Water System Assessment

FORM ONE: Hazard Assessment

SAVE YOUR WORK OFTEN, AND PRINT THIS PAGE FOR YOUR RECORDS.

- Enter detailed answers to the following questions in the large yellow boxes.
- Enter specific hazards in the smaller yellow boxes. Two hazards (use only space provided) may be identified for each water source (up to three).
- Where more than two hazards exist associated with one question other blank yellow cells on the same column may be used.

Descriptive Information	Source # /System	Specific Hazard #1	Specific Hazard #2

Water Supply System Contact Information

1 Date of assessment (yyyy-mm-dd)

2 Name of the water supply system

The name referred to in this question is the name that appears on the Operating Permit.

3 Location of the water supply system

4 Name and address of the owner of this water supply system

Legal name of owner			
Street:			
City:		Postal Code:	
Phone #:		Cell phone #:	
Fax #:		Other #:	
E mail address:			

5 Contact person(s) for the management/administration (if different then the owner)

Name:			
Street:			
City:		Postal Code:	
Phone #:		Cell phone #:	
Fax #:		Other #:	
E mail address:			

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2

6 Operator (if different then the owner)

Name:			
Street:			
City:		Postal Code:	
Phone #:		Cell phone #:	
Fax #:		Other #:	
E mail address:			

7 Person completing this assessment

Name:			
Employer of the assessor			
Street:			
City:		Postal Code:	
Phone #:		Cell phone #:	
Fax #:		Other #:	
E mail address:			

Ownership / Management Structure (Governance)

8 What type of ownership/management structure do you have for your water supply system (the following are examples)?

Regional District	Water Users Community	BC Government Owned
Municipality	Private Water Utility	Societies
Improvement District	Private (not utility)	Strata Corporation

Other (Specify):

Accountability Level

9 Who is the one person accountable for the provision of safe drinking water?

System

10 Does the system have a clearly documented governance structure with reference to how decisions are made?

System

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
11 Is the decision making structure in the best interest for water quality and quantity needs?			
	System		

Drinking Water Source

The following questions should be answered for each well / surface source (including abandoned or back-up sources).

Location & Characteristics

12 What is the name and/or number of the well or surface water source (for more than three sources please fill in a second worksheet)?

Source 1	Source 2	Source 3

13 What is the location of the well or surface water source?
(i.e. behind the school in the pump house, or, 30m southwest of intersection of Amber Street & 4th Avenue, or address)

Source 1	Source 2	Source 3

14 What are the GPS (Global Positioning System) coordinates (if available)?

	Source 1	Source 2	Source 3
North			
West			
Elevation			

15 Do you know the approximate boundary of the contributing watershed? Are you aware of the natural and human influence in this area?
Surface water: the height of land or topographic boundary upstream of the intake. Groundwater: the location of the contributing aquifer.

#1		
#2		
#3		

Water Source Contamination

Look at the area surrounding the source. Do you see or know of any activities, or natural conditions, occurring in that area that could lead to contamination?
List each of the potential contaminants for each source. Note, supplier may not have control over watershed influences, but nevertheless, should be aware of the hazards.
Consider the proximity and the potential for connectivity with the water supply.

16 Are there potential biological contaminants resulting from domestic and wild animals?
- Manure storage or application
- Livestock at large, pasture or feedlot, dog kennels
- Wildlife (deer, bear, beaver, cougars, ducks, geese, other birds, rats, mice...)
- Other animal/agricultural influence

#1		
#2		
#3		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
17 Are there potential biological or chemical contaminants resulting from upslope activities? Agriculture lands with pesticide applications Road related erosion (turbidity), salts, fuel spills Forest harvesting Mining/oil & gas drilling, infrastructure, exploration Saw milling, wood preserving Recreation (e.g. boating, swimming, camping, snowmobiling, 4X4, ATV)			
	#1		
	#2		
	#3		
18 Are there potential biological or chemical contaminants from surrounding infrastructure? Lawn fertilizers, pesticides in parks, homes, golf courses... Pets and other animal impacts Storm runoff, sewage treatment, landfill discharge Septic systems, (including your own or those on nearby properties) Airports, service stations, marinas, car washes Railroad, manufacturing, material stockpile Chemical or fuel storage Paints, Herbicides, Toxic Waste			
	#1		
	#2		
	#3		
19 Is there any other potential Influence within 30 m not identified above?			
	#1		
	#2		
	#3		
20 Is there any other potential Influence between 30-100m not identified above?			
	#1		
	#2		
	#3		
21 Is there any other potential Influence beyond 100m not identified above?			
	#1		
	#2		
	#3		

	Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
Intake Contamination - Surface System				
22	For lake intakes, has the positioning considered the following: Off the muddy bottom. Below the summer thermocline (stable temperature and calmer water). Away from the shoreline.	#1		
		#2		
		#3		
23	For intakes located adjacent to a river, has the positioning considered the following: Water currents that might threaten the safety of the structure. Location of navigable channels. Ice flows. Formation of sandbars, gravel beds or deposits. Potential flooding.	#1		
		#2		
		#3		
24	Are there signs posted indicating the area is a drinking water source?	#1		
		#2		
		#3		
25	Is the intake positioned in a pool or depression so there will be water available during periods of low stream or river flow?	#1		
		#2		
		#3		
26	Is there an infiltration gallery screening and buffering the intake from the river?	#1		
		#2		
		#3		
27	Is there a protective cover over the inlet location to avoid falling debris, animal contamination and vandalism?	#1		
		#2		
		#3		

	Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
28	Is there screening over the intake pipe of a small enough diameter to block any foreign objects (including fish) suspended in the intake pool or lake?			
		#1		
		#2		
		#3		
29	Is the screening over the intake pipe tough enough (sufficient gauge wire) to withstand impact from debris?			
		#1		
		#2		
		#3		
30	Is there regular inspection and maintenance of the intake (changes that could affect water quality, screens in place, cleared of debris...)			
		#1		
		#2		
		#3		
	Groundwater Contamination - Wells			
31	Is the well possibly ground water under the direct influence of surface water (GUDI/GARP)? If so, does treatment reflect this?			
		#1		
		#2		
		#3		
32	Is this well located within 30 meters of any surface water (lake, stream, pond), is there any ability for the surface water to enter the well?			
		#1		
		#2		
		#3		
33	Is there a layer thicker than 3 meters (10 feet) of clay, silt, till or hardpan above the well screen or well intake for this well? Does this extend far enough away from the well to prevent surface water contact?			
		#1		
		#2		
		#3		
34	Are there other wells (including abandoned) that could be connected to the active system?			
		#1		
		#2		
		#3		

	Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
35	Is the aquifer vulnerable to contamination? The following resource could help you learn about your aquifer: Local well drillers Local aquifer mapping Water resource atlas			
		#1		
		#2		
		#3		
36	Which of the following best describes the type of aquifer that this well draws water from, and as a result could there be contaminants in this water? A. The aquifer is located in unconsolidated materials (sand and gravel). B. The aquifer is located in bedrock. C. Unsure			
		#1		
		#2		
		#3		
37	Is the aquifer artesian? If so, are there controls on it?			
		#1		
		#2		
		#3		
38	Is the aquifer feeding the well susceptible to salt water intrusion?			
		#1		
		#2		
		#3		
39	Is the well potentially impacted by flooding (e.g. located in a depression or flood-zone of a river or lake)? Groundwater at risk of containing pathogens (GARP)			
		#1		
		#2		
		#3		
40	Does the seasonal fluctuation in the water level ever potentially fall below the pumping level (i.e. Periods of drought inadequate water availability)?			
		#1		
		#2		
		#3		
	Well Head Contamination			
41	Is the well dug or drilled?			
		#1		
		#2		
		#3		

	Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
	Dug Well			
42	For a dug well, is there a locked and sealed cover (gasket to prevent mice and insects entering)?			
		#1		
		#2		
		#3		
	Drilled Well			
43	Does this well have a screened, vented well cap securely attached? Or Is the wellhead connected directly to the distribution pipe?			
		#1		
		#2		
		#3		
44	Does this well have a surface seal verified to be in good condition?			
		#1		
		#2		
		#3		
45	Does this well have a pitless adapter?			
		#1		
		#2		
		#3		
46	Is there a gap between the well casing and the surrounding ground?			
		#1		
		#2		
		#3		
47	Does the well casing stick up at least 30centimeters (12inches) above ground level?			
		#1		
		#2		
		#3		
48	If the well casing is in a sub-surface pit, is the bottom of the pit drained?			
		#1		
		#2		
		#3		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
Water System Elements			
Storage Facilities			
49 Are there any tanks used to store finished water? What is the size/volume?	System		
50 Are the storage tanks covered, structurally sound and secure (locked)?	System		
51 Is there a minimum capacity of 1 day at maximum day demand?	System		
52 Are all openings, such as vent pipes, overflows and drains screened?	System		
53 Do the storage tanks include design features that encourage adequate daily water turnover and circulation?	System		
54 Are there drains or overflows on the storage tank or reservoir and are they screened?	System		
55 Is the tank(s) set up for regular cleaning?	System		
56 Is there a dedicated line to the reservoir to avoid short circuiting, or does water travel in and out using the same line?	System		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
57 Is the tank manually filled or automatically filled on demand? Is the on demand system working reliably?	System		
Pumps (Supply & Distribution) and Pressure Tanks			
58 Has the pump(s) been installed by a qualified installer?	#1		
	#2		
	#3		
59 Have automated sensors been installed to alert the operator and override the pump if the intake water level falls too low?	#1		
	#2		
	#3		
60 Is the pump(s) adequately sized for the maximum daily demand (if you don't have sufficient reservoir storage)?	#1		
	#2		
	#3		
61 Can the pump re-fill the reservoir on the highest demand day?	#1		
	#2		
	#3		
62 Can distribution pumps supply peak hourly flow and pressure?	#1		
	#2		
	#3		
63 Have sensors been installed on the lines to override the distribution pump in the event of reduced pressure?	#1		
	#2		
	#3		
64 Is a back-up pump available for servicing main pump(s) (supply and distribution)?	#1		
	#2		
	#3		

	Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
65	Is a back-up pressure tank available for servicing the main tank?	#1		
		#2		
		#3		
66	Are all pressure switches regularly updated?	System		
67	Is the pump house secure and sealed against the rain and rodents?	System		
Distribution System Piping				
68	Are distribution mains adequately sized to supply flow and pressure (during fire flow conditions where applicable)?	System		
69	Is minimum distribution system pressure adequate (275 kPa (40 psi) during peak hour demand, above150 kPa (21.7 psi) during maximum day demand?	System		
70	Are all pipes constructed of approved material?	System		
71	Are all pipes in good condition, free of leaks, corrosion, etc.?	System		
72	Do you have accurate mapping of all underground distribution piping?	System		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
73 Are sufficient shut-offs installed to facilitate isolation and detection of leaks?			
	System		
Water System Maintenance			
74 Is the distribution system looped? If so is there a regular flushing schedule?			
	System		
75 Does the distribution system have dead ends? If so, is the blow-off valve opened regularly?			
	System		
76 Is the entire distribution system designed to be flushed regularly?			
	System		
77 Are replacement part and supplies available for routine maintenance?			
	System		
78 Is a preventative maintenance plan in place and functioning?			
	System		
Cross Connection Control			
79 Do all businesses have cross-connection devises (backflow preventers at each connection)?			
	System		
80 Do all homes have backflow preventers on each connection to the system?			
	System		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
81 Is there a cross connection program in place, and followed?	System		
82 Are visual inspection carried out throughout the system to identify and prevent cross connection hazards?	System		
Power Source			
83 Is the power supply adequate, tamper proof and up to current code?	System		
84 Is there an emergency plan in place for power failures (e.g. Back-up generator with enough power to run all aspect of the system)?	System		
Treatment			
85 Is the water supply at risk of containing pathogens?	#1		
	#2		
	#3		
86 Does the raw water turbidity ever exceed 1.0 NTU?	#1		
	#2		
	#3		
87 If you are not treating and the answer to either of the previous two questions was yes, are you considering treatment? For treatment options consult your DWO. The following are some examples of treatment: Aeration, coagulation, sedimentation, clarification. Filtration: 5 or 1 micron cartridge, slow sand, chemical/rapid sand, multimedia filter with backwashing, activated carbon, nanofiltration, reverse osmosis. Disinfection: UV, ozone, chlorine. Other: Ion exchange, softening, chemical stabilization with limestone contactor.	System		

	Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
88	Is the water filtered before disinfection?	System		
89	Is the water treated at point of use (POU) or point of entry (POE)? If yes, is there health approval for the system?	System		
	Filtration of Water			
90	If the source water is treated by filtration, what type is used? (e.g. chemical assist sand, slow sand, direct filtration...)			
91	If filtration is the only treatment, is it effective in removing all disease causing organisms?	System		
92	Is post filtration water turbidity always less than 1.0 NTU?	System		
93	Are filters and other system components maintained regularly (reflective of periods of higher turbidity)?	System		
	Disinfection of Water			
94	Is the source water disinfected by a method, such as UV, Ozone or chlorine? (Two forms of treatment reduces risk)	System		
95	For UV or Ozone treatment, is a regular maintenance schedule followed for bulbs, gases, other system components?	System		

	Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
96	For chlorine treatment, is the system designed to ensure adequate contact time?	System		
	Treatment Control & Monitoring			
97	Are there backup treatment units to stand in when main units are serviced?	System		
98	Are valves installed with unit bypasses to enable servicing of units?	System		
99	Are sampling taps installed before and after treatment units?	System		
100	For chlorinated systems, is there an approved calibrated testing kit used regularly for monitoring chlorine residuals?	System		
101	Is the free chlorine residual at the far end of the distribution system sufficient?	System		
102	For chlorine treatment, is the contact time monitored and verified as sufficient?	System		
103	Are pressure gauges installed and working both before and after filters?	System		

	Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
104	Is instrumentation installed to measure treated water flow, and operating hours?			
		System		
105	Does the treatment system have alarms to advise of need for attention (e.g. Pressure gauges for filters, sensors for UVT levels, low chlorine)?			
		System		

Water Quality and Quantity

Source Water Quantity

106	Is there a secure and reliable source of water to fill the demand of the system throughout the year?			
		#1		
		#2		
		#3		
107	Is there back-up source(s) in case of disruption to the main source?			
		#1		
		#2		
		#3		

Raw Water Quality

108	What is the frequency of pre-treatment source water biological and/or chemical testing?			
		#1		
		#2		
		#3		
109	Do any biological or chemical parameters exceed the Guidelines for Canadian Drinking Water Quality?			
		#1		
		#2		
		#3		

Treated Water Quality

110	What is the frequency of testing treated water for chemical, physical & bacteriological quality?			
		System		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
111 Does the treated water quality meet both minimum and recommended water quality parameters (pathogens, metals, other chemicals)?			
	System		
Boil Water Notices, Water Quality Advisories, Do Not Use Order			
112 Has this system ever had a boil water notice, water quality advisory or do not use order issued?			
	System		
113 If so, has the cause(s) been appropriately investigated and addressed, or may this situation repeat?			
	System		
114 Are requirements of the local health unit met for wording content of the notice and method and extent of the distribution?			
	System		
115 For active or recurring notices, is this assessment being completed with the guidance of the Drinking Water Officer?			
	System		
System Growth Supply Demands			
116 Is your system planning for growth (e.g. the 20 year infrastructure demand)?			
	System		
117 Will the water system be adequate for the future growth needs? Water supply volume. Water storage. Water pumping capacity. Water distribution infrastructure. Water treatment infrastructure.			
	System		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
Water System Operation			
Water System Permits			
118 Is a construction permit approved for the infrastructure?	System		
119 Is an operating permit approved?	System		
120 Do practices meet all conditions of the operating permit?	System		
121 Do practices meet all requirements of the Drinking Water Protection Act and Regulation?	System		
Line of Responsibility			
122 Has management set and implemented a working line of responsibility in operating this facility?	System		
123 Does the assignment (or lack of) clear responsibilities hinder operation and maintenance?	System		
Qualifications and Training			
124 Are the operators trained and certified to operate for the level of work done or as directed by the DWO (e.g. In operating permit)? Small water system certification (some small systems may have no formal requirement, however training is always advised). List the training completed by each operator.	System		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
125 Do the operators receive regular training and upgrading?	System		
126 Will there be adequately skilled operators available for future needs (e.g. any difficulty finding operators with the appropriate level of certification)?	System		
System Monitoring Processes			
127 Are daily, weekly, monthly records reported for all operations?	System		
128 Are the reports reviewed to determine quantity and quality of water?	System		
129 Are corrective actions taken as a result of monitoring records?	System		
130 Do you have a completed Emergency Response Plan?	System		
Customer Satisfaction			
131 Are the customer's needs always met for quantity, quality, and pressure?	System		
132 Are customer complaints documented, addressed and followed up?	System		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
Finances			
Financial Capacity			
133 Is there a financial plan with records of expenses and water quantity and quality produced?	System		
134 What is the current user rate structure and what are the user rates?	System		
Financial Capability			
135 Is management able to provide funding and commitment for operation and Maintenance?	System		
136 Is management able to provide funding and commitment for necessary improvements?	System		
137 Is the rate structure able to be reactive to unexpected financial circumstances? (adjustable to pay for capital costs)	System		
138 Are you able to shut off water service to clients that are not making payments? Or other forms of penalty?	System		
139 Does the system have insurance? Describe.	System		
System Growth Financial Demands			
140 Will future growth of this system be more than finances can satisfy?	System		

Descriptive Information	Source #	Specific Hazard #1	Specific Hazard #2
141 Has there been application for infrastructure grants or alternative funding or acquisition, amalgamation or collaboration with other water suppliers?			
	System		
Long Term Capital Plan			
142 Is there a capital improvement plan in place for the replacement, expansion, up grading of the system?			
	System		

Sign-off Information

Water Supply System Owner or Delegate

Date

I have read this completed Assessment and discussed the contents with the water supply system owner or delegate.

Drinking Water Officer

Date

Action Required / DWO Feedback

Date Assigned

Date By Which Action Must Be Complete

Intentionally left blank

FORM TWO: Risk Rating

SAVE YOUR WORK OFTEN, AND PRINT THIS PAGE FOR YOUR RECORDS.

- This form is automatically populated from the results of the Hazard Assessment form.
- The likelihood and consequence must be filled in manually for each hazard identified.
- The risk rating is automatically generated based on the table in column K through S.

Name of System:

Your Name:

Date:

No.	Reference No.	Issue	Hazard	Likeli-hood	Consequence	Risk	Source/ System	Hazard	Likeli hood	Consequence	Risk
Drinking Water Source											
Ownership	9	Accountability					System				
	10	Governance documented					System				
	11	Decision making structure					System				
Water Source Contaminant	15	Watershed Boundary					#1				
							#2				
							#3				
	16	Animal influence					#1				
							#2				
							#3				
	17	Upslope Activity					#1				
							#2				
							#3				
	18	Surrounding infrastructure					#1				
							#2				
							#3				
	19	Other influence within 30m					#1				
							#2				
							#3				
	20	Other influence 30-100m					#1				
							#2				
							#3				

No.	Reference No.	Issue	Hazard	Likeli-hood	Consequence	Risk	Source/ System	Hazard	Likeli hood	Consequence	Risk
Water Source Contaminant	21	Other influence beyond 100m					#1				
							#2				
							#3				
Intake Contaminant- Surface Water	22	Lake intake position					#1				
							#2				
							#3				
	23	River intake position					#1				
							#2				
							#3				
	24	Signage posted					#1				
							#2				
							#3				
	25	Intake in pool					#1				
							#2				
							#3				
	26	Infiltration gallery					#1				
							#2				
							#3				
	27	Intake covered					#1				
							#2				
							#3				
	28	Intake screened					#1				
							#2				
							#3				
	29	Intake screen strength					#1				
							#2				
							#3				
	30	Intake inspection, maintenance					#1				
							#2				
							#3				

No.	Reference No.	Issue	Hazard	Likeli-hood	Consequence	Risk	Source/ System	Hazard	Likeli hood	Consequence	Risk
Groundwater Contaminant- Wells	31	GWUDI well					#1				
							#2				
							#3				
	32	Surface water within 30m					#1				
							#2				
							#3				
	33	Restrictive layer					#1				
							#2				
							#3				
	34	Other wells connected					#1				
							#2				
							#3				
	35	Vulnerable aquifer					#1				
							#2				
							#3				
	36	Aquifer geologic type					#1				
							#2				
							#3				
	37	Artesian aquifer					#1				
							#2				
							#3				
	38	Salt water intrusion					#1				
							#2				
							#3				
	39	Flooding potential					#1				
							#2				
							#3				
	40	Low water level					#1				
							#2				
							#3				

No.	Reference No.	Issue	Hazard	Likeli-hood	Consequence	Risk	Source/ System	Hazard	Likeli hood	Consequence	Risk
Groundwater Contaminant- Wells	41	Dug or drilled					#1				
							#2				
							#3				
	42	Covered and locked					#1				
							#2				
							#3				
	43	Screened vented cap					#1				
							#2				
							#3				
	44	Surface seal					#1				
							#2				
							#3				
	45	Pitless adapter					#1				
							#2				
							#3				
	46	Well casing gap					#1				
							#2				
							#3				
	47	Casing 30cm above ground					#1				
							#2				
							#3				
	48	Casing pit drained					#1				
							#2				
							#3				
Storage Facilities	49	Storage tank size					System				
	50	Covered and locked					System				
	51	Capacity for 1 day					System				
	52	Openings screened					System				
	53	Water circulation or turnover					System				
	54	Drains or overflows					System				

No.	Reference No.	Issue	Hazard	Likeli-hood	Consequence	Risk	Source/ System	Hazard	Likeli hood	Consequence	Risk
Storage Facilities	55	Regular cleaning					System				
	56	Dedicated line to tank					System				
	57	On demand filling					System				
Pumps and Pressure Tanks	58	Pumps installed properly					#1				
							#2				
							#3				
	59	Pump override sensors					#1				
							#2				
							#3				
	60	Pump size adequate					#1				
							#2				
							#3				
	61	Pump capacity (daily)					#1				
							#2				
							#3				
	62	Pump Capacity (Hourly)					#1				
							#2				
							#3				
	63	Line pressure sensor					#1				
							#2				
							#3				
	64	Back-up pump					#1				
							#2				
							#3				
	65	Back-up pressure tank					#1				
							#2				
							#3				
	66	Pressure switches updated					System				
	67	Secure and sealed pump house					System				

No.	Reference No.	Issue	Hazard	Likeli-hood	Consequence	Risk	Source/ System	Hazard	Likeli hood	Consequence	Risk
Distribution System	68	Distribution mains size					System				
	69	Minimum delivered pressure					System				
	70	Pipe material					System				
	71	Pipe leaks, corrosion					System				
	72	Underground pipes mapped					System				
	73	Shut-offs for leak detection					System				
	74	Looped system					System				
	75	Blow-offs at dead-ends					System				
	76	System flushing					System				
	77	Parts available for Maintenance					System				
	78	Maintenance plan					System				
Cross- Connection	79	Backflow preventers (business)					System				
	80	Backflow preventers (homes)					System				
	81	Cross connection control program					System				
	82	Cross connection inspections					System				
Power	83	Power source adequate, protected					System				
	84	Back-up power plan					System				
Treatment	85	Risk of pathogens					#1				
							#2				
							#3				
	86	Turbidity over 1 NTU					#1				
							#2				
							#3				
	87	Considering treatment					System				
	88	Filtration installed					System				
	89	POU/POE					System				
Filtration	90	Type of filtration					System				
	91	Filtration alone effective					System				
	92	Filtered water under 1 NTU					System				
	93	Filter maintenance					System				

No.	Reference No.	Issue	Hazard	Likeli-hood	Consequence	Risk	Source/ System	Hazard	Likeli hood	Consequence	Risk
Disinfection	94	Disinfection type					System				
	95	UV or Ozone maintenance					System				
	96	Chlorine contact time					System				
Treatment Control & Monitoring	97	Back-up treatment units					System				
	98	By-pass valve for maintenance					System				
	99	Sampling taps					System				
	100	Chlorine residual testing					System				
	101	Sufficient residuals					System				
	102	Contact-time monitoring					System				
	103	Pressure gauges					System				
	104	Water flow measurement					System				
	105	Treatment system alarms					System				
Water Quantity	106	Secure water supply all year					#1				
							#2				
							#3				
	107	Back-up source					#1				
							#2				
							#3				
Water Quality	108	Source water testing					#1				
							#2				
							#3				
	109	Raw water quality					#1				
							#2				
							#3				
	110	Treated water testing					System				
	111	Treated water quality					System				
Notices	112	Past notices					System				
	113	Notices rectified					System				
	114	Notice wording and distribution					System				
	115	DWO involved in this assessment					System				

No.	Reference No.	Issue	Hazard	Likeli-hood	Consequence	Risk	Source/ System	Hazard	Likeli hood	Consequence	Risk
Growth	116	20year infrastructure plan					System				
	117	System adequate for growth					System				
Permits	118	Construction permit					System				
	119	Operating permit					System				
	120	Meeting permit conditions					System				
	121	Meeting Drinking Water Pro Act					System				
Management & Training	122	Working line of responsibility					System				
	123	Responsibility assignment issues					System				
	124	Operator training					System				
	125	Training updated					System				
	126	Training growth plan					System				
Monitoring	127	Regular operating records					System				
	128	Quality / quantity report review					System				
	129	Corrective action taken / planned					System				
	130	Emergency response plan					System				
Customer	131	Customer needs met					System				
	132	Complaints resolution					System				
Financial Capacity	133	Financial plan					System				
	134	Rate structure					System				
	135	Funding available for O&M					System				
	136	Funding for improvements					System				
	137	Rates adjustable					System				
	138	Penalty for non paying customers					System				
	139	Insurance					System				
	140	Finances for growth plan					System				
	141	Infrastructure grant					System				
	142	Capital improvement plan					System				

Likelihood Table

Level	Descriptor	Description	Probability of Occurrence in Next 10 Years
1	Rare	May only occur in exceptional circumstances	<10%
2	Unlikely	Could occur at some time	10-30%
3	Possible	Will probably occur at some time	31-70%
4	Likely	Will probably occur in most circumstances	71-90%
5	Almost certain	Is expected to occur in most circumstances	>90%

Consequence Table

Level	Descriptor	Description
1	Insignificant	Insignificant impact, no illness, little disruption to normal operation, little or no increase in normal operating costs
2	Minor	Minor impact for small population, mild illness moderately likely, some manageable operation disruption, small increase in operating costs
3	Moderate	Minor impact for large population, mild to moderate illness probable, significant modification to normal operation but manageable, operating costs increase, increased monitoring
4	Major	Major impact for small population, severe illness probable, systems significantly compromised and abnormal operation if at all, high-level monitoring required
5	Catastrophic	Major impact for large population, severe illness probable, complete failure of systems

Risk Table

			Consequence				
			Insignificant	Minor	Moderate	Major	Catastrophic
			1	2	3	4	5
Likelihood	Rare	1	1	1	2	3	3
	Unlikely	2	1	1	2	3	4
	Possible	3	1	2	3	4	4
	Likely	4	2	3	3	4	4
	Almost Certain	5	2	3	4	4	4

1 = Low 2 = Moderate 3= High 4 = Very High

FORM THREE: Risk Grouping

SAVE YOUR WORK OFTEN, AND PRINT THIS PAGE FOR YOUR RECORDS.

• This page is an alternative view of the information presented in the Risk Rating sheet. Here the risks are grouped to highlight system areas where there is greater concern.

Name of System:	
Your Name:	
Date:	

Issue	Summary of Hazards	Risk Summary
Operations		
Ownership		
System permits		
Management & Training		
Monitoring		
Handling customer complaints		
Financial capacity		
Financial growth		
System growth		
Sub Total		

Source Contaminants		
Watershed Boundary and animals		
Resource activity and infrastructure		
Other influence 0-300m		
Intake position		
Intake buffered & in a pool		
Intake Condition		
Signage, inspection & maintenance		
Sub Total		

Issue	Summary of Hazards	Risk Summary
Well water contaminants		
Surface water influence		
Cross contaminated from other well		
Aquifer		
Outside aquifer influence		
Well type		
Covers and seals		
Pitless adapter and casing gap		
Casing position		
Sub Total		

Water System Elements		
Storage tank		
Tank flow and controls		
Pump installation and sensors		
Pump capacity		
Pump and tank maintenance		
Security		
Distribution pipes		
Distribution emergency maintenance		
Routine maintenance		
Cross connection control		
Power availability and back-up		
Sub Total		

Issue	Summary of Hazards	Risk Summary
Treatment		
Need for treatment		
POE/POU		
Filtration		
Disinfection		
Maintenance		
Disinfectant sampling		
Pressure, flow and alarms		
Sub Total		

Water Quality, Quantity, Public Notices		
Water quantity		
Source water quality		
Finished water quality		
Public Notices		
Sub Total		