proportional Integral and Derivative (PID) Controllers 	✓	✓	✓		
	The care and maintenance of monitoring equipment including instrument condition assessments and Error! Reference source not found.	✓	✓	✓		
	The need for accurate and precise recording and reporting of process performance, in line with standard operating procedures for the network	✓	✓	✓		
		Kaiwhakamahi Ratonga Wai-para	Kaiwhakamahi Matua Ratonga Wai-para	Kaiārahi Ratonga Wai – para	Kaiwhakahaere Ratonga Wai-para	Unit Standard

Apply a knowledge of Science to Wastewater Network Operations (Pg17)		Junior wastewater Network operator	Senior wastewater Network operator	Wastewater Network Team leader	Wastewater Network manager	17874, 19200,30008
Needs to be able to	Perform mathematical calculations used in the wastewater industry, for example to calculate: <ul style="list-style-type: none"> volumes, levels, pressure flow rates; and chemical concentrations 	Assist ✓	✓	✓		
	Use their understanding of physics to operate and control the hydraulics at the Wastewater Network and any physical methods of treatment	✓	✓	✓		
	Use their understanding of chemistry to operate and control chemical methods of dosing within the wastewater network, where this is applicable e.g. for those networks that use nitrate dosing to reduce hydrogen sulphide formation.	✓	✓	✓		
	Use their understanding of chemistry to assess gas readings and the associated risks from exposure to gasses commonly found in wastewater networks like hydrogen sulphide and methane.					
	Use their understanding of microbiology to operate biological treatment processes	✓	✓	✓		
	Select and use appropriate equipment to measure performance of different parameters	✓	✓	✓		
	Take wastewater samples to monitor typical wastewater characteristics including for the presence of indicator micro-organisms	✓	✓	✓		
Needs to know	The basic principles of physics which impact on wastewater network including understanding hydraulics, pressure and head and headloss and how pumping systems operate	✓	✓	✓		
	The basic principles of chemistry that impact on wastewater treatment including pH, acids and bases, methane, and hydrogen sulphide generation	✓	✓	✓		
	The basic principles of microbiology that relate to the wastewater network and the risks to human health and the environment from exposure to wastewater	✓	✓	✓		
Technical Standards related to Wastewater Networks (Pg18)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Follow the appropriate technical standards that relate to the operation and maintenance of the Wastewater Treatment Plant. This might include a mix of: <ul style="list-style-type: none"> Internal standards developed by your employer Technical documents, guidelines and publications developed by industry groups like Water New Zealand New Zealand Standards and Guidelines published by NZ Standards, or by government organisations like Worksafe. 	✓	✓	✓		
	International standards, guidelines and resources e.g. those published by the: <ul style="list-style-type: none"> International Organisation for Standardization (ISO), International Water Association (IWA) American Water Works Association (AWA) World Health Organisation (WHO) 	✓	✓	✓		
Needs to know	Which technical standards relate to the work that they are responsible for. These should be identified on applicable operational and maintenance procedure documentation within the Error! Reference source not found.	✓	✓	✓		
	Where to find the technical standards, e.g. through a subscription to NZ Standards	✓	✓	✓		


Safe Isolation of Assets (Pg19)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard BYP01, BYP02
Needs to be able to	Identify the asset that is to be worked on, including the point of isolation. There are occasions where this is not clear, e.g. at a pump station a switchboard may not isolate all equipment in the vicinity, and some plant, e.g. actuators, may require isolating elsewhere	Assisting ✓	✓			
	Identify the hazards that might need to be controlled in order to isolate the plant or equipment. This might include hazards from the likes of: <ul style="list-style-type: none"> ▪ Confined Spaces ▪ Hazardous atmospheres ▪ Falling from heights ▪ Mechanical equipment with moving parts ▪ Electricity ▪ Pressure ▪ Chemical hazards ▪ Biological hazards 	✓	✓			
	Identify any other areas of the network that might be affected. The Wastewater Network Operator must be able to clearly understand and communicate the effects of the isolation to others	✓	✓			
	Be able to select and use the correct equipment to safely isolate the plant to be worked on e.g. valves, isolating locks and tags, locking pins etc	✓	✓			
	Safely remove wastewater from the system by draining, venting, purging or flushing the isolation	✓	✓			
	Follow approved procedures to confirm that the isolation has been successful to ensure that the isolated equipment is safe to work on	✓	✓			
	Undertake the safe removal of isolation equipment to return the pipe or asset into service	✓	✓			
Needs to know	The permit-to-work system in use	✓	✓	✓		
	The procedures for installing isolations including: <ul style="list-style-type: none"> ▪ Installing pipe plugs including blocker plugs, and bypass/flow-through plugs (bungs). ▪ Draining, venting, purging and flushing wastewater from the asset to be isolated ▪ Electrical isolation and tagging/locking out ▪ Proving electrical equipment is dead to ensure that you have isolated the correct piece of equipment. ▪ Immobilisation techniques such as valves, chains, locking pin etc. ▪ Bleeding off pressure, isolating and bypassing process equipment. ▪ Cooling requirements, e.g., the time electric motors take to cool. ▪ Neutralisation of chemicals (e.g., chlorine and caustic soda). 	✓	✓	✓		
	How to adequately identify, test and confirm that the isolation has made the plant or equipment safe	✓	✓	✓		
	The procedures for draining, venting, purging and flushing	✓	✓	✓		
	The procedures for removing isolations and returning plant and equipment	✓	✓	✓		
	The risks associated with isolating a piece of plant or equipment and how to minimise the impacts associated with these and as documented within the Error! Reference source not found.	✓	✓	✓		
	Communication, reporting and record keeping requirements associated with isolating a piece of plant and equipment. Including ensuring the work meets the requirements of the Health and Safety at Work Act	✓	✓	✓		
That the National Guidelines for Occupational Health and Safety in the NZ Water Industry provide examples of hazards that Wastewater Operators need to be aware of when they isolate plant and equipment	✓	✓	✓			
Hygiene Requirements (Pg21)	Kaiwhakamahi Ratonga Wai-para	Kaiwhakamahi Matua Ratonga Wai-para	Kaiārahi Ratonga Wai – para	Kaiwhakahaere Ratonga Wai-para	Unit Standard PCMOR	

		Junior wastewater Network operator	Senior wastewater Network operator	Wastewater Network Team leader	Wastewater Network manager	
Needs to be able to	Follow hygienic practices to protect themselves from biological hazards. This includes: <ul style="list-style-type: none"> - Avoiding direct contact with wastewater. - Avoiding aerosolizing wastewater or minimizing exposure time in areas where aerosolizing is occurring. Make sure ventilation systems are functioning properly when working around areas where wastewater may be aerosolized. - Avoid touching the face, mouth, hands, eyes or nose with dirty hands or other items and avoid nail biting. - Thoroughly wash the hands and face with soap and water before eating, drinking or smoking. - Eat/smoke in designated areas away from potential wastewater contamination. These areas must be kept free from contamination by leaving any protective clothing and boots in a separate area. - Use appropriate protective clothing at work (coveralls) and personal protective equipment (boots, gloves, plastic face shields) and, where required, wear respiratory protective equipment. - Remove personal protective clothing and footwear at the end of the shift and leave it at work. - Shower and change out of work clothes before leaving work. - Thoroughly cleanse all exposed injuries with soap and water and keep them covered with a bandage (preferably waterproof) while at work. Seek medical attention immediately after suffering cuts or penetrating injuries. - Report illness to your employer and doctor. - Receive appropriate vaccinations. 	✓	✓	✓		
	The safe work procedures for hygiene at their worksite	✓	✓	✓		
	That careful attention to personal hygiene and proper use of personal protective equipment (PPE) can greatly reduce the associated risks of exposure to wastewater	✓	✓	✓		
	That the Water NZ Good Practice Guide: Occupational Health & Safety in the NZ Water Industry can provide guidance on occupational health procedures for the hazards that wastewater operators are exposed to during the course of their employment	✓	✓	✓		
	That no tools or equipment used in a wastewater environment should be used at a drinking water treatment plant or on the drinking water network. For workplaces where staff and equipment have the potential to move from wastewater sites to potable water sites Wastewater Operators should also be aware of the Water NZ Good Practice Guide: Hygiene Practices to prevent water supply contamination	✓	✓	✓		
	Locating Underground Services (Pg23)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard PCM04, PCM06
	Use service plans, GPS, and Geographic Information Systems (GIS) to determine the location of both underground wastewater network assets and assets belonging to other utility services	Assisting ✓	✓	✓		
	Request a locate service using a range of internet based services such as Before U Dig	✓	✓			
	Follow Error! Reference source not found. procedures for assets located in the road reserve	✓	✓	✓		
	Visually inspect the work area surface to identify evidence of any wastewater network assets along with evidence of other utility assets	✓	✓	✓		
Use electronic locating equipment to determine the location of buried utility assets including: <ul style="list-style-type: none"> ▪ Passive line tracing 	✓	✓	✓			

	<ul style="list-style-type: none"> Active line tracing Sonde Locating 					
	Mark and record the position of services and sub-structures on the work site	✓	✓	✓		
	Communicate to others the details of the position and type of services and sub-structures	✓	✓	✓		
	Report deviations in the expected position of assets to the appropriate people	✓	✓	✓		
	Excavate trial pits to expose the exact location of utility assets	✓	✓	✓		
	Store tools and equipment safely and securely and leave the work area work in a safe condition	✓	✓	✓		
Needs to know	The Error! Reference source not found. hazards associated with working on or near underground services relating to including hazards related to the following utility types: <ul style="list-style-type: none"> Water Stormwater Gas Electricity Telecommunications / Fibre optic Oil / Petroleum Traffic signal cables and detector loops Working in the roading corridor 	✓	✓	✓		
	The requirements of any Traffic Management Plan (TMP) which relate to the site in question.	✓	✓	✓		
	How to interpret GIS, utility drawings and line search documents to identify underground utilities assets.	✓	✓	✓		
	Methods of visually locating and identifying underground services including typical markers and signs.	✓	✓	✓		
	The typical locations and depths of underground utilities	✓	✓	✓		
	Methods of accurately marking out services.	✓	✓	✓		
	Methods for undertaking test pit excavations.	✓	✓	✓		
	That plans may not be accurate and the potential outcomes of incorrect marking out of services and excavations including injury, costs, loss of time, and material wastage	✓	✓	✓		
	How to use, and interpret the results, of electronic locating equipment.	✓	✓	✓		
	The possible effects of external influences on electronic locating equipment readings and reduce the effects e.g. metal fencing, reinforced concrete.	✓	✓	✓		
The procedures for reporting and recording work problems including who to inform when assets on site deviate from their position marked out on plans.	✓	✓	✓			
Safe Working in Roads (Pg25)		Kaiwhakamahi Ratonga Wai-para	Kaiwhakamahi Matua Ratonga Wai-para	Kaiārahi Ratonga Wai – para	Kaiwhakahaere Ratonga Wai-para	Unit Standard
		Junior wastewater Network operator	Senior wastewater Network operator	Wastewater Network Team leader	Wastewater Network manager	
Needs to be able to	<ul style="list-style-type: none"> Apply for a Corridor Access Request (CAR) to obtain a Work Access Permit (WAP) from the Corridor Manager. 	✓	✓			
	<ul style="list-style-type: none"> Implement the Traffic Management Plan (TMP) for the work. 	✓	✓			
	<ul style="list-style-type: none"> Ensure that a copy of the Corridor Access Request (CAR), including global CARs, and Work Access Permits (WAP) are held at all work sites along with a copy of the Traffic Management Plan (TMP) 		✓	✓		

Needs to know	<ul style="list-style-type: none"> That the National Code of Practice for Utility Operators' Access to Transport Corridors produced by the New Zealand Utilities Advisory Group [3] is a requirement under the Utilities Access Act 2010 and provides a framework for the access rights to the transport corridor for utility operators like water suppliers. That a Corridor Access Request (CAR) must be lodged with the Corridor Manager before any work can be carried out in Transport Corridors. Utilities such as water supplies can operate under a global CAR however each individual site will require an appropriate Traffic Management Plan (TMP). That the New Zealand Transport Agency Code of Practice for Temporary Traffic Management (NZTA COP/TTM) requires that appropriately trained and qualified personnel must carry out and supervise Temporary Traffic Management duties on all roadwork sites. That the Site Traffic Management Supervisor (STMS) has specific duties and has ultimate responsibility for overall traffic management at the site 	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓		
Excavation (Pg26)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	<ul style="list-style-type: none"> Safely use tools and large earthmoving equipment to excavate the ground to provide access to Error! Reference source not found., or to install new assets. Load excavated materials onto the trucks, using attachments if necessary. Backfill, compact, and reinstate the surface of excavated area with suitable materials. Avoid Error! Reference source not found. when excavating, making sure not to undermine nearby structures by digging away from them and by hand digging when close to services. Prevent excavation collapse by shoring, benching, or battering back. Provide safe access to get in and out of the trench. Prevent people and materials falling into the excavated area. This will require Wastewater Network Operators to install barriers strong enough not to collapse if someone falls against them. Check the excavation each day before starting work and after any event that may affect its stability. Where applicable Wastewater Network Operators need to hold a special license e.g. Class 2 licence with a roller, tracks, and wheels (R, T and W) endorsement. Following standard operating procedures to ensure that the site is safe before leaving the site 	Assisting ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓		
	<ul style="list-style-type: none"> That the Good Practice Guide: Excavation Safety [2] produced by Worksafe New Zealand provides practical guidance for how to manage the health and safety risks associated with excavation work. That the Guide for Safety with Underground Services [3] sets out the work methods and preferred work practices for the location and excavation of Error! Reference source not found. That activities like concrete cutting, which can be used to cut through pavements prior to excavation, produces a wastewater which cannot be discharged to the environment, or the stormwater network. That they should not start excavations until they have located Error! Reference source not found. Error! Reference source not found. procedures. 	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓		

Needs to be able to	<ul style="list-style-type: none"> - Identify any environmental and Health & Safety hazards and how they are to be mitigated. Obtain a permit to work, and where this is required for the procedure. - Follow Error! Reference source not found. procedures for assets located in the road reserve. - Identify any network impacts on the work and inform the appropriate people e.g. if there is to be an interruption in customer service. - Undertake Error! Reference source not found. to allow construction, or repair, to proceed, providing suitable excavation support. - Determine what methods and materials are suitable to repair broken wastewater network assets for different types of asset failures e.g. pipe replacement versus a repair clamp. - Install a temporary pumped overland bypass between manholes to provide continuity of service where this is required. - Ensure materials, pipes and fittings are suitable for use in the wastewater network. - Install, or repair, pipe, and fittings including manholes. - Join pipe together. Where pipe is to be welded, operators will need to hold a welding certificate - Check that the completed installation maintenance and repairs meets the specification detailed in the maintenance procedure before returning the asset to service. - Document what work has been undertaken, including identifying any costs (including time) and inventory items used 					
Needs to know	<ul style="list-style-type: none"> ▪ How to identify any environmental and Health & Safety hazards, and appropriate mitigation methods. ▪ Error! Reference source not found. procedures. ▪ The isolation and overpumping procedures for wastewater network assets. ▪ The procedures to follow when locating Error! Reference source not found. ▪ How to safely excavate, support/shore, backfill and reinstate holes and trenches needed for construction. ▪ How to safely operate tools, machinery, and equipment. ▪ How to install pipe including understanding: <ul style="list-style-type: none"> - position tolerances - pipe grade requirements - appropriate bedding materials, pipe surround and compaction requirements - the need for vertical and horizontal separation from other services - appropriate jointing techniques - how to install a trace wire ▪ The different rehabilitation and repair techniques associated with different material types including, but not limited to: <ul style="list-style-type: none"> - the use of structural liners - the use of non-structural liners - hydro-excavation - drilling - pipe-bursting 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ 		

	<ul style="list-style-type: none"> ▪ The procedures associated with the handling, storage, installation, repair, testing and commissioning of different pipe material types including: <ul style="list-style-type: none"> - reinforced concrete - asbestos cement - polyethylene pipe - ductile iron - PVC ▪ How to join pipe materials by: <ul style="list-style-type: none"> - electrofusion processes - butt fusion processes - mechanical joints ▪ Weld testing requirements for pipes that are to be fused together and what to do when a weld fails a test. ▪ How to undertake pressure and pipe integrity tests for gravity flow and what to do when a pipe fails a test ▪ The requirements for documenting what work has been completed. ▪ That there are technical standards that cover the installation and repair of wastewater network assets 	✓	✓	✓		
	Maintenance and Repair of Wastewater Network Assets (Pg31)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	<ul style="list-style-type: none"> ▪ Respond to Wastewater network emergencies e.g. blockages. ▪ Perform planned and unplanned maintenance on the Wastewater network assets in accordance with job instructions detailed in operations and maintenance procedures. This will require Wastewater Network Operators to: <ul style="list-style-type: none"> - Identify any environmental and safety hazards and how they are to be mitigated. Obtain a permit to work, where this is required for the procedure. - Complete the instructions/organisational procedures for the maintenance task e.g. as recorded in maintenance procedures. - Identify any network impacts on the work, e.g. if it will cause flows to back-up in the network, and inform the appropriate people - Safe isolation of pipes, plant, and equipment. - Make the site safe from the public. - Check that the completed maintenance and repairs meets the specification detailed in the maintenance procedure before returning pipes, or plant and equipment, to service. <p>Document what work has been undertaken, including identifying any costs (including time) and spare parts used, so that better Asset Management decisions can be made</p>	Assist ✓	✓	✓	✓	
	(In certain teams the Junior is not involved much here)					
	<ul style="list-style-type: none"> ▪ The required maintenance procedures assets within the wastewater network. 	✓	✓	✓	✓	

Needs to know	<ul style="list-style-type: none"> ▪ What maintenance frequency is required for each task. This might be based on the suggestions of equipment manufacturers but may also be a factor of the reliability and criticality of equipment, or the history of past problems like blockages. ▪ How to identify any environmental or Error! Reference source not found. hazards, and appropriate mitigation methods. ▪ The requirements for Error! Reference source not found. before performing maintenance. ▪ The requirements for documenting what work has been completed. ▪ That the maintenance and asset replacement strategies for Wastewater Network assets are recorded in the Asset Management Plan (AMP); Operators should be aware of what should be maintained and what should be replaced. ▪ That differentiating between planned and unplanned maintenance is important because an increasing incidence of unplanned maintenance might indicate that the assets within the network are deteriorating and becoming unreliable. ▪ That routine (planned) maintenance comprises the periodic inspections and tests performed on equipment at regular intervals. Included are daily, weekly, monthly, quarterly etc., inspections during which minor routine maintenance tasks are carried out, e.g. regular cleaning of pipes where there are known problems such as fat accumulation or where there are sags in gravity pipework. ▪ That scheduled (planned) maintenance is also carried out on a time basis but is based on wear and the expected life cycle of the equipment's individual components. It involves the systematic and periodic removal from service of a piece of equipment for the replacement of parts, reconditioning, or overhaul. ▪ That reactive (unplanned) maintenance amounts to repairing assets, such as collapsed pipes, or abandoning them and replacing with new assets 	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	
	Maintenance and Repair of Wastewater Pumping Systems (Pg33)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	<ul style="list-style-type: none"> ▪ Respond to water distribution pumping system repair emergencies. ▪ Perform planned and unplanned maintenance on assets in accordance with job instructions detailed in operations and maintenance procedures. Maintenance may be required on assets such as: <ul style="list-style-type: none"> - Pumps - Wet and Dry Wells - Macerators - Surge Vessels - Screening equipment - Inverted Siphons - Lifting Equipment ▪ Identify any environmental or Error! Reference source not found. hazards and how they are to be mitigated. Obtain a permit to work, where this is required for the procedure. ▪ Identify any impacts of the work, considering how to maintain pass forward flow and duty/stand-by considerations. Wastewater Network operators need to inform the appropriate people of network impacts, particularly if there is to be a service interruption. 	Assisting ✓ ✓	✓ to advise TL ✓ ✓ ✓	✓ reviewing recommendations before approving (final call) ✓ ✓		

	<ul style="list-style-type: none"> ▪ Select and use appropriate tools and equipment to complete the work, this might include things like: <ul style="list-style-type: none"> - Lifting equipment, - Davits, - Harnesses, - Escape breathing apparatus - Intrinsically safe tools. ▪ Undertake safe isolation of assets, plant, and equipment. ▪ Make sure materials, pipes and fittings are suitable for use a wastewater environment and are not used in the drinking water network. ▪ Check that the completed maintenance and repairs meets the specification detailed in the maintenance procedure before returning the equipment to service. ▪ Document what work has been undertaken, including identifying any costs (including time) and spare parts used 		✓	✓		
Needs to know	<ul style="list-style-type: none"> ▪ The required planned, scheduled, and reactive maintenance tasks and procedures for the wastewater network pumping assets. ▪ The flow rates and available storage in the network. Including knowledge of available storage and how long assets can be isolated for before there is a risk of overflow. ▪ How the equipment typically operates. Wastewater Network Operators need to observe the equipment while it is in use so that they can recognize unusual sounds, vibrations or leaks that indicate that reactive maintenance is necessary. ▪ What maintenance frequency is required for each task. This will be based on the suggestions of the asset manufacturer but may also be a factor of the reliability and criticality of the asset. ▪ How to identify any environmental or Error! Reference source not found. hazards, and appropriate mitigation methods. ▪ Safe shut down and isolation procedures before performing maintenance. ▪ The requirements for documenting what work has been completed. ▪ The maintenance and asset replacement strategies for the wastewater network assets that are recorded in the Asset Management Plan, so that Operators are aware of what should be maintained and what should be replaced. ▪ That differentiating between planned and unplanned maintenance is important because an increasing incidence of unplanned maintenance might indicate that the system is deteriorating and becoming unreliable. ▪ That routine (planned) maintenance comprises the periodic inspections and tests performed on equipment at regular intervals. Included are daily, weekly, monthly, quarterly etc., inspections during which minor routine maintenance tasks are carried out, e.g. cleaning, lubrication, vibration tests, adjustments replacements and calibrations. ▪ That scheduled (planned) maintenance is also carried out on a time basis but is based on wear and the expected life cycle of the equipment's individual components. It involves the systematic and periodic removal from service of a piece of equipment for the replacement of parts, reconditioning or overhaul. ▪ That reactive (unplanned) maintenance amounts to repairing equipment that has broken down or abandoning it and replacing it with new equipment. 	✓	✓	✓	✓	

	<ul style="list-style-type: none"> That communication around wastewater network asset maintenance is particularly important for where the maintenance activity might lead to: <ul style="list-style-type: none"> interruption to service, or the possibility of overflow from the site 	✓ ✓	✓ ✓	✓ ✓	✓ ✓	
	Validation and Calibration of Monitoring Equipment (Pg35)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	<ul style="list-style-type: none"> Carry out key calibration or instrument checks of online equipment and identify issues with their performance. Understand the operation of control systems and how to operate each instrument in various control states. Carry out the practice of maintaining online instruments in line with supplier recommendations, standard operating procedures and record keeping as detailed in operations and maintenance manuals for the network. Review and analyse the performance of the wastewater instruments by reviewing site and telemetry data to ensure the results are correct and accurate 	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓			
Needs to know	<ul style="list-style-type: none"> The validation and calibration procedures documented within operations and maintenance manuals. What any Critical Control Points within the wastewater network are. The correct type and use of various analytical equipment for measurement, including understanding the levels at which the instruments operate along with the accuracy and sensitivity of the equipment. The requirement and need for online monitoring of wastewater network, including the key performance criteria. The use and care of online equipment, including record keeping. The equipment required to maintain the instrument and its use. The calibration of the instruments including understanding the expected results Communications, reporting, and record keeping requirements, associated with maintenance of monitoring equipment. Troubleshooting requirements related to instrument performance, such as what to do when the instrument is flat lining. The need for accurate and precise analysis and risks associated with incomplete or inaccurate analysis or results. Contingency plans associated with the wastewater network when monitoring equipment is unavailable or incorrect 	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓		
	Inventory Management (Pg37)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
	<ul style="list-style-type: none"> Proactively identify what spare parts are needed to maintain and repair equipment. 	✓ (assisting)	✓	✓		

Needs to be able to	<ul style="list-style-type: none"> How to store parts correctly. Monitor the level of parts that are held in stock. Identify which parts are to be used first (i.e. the oldest) Proactively order adequate quantities of parts and consumables from the supplier, in accordance with the procurement policies of the wastewater service provider 					
Needs to know	<ul style="list-style-type: none"> What spares are held in storage. That spares should be used on a “first in, first out” basis. What supplier provides spare parts and how to follow the organisations procurement procedures to obtain them. That standardisation of equipment and parts reduces the level of risk of equipment failure, because fewer types of each part need to be stocked which makes stock management easier and because it reduces the number of skills which need to be learnt to correctly install each part by the operators. The correct specification of the chemicals they need to order and the quality control, testing, certification requirements that they need to meet 	✓	✓	✓		
Cranes and Lifting Equipment (Pg38)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 29938
Needs to be able to	<ul style="list-style-type: none"> Understand and comply with the written instructions relating to the safe operation of the crane. Calculate the load to be lifted and confirm that this is within the safe loading limit of the crane. Use, and understand, hand signals for the operation of the crane. Exercise the required level of care when operating the crane, including wearing the correct Personal Protective Equipment (PPE). Notify the controller of any unsafe equipment or process as soon as practicable. Readily locate all documentation and information related to the crane. Engage an Inspector to certify that the crane is safe 	✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓		
Needs to know	<ul style="list-style-type: none"> That they cannot operate the crane until they have been trained in its safe use. That the crane cannot be used unless it has a certification of inspection. The design loading limits of the crane. That the Approved Code of Practice for Cranes [4] covers the operation, maintenance and inspection requirements of any cranes located at the Wastewater Network Plant. That a general guide to the health and safety in employment (pressure equipment, cranes and passenger ropeways) Regulations 1999 provides guidance on regulations around the duties of equipment controllers, designers, manufacturers and suppliers, as well as workers 	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓		
Awareness of Specified Building Systems (Pg39)		Kaiwhakamahi Ratonga Wai-para	Kaiwhakamahi Matua Ratonga Wai-para	Kaiārahi Ratonga Wai – para	Kaiwhakahaere Ratonga Wai-para	Unit Standard

		Junior wastewater Network operator	Senior wastewater Network operator	Wastewater Network Team leader	Wastewater Network manager	29955
Needs to be able to	<ul style="list-style-type: none"> ▪ Ensure that the current version of the BWoF is publicly displayed. ▪ Inform the appropriate people have been informed if the displayed BWoF is out-of-date. ▪ Induct the Independent Qualified Person (IQP) engaged to undertake inspections and maintenance of the specified systems onto the site in question 	✓	✓			
Needs to know	<ul style="list-style-type: none"> ▪ That buildings with specified systems need to have a compliance schedule where one is required under the Building Act [7]. ▪ That inspections, maintenance and reporting procedures for the specified systems stated in the compliance schedule for the building in question will need to be carried out by an Independent Qualified Person (IQP) to confirm that those systems are performing, and will continue to perform, to the performance standards. ▪ That reports detailing inspections, maintenance, and repairs from IQP need to be kept with the compliance schedule for at least two years after they have been issued. ▪ That the Ministry of Building, Innovation and Employment has published a Compliance Schedule Handbook to provide guidance on the requirements of Compliance Schedules and Building Warrants of Fitness 	✓	✓	✓		
Root Cause Analysis (Pg40)		Kaiwhakamahi Ratonga Wai-para	Kaiwhakamahi Matua Ratonga Wai-para	Kaiārahi Ratonga Wai – para	Kaiwhakahaere Ratonga Wai-para	Unit Standard
		Junior wastewater Network operator	Senior wastewater Network operator	Wastewater Network Team leader	Wastewater Network manager	29957
Needs to be able to	<p>Be involved, with others where appropriate, in the Root Cause Analysis processes. This involves helping to:</p> <ul style="list-style-type: none"> ▪ Define the problem: <ul style="list-style-type: none"> - what is happening? - what are the specific symptoms? ▪ Collect data: <ul style="list-style-type: none"> - how long has it been happening? - what is the impact of the problem? ▪ Identify possible causal factors: <ul style="list-style-type: none"> - what sequence of events led to the problem? - what conditions allows it to occur? ▪ Identify the root cause: <ul style="list-style-type: none"> - why does the causal factor exist? - what is the real reason the problem occurred? ▪ Recommend and implement solutions <ul style="list-style-type: none"> - what can you do to prevent this happening again? - how do we implement the solution? - who will be responsible for this? - what are the risks of implementing the solution? 	✓	✓			
	The basic cause of the problem (there can be more than one). Usually either a:	✓	✓	✓		

Needs to know	<ul style="list-style-type: none"> Physical cause – a physical item failed in some way (for example a pump stopped working), or a Human cause – somebody did something wrong or did not do something that was needed. Human causes typically lead to physical causes (for example nobody cleared the wetwell of rags, which led to the pump failing), or a Organisational cause - a system, process, or policy that people use to make decisions or do their work is faulty (for example, no one person was responsible for clearing the rags, and everyone assumed someone else had done this) 					
Wastewater Flows and Hydraulics (Pg41)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 29952
Needs to be able to	Understand the nature of wastewater flows, including average dry weather flows, peak wet weather flows, diurnal variations, and Error! Reference source not found. discharges.	✓	✓			
	Carry out routine maintenance on flow control and monitoring equipment	✓	✓			
	Monitor, interrogate, analyse, and evaluate Error! Reference source not found. / HMI to confirm pumping systems are operating as per design.	✓	✓			
	Install Data Logging equipment within the wastewater network.	✓	✓			
Needs to know	The various influences on wastewater flows in the wastewater network.	✓	✓	✓		
	<ul style="list-style-type: none"> How the design specification for the Network process relates to wastewater flows. 	✓	✓	✓		
	<ul style="list-style-type: none"> How to use flow data to maintain and optimise Network processes. 	✓	✓	✓		
	<ul style="list-style-type: none"> The impacts unpredictable flows can have on wastewater Network processes. 	✓	✓	✓		
	<ul style="list-style-type: none"> How to interrogate Error! Reference source not found. to evaluate trend data differentiating normal operational cycles from developing fault conditions or emerging risks 	✓	✓	✓		
	The associated Error! Reference source not found. hazards and risks with changing flow conditions.	✓	✓	✓		
	The importance of recording flow measurement from the correct locations, using approved techniques.	✓	✓	✓		
	The consequences of inaccurate flow measurement, recording and reporting.	✓	✓	✓		
Data collection, recording, reporting and maintenance requirements.	✓	✓	✓			
Use Automated Systems to monitor Plant and Collect Data (Pg42)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 30009
	Use automation systems like SCADA, including being able to: <ul style="list-style-type: none"> Log into and navigating around the SCADA system Adjusting control set points and alarm levels for the different types of equipment used to control process operations. Interpreting alarms 	✓	✓	✓		

Needs to be able to	<ul style="list-style-type: none"> - Accepting, or overriding, alarms - Viewing and understanding trend data and reporting any unusual trends - Setting up ad-hoc records - Interpreting mimic pages - Undertaking basic maintenance of the SCADA system i.e. shutting down and restarting nodes 					
	Interrogate the automation/SCADA system to: <ul style="list-style-type: none"> - Identify and control items of mechanical, electrical and instrumentation equipment. 	✓	✓	✓		
	Evaluate trend data differentiating normal operational cycles from developing fault conditions or emerging risks	✓	✓	✓		
Needs to know	The control philosophy for the wastewater network assets.	✓	✓	✓		
	What automation/SCADA systems are, and what functions they are used for within wastewater networks.	✓	✓	✓		
	How data acquisition is done from Remote Terminal Units (RTUs) or Programmable Logic Controllers (PLCs) which connect to sensors in the process and convert sensor signals to digital data. How this data is then compiled and formatted so that Wastewater Network Operators can make supervisory decisions to adjust or override normal automatic controls.	✓	✓	✓		
	What the limitations of the automation/SCADA system are, including an understanding of how the frequency of signals impacts on the data.	✓	✓	✓		
	What to do if the SCADA system fails.	✓	✓	✓		
	The different types of equipment used to control processes and any applicable Error! Reference source not found. requirements for the network.	✓	✓	✓		
	How the radio/telemetry system at the site works.	✓	✓	✓		
Overflow Discharges (Pg54)		Kaiwhakamahi Ratonga Wai-para	Kaiwhakamahi Matua Ratonga Wai-para	Kaiārahi Ratonga Wai – para	Kaiwhakahaere Ratonga Wai-para	Unit Standard
		Junior wastewater Network operator	Senior wastewater Network operator	Wastewater Network Team leader	Wastewater Network manager	29954
Needs to be able to	<ul style="list-style-type: none"> ▪ Monitor the wastewater network to identify when overflows are imminent or have occurred. ▪ Identify the locations of likely overflows e.g. from past complaints. ▪ Monitor the wider environment for cumulative environmental impacts. ▪ Maintain overflow infrastructure, such as screens or copasacs on consented overflows. ▪ Provide data and information about overflow events to others to help assist in Asset Management decision making ▪ Error! Reference source not found. and disinfect impacted areas 	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓		
	<ul style="list-style-type: none"> ▪ The conditions and monitoring requirements of any related Resource Consent. These are likely to be very site specific since overflows occur intermittently and often with little warning. ▪ That while the monitoring of sewer overflows is not specifically addressed in the New Zealand Municipal Wastewater Monitoring Guidelines some of the receiving environment monitoring methods in the guidelines may be useful if the effects of the overflow are under consideration. ▪ The operational and maintenance procedures for unscreened overflow sites including: 	✓ ✓	✓ ✓	✓ ✓		

Needs to know	<ul style="list-style-type: none"> - surge relief - weirs - vortex overflows ▪ The operational and maintenance procedures related to screened overflow sites including: <ul style="list-style-type: none"> - Both static and powered screens - Copasac (or similar) ▪ The operational and maintenance procedures related to any bypass or flow control related to overflow sites. This might include assets such as: <ul style="list-style-type: none"> - Penstocks - Throttle pipes - Weirs - Hydrobrakes and hydroslides. ▪ The Health & Safety risks and hazards associated with managing and maintaining the overflow infrastructure and the manner in which these may be mitigated. ▪ What procedures to follow, as documented in the incident and emergency plan for the network in the event of an overflow from the network. Including how to clean-up and disinfect sites affected by overflows 	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓		
Operate Pressure and Vacuum Sewer Systems (Pg56)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 29948
Needs to be able to	<ul style="list-style-type: none"> ▪ Safely carry out operational procedures and first line maintenance procedures that are documented in operations and maintenance manuals relating to the pressure or vacuum sewer system. This might include tasks such as: <ul style="list-style-type: none"> - Responding to tank alarms and instigate corrective action to return the assets to compliant condition - Responding to power failure event - Routine inspection and maintenance requirements ▪ Make new connections to an in-situ / operating pressure/vacuum sewer line either by cutting and inserting an electrofusion coupler, a tee, or a branching saddle. ▪ Identify all mechanical, electrical and instrumentation assets associated with the pressure system on Error! Reference source not found. and within the sewer network. ▪ Validate and calibrate the monitoring equipment used the pressure sewer system processes. ▪ Identify control requirements for pressure or vacuum sewer system process along other set-points applicable to their operation. ▪ Evaluate trend data from Error! Reference source not found. to identify: <ul style="list-style-type: none"> - Normal trends or cycles for the works, and - Atypical trends or changes and the underlying or root cause for the change ▪ Undertake the Error! Reference source not found. within the pressure or vacuum sewer system. ▪ Safely dispose of screenings and grit removed from the wastewater holding tanks, paying attention to Health & Safety requirements ▪ Identify the Root Cause of pressure or vacuum sewer problems. 	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓		

	<ul style="list-style-type: none"> Record and report equipment condition and performance data to the appropriate people to assist in Asset Management decision making 					
Needs to know	<ul style="list-style-type: none"> The Water New Zealand Pressure Sewer National Guidelines [8] offer operation and maintenance guidance for pressure sewer networks That there is a potential risk to the wastewater network and to their own Health and Safety, wherever pressure or vacuum mains transition to an unpressurised state because of the likelihood of hydrogen sulphide (H2S) release. The Water Services Association of Australia WSA-06 – Vacuum Sewerage Code of Australia provides vacuum system guidelines. Key process parameters and variables associated with pressure and vacuum systems, including an understanding of the design considerations and consequences of sub-optimal performance. The nature and sources of odour generation within the pressure or vacuum sewer system and any resource consent requirements that control air discharges from the network. The range of mechanical, electrical and instrumentation plant used to monitor and control the pressure system. Reactive and preventive maintenance tasks and frequencies How to interrogate the Error! Reference source not found. to: <ul style="list-style-type: none"> a) Identify and control items of mechanical, electrical and instrumentation equipment. b) Evaluate trend data differentiating normal operational cycles from developing fault conditions. The alarms, action levels, authorisation levels and consequences associated with the system. How to identify the Error! Reference source not found. problems related to the pressure system and the sequence of actions required to restore the process to compliant conditions, taking account of all process variables and process lag times. The parameters and tests required to monitor the odour control process, why the analysis is important and any limitation with the monitoring. The Error! Reference source not found. hazards associated with each stage of the pressure or vacuum system and how these should be mitigated 	✓	✓	✓		
Operate Grinding Pumps, Grease Traps, Screening and Grit Removal Processes (Pg45)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Follow the operational procedures that are identified in Operational and Maintenance Manuals.	✓	✓	✓		
	Identify all mechanical, electrical and instrumentation assets associated with grinding pumps, screens, or grit removal processes on Error! Reference source not found. and within the wastewater network.	✓	✓	✓		
	Validate and calibrate the monitoring equipment used in screening and grit removal processes.	Assist	✓	✓		
	Identify the control mechanisms for the screening and grit removal process along other set-points applicable to screening and grit removal operations.	✓	✓	✓		
	Evaluate trend data from Error! Reference source not found. to identify:	Assist	✓	✓		

	<ul style="list-style-type: none"> - Normal trends or cycles for the works, and - Atypical trends or changes and the underlying or root cause for the change 					
	Respond to alarms and instigate corrective action to return the assets to compliant condition.	✓	✓	✓		
	Safely carry out operational and first line maintenance and repairs of relating to the screening, grease traps and grit removal processes. Including the Error! Reference source not found. when required.	✓	✓	✓		
	Safely dispose of screenings, grease and grit removed from the wastewater, paying attention to Error! Reference source not found. requirements.	✓	✓	✓		
	Identify the Error! Reference source not found. of screening, grease trap and grit removal problems.	✓	✓	✓		
	Record and report screening and grit removal equipment condition and performance data to the appropriate people to assist in Asset Management decision making.	✓	✓	✓		
Needs to know	The objectives of the grinding, grease trap, screening, and grit removal processes, including an understanding of the design considerations and consequences of sub-optimal performance.	✓	✓	✓		
	Key process parameters and variables associated with screening, grease traps and grit removal. Including the impact of the screening process on downstream assets.	✓	✓	✓		
	How to interrogate the Error! Reference source not found. system to: <ul style="list-style-type: none"> a) Identify and control items of mechanical, electrical and instrumentation equipment. b) Evaluate trend data differentiating normal operational cycles from developing fault conditions. c) How to confirm the configuration, operation and performance of the actual disinfection plant corresponds to SCADA. 	✓	✓	✓		
	The range of mechanical, electrical and instrumentation plant used to control the screening and grit removal process and their validation and calibration requirements.	✓	✓	✓		
	The, action levels, authorization levels and consequences associated with the process or processes.	✓	✓	✓		
	How to identify the root cause of screening, grease trap and grit removal process problems and the sequence of actions required to restore the process to compliant conditions, taking account of all process variables and process lag times.	✓	✓	✓		
	The operational and maintenance tasks for both reactive and preventive maintenance and maintenance frequencies.	✓	✓	✓		
	The Error! Reference source not found. hazards associated with the grinding, screening and grit removal processes and how these should be mitigated.	✓	✓	✓		
	How to optimise the screening and grit removal processes to minimise downstream Network problems, based on process performance management, test results and analysis of trends.	✓	✓	✓		
How to safely isolate grinding, screening, and grit removal equipment and how to take it out of service.	✓	✓	✓			

	What procedures to follow in an incident.	✓	✓	✓		
	Respond to blockages (Pg49)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 29958
Needs to be able to	Respond to reports of blockages within the wastewater network, and safely access the wastewater network to use techniques such as sewer jetting to clear them.	✓	✓			
	Identify whether a blockage is located in the public network, or whether they are located in a private sewer connection.	✓	✓			
	Where blockages are located in private connections Wastewater Network Operators need to be able to communicate to the homeowner their responsibilities to clear the blockage and to also prevent recurrences.			✓		
	Where blockages in the network are located in the public network, Wastewater Network Operators use their knowledge of the network and local dischargers, to identify the most likely cause of a blockage or FOG issue in the network.		✓			
	Ensure that any identified cause of a blockage is recorded in the organisations records and communicated to other stakeholders e.g. the Trade Waste Officer, where appropriate.	✓	✓			
	Where blockages have resulted in overflows , these must be cleaned up.	✓				
Needs to know	The procedures for safely accessing the wastewater network, including how to safely work in the roads .	✓	✓	✓		
	How to determine whether a sewer is privately or publicly owned. The procedures for clearing blockages, e.g. sewer jetting .	✓	✓	✓		
	The procedures for cleaning up overflow discharges	✓	✓	✓		
	Wastewater Network Operators need to also know the network utility operators’ internal procedures for data collection, recording and reporting required for blocked sewers. This will ensure that costs can be recovered from those cause the blockages and for this information to be used in future asset management decision making.	✓	✓	✓		
	The details for Error! Reference source not found. discharge consents for business connected to the wastewater network.	✓	✓	✓		
	Sewer Jetting Operations (Pg50)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 31973
	Select, set-up, maintain and operate appropriate jetting equipment to undertake sewer cleaning and blockage removal, following the operational procedures that are identified for sewer jetting operations.	✓	✓			

Needs to be able to	Identify an appropriate source of water. Where this is a hydrant on the drinking water distribution network the appropriate connection/disinfection techniques must be followed to avoid contaminating the drinking water supply.	✓	✓			
	Provide, and maintain, safe access to the wastewater network to allow the jetting operations to be undertaken.	✓	✓	✓	✓	
	Follow Error! Reference source not found. procedures	✓	✓			
	Safely transfer solids removed from the wastewater network for disposal, paying attention to Error! Reference source not found. requirements.	✓	✓			
Needs to know	How to use wastewater network plans to determine the likely position of a blockage and access points for the sewer jetting operation.					
	The objectives of the sewer jetting work, whether it is to remove a blockage or sedimentation, including an understanding of the design considerations and consequences of pipe damage from jetting.	✓	✓	✓		
	The abilities, limitations, and recommended applications of various types of jetting nozzles.	✓	✓	✓		
	That the maximum working pressure to avoid damage will vary according to the material of the pipe, condition of the pipe and type of nozzle used.	✓	✓	✓		
	That choosing a suitable jetting nozzle for the work should consider the composition of the blockage and the pipe material and condition.	✓	✓	✓		
	That the water connection and disinfection procedures may require approval by the Drinking Water supplier.	✓	✓	✓		
	That different jetting techniques should be used dependent on whether the blockage is upstream or downstream from the sewer access point.	✓	✓	✓		
	The Health & Safety requirements related to sewer jetting operations.	✓	✓	✓		
Pipe Inspection Operations (Pg52)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 29956
	Determine the right approach to use for the inspection. This might involve a walk/crawl through visual inspection or a CCTV inspection using either a: <ul style="list-style-type: none"> - a pan-tilt (zoom) camera - a fixed axial camera - a digital scanning camera - a zoom (pole) camera - an action camera. 		✓	✓		
	Determine the appropriate transportation system for the camera including either a: <ul style="list-style-type: none"> - Push road - Tractor/crawler 		✓	✓		

Needs to be able to	<ul style="list-style-type: none"> - Floating platform - Pole support. 					
	Locate the asset and expose access points. Where the wastewater network is located in the road reserve, Error! Reference source not found. procedures must be followed.	✓	✓			
	Prepare pipes and manholes for inspections including cleaning pipelines of debris, gravel, fats, and roots to enable inspection completion.	✓	✓			
	Temporary divert flows, or overpump.		✓			
	Where walk/crawl through visual inspections are to be undertaken the sewer must be ventilated and made safe for confined space entry and exit.	✓	✓			
	Identify defects which are commonly found in wastewater networks, including: <ul style="list-style-type: none"> - Displaced joints - Intruding connections - Cracks and fractures - Pipe deformation - Root ingress - Encrustation 		✓	✓		
	Extract pipe wall samples.	✓				
	Undertake non-destructive in-situ testing of pipe walls		✓	✓		
	Safely insert and remove CCTV equipment into and from the wastewater network in line with company and manufacturers' procedures	✓				
	Operate CCTV equipment functions including lights, focus, sonde and where appropriate zoom, pan & tilt, elevation, and reverse	Assist	✓			
	Record and store CCTV survey and communicate results with others in line with company procedure		✓			
	Store tools and equipment safely and securely and leave the work area work in a safe condition in accordance with company procedures.	✓	✓			
Needs to know	The 4 th edition of the New Zealand Gravity Pipe Inspection Manual [7] provides guidelines on how to undertake inspections of sewers and manholes and laterals to assess their conditions along with acceptance procedures for new pipes.	✓	✓	✓		
	The specific Health & Safety requirements relating to CCTV operations including Error! Reference source not found. procedures, ventilation procedures and confined space procedures.	✓	✓	✓		
	How to use GIS and sewer records to determine safe entry and exit points.	✓	✓	✓		
	How to select the appropriate inspection method and equipment based on pipe diameter, depth, extent of survey and other relevant operational factors.	✓	✓	✓		
	The abilities and limitations of the different CCTV systems.	✓	✓	✓		

	How to insert and remove CCTV equipment to and from the wastewater network.	✓	✓	✓		
	How to locate the underground position of CCTV equipment	✓	✓	✓		
	The procedures for reporting and recording pipe inspection results as detailed in the New Zealand Gravity Pipe Inspection Manual [7].	✓	✓	✓		
	Wastewater Network Operators need to also know the network utility operators' internal procedures for data collection, recording and reporting inspection information to ensure it is used in future asset management decision making.	✓	✓	✓		
	Operate Ventilation Systems and Odour Control Processes (Pg47)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 29953
Needs to be able to	Identify the Root Cause of odour problems.	✓	✓			
	Optimise site processes to minimise odour generation e.g. by minimising turbulent flow or exposure to air.	✓				
	Follow the operational procedures that are identified in the Error! Reference source not found. for ventilation and odour control.	✓				
	Identify all mechanical, electrical and instrumentation assets associated with the ventilation system and odour control processes on SCADA and at the Wastewater Treatment Plant.	✓				
	Identify, and safely use any chemicals used in the odour control process.	✓	✓			
	Identify Error! Reference source not found. applicable to the ventilation system and odour control processes, control the ventilation system and odour control processes.		✓			
	Undertake the Error! Reference source not found. of the instruments used to monitor the ventilation and odour control processes, as well as undertaking the Error! Reference source not found. of the process, completing associated calculations.		✓			
	Evaluate trend data from Error! Reference source not found. and test results to identify: <ul style="list-style-type: none"> - Normal trends or cycles for the works, and - Atypical trends or changes and the underlying reason or Root Cause of the change 		✓			
	Optimise the ventilation and odour control treatment processes based on test results and trend data to efficiently achieve the required parameters.		✓	✓		
	Respond to alarms and instigate corrective action to return the treatment processes to compliant condition.	✓				
	Safely carry out operational and first line Error! Reference source not found. relating to the ventilation system and odour control treatment process, including the Error! Reference source not found. when required.	✓				
	Record equipment condition and performance data to the appropriate people to assist in Error! Reference source not found.	✓				
	Monitor, check, record and report on chemical dosing used in odour control processes.	✓				
Install temporary ventilation systems to allow for safe confined space access.		✓	✓			
The nature and sources of odour generation at the Wastewater Network and the resource consent requirements that control air discharges at the site.	✓	✓	✓			
How ventilation systems assist in preventing corrosion at Wastewater Treatment Plants.	✓	✓	✓			

Needs to know

How ventilations systems help to allow for safe confined space entries.					
The hazards associated with confined spaces and the use of ventilation systems to reduce hazardous atmospheric conditions.	✓	✓	✓		
That the requirements for odour management control that will be outlined in the air discharge resource consent for the site, and the consequences of sub-optimal performance	✓	✓	✓		
That the Water NZ Manual for Wastewater Odour Management [8] provides guidelines for the preventing and controlling wastewater odour at Wastewater Treatment Plants.	✓	✓	✓		
The different types of odour management processes available and the associated ancillary equipment used to control odour. An understanding of the design considerations associated with each of the different types of odour management processes e.g. the type of odour to be treated, media used, chemicals used, passive or active treatment.	✓	✓	✓		
The objectives of the ventilation and odour control processes, including an understanding of the design considerations and consequences of sub-optimal performance.	✓	✓	✓		
How atmospheric conditions can affect the dispersion of odour at the Wastewater Network site.	✓	✓	✓		
Key process parameters and variables associated with ventilation and odour control. Including the impact of ventilation on Error! Reference source not found. and corrosion within other treatment processes.	✓	✓	✓		
How to interrogate the SCADA to: <ul style="list-style-type: none"> - Identify and control items of mechanical, electrical and instrumentation equipment. - Evaluate trend data differentiating normal operational cycles from developing fault conditions. 	✓	✓	✓		
The range of mechanical, electrical and instrumentation plant used in the Error! Reference source not found. of the process and their Error! Reference source not found. requirements.	✓	✓	✓		
The Error! Reference source not found. , alarms, action levels, authorization levels and consequences associated with the process.	✓	✓	✓		
The first line Error! Reference source not found. tasks for the odour control process that will be outlined in the Error! Reference source not found. . Including the reactive and preventive Error! Reference source not found. frequencies.	✓	✓	✓		
How to identify the Root Cause of ventilation and odour control problems and the sequence of actions required to restore the process to compliant conditions, taking account of all process variables and process lag times.	✓	✓	✓		
The parameters and tests required to monitor the odour control process and why the analysis is important and any limitation with the monitoring.	✓	✓	✓		
The Error! Reference source not found. hazards associated with the ventilation and odour control processes and how these should be mitigated.	✓	✓	✓		
How to optimise the ventilation and odour treatment processes to minimise odour, Error! Reference source not found. and corrosion problems, on the basis of process performance management, test results and analysis of trends.	✓	✓	✓		
The safe Error! Reference source not found. procedures for the ventilation and odour control equipment	✓	✓	✓		
What procedures to follow in an Error! Reference source not found. related to the ventilation and odour control process.	✓	✓	✓		
	Kaiwhakamahi Ratonga Wai-para	Kaiwhakamahi Matua Ratonga Wai-para	Kaiārahi Ratonga Wai – para	Kaiwhakahaere Ratonga Wai-para	Unit Standard

Operate Pumping Systems (Pg43)		Junior wastewater Network operator	Senior wastewater Network operator	Wastewater Network Team leader	Wastewater Network manager	24931
Needs to be able to	Follow the operational procedures that are identified in the operational and maintenance manual for the site including removal of blockages and fault finding.	✓				
	Identify and mitigate Error! Reference source not found. hazards related to pumps and pumps station operation and maintenance, including the safe entry and ventilation requirements of confined spaces.	✓	✓			
	Identify all mechanical, electrical and instrumentation assets associated the pump processes on SCADA and at the Wastewater Treatment Plant.	✓				
	Identify Error! Reference source not found. applicable to the pump station, <u>control</u> the pump station operation.		✓			
	Undertake the Error! Reference source not found. of the instruments used to monitor the pumping system, as well as undertaking the Error! Reference source not found.		✓			
	Evaluate trend data from Error! Reference source not found. and test results to identify: <ul style="list-style-type: none"> - Normal trends or cycles for the works, and - Atypical trends or changes and the underlying or <u>Root Cause</u> of the change 		✓	✓		
	Identify and set, or adjust, pump and pump station controls including optimizing the pumping station operations to ensure efficiencies are maintained.		✓	✓		
	Respond to alarms and instigate corrective action to return the Pump Station operation to compliant condition	✓	✓	✓		
	Optimise the pump station operation based on test results and trend data to efficiently achieve the required parameters. including optimizing the pumping station operations to ensure efficient operation.			✓		
	Respond to alarms and instigate corrective action to return the pump station operation to compliant condition.		✓	✓		
	Safely carry out operational and first line Error! Reference source not found. relating to the pump station, including the Error! Reference source not found. of equipment when required.	✓	✓	✓		
	Identify the <u>Root Cause</u> of pump station problems.	✓	✓	✓		
	Record equipment condition and performance data to the appropriate people to assist in Error! Reference source not found.	✓	✓	✓		
The objectives of the pump station operation, including an understanding of the design considerations, <u>wastewater flows and hydraulics</u> and consequences of sub-optimal performance including the capacity of the wet well.	✓	✓	✓			
The different types of pumping systems, including the different types of pumps and associated equipment used at wastewater treatment plants.	✓	✓	✓			
The impact of vibration on the long-term operation and maintenance of the pumps.	✓	✓	✓			
That pumps with variable speed drives can introduce harmonics into the electrical network. Harmonics can damage electronic equipment, interfere with communication systems and cause false readings on measurement devices.	✓	✓	✓			
Key process parameters and variables associated with pump station operation including: <ul style="list-style-type: none"> - pump start/stop control - the duty/standby situation 	✓	✓	✓			
How to <u>interrogate the SCADA</u> to: <ul style="list-style-type: none"> - Identify and control items of mechanical, electrical and instrumentation equipment. 	✓	✓	✓			

Needs to know	<ul style="list-style-type: none"> - Evaluate trend data differentiating normal operational cycles from developing fault conditions. - How to confirm the configuration, operation and performance of the pumps corresponds to SCADA. 					
	The range of mechanical, electrical and instrumentation plant used to in the Error! Reference source not found. of the pump station and their Error! Reference source not found. requirements.	✓	✓	✓		
	The Error! Reference source not found. , alarms, action levels, authorization levels and consequences associated with the process.	✓	✓	✓		
	The operational and maintenance tasks for the pump station that will be outlined in the Error! Reference source not found. Including the reactive and preventive Error! Reference source not found. frequencies.	✓	✓	✓		
	How to identify the Root Cause of pump station problems and the sequence of actions required to restore the process to compliant conditions, taking account of all process variables and process lag times.	✓	✓	✓		
	The Error! Reference source not found. hazards associated with the pump station and how these should be mitigated.	✓	✓	✓		
	How to optimise pump station operation. For example, the use of variable speed drives (VSDs) can help to reduce energy consumption. But Wastewater Treatment Operators need to be aware that the use of VSDs on pumps, fans and other drives can contribute to harmonics, which when left uncompensated, might be the cause problems such as overheating transformers, nuisance tripping and reducing asset life etc.	✓	✓	✓		
	How to safely take the pump equipment out of service ,	✓	✓	✓		
	What procedures to follow in an emergency situation , including what to do if the pump station has an emergency overflow.	✓	✓	✓		
Operate Emergency Power Supplies (Pg58)		Kaiwhakamahi Ratonga Wai-para	Kaiwhakamahi Matua Ratonga Wai-para	Kaiārahi Ratonga Wai – para	Kaiwhakahaere Ratonga Wai-para	Unit Standard
	Junior wastewater Network operator	Senior wastewater Network operator	Wastewater Network Team leader	Wastewater Network manager		
Needs to be able to	Follow the operational procedures relating to the emergency power system that are identified in the Error! Reference source not found.		✓	✓		
	Identify the voltage, load and phase of all assets associated with the treatment plant.		✓	✓		
	Ensure that the generator is regularly serviced by a qualified technician as specified by the supplier.		✓	✓		
	Regularly run the generator under full load for extended periods to test for any problems.		✓	✓		
	Ensure that the UPS is regularly tested and serviced by a qualified technician as specified by the supplier		✓	✓		
	Arrange for fuel in storage tanks to be tested to ensure that it remains viable. Undertake fuel conditioning, or fuel replacement, on a regular basis to maintain the quality of the fuel in the tank.		✓	✓		
	Implement the incident and emergency response plan for loss of power at the site, including informing their lines network provider of the loss of mains electricity supply.		✓	✓		
	For sites which rely on portable emergency generators the wastewater treatment operator needs to be able to select a generator which is suitable for the site and be able to safely transfer the load from the mains to the generator.		✓	✓		
	Safely carry out operational and first line Error! Reference source not found. relating to the emergency power system.		✓	✓		
Escalate to Team Leader.						
The operating and maintenance cycles for the emergency power system components including inspection requirements.	✓	✓	✓			
How much fuel is needed to operate the site, or the time period specified in the incident and emergency response plan and the on-site fuel capacity	✓	✓	✓			

Needs to know	If there isn't a permanently installed generator the Wastewater Treatment Operator needs to know what type of generator is needed and where this is to come from. The following variables will need to be in order to select an appropriate emergency generator: <ul style="list-style-type: none"> - Voltage – the generator must have the appropriate voltage to match the motors it will be powering - Load – the Full Load Amps of all motors that are to be run off the generator needs to be known. - Phase (rotation) - Location of the transfer switch to transfer the load - The power rating and load factor of the genset. 	✓	✓	✓		
	Reactive and preventive maintenance tasks and frequencies.	✓	✓	✓		
Network Performance Data Collection (Pg60)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard BYP02
Needs to be able to	Maintain data collection equipment in line with manufacturers' recommendations including calibration requirements	Assist	✓			
	Confirm the data type needed, this could include: <ul style="list-style-type: none"> - Flow - Levels - Pump status - Alarm status 	✓	✓			
	Use GIS to identify locations where data is collected; this could include locations like: <ul style="list-style-type: none"> - Pumping stations - Overflows / incident locations 	✓	✓	✓		
	Safely access wastewater network to install, and to retrieve, portable data loggers, confirming that logging device is active and recording required data in line with standard operating procedures.	✓	✓	✓		
Needs to know	The monitoring requirements of any related Resource Consent for which data is to be collected.	✓	✓	✓		
	The operational and maintenance procedures related to data collection instruments and portable data loggers, including calibration requirements.	✓	✓	✓		
	What procedures to follow to install loggers and to retrieve the data.	✓	✓	✓		
	The Error! Reference source not found. risks and hazards associated with installing data loggers, included confined space hazards, and the manner in which these may be mitigated.	✓	✓	✓		
Awareness of Trade Waste (Pg61)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard BYP02
Needs to be able to	Identify what customers hold trade waste consents	✓				
	Find / identify discharges that breach consent conditions e.g. unusual coloured discharges into the network.	✓				
	Communicate with others within the organisation e.g. the Trade Waste Officer, when unusual discharge characteristics are identified.		✓			
	Which customers hold trade waste consents and their location within the Wastewater Network Catchment.	✓	✓	✓		

Needs to know	The characteristics of what is permitted to be discharged into the wastewater network.	✓	✓	✓		
	What is prohibited from being discharged into the wastewater network.	✓	✓	✓		
	The organisations communication procedures to flag potential trade waste breaches.	✓	✓	✓		
	Wastewater Network Asset Isolation and Re-commissioning (Pg62)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard BYP02
Needs to be able to	Carry out the planning and actions required for the following types of shutdowns: a) An automatic plant shutdown b) A manual plant shutdown c) A controlled plant shutdown on discovery of process issues	Assisting		✓		
	Shutdown the treatment plant in line with standard operating procedures.			✓		
	Identify the work area to be accessed using documentation, systems and work instructions.			✓		
	Troubleshoot major components and their problems to identify the cause of an emergency shutdown.			✓		
Needs to know	Re-start the treatment works in line with standard operating procedures, including: a) Reporting and recording b) Observing, sampling and testing c) Information systems and manual checks			✓		
	The correct methods of starting, stopping, operating and controlling each process including understanding the impact of plant shutdown on each treatment processes and how to respond.	✓	✓	✓		
	The architecture of the process/production system including knowing the process control philosophy and process parameters and limits e.g. temperature, pressure, flow, pH.	✓	✓	✓		
	How to identify the cause of plant shutdown including relevant alarms and actions.	✓	✓	✓		
	Start-up procedures including standard operating procedures and local procedures	✓	✓	✓		
	The range of sampling and testing required in the event of a plant shutdown and re-start.	✓	✓	✓		
	Communications, reporting and record keeping requirements associated with a plant shutdown, including ensuring the response meets the requirements of the Resource Consent.	✓	✓	✓		
	The risks associated with works shutdown and re-start and how to minimize the impacts associated with these and as documented within the Error! Reference source not found.	✓	✓	✓		
	Contingency plans associated with the works shutdown.	✓	✓	✓		
	How to respond in the event of an Error! Reference source not found. that caused an unplanned plant shutdown.	✓	✓	✓		
	Incident & Emergency Response Plans (Pg64)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Understand the nature and sources of different types of incidents and their impact on public health and the environment.			✓		
	Provide input the development of the Incident and Emergency Response Plan.			✓		
	Implement the operational corrective actions, which may include process control adjustments or a plant isolation and shutdown to ensure that the discharge of insufficiently treated effluent is prevented.			✓		
	Report the nature of the incident to the appropriate people, instigating escalation procedures.	✓	✓	✓	✓	
	Demonstrate that they have been trained in emergency situations.					

	Test response plans prior to an emergency situation arising.					
	Make use of "lessons learned" information by contributing to the implementation and continuous improvement of quality systems in the wastewater industry.					
Needs to know	How to ascertain the nature of an incident, including spills and pollution incidents, accidents and loss of process control.	✓	✓	✓		
	Where to find the documented Incident and Emergency Response Plan.	✓	✓	✓		
	What potential incidents and emergencies will require an operational response.	✓	✓	✓		
	The triggers for activating the incident and emergency response plan, for example when a critical control point level has been reached.	✓	✓	✓		
	Communications, reporting and record keeping requirements associated with emergency, including ensuring the response meets the requirements of all resource consents related to the site	✓	✓	✓		
	What civil defence obligations they have during an emergency situation.	✓	✓	✓		
Environmental Clean-up of Overflows (Pg65)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 30004
Needs to be able to	<ul style="list-style-type: none"> ▪ Follow the operational procedures for the environmental clean-up of overflows. This might include: Follow the operational procedures for the environmental clean-up of overflows. This might include: <ul style="list-style-type: none"> - Removing wastewater and solids to the maximum amount practicable e.g. by pumping wastewater into a liquid waste truck for discharge at the wastewater treatment plant, or elsewhere in the wastewater network. - Washdown of contaminated hard surface areas with clean water and an approved chemical disinfectant. - Ensure that wash water used is not disposed of into the stormwater network. It must either be allowed to soak naturally into surrounding soil, or if it is pooling it should be pumped not a liquid waste truck for disposal at the wastewater treatment plant, or elsewhere in the wastewater network. - Communicate with impacted homeowners. <p>Restrict site access to the public are a period of at least 24 hours following clean-up and disinfection process.</p>	✓				
		✓	✓	✓		
Needs to know	How to respond in the event of an overflow	✓	✓	✓		
	The decontamination procedures outlined in the Guidelines for Occupational Health & Safety in the New Zealand Water Industry . [4]	✓	✓	✓		
	Communications, reporting, and record keeping requirements associated with clean-ups, including ensuring the response meets the requirements of all resource consents related to the site.	✓	✓	✓		
Assisting with the Process to Decommission, Remove or Abandon Assets (Pg66)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 30004

Needs to be able to	Assist with a risk assessment, prior to starting the decommissioning process, that is reflective of the scope and complexity of the decommissioning process. The risk assessment may need to include the following items to provide assurance that all hazards are identified, understood and eliminated:	Assist	✓	✓		
	<ul style="list-style-type: none"> - An engineering assessment of the structural integrity of any associated building and structure carried out by a Chartered Structural Engineer. - A Error! Reference source not found. electrical assessment that identifies and marks out the power supply to, and the distribution of power in the work area, to identify the isolation requirements or protection of the supply to other areas of plant or equipment carried out by an Electrical Engineer or the plants Electrician. - A Error! Reference source not found. fire assessment if changes to fire protection systems might be required carried out by a Fire Engineer. - A Error! Reference source not found. asbestos assessment to establish if any asbestos is present and if so, how to deal with it. - A Error! Reference source not found. assessment of specific toxic substances such as mercury from Fixed Growth Reactor turntables and UV lamps. 					
	Assist with the decommissioning process and disposal of wastewater treatment assets at the end of their life once the risks above have been eliminated.	Assist	✓	✓		
Needs to know	The Decontamination and Demolition of Plant and Assets Procedure outlined in the Guidelines for Occupational Health & Safety in the New Zealand Water Industry . [4]	✓	✓	✓		
Provide Data to Assist in Asset Management Decision Making (Pg67)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 30005
Needs to be able to	Undertake a systematic approach to collecting, recording and reporting data.		✓	✓		
	Follow the reporting requirements and procedures that are either referenced or documented within the Error! Reference source not found.		✓	✓		
	Follow reporting requirements and procedures for the performance measures and targets that are either referenced or documented within the Asset Management Plan.		✓	✓		
Needs to know	What mechanisms are in place for recording and reporting data to others within the organisation. This includes what reporting responsibilities and accountabilities the Wastewater Treatment Operator will have.	✓	✓	✓		
	What higher level oversight, performance assessment against organisational goals and objectives is expected. This includes needing to know about: <ul style="list-style-type: none"> - The required level of service for the wastewater treatment plant. - The performance measures and targets that are to be used to assess compliance with the required level of service. 	✓	✓	✓		
	How performance is to be assessed and reported.	✓	✓	✓		
	How asset condition is to be recorded and reported.	✓	✓	✓		
Health and Safety (Pg68)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 15189
	Identify hazards, risk assessment and control measures.	✓	✓	✓		

Needs to be able to	Safely undertake their work and look after the health and safety of any other workers that they direct. To do this Wastewater Treatment Operators need to be able to: <ul style="list-style-type: none"> - Conduct a health and safety induction for visitors to the site - Test for hazardous atmospheres to safely enter confined spaces - Work alone, and in isolated areas - Work with hazardous substances - Work at heights - Work in, and above, wastewater 	✓	✓	✓		
	<ul style="list-style-type: none"> ▪ Control plant and equipment hazards by: <ul style="list-style-type: none"> - Safely operating machinery - Safely operating vehicles - Safely operating mobile plant 	✓	✓	✓		
	Implement Incident and Emergency response plans for the site.		✓	✓		
Needs to know	That the Health and Safety at Work Act 2015 (HSWA) [5] is New Zealand’s workplace health and safety legislation. Employers must look after the health and safety of their Wastewater Treatment Operators and any other workers that they influence or direct.	✓	✓	✓		
	That the Water New Zealand Good Practice Guide for Occupational Health and Safety in the New Zealand Water Industry [4] provides guidance and model procedures for how to comply with the HSWA.	✓	✓	✓		
	What “permits to work” and operational procedures are in place at the Wastewater Network that control identified hazards.	✓	✓	✓		
	What Personal Protective Equipment (PPE) is required when operating and maintaining processes at the Wastewater Treatment Plant.	✓	✓	✓		
	The Error! Reference source not found. requirements at the WWTP.	✓	✓	✓		
Confined Spaces (Pg69)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Identify confined space hazards, undertake risk assessments and identify the control measures for confined space entry work.	✓	✓	✓		
	Select and safely use the correct PPE for a confined space entry. This may include the use of safety harnesses and lifelines, and respiratory protection.	✓	✓	✓		
	Ensure that communication between the person within the confined space and the confined space standby person is always maintained during any confined space entry.	✓	✓	✓		
	Secure confined space entry and exit points to allow for safe access, ensuring that appropriate danger signs are used.	✓	✓	✓		
	Isolate the confined space to prevent the inflow of hazardous substances.	✓	✓	✓		
	Ensure that the space is ventilated, either through forced, extraction, or natural ventilation.	✓	✓	✓		
	Undertake atmospheric testing prior to, and during a confined space entry.	✓	✓	✓		
	Clear atmospheric conditions in a confined space by purging.	✓	✓	✓		
Implement incident and emergency response plans for confined space entries and rescues.	Assist	✓	✓			
	That the Worksafe Quick Guide to Confined spaces: planning entry and working safely in a confined space gives a brief overview of the requirements and procedures required to plan an entry to and also to work safely within a confined space.	✓	✓	✓		
	That Worksafe New Zealand accepts the Standard AS/NZS 2865:2001 Safe working in a confined space as having the current state of knowledge on confined space entry work. It follows the approach of the Health and Safety at Work Act 2015 (HSWA) [5] in requiring that the hazards associated with working in confined spaces be identified and controlled either by elimination or minimisation.	✓	✓	✓		

Needs to know	That the Water New Zealand Good Practice Guide for Occupational Health and Safety in the New Zealand Water Industry [4] provides guidance and model procedures for planning an entry into a confined space.	✓	✓	✓		
	What “permits to work” and operational procedures are in place at the Wastewater Network that control identified hazards like confined space.	✓	✓	✓		
	What Personal Protective Equipment (PPE) is required when entering, or working within, a confined space.	✓	✓	✓		
	What the atmospheric conditions within the confined space are.	✓	✓	✓		
	That the concentration of potential atmospheric contaminants will determine whether it is safe to be within the confined. The Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)] identify what the safe level of atmospheric contaminants that Wastewater Treatment Operators can be exposed to.	✓	✓	✓		
	That the Standard AS/NZS 1891 Industrial fall-arrest systems and devices covers the selection, use and maintenance of harnesses and ancillary equipment used in confined space entry work.	✓	✓	✓		
Hazardous Substances Awareness (Pg71)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 31933
Needs to be able to	Manage an inventory of all chemicals and hazardous substances used at the site, including all consumable chemicals, process chemicals, laboratory chemicals and gas storage. The inventory needs to be kept up-to-date, accurate and easily accessible to emergency workers.	Assisting	✓	✓		
	Ensure that Safety Data Sheets are available for all chemical and hazardous substances used or generated (e.g. methane) at the site.	Assisting	✓	✓		
	Safely work with chemicals and hazardous substances (both in terms of handling and storage requirements) including for: - Asbestos - Fuel - Chemicals - Gas	Assisting	✓	✓		
	Use the correct Personal Protective Equipment (PPE) and other appropriate controls (e.g. ventilation) as indicated on the Safety Data Sheet when handling chemicals and hazardous substances.	✓	✓	✓		
	Label containers containing hazardous substances correctly, including when they are decanted or transferred into smaller containers.	Assisting	✓	✓		
	Store hazardous substances safely	Assisting	✓	✓		
	Ensure that correct signage is in place for hazardous substances.	Assisting	✓	✓		
	Follow the procedures are detailed in the event of an Error! Reference source not found. at the Wastewater Network site in the event of a spill.	Assisting	✓	✓		
What hazardous substances (i.e. any product or chemical that has explosive, flammable, oxidising, toxic, corrosive or ecotoxic properties) are stored or used at the Wastewater Network and the dangers that these substances pose.	✓	✓	✓			
That they cannot work with or around hazardous substances until they have the knowledge and practical experience to do so safely.	✓	✓	✓			
That the Incident and Emergency Plan for the Wastewater Network site for detail the procedures to follow in the event of a spill at the site.	✓	✓	✓			
That the Health and Safety at Work (Hazardous Substances) Regulations [6] identifies how the chemicals and hazardous substances such as those used in Wastewater Treatment processes need to be managed.	✓	✓	✓			

Needs to know	That the Water New Zealand Good Practice Guide for Occupational Health and Safety in the New Zealand Water Industry [4] provides guidance and model procedures for how to manage chemical and hazardous substances at Wastewater Treatment Plants.	✓	✓	✓		
	That health and safety information is available for all chemicals on Safety Data Sheets (SDS) that must be provided at the time of supply.	✓	✓	✓		
	That the Water New Zealand National Asbestos Cement Pressure Pipe Manual [7] details the health and safety requirements when working with asbestos material containing pipes, i.e. for work involving cutting into, removal, storage or replacement of AC pipes Refer to the Water New Zealand Good Practice Guide for Occupational Health and Safety in the New Zealand Water Industry [4] for procedures for asbestos material not associated with pipes i.e. asbestos material present in switchboards or building materials	✓	✓	✓		
	That depending on the type and quantity of hazardous substances stored at the site, a Wastewater Network might be considered a Major Hazard Facility . Where this is the case there will be additional requirements for the site to comply with the Health and Safety at work (Major Hazard Facilities) Regulations 2016 which the Wastewater Treatment Operators will need to be aware of.	✓	✓	✓		
Security and Asset Protection (Pg73)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Induct and supervise visitors to the Wastewater Network in accordance with Error! Reference source not found. procedures.	Assist	✓			
	Lock and alarm all points of entry, including doors, windows and gates.	✓				
	Maintain a key register to identify who holds keys for each site.	✓				
	Routinely perform visual examinations of the exterior of the Wastewater Network and remove objects that could be used to aid an intruder.	✓				
	Respond to security breaches at the Wastewater Network in accordance with the requirements of the Error! Reference source not found. for the site.	✓				
Follow required procedures to ensure their own personal safety when in customer facing situations.						
Needs to know	Who has access to the Wastewater Treatment Plant, and where the keys are kept.					
	How to induct and supervise visitors to site.	✓	✓	✓		
	How to implement the Error! Reference source not found. measures for security breaches.	✓	✓	✓		
Verification Monitoring (Pg74)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Follow the Error! Reference source not found. plan that is referenced in the resource consent(s) for the site.	✓	✓			
	Review complaints and use them to make improvements to the treatment process. Monitoring comments and complaints can provide valuable information on problems with the treatment processes.	✓	✓	✓		
	Review the results of the Error! Reference source not found. , the Error! Reference source not found. to identify target and action limits when intervention may be required and communicate this to the appropriate people.	✓	✓			
	The objectives of the monitoring being undertaken including knowing the: <ul style="list-style-type: none"> - Error! Reference source not found. - Response procedures when trigger levels are reached - Reporting requirements 	✓	✓	✓		

Needs to know	The Default Guideline Values (DGVs) for the toxicants that are within the effluent being discharged, as published in the Australian & New Zealand Guidelines for Fresh & Marine Water Quality .	✓	✓	✓		
	The procedures for responding to transgressions and Error! Reference source not found.	✓	✓	✓		
	The Error! Reference source not found. and how complaints are to be reviewed and used with helping to make improvements	✓	✓	✓		
	The parameters being monitored, refer to the New Zealand Municipal Wastewater Guidelines for more information, this might include the likes of: <ul style="list-style-type: none"> - Flow - Physical characteristics - Chemical characteristics - Microbiological Characteristics - Toxicity 	✓	✓	✓		
	The sampling frequency for each of the parameters, analytical methods and quality control requirements.	✓	✓	✓		
Resource Consent Compliance Monitoring and Reporting (Pg75)		Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard
Needs to be able to	Follow the compliance monitoring plan that is referenced in the resource consent(s) for the supply. This plan will detail the specific requirements for compliance monitoring requirements and might include being able to:	✓	✓			
	Take representative samples of wastewater from key points within the treatment process, safely using appropriate sampling equipment.	✓	✓			
	Taking representative samples from the receiving environment, safely using appropriate sampling equipment. Review and analyse the performance of the wastewater treatment process by using laboratory and site quality reports.	✓	✓			
	Recording and responding to complaints about odour.	✓	✓			
	Fulfil the resource consent conditions related to the operation and maintenance of the Wastewater Treatment Plant.	✓	✓			
	Assist staff from the consent authority when they undertake site inspections, e.g. induct them onto site.	✓	✓			
	Provide operational data to the consent authority in accordance with the conditions of consent and as outlined in the site management or the compliance monitoring plan for the site.		✓	✓		
	Monitor the performance of the Wastewater Treatment Plant, including trending data, and communicate with the appropriate people when conditions of consent are close to being breached so that action can be taken to prevent this before it occurs.		✓	✓		
Notify the appropriate people when the operation of the Wastewater Network fails to comply with the resource consent conditions and implement the operational response in accordance with the Error! Reference source not found.		✓	✓			
Needs to know	What resource consent conditions are in place for the Wastewater Network and the limitations these apply to the operation of the Wastewater Network (e.g. maximum discharge flow rates).	✓	✓	✓		
	The compliance monitoring plan that is referenced in the resource consent(s). This details what data needs to be collected and monitored to meet the conditions of the consent. Items in the compliance plan that the Operator will need to aware of will include: <ul style="list-style-type: none"> - Sampling locations - Sampling methods (timing, frequency, volumes, sampling equipment, preservation requirements) - Laboratory delivery details - Quality assurance requirements 	✓	✓	✓		

	- Data interpretation protocols and statistical analyses						
	What to do if the operation of the Wastewater Network fails to comply with the resource consent conditions, as detailed in the Error! Reference source not found.	✓	✓	✓			
	Inflow and Infiltration (I/I) (Pg77)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 30007, 30006	
Needs to be able to	Follow a variety of different methods and operational procedures to determine the source of inflow and infiltration within the wastewater network, this could include: <ul style="list-style-type: none"> - visual and smoke testing to identify direct stormwater connections - private property inspections e.g. to identify low gully traps - manhole inspections - CCTV inspection of both sewers and house laterals - hydraulic testing of sewers and house laterals to determine typical water tightness. 	✓	✓				
	Follow a variety of different methods and operational procedures to repair of manholes using a variety of different rehabilitation techniques which could include: <ul style="list-style-type: none"> - Mortar patch repair - Resin-impregnated felt patch repairs - PVC plastic lining systems - Complete manhole replacement - Manhole ring and lid replacement. 	✓	✓				
	Identify and mitigate Error! Reference source not found. hazards related to I/I programs including Error! Reference source not found. and Error! Reference source not found. entry and ventilation requirements.		✓	✓			
	Record asset condition and provide rehabilitation data to the appropriate people to assist in Error! Reference source not found.	✓	✓	✓			
Needs to know	That the Water New Zealand, Infiltration & Inflow Control Manual; Volume 1: Overview, Background & Theory [13] provides higher-level information on the management of Inflow and infiltration, the corresponding issues and complexities, and good practice strategies to effectively reduce and manage I/I.	✓	✓	✓			
	That the Water NZ, Infiltration & Inflow Control Manual; Volume 2: Practical Guidelines [14] provides details on how to manage and reduce I/I, including the detailed information on how to undertake each of the five stages in the good practice methodology.	✓	✓	✓			
	That the New Zealand Gravity Pipe Inspection Manual, 4th Edition, 2019 provides details on how to undertake inspections of sewer pipes and manholes including how to undertake infiltration source investigation inspections.	✓	✓	✓			
	Engage with Stakeholders and the Community (Pg79)	Kaiwhakamahi Ratonga Wai-para Junior wastewater Network operator	Kaiwhakamahi Matua Ratonga Wai-para Senior wastewater Network operator	Kaiārahi Ratonga Wai – para Wastewater Network Team leader	Kaiwhakahaere Ratonga Wai-para Wastewater Network manager	Unit Standard 30007, 30006	
	Identify the stakeholders that they are required to engage with. This will include, but not be limited to, those identified in the Error! Reference source not found.	Assist	✓	✓			

Needs to be able to	Engage with stakeholders by following the mechanisms and documentation within the Error! Reference source not found. for stakeholder engagement.		✓	✓		
	Provide input into the long-term employee engagement plan (management and operational) on awareness and involvement in safe treatment of wastewater and disposal effluent.		✓	✓		
	Identify the contact list and communication plan for incidents and emergencies.		✓	✓		
Needs to know	That the stakeholders who could affect, or be affected by, decisions or activities to do with the wastewater treatment will have been identified in the Error! Reference source not found.	✓	✓	✓		
	That the Error! Reference source not found. will also have documented the appropriate mechanisms that they should use to obtain input and involvement from the stakeholders.	✓	✓	✓		
	The long-term community engagement plan on awareness and involvement in the treatment of wastewater and the disposal of effluent.	✓	✓	✓		
	The organisations two-way communication programme to receive the communities' suggestions, complaints and concerns.	✓	✓	✓		

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Please note the following:

- This at a glance should be used in conjunction with the competency framework document for this particular role.
- Some sections and or responsibilities are completed by certain individuals as well as a combination of teams. This does vary depending on the treatment plant.
- For each of these roles, it is important to note that **if escalation is needed then the team leader and / manager needs to be informed and involved.**

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