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Water/Wastewater Incident Notification and Communication Protocol

DHW, SA Water, EPA

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Introduction

The Water/Wastewater Incident Notification and Communication Protocol (the Protocol) was established in 1999 between the Department for Health and Wellbeing (DHW), SA Water and EPA to ensure interagency communication and the development of a coordinated response to water and wastewater incidents that could potentially cause public health or environmental harm. The Protocol also includes notification to other relevant bodies such as Landscape South Australia Boards, the Office of the Technical Regulator, and local Councils. The Protocol meets regulatory requirements in relation to notification of incidents under the *Safe Drinking Water Act 2011* and in recycled water approvals issued under the South Australian Public Health (Wastewater) Regulations 2013.

In order for a coordinated incident response to be developed within Government (see Figure 1, Appendix) a need was identified for:

- a lead Minister to be appointed for each serious incident
- an independent Water Incident Coordinator (WIC) to advise the lead Minister throughout the duration of that incident

Duties of the WIC and lead Minister are provided in Figure 2, Appendix.

Since its inception in 1999 the Protocol has undergone an annual review process to ensure that the structure and content of the document remains relevant and accurately captures the range and complexity of potential water and wastewater incidents.

Incidents are classified into three types: Priority Type 1, Type 1 or Type 2 incidents:

PRIORITY TYPE 1 INCIDENTS

These incidents are likely to require immediate interagency meetings to consider responses and possible issuing of public advice. Priority Type 1 incidents are to be reported immediately by direct voice contact to the WIC or to the Wastewater Management Section, DHW (for regional wastewater incidents). Phone messages can be used as a prompt but must be followed up within an hour to ensure voice contact.

TYPE 1 INCIDENTS

These are either:

- **Health** - an incident that without appropriate intervention* could cause serious risk to human health, *or*
- **Environmental** – an incident that without appropriate intervention* could cause or threaten to cause serious or material environmental harm.

Type 1 incidents require immediate notification** to defined agencies and will always be reported by telephone to the WIC or to the Wastewater Management Section, DHW (for regional wastewater incidents) and concerned Ministers or delegate***. Notification to the WIC and identified agencies will be immediately by telephone and within 24 hrs by email, e.g.

- if an incident occurs at 4.10pm on Tuesday, notification via email/hardcopy must occur by 4.10pm on Wednesday
- if an incident occurs at 2.40pm on Friday, notification via email/hardcopy must occur by 2.40pm on Saturday

There are certain Type 1 incidents that require notification to the EPA as soon as practicable via the SA Water SAAM/fax system and to other agencies within 3 hrs by telephone.- as indicated in the tables of criteria. Concerned Ministers (or delegate) will be advised as soon as possible and within 24 hrs in writing.

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TYPE 2 INCIDENTS

These are either:

- **Health** - an incident that without appropriate intervention* represents a low risk to human health, *or*
- **Environmental** – incidents that without appropriate intervention* cause or could cause environmental harm but are not of a high impact or on a wide scale.

In the absence of appropriate intervention and remediation, Type 2 incidents have the potential to escalate to Type 1 or Priority Type 1 incidents. Type 2 incidents require notification to defined agencies but will not be routinely reported to the WIC and concerned Ministers. Type 2 incidents will be reported within 24 hrs. Where this is not practicable, i.e. incident occurs late Friday afternoon, on a weekend or public holiday, notification must occur by no later than 12 noon the next business day, e.g.

- if an incident occurs at 9.10am on Wednesday, notification via telephone or email/hardcopy must occur by 9.10am the next day (Thursday)
- if an incident occurs at 3pm on Friday notification via telephone or email/hardcopy on the same day is preferable, but in any case, no later than 12 noon the following Monday (unless it is a public holiday in which case notification is due by 12 noon Tuesday)
- if an incident occurs at 10.30am on a Saturday, notification via telephone or email/hardcopy must occur by 12 noon the following Monday (unless it is a public holiday in which case notification is due by 12 noon Tuesday)

NOTE: An allowance for notifying Type 2 incidents by 12 noon the next business day is included to eliminate notification requirements over a weekend or on a public holiday

* Appropriateness of intervention can only be determined after notification of the incident, i.e. normally by DHW for health incidents and EPA for environmental incidents.

** Incidents detected through SCADA should be notified within 1 hour. In the event that further time is required to verify the incident in the field, this should be specified as part of the initial notification. Exceedances notified by the Australian Water Quality Centre (AWQC) should be notified within 2 hours (e.g. 1 hour for AWQC to report to SA Water and a further hour for SA Water to notify the WIC and defined agencies).

*** Internal agency protocol may include notification of Priority Type 1/Type 1 incidents to a delegate particularly out of office hours and weekends, e.g. the Minister for Health and Wellbeing can delegate notification of incidents that do not represent a serious public health risk to DHW. Where incidents occur out of office hours or after 5pm on Friday, the ministerial briefing is prepared and forwarded to the relevant Minister the following business day. Phone contact will be made with the Minister's delegate (i.e. Executive Director, Public Health Division) where the incident is considered to represent a significant public health risk or where media interest is likely.

NOTE: For SA Water, the Minister for Climate, Environment and Water's Office is advised in writing by 3 pm next business day for all Priority Type 1 incidents and any other incidents where the SA Water delegate makes a business decision to brief. If an incident poses a potential immediate high consequence (i.e. considered to represent a significant public health risk, risk of significant environment harm or where public interest is likely), the Minister for Climate, Environment and Water's Office is advised verbally as soon as possible, and in writing by 3 pm next business day.

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NOTIFICATIONS SUMMARY

A summary of general notification requirements and timeframes for various agencies is listed below. Refer to incident notification Tables for further details.

Priority Type 1 and Type 1 incidents	DHW EPA (where indicated),	Immediately by telephone and within 24 hrs by SAAM notification/email
	EPA (where indicated)	As soon as practicable via the SA Water SAAM/fax system
	OTR (where indicated)	As soon as practicable by telephone for cross connections, as soon as practicable by SAAM notification/email for other incidents
	LC, LSA, DEW, PIRSA, DIT, URE (where indicated)	Immediately by telephone for treated water discharges or within 3 hrs by telephone where public notification required for wastewater incidents
	BME (aluminium only)	Advised by DHW as soon as practicable by telephone
Type 2 incidents	EPA, DHW, OTR, SAW,	Within 24 hrs by SAAM notification/email

DEFINED INCIDENT CRITERIA

Health and environmental incident criteria that align with the 3 incident categories, Priority Type 1, Type 1 or Type 2 are defined in this Protocol. When comparing chemical sample results to the defined health incident criteria, results are rounded following guidance in the Australian Drinking Water Guidelines (ADWG). See SAWR-WQ-008 (WQ-T08) for further information.

UNDEFINED INCIDENT CRITERIA

Any other health or environmental incident that does not appear in the defined incident criteria (Table 1 - 26) but appears to align with one of the general incident classifications or any incident that could be of public concern/interest shall be classified as a Priority Type 1, Type 1 or Type 2 according to its risk. Where there is uncertainty in categorising an incident, the default should be for the higher risk category. Incidents may be downgraded at a later stage. All incidents shall be reported in the timeframe of a Type 1 incident. This includes any event or situation where there is evidence/suspicion of external contamination, interference with infrastructure or any pollution incident in drinking water source catchments (surface and groundwater) that gives rise to concern about risks to public or environmental health.

RAISING INCIDENTS

Incidents at outlets from treatment plants (Table 10 (A) and (B)) and secondary chlorinators (Table 11) triggered from on-line monitoring and SCADA alarms may require further investigation by operators to determine whether they represent actual events that require notification. Operators are expected to use their experience and knowledge to establish whether there is evidence of analyser faults, unrepresentative results or other circumstances that mean there is a high likelihood that an incident has not occurred. However, if there is uncertainty the incident should be notified in accord with set procedures identified in the Protocol.

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DOWNGRADING INCIDENTS

Downgrading of Priority Type 1, Type 1 and Type 2 incidents as defined by the protocol requires DHW approval, and EPA approval in the case of Environmental incidents. This can be initiated by telephoning the WIC or the Wastewater Management Section, DHW (for regional wastewater incidents), followed by a formal communication process in line with the relevant authorised agency representatives. Additional information on downgrading incidents or identification of non-incidents is contained in SAWR-WQ-008 (WQ-T08).

ONGOING INCIDENTS

Generally incidents will be followed by remedial action and subsequent clear evidence of recovery. However where there is uncertainty about control being re-established an incident will remain ongoing. In regard to drinking water supplies this decision will be made in consultation with the WIC and the Senior Manager Water Expertise at SA Water. For public health wastewater incidents consultation will involve the WIC or the Wastewater Management Section, DHW (for regional wastewater incidents) and the Senior Manager Production and Treatment, SA Water. The incident will remain ongoing until sufficient information is available to demonstrate to the WIC or the Wastewater Management Section, DHW that control has been re-established. In regard to environmental incidents this decision will be made in consultation with the WIC, the Senior Manager Wastewater Environment and Energy at SA Water and the EPA. The incident will remain ongoing until sufficient information is available to demonstrate to the WIC that incident impacts have been mitigated and regulatory authority requirements have been met.

EXPLANATORY NOTES CONTAINED IN SAWR-WQ-008 (WQ-T08)

SA Water maintains an incident notification table SAWR-WQ-008 (WQ-T08) which in addition to the Protocol criteria contains information for water/wastewater treatment plant operators and incident managers on correctly interpreting and applying these criteria and providing further advice on appropriate responses following incidents (e.g. notification requirements, correct sampling protocols, raising and closing out incidents, downgrading incidents or identification of non-incidents, response to SCADA alarms). It is intended that the explanatory notes in SAWR-WQ-008 (WQ-T08) be used in conjunction with the Protocol criteria by SA Water, Production & Treatment Alliance (Suez) and Service Stream along with contractors Trility and Adelaide Aqua. The explanatory notes in SAWR-WQ-008 (WQ-T08) will be updated on an annual basis in line with reviews of the Protocol. Other updates will occur where required to reflect any interim arrangements made between DHW and SA Water.

KEY TO AGENCIES / ACRONYMS	
ADWG	Australian Drinking Water Guidelines
AWQC	Australian Water Quality Centre
DEW	Department for Environment and Water
DHW	Department for Health and Wellbeing
DIT	Department for Infrastructure and Transport
EPA	Environment Protection Authority
LC	Local Council
LSA	Landscape South Australia Board
OTR	Office of the Technical Regulator
PIRSA	Department of Primary Industries and Regions
BME	Biomedical Engineering (Royal Adelaide Hospital)
SAW	SA Water
URE	Users of Recycled Water

1. Non-drinking water supplies

A small number of rural water supply systems deliver non-drinking water or water that cannot be guaranteed as being compliant with the ADWG. Customers are advised that the water is not of drinking quality and of suitable uses, e.g. where a non-drinking classification exists on the basis of microbial quality, customers are advised that the water can be used for drinking purposes provided that the water is boiled prior to use.

A listing of agreed DHW and SA Water non-drinking water supplies is included as an attachment to the Memorandum of Administrative Arrangement document which has been signed by the Chief Executives of both agencies. The non-drinking water supplies are categorised based on the either microbiological quality only (non-drinking unless boiled) or microbiological and chemical quality (non-drinking).

NON-DRINKING UNLESS BOILED:

The following water supplies are classified as non-drinking on the basis of microbial quality. Customers have been advised that the water can be used for drinking provided it is boiled prior to use.

- Cockburn
- Dutchman's/Fosters Creek
- Mannahill
- Mannum-Adelaide P/L
- Murray Bridge-Onkaparinga P/L
- Olary
- Oodlawirra
- South Creek
- Terowie
- Woolundunga
- Yunta

NON-DRINKING WATER:

The following water supplies are classified as non-drinking on the basis of microbial and chemical quality. Customers have been advised that the water cannot be used for drinking even after boiling.

- Blinman
- Hammond / Willowie
- Maree
- Marla
- Oodnadatta
- Peak Spring
- Saltia Creek
- Woolshed Flat

NON-DRINKING ZONES WITHIN DRINKING WATER SYSTEMS

Water supplied to any customer connected to a drinking water supply prior to the disinfection plant is also classified as non-drinking on the basis of compromised microbial and/or chemical quality. This applies to customers connected prior to the disinfection plant in the systems listed below. All supplies listed below are categorised as non-drinking unless boiled:

- Bordertown
- Cowirra
- Quorn
- Uley Vanilla
- Wilmington

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REMOTE COMMUNITIES DUAL SUPPLIES – (NON-DRINKING SUPPLY)

A number of Remote Communities have dual supplies and include distribution system sampling points both in the non-drinking supply and the drinking water supply. The table below applies only to sampling points connected to the non-drinking supply in the following Remote Communities.

- Indulkana (Iwantja)—aesthetic parameters.
- Kaltjiti (Fregon)—aesthetic parameters only.
- Mimili (Everard Park)—high fluoride and nitrate.
- Nepabunna (Nipapanha)—aesthetic parameters and microbial (no disinfection).
- Oak Valley—nitrates
- Yunyarinyi (Kenmore Park) – high fluoride
- Murputja System (Kanpi, Nyapari, Murputja) – high fluoride

In each of these remote communities there is a separate, dedicated drinking water reticulation system supplying drinking water to a household tap and, in some cases, the hot water service. All other Remote Communities' sampling point locations (in drinking water supplies) follow Table 6 -Table 11 of this protocol.

INCIDENTS FOR NON-DRINKING WATER SUPPLIES

For water supplies classified as non-drinking on the basis of unassured microbiological quality, a Type 1 incident is triggered by an exceedance of ADWG values for health-related inorganic chemicals, pesticides, radionuclides, detection of *Naegleria fowleri* ($\geq 50/L$) or an exceedance of the existing pH or algal toxin criteria (see Table 1).

For supplies classified as non-drinking on the basis of both microbiological and chemical quality, a Type 1 incident is triggered by parameters that raise potential concern over using water for bathing (See Table 1) .

Type 1 incidents for non-drinking supplies must be reported as per existing notification mechanisms defined in the Protocol.

The only Type 2 criteria that apply to non-drinking water supplies are detection of > 100 *Naegleria/L*, detection of *Naegleria fowleri* and detection of $> 2\mu g/L$ Lanthanum (Table 1) .

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TABLE 1: NON-DRINKING WATER SUPPLIES

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone and 24 hrs by SAAM notification/email.
- **PIRSA** by telephone within 3 hrs where the water supply is known to be or suspected of being used for stock watering, excluding *N.fowleri* detections.

Type 2 incidents are to be notified and reported to the agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 INCIDENTS		TYPE 2 INCIDENTS
	MICRO SUPPLIES	MICRO/ CHEM SUPPLIES	ALL NON-DRINKING SUPPLIES
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	> 1.3 µg/L toxin ≥ 6,500 cells/mL (in the absence of toxicity data)	> 13 µg/L toxin ≥ 65,000 cells/mL (in the absence of toxicity data)	
Nodularin <i>Nodularia spumigena</i>	> 1.3 µg/L toxin ≥ 40,000 cells/mL (in the absence of toxicity data)	> 13 µg/L toxin ≥ 400,000 cells/mL (in the absence of toxicity data)	
Saxitoxin(s) <i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)	> 1 µg/L toxin ≥ 2,000 cells/mL (in the absence of toxicity data)	> 3 µg/L toxin ≥ 20,000 cells/mL (in the absence of toxicity data)	
Cylindrospermopsin <i>Cylindrospermopsis raciborskii</i> <i>Chrysochlorum ovalisporum</i>	> 1 µg/L toxin ≥ 15,000 cells/mL (in the absence of toxicity data)	> 10 µg/L toxin ≥ 150,000 cells/mL (in the absence of toxicity data)	
Health-related inorganic chemicals	Any exceedance of health values prescribed in the ADWG	> 10 times the health values prescribed in the ADWG	
Lanthanum	>10 µg/L	>10 µg/L	>2 µg/L
Pesticides	Any exceedance of health values prescribed in the ADWG	> 10 times the health values prescribed in the ADWG	
Radionuclides	Any exceedance of health values prescribed in the ADWG	> 10 times the health values prescribed in the ADWG	
pH	< 4.5 or > 10.5		
Naegleria			Detection of ≥ 100 organisms / L
Naegleria fowleri	≥ 50 <i>Naegleria fowleri</i> detected		Any detection of <i>Naegleria fowleri</i>

2. Recreational access to reservoirs

A number of reservoir reserves have been opened to the public to allow recreational activities. The recreational activities permitted, and areas of access have been defined for each reservoir.

In this Section, incidents relating to recreational access at the reservoir are defined under the following parameters:

- contamination of a drinking water source, and
- toxic cyanobacteria – where there is a potential health risk to the public engaged in recreational activities

The reporting requirements for each type of incident are indicated in Table 2 and described below.

Any unauthorised high-risk activity at the reservoir (e.g. intended swimming or water immersion) that may lead to immediate/direct contamination of the drinking water source triggers a Type 1 health incident. These incidents are reported immediately to DHW. Unintended water immersion through a recreator accidentally entering the water (e.g. kayak has capsized) triggers a Type 2 health incident.

Other unauthorised activities at the reservoir that present a lower level of risk of contamination (e.g. fishing outside of permitted zone, use of non-compliant watercraft) are reported as Type 2 SAW incidents under the same parameter. These incidents are reported as part of the recreational access compliance monitoring program. DHW receive SAAM notification for these incidents, but the incidents are not included in annual reporting.

High levels of toxic cyanobacteria in reservoirs, which are accessible to the public can trigger an incident. These incidents can present a risk to health where exposure to the toxic cyanobacteria occurs while engaging in recreational activities. Incidents of toxic cyanobacteria within the reservoir location (at both dedicated drinking water reservoir and recreational access locations) are raised under the criteria in Table 6 -9 and reported to DHW.

Extremely high levels of toxic cyanobacteria may require of a reservoir to be closed (see Table 2), these incidents are raised as a Type 1 SAW with immediate notification to DHW. These Type 1-SAW incidents are not included in annual reporting. Reservoir closures levels are based the visual observation of cyanobacterial scum in areas used by recreators in addition to either toxin concentrations (WHO guidelines on recreational waters, 2nd Edn. July 2021, Figure 0.2) or cell concentrations (in the absence of toxin data). The cell concentration has been derived using calculated ratios (cell concentration: toxin) where the cell concentration is the NHMRC ADWG version 3.7, Jan 2022 drinking water cell concentration and multiplied by the new WHO Recreational guideline for toxin.

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TABLE 2: RESERVOIRS WITH RECREATIONAL ACCESS

Applies to reservoirs with recreational access – refer to SAWR-WQ-008 (WQ-T08) for details

- Online Reservoirs include: Barossa, Happy Valley, Hope Valley, Little Para, Mount Bold, Myponga, South Para, Warren (when transferring to South Para)
- Offline Reservoirs include: Beetaloo, Bundaleer, Tod River and Warren (when not transferring to South Para)

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone and within 24 hrs via SAAM notification/email
- **EPA** via the SAW SAAM/fax system (as soon as practicable)

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs via SAAM notification

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
WATER QUALITY INCIDENTS		
Contamination of a drinking water source – reservoirs with recreational access	Any unauthorised high-risk activity e.g. swimming / intended water immersion or other that can lead to contamination of an online reservoir #	Any unintended water immersion in an online / offline reservoir (e.g. accidentally falling from kayak) Any unauthorised high-risk activity e.g. swimming / intended water immersion in an offline reservoir # TYPE 2-SAW Any other defined unauthorised activity in the reservoir reserve #
Wastewater spills in the reservoir reserve	Wastewater spills not contained by the bunded area of the toilet	Wastewater spills contained by the bunded area of the toilet
RECREATIONAL WATER INCIDENTS		
Toxic cyanobacteria	TYPE 1 SAW Visual observation of thick cyanobacterial scum or paint-like green film on surface in areas used by recreators with toxin data and / or the cell numbers (in the absence of toxin data), that may lead to reservoir closure.#	

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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RESERVOIRS WITH RECREATIONAL ACCESS continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
RECREATIONAL WATER INCIDENTS		
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	TYPE 1 SAW >24 µg/L toxin ≥ 120,000 cells/mL (in the absence of toxicity data)	
Nodularin <i>Nodularia spumigena</i>	TYPE 1 SAW >24 µg/L toxin ≥ 720,000 cells/mL (in the absence of toxicity data)	
Saxitoxin(s) <i>Dolichospermum circinale</i> <i>(Anabaena circinalis)</i>	TYPE 1 SAW > 30 µg/L toxin ≥ 200,000 cells/mL (in the absence of toxicity data)	
Cylindrospermopsin(s) <i>Cylindrospermopsis raciborskii</i> <i>Chrysochloris ovalisporum</i>	TYPE 1 SAW > 6 µg/L toxin ≥ 90,000cells/mL (in the absence of toxicity data)	

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

3. Water incident criteria

TABLE 3: BLUE GREEN ALGAE AND TOXIN INCIDENT SUMMARY

PARAMETER	LEVEL	Surface Water Catchments Table 6	Reservoirs		Treatment Plants			Distribution System Table 11
			Indirect Supply Table 7	Filtered Direct Supply Table 8	Inlets Table 9	Outlets Table 10		
					All supplies	Filtration Plants	Disinfection Stations	
Microcystin	>13 µg/L	Type 1	Type 2	Type 1	Priority Type 1	-	-	-
	>1.3 µg/L	Type 2	-	Type 2	Type 1	Priority Type 1	Priority Type 1	Priority Type 1
<i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	≥65,000 cells/mL#	Type 1	Type 2	Type 1	Priority Type 1	-	-	-
	≥6,500 cells/mL#	Type 2	-	Type 2	Type 1	-	-	-
Nodularin	>13 µg/L	Type 1	Type 2	Type 1	Priority Type 1	-	-	-
	>1.3 µg/L	Type 2	-	Type 2	Type 1	Priority Type 1	Priority Type 1	Priority Type 1
<i>Nodularia spumigena</i>	≥400,000 cells/mL#	Type 1	Type 2	Type 1	Priority Type 1	-	-	-
	≥40,000 cells/mL#	Type 2	-	Type 2	Type 1	-	-	-
Saxitoxin(s)	>3 µg/L	Type 1	Type 2	Type 1	Priority Type 1	-	-	-
	>1 µg/L	Type 2	-	Type 2	Type 1	Priority Type 1	Priority Type 1	Priority Type 1
<i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)	≥20,000 cells/mL#	Type 1	Type 2	Type 1	Priority Type 1	-	-	-
	≥2,000 cells/mL#	Type 2	-	Type 2	Type 1	-	-	-
Cylindrospermopsin(s)	>10 µg/L	Type 1	Type 2	Type 1	Priority Type 1	-	-	-
	>1 µg/L	Type 2	-	Type 2	Type 1	Priority Type 1	Priority Type 1	Priority Type 1
<i>Cylindrospermopsis raciborskii</i> <i>Chrysochloris ovalisporum</i>	≥150,000 cells/mL#	Type 1	Type 2	Type 1	Priority Type 1	-	-	-
	≥15,000 cells/mL#	Type 2	-	Type 2	Type 1	-	-	-

in the absence of toxicity data

TABLE 4: CRYPTOSPORIDIUM AND GIARDIA INCIDENT SUMMARY

PARAMETER		Surface Water Catchment Table 6	Reservoirs		Treatment Plants				Distribution system	
			Indirect Supply Table 7	Filtered Direct Supply Table 8	Inlets Table 9		Outlets Table 10		Table 11	
					Filtered supplies	Unfiltered supplies	Filtration Plants	Disinfection Stations	Unfiltered supplies	Filtered supplies
<i>Cryptosporidium</i>	<i>parvum / hominis</i> detected	-	-	-	Type 1 #	-	-	-	-	-
	≥ 500 confirmed	Type 1	Type 1	-	-	-	-	-	-	-
	≥ 50 confirmed	Type 2	Type 2	Type 1	Type 1	-	-	-	-	-
	any confirmed	-	-	Type 2	Type 2	Priority Type 1	Priority Type 1 #	Priority Type 1	Priority Type 1	Priority Type 1
	any presumptive	-	-	-	-	Type 1	Type 1	Type 1	Type 1	Priority Type 1
<i>Giardia</i>	≥ 500 confirmed	Type 1	Type 1	-	-	-	-	-	-	-
	≥ 50 confirmed	Type 2	Type 2	Type 1	Type 1	-	-	-	-	-
	any confirmed	-	-	Type 2	Type 2	Priority Type 1	Priority Type 1 #	Priority Type 1	Priority Type 1	Priority Type 1
	any presumptive	-	-	-	-	Type 1	Type 1	Type 1	Type 1	Priority Type 1

Filtered Supplies / Filtration plant with UV disinfection – DHW verification requirements include showing minimum UV was achieved at all times during the plant challenge (scan must be provided) turbidity and product water results

TABLE 5: CRYPTOSPORIDIUM INFECTIVITY ASSAY – RESULT REPORTING AND INCIDENT SUMMARY

Applies to samples taken at the WTP outlet for Adelaide Metropolitan WTPs; Anstey Hill WTP, Barossa WTP, Hope Valley WTP and Little Para WTP

Note: Systems with UV disinfection have been removed. Use Table 4 for all other locations.

Results obtained from emergency processing (where presumptive *Cryptosporidium* count is $n \geq 2$) are to be reported to DHW as an update to the existing Type 1 incident (by telephone and email). Final classification of the incident will occur once *Cryptosporidium* infectivity assay results are obtained.

Wednesday pm/ Thursday am		Thursday			Friday			
		Emergency processing of duplicate sample						
Presumptive <i>Cryptosporidium</i> count (no of oocyst detected)	Incident	Duplicate sample (10L)	Confirmed <i>Cryptosporidium</i> count (FITC/ DAPI)	Speciation <i>C.parvum</i> / <i>C.hominis</i> FISH Probe + 3hrs	<i>Cryptosporidium</i> infectivity assay result (+ /- foci)	Incident	Genotyping <i>C.parvum</i> / <i>C.hominis</i> +3-6 hrs	Incident
n = 0	No incident				Non-infectious	No incident		
					Infectious	Type 1	Negative	Type 1
					Infectious	Type 1	<i>C.hominis</i> or <i>C.parvum</i>	Priority Type 1
n = 1	Type 1				Non-infectious	Type 1		
					Infectious	Update DHW	Negative	Type 1
					Infectious	Update DHW	<i>C.hominis</i> or <i>C.parvum</i>	Priority Type 1
n ≥ 2	Type 1	yes	Presumptive or none detected	n/a	Non-infectious	Type 1		
					Infectious	Update DHW	Negative	Type 1
					Infectious	Update DHW	<i>C.hominis</i> or <i>C.parvum</i>	Priority Type 1
			confirmed	Not detected	Non-infectious	Type 1		
					Infectious	Update DHW	Negative	Type 1
					Infectious	Update DHW	<i>C.hominis</i> or <i>C.parvum</i>	Priority Type 1
			confirmed	<i>C.parvum</i> or <i>C.hominis</i> detected	Non-infectious	Type 1		
					Infectious	Priority Type 1	Negative	Priority Type 1
					Infectious	Priority Type 1	<i>C.hominis</i> or <i>C.parvum</i>	Priority Type 1

TABLE 6: SURFACE WATER CATCHMENTS

Applies to general River Murray and other rivers and streams e.g. Onkaparinga River, Snake Gully Creek. Applies to inlets to direct supply reservoirs.

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW and EPA** (for chemicals and pesticides only) immediately by telephone and within 24 hrs by SAAM notification/email.
- **EPA** via the SA Water SAAM/fax system (as soon as practicable)
- **DEW and LSA (Murraylands and Riverland)** for Algae immediately by telephone and within 24 hrs by email and **LC** notified by **WIC** as required.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW and EPA** within 24 hrs by SAAM notification/email

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	> 13 µg/L toxin ≥ 65,000 cells/mL (in the absence of toxicity data)	> 1.3 µg/L toxin ≥ 6,500 cells/mL (in the absence of toxicity data)
Nodularin <i>Nodularia spumigena</i>	> 13 µg/L toxin ≥ 400,000 cells/mL (in the absence of toxicity data)	> 1.3 µg/L toxin ≥ 40,000 cells/mL (in the absence of toxicity data)
Saxitoxin(s) <i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)	> 3 µg/L toxin ≥ 20,000 cells/mL (in the absence of toxicity data)	>1 µg/L toxin ≥2,000 cells/mL (in the absence of toxicity data)
Cylindrospermopsin(s) <i>Cylindrospermopsis raciborskii</i> <i>Chrysochloris ovalisporum</i>	> 10 µg/L toxin ≥ 150,000 cells/mL (in the absence of toxicity data)	> 1 µg/L toxin ≥ 15,000 cells/mL (in the absence of toxicity data)
Cryptosporidium or Giardia	≥500 confirmed organisms / 10L in supply weirs and stream inlets to reservoirs#	≥50 confirmed organisms / 10L in supply weirs and stream inlets to reservoirs#
Health-related organic chemicals	Any exceedance of health values prescribed in the ADWG	Any detection, excluding pesticides
Pesticides	Any exceedance of health values prescribed in the ADWG	Detection equivalent to > 10% of the health values prescribed in the ADWG
Health-related inorganic chemicals and Radionuclides	Any exceedance of health values prescribed in the ADWG	
Lanthanum	>10 µg/L	>2 µg/L

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria.

TABLE 7: INDIRECT SUPPLY RESERVOIRS

Applies to water storages that are remote from a direct supply reservoir, e.g. South Para, Warren, Mt Bold, Kangaroo Creek

For incidents relating to recreational access refer to Table 2.

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone and within 24 hrs by SAAM notification/email.
- **EPA** via the SA Water SAAM/fax system (as soon as practicable)

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** and **EPA** within 24 hrs by SAAM notification/email

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>		> 13 µg/L toxin ≥ 65,000 cells/mL (in the absence of toxicity data)
Nodularin <i>Nodularia spumigena</i>		> 13 µg/L toxin ≥ 400,000 cells/mL (in the absence of toxicity data)
Saxitoxin(s) <i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)		> 3 µg/L toxin ≥ 20,000 cells/mL (in the absence of toxicity data)
Cylindrospermopsin(s) <i>Cylindrospermopsis raciborskii</i> <i>Chrysochloris ovalisporum</i>		> 10 µg/L toxin ≥ 150,000 cells/mL (in the absence of toxicity data)
Cryptosporidium or Giardia	≥ 500 confirmed organisms / 10 L#	≥ 50 confirmed organisms / 10 L#
Contamination of a drinking water supply		Direct contamination of a drinking water reservoir #
Health-related organic chemicals		Any exceedance of health values prescribed in the ADWG
Health-related inorganic chemicals and Radionuclides		Any exceedance of health values prescribed in the ADWG
Lanthanum		>10 µg/L

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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TABLE 8: FILTERED DIRECT SUPPLY RESERVOIRS

Applies to reservoirs that supply water directly to water treatment plants, e.g. Millbrook, Hope Valley, Barossa, Myponga, Mannum Summit, Onkaparinga Summit Storage, Happy Valley

For incidents relating to recreational access refer to Table 2.

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone and within 24 hrs by SAAM notification/email.
- **EPA** via the SA Water SAAM/fax system (as soon as practicable)

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** and **EPA** within 24 hrs by SAAM notification/email .

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	> 13 µg/L toxin ≥ 65,000 cells/mL (in the absence of toxicity data) #	> 1.3 µg/L toxin ≥ 6,500 cells/mL (in the absence of toxicity data) #
Nodularin <i>Nodularia spumigena</i>	> 13 µg/L toxin ≥ 400,000 cells/mL (in the absence of toxicity data) #	> 1.3 µg/L toxin ≥ 40,000 cells/mL (in the absence of toxicity data) #
Saxitoxin(s) <i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)	> 3 µg/L toxin ≥ 20,000 cells/mL (in the absence of toxicity data) #	>1 µg/L toxin ≥2,000 cells/mL (in the absence of toxicity data) #
Cylindrospermopsin(s) <i>Cylindrospermopsis raciborskii</i> <i>Chrysochloris ovalisporum</i>	> 10 µg/L toxin ≥ 150,000 cells/mL (in the absence of toxicity data) #	> 1 µg/L toxin ≥ 15,000 cells/mL (in the absence of toxicity data) #
Naegleria	Any detection of <i>Naegleria fowleri</i>	
Cryptosporidium or Giardia	Detection of ≥ 50 confirmed organisms / 10 L#	Any detection of confirmed organisms / 10 L#
Contamination of a drinking water supply	Direct contamination of a drinking water reservoir #	
Health-related organic chemicals	Any exceedance of health values prescribed in the ADWG	Any detection excluding pesticides
Pesticides	Any exceedance of health values prescribed in the ADWG	Detection equivalent to > 10% of the health values prescribed in the ADWG
Health-related inorganic chemicals and Radionuclides	Any exceedance of health values prescribed in the ADWG	
Lanthanum	>10 µg/L	>2 µg/L

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

TABLE 9: TREATMENT PLANT INLETS

- Applies to surface water or groundwater entering treatment plants and prior to any processes
- Includes unfiltered direct supply reservoirs (e.g. Blue Lake, Lincoln Gap and Redbanks) and groundwater supplies (e.g. Bordertown, Millicent) that supply water that is disinfected only
- Includes inlets to desalination plants. Note Type 1 and 2 criteria for algae, *Cryptosporidium* and *Giardia* do not apply to desalination plants (due to source of water)

Priority Type 1 and Type 1 incidents will be notified and reported to agencies indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email
- **EPA** via the SA Water SAAM/fax system (as soon as practicable)

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** and **EPA** within 24 hrs by SAAM notification/email.

PARAMETER	PRIORITY TYPE 1 CRITERIA	
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	> 13 µg/L toxin ≥ 65,000 cells/mL (in the absence of toxicity data) #	
Nodularin <i>Nodularia spumigena</i>	> 13 µg/L toxin ≥ 400,000 cells/mL (in the absence of toxicity data) #	
Saxitoxin(s) <i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)	> 3 µg/L toxin ≥ 20,000 cells/mL (in the absence of toxicity data) #	
Cylindrospermopsin(s) <i>Cylindrospermopsis raciborskii</i> <i>Chrysochloris ovalisporum</i>	> 10 µg/L toxin ≥ 150,000 cells/mL (in the absence of toxicity data) #	
Cryptosporidium or Giardia	Any detection of confirmed organisms / 10 L at the plant inlet of unfiltered supplies#	
Pesticides	Any exceedance of health values prescribed in the ADWG	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	> 1.3 µg/L toxin ≥ 6,500 cells/mL (in the absence of toxicity data) #	
Nodularin <i>Nodularia spumigena</i>	> 1.3 µg/L toxin ≥ 40,000 cells/mL (in the absence of toxicity data) #	
Saxitoxin(s) <i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)	>1 µg/L toxin ≥ 2,000 cells/mL (in the absence of toxicity data) #	
Cylindrospermopsin(s) <i>Cylindrospermopsis raciborskii</i> <i>Chrysochloris ovalisporum</i>	> 1 µg/L toxin ≥ 15,000 cells/mL (in the absence of toxicity data) #	

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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TREATMENT PLANT INLETS continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Naegleria	Any detection of <i>Naegleria fowleri</i>	
Cryptosporidium or Giardia	<p>Detection of ≥ 50 confirmed organisms per 10 L at the plant inlet of filtered supplies#</p> <p>Any detection of confirmed and speciated <i>C.parvum</i> group / <i>C. parvum</i>/ <i>C.hominis</i> per 10 L at the plant inlet of filtered supplies, <u>unless</u> DHW verifies minimum UV dose was achieved at all times (scan must be provided) – see specific UV minimum plant doses # (column E).</p> <p>Any detection of presumptive organisms per 10 L at the plant inlet of unfiltered supplies</p>	Any detection of confirmed organisms per 10 L at the plant inlet of filtered supplies#
Health-related organic chemicals	Any exceedance of health values prescribed in the ADWG	Any detection excluding pesticides
Pesticides		Detection equivalent to > 10% of the health values prescribed in the ADWG
Health-related inorganic chemicals	Any exceedance of health values prescribed in the ADWG (refer to exemptions below) #	
Lanthanum	>10 µg/L	>2 µg/L
Radionuclides	Any exceedance of health values prescribed in the ADWG	
Radon (Wilmington supply)	Interruption to aeration >15 mins where the Mine bore is the sole water supply	<p>Interruption to aeration >24 hrs where Bore 3 is the sole water supply <i>or</i> Bore 3/Mine Bore water is blended at the agreed ratio.</p> <p>Failure of Bore 3 for >24 hrs (use of Mine bore water only) where the aeration system continues to operate</p>
Total petroleum hydrocarbons (Seawater reverse osmosis plants)	Any exceedance of WHO health-based values (refer to # for link to relevant document)	

see Protocol Explanatory Notes (in SAWR-WQ-008 (WQ-T08)) for additional information on this criteria

TREATMENT PLANT INLETS continued

EXEMPTIONS	
<p>Health-related inorganic chemicals</p>	<p>For naturally occurring chemicals where paired samples taken after treatment comply with ADWG (e.g. iodine, selenium, cadmium, arsenic at Lameroo or Pinnaroo,)</p> <p>Also applies to the exceedance of copper at the plant inlet during copper compound dosing of a direct supply reservoir where paired samples taken after treatment comply with ADWG</p> <p>#</p> <p>Exceedance of ADWG values after treatment are Type 1 incidents – refer to Table 11.</p>
<p>Radon</p>	<p>Also applies to exceedance of Radon at the plant inlet where a paired sample taken after treatment complies with ADWG</p>

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

TABLE 10: TREATMENT PLANT OUTLETS

For treatment plant outlet sampling locations where there is a filtration and a disinfection plant, criteria for both Table 10 (A) and Table 10 (B) apply

(A) Filtration Plants

- Applies to plants with media filtration
- Does not include iron/arsenic removal plants
- Applies to results obtained after filtered water storages, with the exception of turbidity which may also apply prior to filtered water storage

(B) Primary Disinfection Stations

- Applies to primary disinfection stations
- Includes disinfection at iron/arsenic removal stations
- Applies to disinfection failures/faults and results obtained after disinfection, e.g. chlorination, chloramination or UV station outlet

Note: Criteria listed in Table 11 also apply for Water Treatment Outlets when tested i.e. health related chemicals (including aluminium & monochloramine), pesticides, algal toxins, lanthanum, radionuclides, chlorate.

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email
- **EPA** for discharge of treated water immediately by telephone and within 24 hrs by SAAM notification/email
- **OTR** (excluding exceedances for health related parameters) as soon as practicable by SAAM notification/email

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email (with the exception of water main bursts)
- **OTR** (excluding exceedances for health related parameters) within 24 hrs by SAAM notification/email
- **EPA, LC and LSA** for water main bursts within 24 hrs by SAAM notification/email

(A) FILTRATION PLANT

PARAMETER	PRIORITY TYPE 1 CRITERIA
<i>Cryptosporidium</i> or <i>Giardia</i>	Any detection of confirmed organisms per 10 L, <u>unless</u> DHW verifies that the minimum UV dose was achieved at all times (scan must be provided) – see specific UV minimum plant doses # (column E) or , in the case of <i>Cryptosporidium</i> , speciation tests for both <i>C. parvum</i> and <i>C. hominis</i> are negative. # Positive result in <i>Cryptosporidium</i> infectivity assay, where <i>C.parvum</i> or <i>C.hominis</i> is also detected #
<i>Naegleria fowleri</i>	Any detection

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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(A) FILTRATION PLANT continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Turbidity Media filtration plants with dedicated individual filter turbidimeters + Worrina (excludes reverse osmosis) #	>0.5 NTU for 15 consecutive minutes (individual filters) <u>unless</u> DHW verifies that the minimum UV dose was achieved at all times (scan must be provided) – see specific UV minimum plant doses # (column E)	> 0.5 NTU for 15 consecutive minutes (individual filters) with DHW verification of the minimum UV dose being achieved (scan must be provided) – see specific UV minimum plant doses # (column E) > 0.2 NTU for 30 consecutive minutes (combined filtrate as measured through online measurements) <u>unless</u> DHW verifies that the minimum UV dose was achieved at all times (scan must be provided) – see specific UV minimum plant doses # (column E)
Turbidity Membrane filtration plants with dedicated individual skid turbidimeters (excludes reverse osmosis) #	>0.15 NTU for 15 consecutive minutes	
<i>Cryptosporidium</i> or <i>Giardia</i>	Any detection of presumptive organisms per 10 L Positive result in <i>Cryptosporidium</i> infectivity assay where <i>C.parvum</i> or <i>C.hominis</i> are not detected#	
Conductivity combined permeate Seawater desalination only – (Penneshaw, ADP)	>800 µS/cm for 30 consecutive minutes	
Algal toxins or treatment chemicals	Discharge of ≥ 50 KL process water containing concentrated algal toxins or treatment chemicals to the River Murray	Discharge of <50 KL process water containing concentrated algal toxins or treatment chemicals to the River Murray
Treated water# discharges^E	Discharge of ≥ 1 ML treated # water to a natural or modified watercourse # either directly or through the local stormwater system	Discharge of >50 KL <1 ML treated # water to a natural or modified watercourse # either directly or through the local stormwater system

^E Environmental incident

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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(B) PRIMARY DISINFECTION STATIONS

PARAMETER	PRIORITY TYPE 1 CRITERIA	
<i>Cryptosporidium or Giardia</i>	Any detection of confirmed organisms per 10 L	
<i>Naegleria fowleri</i>	Any detection	
Chlorination or chloramination	Disinfection plant failure including underdosing that leads to consumers receiving undisinfected water (determined by loss of chlorine residual) sourced from a surface water supply or groundwater supply known to be microbiologically contaminated	
Chlorine/ammonia gas leak	Any uncontrolled leak that causes chlorine or ammonia gas to be released outside of any enclosure that could cause exposure to the public	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Chlorination or chloramination	Disinfection plant failure including underdosing that leads to consumers receiving undisinfected water (determined by loss of chlorine residual) sourced from a ground water supply **	Disinfection plant failure leading to interruption to disinfection dosing for more than 1 hr (and is not a Type 1 incident).
Chlorine	Residual > 5.0 mg/L for >15 consecutive minutes as measured via online analyser.	
Monochloramine	Residual > 5.0 mg/L for >30 consecutive minutes as measured via online analyser	
UV	Any failure (except Remote Communities facility) resulting in <50% of the plant's required dose for ≥ 10 minutes – see specific UV 50% plant doses # (column F)	Any Remote Communities UV facility outage (less than 1 week) with DHW verification the supply is free from microbiological contamination (all pre-UV sample locations, 2 years data)
Fluoride	>1.5 mg/L for > 15 consecutive minutes as measured by on-line analyser.	
<i>Cryptosporidium or Giardia</i>	Any detection of presumptive organisms per 10 L	
EXEMPTION		
Chlorination or chloramination	Low volume loss of chlorine residual at Quorn (groundwater), where the total volume is <4kL and the supply is free of microbiological contamination #	

see Protocol Explanatory Notes SAWR-WQ-008 (WQ-T08) for additional information on this criteria

** If a disinfection failure at Mt Gambier (i.e. surface water supply) results in the supply of undisinfected water to customers for a period < 30 minutes, the incident can be raised as a Type 1 incident. If the disinfection failure occurs for a period ≥ 30 minutes, then the incident must be raised as a Priority Type 1 incident.

TABLE 11: DISTRIBUTION SYSTEMS

- Applies to drinking water which is being distributed to customers, e.g. pipelines and customer taps
- Includes after-chlorination secondary disinfection locations

Priority Type 1 and Type 1 incidents will be notified and reported to agencies indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email .
- **EPA** for chlorine/ammonia gas leak and discharge of treated water immediately by telephone and within 24 hours by email
- **LC** and **LSA** for discharge of treated water immediately by telephone and within 24 hrs by email
- **OTR** for cross connections as soon as practicable by telephone, for other incidents (excluding health related water quality parameters) as soon as practicable or by SAAM notification/email
- **BME** (for Aluminium) advised by **DHW** as soon as practicable by telephone.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email (with the exception of water main bursts)
- **EPA, LC** and **LSA** for water main bursts within 24 hrs by telephone or email
- **OTR** (excluding health related water quality parameters) within 24 hrs by SAAM notification/email.

PARAMETER	PRIORITY TYPE 1 CRITERIA	
Microcystin	> 1.3 µg/L toxin	
Nodularin	> 1.3 µg/L toxin	
Saxitoxin(s)	> 1 µg/L toxin	
Cylindrospermopsin(s)	> 1 µg/L toxin	
Viruses, <i>Naegleria fowleri</i>	Any detection	
<i>Cryptosporidium, Giardia</i>	Any detection of presumptive or confirmed organisms/10L in filtered supplies. Any detection of confirmed organisms/10L in unfiltered supplies	
Pesticides#	Any exceedance of health values prescribed in the ADWG#	
Chlorine/ammonia gas leak from secondary chlorinators ^E	Any uncontrolled leak that causes chlorine or ammonia gas to be released outside of any enclosure that could cause exposure to the public	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
pH	<4.5 or >10.5	
THMs #	>250 µg/L for a period ≥ 12 weeks Or >300 µg/L	>250 µg/L
Chloral hydrate	> 100 µg/L	
Chlorate	> 0.7 mg/L	
Acid soluble aluminium	> 0.2 mg/L	

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DISTRIBUTION SYSTEMS continued.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Chlorine at secondary disinfection stations	Residual > 5.0 mg/L for > 15 consecutive minutes as measured via online analyser	
Monochloramine at secondary disinfection stations	Residual > 5.0 mg/L for >30 consecutive minutes as measured via online analyser	
Health-related organic chemicals #	Any exceedance of health values prescribed in the ADWG	Any detection excluding pesticides and disinfection by-products
Pesticides#		Detection equivalent to > 10% of the health values prescribed in the ADWG
Health-related inorganic chemicals #	Any exceedance of health values prescribed in the ADWG	
Lanthanum	>10 µg/L	>2 µg/L
Radionuclides	Any exceedance of health values prescribed in the ADWG	
<i>E.coli</i>	Any detection of <i>E.coli</i> per 100mL in consecutive samples from a specific location or detections in more than one location of the same WQ zone.	Any detection
<i>Cryptosporidium</i> or <i>Giardia</i>	Any detection of presumptive organisms per 10 L in unfiltered supplies.	
Treated water# discharges^E	Discharge of ≥ 1 ML treated # water to a natural or modified watercourse # either directly or through the local stormwater system	Discharge of > 50 KL < 1 ML treated # water to a natural or modified watercourse # either directly or through the local stormwater system
Cross-connection	Detection of a cross-connection with confirmed backflow, or a mis-connection, from a non-drinking source* to the drinking water network # <i>*where the non-drinking source is recycled water, see the appropriate Wastewater/ Recycled water incident criteria in Section 4 or 5 of the Protocol</i>	
Contamination of a drinking water supply	Direct contamination of a mains supply # Direct contamination of a treated water storage #	
Public complaints		Evidence of clustered complaints (5 or more within a 48hr period for a specific zone) regarding a single water quality issue #

^E Environmental incident

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

4. Wastewater incident criteria - metro

This Section includes incident criteria for metropolitan wastewater and recycled water treatment plants and networks (excluding Myponga)

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TABLE 12: METROPOLITAN WASTEWATER AND RECYCLED WATER TREATMENT PLANTS DISCHARGES

Discharge is identified as any uncontrolled escape from a SA Water system due to burst, overflow or infrastructure/equipment failure.

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW and EPA** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email
- **LSA & LC** for effluent disinfection where discharge is to fresh or estuarine water, sewage discharges and sludge discharges within 3 hrs by telephone.
- **URE** for effluent disinfection and turbidity within 3 hrs by telephone.
- **OTR** as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW, EPA, OTR** within 24 hrs by SAAM notification/email
- **LC** for odours, sewage discharges, treated effluent discharges and sludge discharges within 24 hrs by telephone or email . No report required for *E. coli*
- **LSA** for sewage discharges treated effluent discharges and sludge discharges within 24 hrs by telephone or email . No report required for *E. coli* or odours

PARAMETER	PRIORITY TYPE 1 CRITERIA	
Effluent disinfection	When the disinfection system fails and there is continual release (> 1 hr Glenelg or Christies Beach,) of undisinfecting effluent	
Chlorine / methane leak	Uncontrolled chlorine or methane gas leakage or significant chemical spills that cause exposure to the public.	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Effluent turbidity ^E	When plant effluent is highly turbid beyond the normal process range, sufficient to cause marked discolouration above normal levels in receiving waters	
<i>E.coli</i> (or enterococci)		When numbers of <i>E.coli</i> or enterococci in the plant effluent discharge to receiving waters exceed <ul style="list-style-type: none"> • 400 / 100mL (Glenelg, Christies Beach)

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METROPOLITAN WASTEWATER AND RECYCLED WATER TREATMENT PLANTS DISCHARGES - continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Wastewater discharges	Discharge of ≥ 100 KL of wastewater (treated or untreated) not contained by the drainage systems in the plant #	Discharge of < 100 KL of wastewater (treated or untreated) not contained by the drainage systems in the plant #
Sludge discharges	<p>Discharge of ≥ 100 KL of sludge not contained by the drainage systems in the plant</p> <p>Discharges of ≥ 10 KL of sludge not contained by the drainage systems in the plant and discharged to a natural or modified watercourse# either directly or through the stormwater system#</p>	Discharge of < 100 KL of sludge to the environment not contained by the drainage systems in the plant (if enters stormwater system or natural watercourse # and ≥ 10 KL, Type 1 applies)
Odours ^E		Release of odours from a wastewater treatment plant causing greater than 2 customer complaints within 48 hrs.

^E Environmental wastewater incident

see Protocol Explanatory Notes in SAWR-WQ-0008 (WQ_T08) for additional information on this criteria

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TABLE 13: CYANOBACTERIA IN WASTEWATER AND RECYCLED WATER STORAGES AND LAGOONS

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone and within 24 hrs by SAAM notification/email
- **EPA** within 24 hrs by SAAM notification/email
- **PIRSA** for release of wastewater containing cyanobacteria which may impact on animal health within 3 hrs by telephone
- **LC** and **LSA** for discharge of wastewater containing cyanobacteria within 3 hrs by telephone and 24 hrs by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW, EPA** within 24 hrs by SAAM notification/email

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Toxic cyanobacteria	Detection of cyanobacteria (as per criteria below) in final product water which could impact on public health #	Detection of cyanobacteria (as per criteria below) in final product water which could impact on public health #
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	> 13 µg/L toxin ≥ 65,000 cells/mL (in the absence of toxicity data)	> 1.3 µg/L toxin ≥ 6,500 cells/mL (in the absence of toxicity data)
Nodularin <i>Nodularia spumigena</i>	> 13 µg/L toxin ≥ 400,000 cells/mL (in the absence of toxicity data)	> 1.3 µg/L toxin ≥ 40,000 cells/mL (in the absence of toxicity data)
Saxitoxin(s) <i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)	> 3 µg/L toxin ≥ 20,000 cells/mL (in the absence of toxicity data)	> 1 µg/L toxin ≥ 2,000 cells/mL (in the absence of toxicity data)
Cylindrospermopsin(s) <i>Cylindrospermopsis raciborskii</i>	> 10 µg/L toxin ≥ 150,000 cells/mL (in the absence of toxicity data)	> 1 µg/L toxin ≥ 15,000 cells/mL (in the absence of toxicity data)

refer to the Cyanobacteria Protocol tab in SAWR-WQ-0008 (WQ_T08) for additional information on this criteria.

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TABLE 14: METROPOLITAN WASTEWATER AND RECYCLED WATER NETWORKS

Discharge is identified as any uncontrolled escape from a SA Water system due to burst, overflow or infrastructure/equipment failure.

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW and EPA** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **LSA and LC** within 3 hrs by telephone.
- **DIT** within 3 hrs by telephone for wastewater or sludge discharges that may impact on water quality at West Lakes
- **OTR** for cross connections as soon as practicable by telephone, for other incidents as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **EPA** within 24 hrs by SAAM notification/email.
- **DHW, LC, LSA and OTR** within 24 hrs by SAAM notification/email.
- **DIT** within 48 hrs by email for wastewater or sludge discharges that may impact on water quality at West Lakes

PARAMETER	PRIORITY TYPE 1 CRITERIA	
Untreated wastewater or sludge discharge	Any untreated wastewater or sludge discharge to an area with general public access and potential for high risk exposure (e.g. childcare facility, schools, aged care facilities, markets, commercial food preparation areas and recreational areas e.g. bathing areas) and where public access is not controlled #	
Cross-connection	Detection of any cross-connection or mis-connection where contamination of the drinking water network or drinking water supply of a private property with recycled water is confirmed (e.g. backflow).	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Wastewater discharges	Discharge of ≥ 100 KL of wastewater (treated or untreated) as a result of failure within a wastewater network system and public access is controlled #	Discharge of < 100 KL of wastewater (treated or untreated) to a natural or modified watercourse #, or discharge of > 5 KL < 100 KL to the stormwater system and public access is controlled #
Sludge discharges	Discharge of ≥ 100 KL of sludge due to failure in the sludge main. Discharge of ≥ 10 KL of sludge to a natural or modified watercourse# either directly or through the stormwater system	Discharge of < 100 KL of sludge due to failure in the sludge main. <i>(if enters stormwater system or natural watercourse# and ≥ 10 KL, Type 1 applies)</i>

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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METROPOLITAN WASTEWATER AND RECYCLED WATER NETWORKS
continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Cross-connection	Detection of any cross-connection or mis-connection with <i>potential to contaminate</i> the drinking water network or drinking water supply of a private property with recycled water.	
Odours ^E		Release of odours from one network location causing greater than 2 customer complaints within 48 hrs.

^E Environmental wastewater incident

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TABLE 15: BOLIVAR RECYCLED WATER TREATMENT PLANTS

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** and immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **OTR** for cross connections as soon as practicable by telephone, for other incidents (excluding health related water quality parameters) as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.
- **OTR** (excluding health related water quality parameters) within 24 hrs by SAAM notification / email

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA												
STABILISATION LAGOONS														
Primary effluent		Primary effluent from activated sludge plant diverted to stabilisation lagoons												
Lagoon area		Less than 16 days detention time												
<i>E.coli</i>	>10,000 organisms/100mL in lagoon effluent supplied to reuse	>4,000 organisms/ 100 mL in lagoon effluent supplied to reuse												
BOLIVAR RWTP														
Turbidity	Daily average turbidity exceeds 1 NTU <i>or</i> On-line turbidity exceeds 5NTU continuously for more than 60 minutes and production is not stopped	Production stopped due to high filtered water turbidity >5NTU # (other than a Type 1 incident)												
Chlorination	Chlorination fails for a period exceeding 30 minutes and production is not stopped <i>or</i> Free chlorine C.t to achieve 1 log reduction of virus in accordance with table 1 below continuously for a period exceeding 60 minutes and production is not stopped <table border="1" style="margin: 5px auto; border-collapse: collapse;"> <thead> <tr> <th>Free chlorine C.t (mg.min/L)</th> <th>pH</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>< 7.0</td> </tr> <tr> <td>5</td> <td>≥ 7.0 < 7.5</td> </tr> <tr> <td>7</td> <td>≥ 7.5 < 8.0</td> </tr> <tr> <td>9</td> <td>≥ 8.0 < 8.5</td> </tr> <tr> <td>10</td> <td>≥ 8.5 ≤ 9.0</td> </tr> </tbody> </table>	Free chlorine C.t (mg.min/L)	pH	3	< 7.0	5	≥ 7.0 < 7.5	7	≥ 7.5 < 8.0	9	≥ 8.0 < 8.5	10	≥ 8.5 ≤ 9.0	Production stopped due to either interruption to chlorination or low C.t (<1 log reduction of virus) #
Free chlorine C.t (mg.min/L)	pH													
3	< 7.0													
5	≥ 7.0 < 7.5													
7	≥ 7.5 < 8.0													
9	≥ 8.0 < 8.5													
10	≥ 8.5 ≤ 9.0													
Cryptosporidium	Any detection / 50 L in product water	Any detection > 50 confirmed oocysts/L in lagoon influent water												
<i>E.coli</i>	>10 organisms / 100 mL at the chlorine contact tank outlet	> 4 organisms / 100 mL at the chlorine contact tank outlet												

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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BOLIVAR RECYCLED WATER TREATMENT PLANTS Continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
BOLIVAR RWTP		
Toxic cyanobacteria	Refer to criteria in Table 13 for detection of cyanobacteria in product water	Refer to criteria in Table 13 for detection of cyanobacteria in product water
Contamination of Virginia Pipeline Scheme (VPS) Balance Pond	Any event resulting in contamination of open storage resulting in lower quality water	
ADVANCED WATER RECYCLING PLANT		
Chlorination	Chlorination fails for a period exceeding 30 minutes and production is not stopped <i>or</i> Free chlorine < C.t required to achieve 4 log reduction for viruses at defined pH range #	Production stopped due to either interruption to chlorination or low C.t #
UV disinfection	UV light system fails for a period exceeding 30 minutes and production is not stopped <i>or</i> Validated UV dose <58mJ/cm2 continuously for an individual train for a period exceeding 60 minutes and offending train is not replaced or production not stopped.	Daily average ^δ Validated UV dose on an individual train <58mJ/cm ² <i>or</i> Daily average ^δ UVT < 40%
E.coli	>10 organisms/100mL in product water	>4 organisms/100mL in product water
EARTH BANK STORAGES		
Toxic cyanobacteria	Refer to criteria in Table 13 for detection of cyanobacteria in product water	Refer to criteria in Table 13 for detection of cyanobacteria in product water

^δ The criteria based on daily averages (noon to noon) for turbidity, UV dose and UV transmission only apply if the relevant process unit/train has been operated for a period greater than one continuous hour in a given day.

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

BOLIVAR RECYCLED WATER TREATMENT PLANTS continued

RECYCLED WATER - DUAL RETICULATION NETWORK		
PARAMETER	PRIORITY TYPE 1 CRITERIA	
Cross-connection Mawson Lakes	Detection of any cross-connection or mis-connection where contamination of the drinking water network or drinking water supply of a private property with recycled water is confirmed (e.g. backflow).	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Cross-connection Mawson Lakes	Detection of any cross-connection or mis-connection with <i>potential to contaminate</i> the drinking water network or drinking water supply of a private property with recycled water.	
<i>E.coli</i> Mawson Lakes		Any detection of <i>E.coli</i> /100 mL in consecutive samples
Public complaints Mawson Lakes		Evidence of clustered complaints (5 or more within a 48 hr period) regarding recycled water quality

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TABLE 16 : GLENELG RECYCLED WATER TREATMENT PLANT

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **OTR** for cross connections as soon as practicable by telephone, for other incidents as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.
- **OTR** within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Membrane Pressure Decay Rate Test (PDRT)	Any membrane skid that fails the PDRT (> 10.5 kPa/min) and is not automatically and immediately taken out of service	
Post-membrane Turbidity	Daily average turbidity ^δ exceeds 0.15 NTU; <i>or</i> On-line turbidity exceeds 0.3 NTU continuously for more than 30 minutes and production is not stopped.	Production stopped due to high filtered water turbidity (other than a type 1 incident).
UV Transmission		Daily average ^δ UVT < 50%
UV Irradiation Disinfection	UV light system fails for a period exceeding 30 minutes and production is not stopped; <i>or</i> Validated UV dose < 58 mJ/cm ² continuously on an individual train for a period exceeding 60 minutes and offending train is not replaced or production not stopped.	Daily average ^δ validated UV dose on an individual train < 58 mJ/cm ² .
Chlorination	Chlorination fails for a period exceeding 30 minutes and production is not stopped; <i>or</i> Free chlorine C.t < 6 mg.min/L continuously for a period exceeding 60 minutes and production is not stopped.	Production stopped due to either interruption to chlorination or low C.t (< 6 mg.min/L)#
E.coli	> 10 organisms / 100 mL at the chlorine contact pipe outlet.	> 4 organisms / 100 mL at the chlorine contact pipe outlet.

^δ The criteria based on daily averages (noon to noon) for turbidity, UV dose and UV transmission only apply if the relevant process unit/train has been operated for a period greater than one continuous hour in a given day.

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

GLENELG RECYCLED WATER TREATMENT PLANT continued

RECYCLED WATER – DUAL RETICULATION NETWORK		
PARAMETER	PRIORITY TYPE 1 CRITERIA	
Cross-connection Bowden	Detection of any cross-connection or mis-connection where contamination of the drinking water network or drinking water supply of a private property with recycled water is confirmed (e.g. backflow).	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Cross-connection Bowden	Detection of any cross-connection or mis-connection with <i>potential to contaminate</i> the drinking water network or drinking water supply of a private property with recycled water.	
<i>E.coli</i> Bowden		Any detection of <i>E.coli</i> /100 mL in consecutive samples
Public complaints Bowden		Evidence of clustered complaints (5 or more within a 48 hr period) regarding recycled water quality

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TABLE 17 : ALDINGA RECYCLED WATER TREATMENT PLANT

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email
- **OTR** for cross connections as soon as practicable by telephone, for other incidents as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.
- **OTR** within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Membrane Pressure Decay Test (PDT)	Any membrane skid that fails the PDT (> 10.5 kPa/min) and is not automatically and immediately taken out of service	
Post-membrane Turbidity	Daily average turbidity ^δ exceeds 0.15 NTU; <i>or</i> On-line turbidity exceeds 0.3 NTU continuously for more than 30 minutes and production is not stopped.	Production stopped due to high filtered water turbidity (other than a Type 1 incident).
UV Transmission		Daily average ^δ UVT < 50%
UV Irradiation Disinfection	UV light system fails for a period exceeding 30 minutes and production is not stopped or the problem train is not taken off- line; <i>or</i> Validated UV dose < 58 mJ/cm ² continuously for a period exceeding 60 minutes and the problem train is not replaced or production not stopped.	Daily average ^δ validated UV dose on an individual train < 58 mJ/cm ² .

^δ The criteria based on daily averages (7.30am to 7.30am) for turbidity, UV dose and UV transmission only apply if the relevant process unit/train has been operated for a period greater than one hour in a given day

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ALDINGA RECYCLED WATER TREATMENT PLANT continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA												
Chlorination	<p>Chlorination fails for a period exceeding 30 minutes and production is not stopped;</p> <p><i>or</i></p> <p>Free chlorine C.t to achieve 2.5 log reduction of virus in accordance with table 1 below continuously for a period exceeding 60 minutes and production is not stopped. #</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Free Chlorine C.t (mg.min/L)</th> <th>pH</th> </tr> </thead> <tbody> <tr> <td>4.5</td> <td><7.0</td> </tr> <tr> <td>8</td> <td>≥7.0 < 7.5</td> </tr> <tr> <td>11.5</td> <td>≥7.5 < 8.0</td> </tr> <tr> <td>15</td> <td>≥8.0 < 8.5</td> </tr> <tr> <td>18.5</td> <td>≥8.5 ≤ 9.0</td> </tr> </tbody> </table>	Free Chlorine C.t (mg.min/L)	pH	4.5	<7.0	8	≥7.0 < 7.5	11.5	≥7.5 < 8.0	15	≥8.0 < 8.5	18.5	≥8.5 ≤ 9.0	Production stopped due to either interruption to chlorination or low C.t (< 2.5 log reduction of virus)#
Free Chlorine C.t (mg.min/L)	pH													
4.5	<7.0													
8	≥7.0 < 7.5													
11.5	≥7.5 < 8.0													
15	≥8.0 < 8.5													
18.5	≥8.5 ≤ 9.0													
Chloramination	<p>Chloramination fails for a period exceeding 30 minutes and flow is not stopped;</p> <p><i>or</i></p> <p>Chloramine C.t < 1067 mg.min/L continuously for a period exceeding 60 minutes and production is not stopped. #</p>	Production stopped due to either interruption to chloramination or low chloramine C.t (< 1067 mg.min/L) #												
E.coli	> 10 organisms / 100 mL at the chlorine contact tank outlet	> 4 organisms / 100 mL at the chlorine contact tank outlet.												
RECYCLED WATER – DUAL RETICULATION NETWORK														
PARAMETER	PRIORITY TYPE 1 CRITERIA													
Cross-connection SURS	Detection of any cross-connection or mis-connection where contamination of the drinking water network or drinking water supply of a private property with recycled water is confirmed (e.g. backflow).													
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA												
Cross-connection SURS	Detection of any cross-connection or mis-connection with <i>potential to contaminate</i> the drinking water network or drinking water supply of a private property with recycled water.													
E.coli SURS		Any detection of <i>E.coli</i> /100 mL in consecutive samples												
Public complaints SURS		Evidence of clustered complaints (5 or more within a 48 hr period) regarding recycled water quality												

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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TABLE 18: METROPOLITAN REUSE SCHEMES – RESTRICTED USE

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **OTR** as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.
- **OTR** within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
CHRISTIES BEACH - A AND B PLANT GLENELG- (restricted uses portion)		
Chlorination Recycled wastewater	Chlorination fails for more than 60 continuous minutes before supply is stopped to consumers	
<i>E.coli</i>	>1,000 organisms / 100 mL after chlorination	
CHRISTIES BEACH – C PLANT		
Membrane permeate turbidity	> 0.5NTU continuously for a period exceeding 60 minutes for any train	Daily average turbidity >0.2NTU from any train, providing the train has operated for a period greater than 60 continuous minutes Recycled water supply stopped due to high filtered water turbidity (other than a type 1 incident)
UV disinfection	UV irradiation in any channel fails for a period exceeding 60 minutes	Daily average ^δ validated UV dose <15 mJ/cm ² on any channel providing UV irradiation has been operating for a period greater than 60 minutes
<i>E. coli</i> in product water	>1,000 <i>E.coli</i> / 100 mL	> 400 <i>E.coli</i> / 100mL
ALDINGA WWTP		
Chlorination Recycled wastewater	Chlorination fails for more than 60 continuous minutes before supply is stopped to consumers	
<i>E.coli</i>	> 1,000 organisms / 100 mL after chlorination	

^δ The criteria based on daily averages (noon to noon) for turbidity and UV dose only apply if the relevant process unit has been operated for a period greater than one continuous hour in a given day.

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TABLE 19 : GENERAL STORMWATER SCHEMES

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW and EPA** immediately by telephone and within 24 hrs by SAAM notification/email .
- **OTR** as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW and EPA** within 24 hrs by SAAM notification/email.
- **OTR** within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Chlorination	Chlorination fails for a period exceeding 60 minutes and production is not stopped	
UV Irradiation Disinfection	UV light system fails for a period exceeding 60 minutes and production is not stopped	

5. Wastewater incident criteria - regional

This section includes incident criteria for regional wastewater and recycled water treatment plants and networks (includes Myponga).

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TABLE 20 : REGIONAL WASTEWATER AND RECYCLED WATER TREATMENT PLANTS

Discharge is identified as any uncontrolled escape from a SA Water system due to burst, overflow or infrastructure/equipment failure.

INCIDENT reporting to DHW call 1300 043 215

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **DHW** and **EPA** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **LSA & LC** for effluent disinfection where discharge is to fresh or estuarine water, sewage discharges and sludge discharges within 3 hrs by telephone.
- **URE** for effluent disinfection and turbidity within 3 hrs by telephone.
- **OTR** as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **EPA** within 24 hrs by SAAM notification/email.
- **DHW** within 24 hrs by SAAM notification/email.
- **OTR** within 24 hrs by SAAM notification/email.
- **LC** for odours, sewage discharges, treated effluent discharges and sludge discharges within 24 hrs by telephone or email. No report required for *E. coli*.
- **LSA** for sewage discharges treated effluent discharges and sludge discharges within 24 hrs by SAAM notification/email. No report required for *E. coli* or odours.

(A) DISCHARGE TO ENVIRONMENT

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Effluent disinfection	When the disinfection system fails and there is continual release (> 2 hrs regional plants) of undisinfecting effluent to receiving waters in the environment	
Effluent turbidity ^{E+H}	When plant effluent is highly turbid beyond the normal process range, sufficient to cause marked discolouration above normal levels in receiving waters in the environment	When plant effluent turbidity is > 10 NTU and effluent is released to receiving waters for > 2 continual hours (Hahndorf, Heathfield, Bird in Hand).
<i>E.coli</i>		When numbers of <i>E.coli</i> or enterococci in the plant effluent discharge to receiving waters in the environment exceed <ul style="list-style-type: none"> • 400 / 100mL (Finger Point, Hahndorf, Heathfield, Victor Harbour, Bird in Hand) • 2000 / 100mL (Angaston)

^E Environmental wastewater incident

^H Health wastewater incident

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(A) DISCHARGE TO ENVIRONMENT continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Wastewater discharges	Discharge of ≥ 100 KL of wastewater (treated or untreated) not contained by the drainage systems in the plant#	Discharge of < 100 KL of wastewater (treated or untreated) not contained by the drainage systems in the plant#
Sludge discharges	<p>Discharge of ≥ 100 KL of sludge not contained by the drainage systems in the plant</p> <p>Discharges of ≥ 10 KL of sludge not contained by the drainage systems in the plant and discharged to a natural or modified watercourse# either directly or through the stormwater system#</p>	Discharge of < 100 KL of sludge to the environment not contained by the drainage systems in the plant (<i>if enters stormwater system or natural watercourse# and ≥ 10 KL, Type 1 applies</i>)

(B) WASTEWATER TREATMENT

PARAMETER	PRIORITY TYPE 1 CRITERIA	
Chlorine / methane leak	Uncontrolled chlorine or methane gas leakage or significant chemical spills that cause exposure to the public	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Odours ^E		Release of odours from a wastewater treatment plant causing greater than 2 customer complaints within 48 hrs.

^E Environmental wastewater incident

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

TABLE 21: CYANOBACTERIA IN WASTEWATER AND RECYCLED WATER – REGIONAL

INCIDENT reporting to DHW call 1300 043 215

Type 1 incidents will be notified and reported to agencies as indicated below:

- **Water Incident Coordinator, DHW** immediately by telephone and within 24 hrs by SAAM notification/email
- **EPA** within 24 hrs by SAAM notification/email
- **PIRSA** for release of wastewater containing cyanobacteria which may impact on animal health within 3 hrs by telephone
- **LC** and **LSA** for discharge of wastewater containing cyanobacteria within 3 hrs by telephone and 24 hrs by email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW, EPA** within 24 hrs by SAAM notification/email

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Toxic cyanobacteria	Detection of cyanobacteria (as per criteria below) in final product water which could impact on public health#:	Detection of cyanobacteria (as per criteria below) in final product water which could impact on public health#:
Microcystin <i>Microcystis aeruginosa</i> <i>Microcystis flos-aquae</i>	> 13 µg/L toxin ≥ 65,000 cells/mL (in the absence of toxicity data)	> 1.3 µg/L toxin ≥ 6,500 cells/mL (in the absence of toxicity data)
Nodularin <i>Nodularia spumigena</i>	> 13 µg/L toxin ≥ 400,000 cells/mL (in the absence of toxicity data)	> 1.3 µg/L toxin ≥ 40,000 cells/mL (in the absence of toxicity data)
Saxitoxin(s) <i>Dolichospermum circinale</i> (<i>Anabaena circinalis</i>)	> 3 µg/L toxin ≥ 20,000 cells/mL (in the absence of toxicity data)	> 1 µg/L toxin ≥ 2,000 cells/mL (in the absence of toxicity data)
Cylindrospermopsin(s) <i>Cylindrospermopsis raciborskii</i>	> 10 µg/L toxin ≥ 150,000 cells/mL (in the absence of toxicity data)	> 1 µg/L toxin ≥ 15,000 cells/mL (in the absence of toxicity data)

note different cyanobacterial toxin levels may apply dependent on the end use. Refer to the Cyanobacteria Protocol tab in SAWR-WQ-0008 (WQ_T08) for additional information.

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TABLE 22 : REGIONAL WASTEWATER AND RECYCLED WATER NETWORKS

Discharge is identified as any uncontrolled escape from a SA Water system due to burst, overflow or infrastructure/equipment failure.

INCIDENT reporting to DHW call 1300 043 215

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **DHW and EPA** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **LSA and LC** within 3 hrs by telephone.
- **OTR** for cross-connections as soon as practicable by telephone and for other incidents by SAAM notification/email

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **EPA** within 24 hrs by SAAM notification/email.
- **DHW, LC, LSA and OTR** within 24 hrs by SAAM notification/email.

PARAMETER	PRIORITY TYPE 1 CRITERIA	
Wastewater or sludge discharge	Any treated or untreated wastewater or sludge discharge to an area with general public access and potential for high risk exposure (e.g. drinking water source, childcare facility, schools, aged care facilities, markets, commercial food preparation areas and recreational areas e.g. bathing areas) and where public access is not controlled #	
Cross-connection	Detection of any cross-connection or mis-connection where contamination of the drinking water network or drinking water supply of a private property with recycled water is confirmed (e.g. backflow).	
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Wastewater discharges	Discharge of ≥ 100 KL of wastewater (treated or untreated) as a result of failure within a wastewater network system and public access is controlled #	Discharge of < 100 KL of wastewater (treated or untreated) to a natural or modified watercourse# or Discharge of > 5 KL < 100 KL to the stormwater system and public access is controlled#
Sludge discharges	Discharge of ≥ 100 KL of sludge due to failure in the sludge main. Discharge of ≥ 10 KL of sludge to a natural or modified watercourse# either directly or through the stormwater system	Discharge of < 100 KL of sludge due to failure in the sludge main. <i>(if enters stormwater system or natural watercourse# and ≥ 10 KL, Type 1 applies)</i>

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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REGIONAL WASTEWATER AND RECYCLED WATER NETWORKS continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Cross-connection	Detection of any cross-connection or mis-connection with <i>potential to contaminate</i> the drinking water network or drinking water supply of a private property with recycled water.	
Odours ^E		Release of odours from one network location causing greater than 2 customer complaints within 48 hrs.

^E Environmental wastewater incident

TABLE 23 : PORT LINCOLN SCHEME

INCIDENT reporting to DHW call 1300 043 215

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **OTR** as soon as practicable by SAAM notification/email
- **EPA** for storage tank overflow immediately by telephone and within 24 hrs by SAAM notification/email

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.
- **OTR** within 24 hrs by SAAM notification/email.
- **EPA** for storage tank overflow within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
Filtered water turbidity	Turbidity exceeds 2 NTU for more than 60 minutes and flow from the raw water pumps into the reuse plant is not stopped	Flow from the raw water pumps into the reuse plant stopped due to high filtered water turbidity (other than Type 1 incident)
UV Irradiation Disinfection Recycled wastewater	Transmissivity falls below 43% for more than 60 continuous minutes and flow from the raw water pumps into the reuse plant is not stopped <i>or</i> > 10% of UV lamps (7 out of 60) fail and flow from the raw water pumps into the reuse plant is not stopped.	
Chlorine Disinfection	Chlorinator fails for more than 60 continuous minutes and flow from the raw water pumps into the reuse plant is not stopped When recycled water is being produced, the chlorine residual entering the 300 KL tank falls below 0.2 mg/L for 60 minutes and flow from the raw water pumps into the reuse plant is not stopped or the chlorine dose is not increased	
<i>E.coli</i>	> 10 organisms / 100 mL after UV light irradiation and chlorine disinfection	> 4 organisms / 100 mL after UV light irradiation and chlorine disinfection
Storage tank overflow ^E	Tank overflows >100 kL discharge	Tank overflows <100 kL discharge

^E Environmental wastewater incident

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TABLE 24 : VICTOR HARBOR SCHEME

INCIDENT reporting to DHW call 1300 043 215

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **OTR** for cross-connections as soon as practicable by telephone for other incidents by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.
- **OTR** within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA						
Post-membrane filtered water turbidity	Turbidity exceeds 0.5 NTU continuously for more than 60 minutes	Daily average turbidity >0.4 NTU						
UV Transmission	Daily average UVT < 40%							
Chlorine Disinfection	Chlorination fails for a period exceeding 30 minutes and production is not stopped; or Free chlorine C.t <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Free chlorine Ct (mg.min/L)</th> <th>Turbidity</th> </tr> </thead> <tbody> <tr> <td>< 14.5</td> <td>< 5.0</td> </tr> <tr> <td>< 21.5</td> <td>≥ 5.0 < 20</td> </tr> </tbody> </table> continuously for a period exceeding 60 minutes and production is not stopped#	Free chlorine Ct (mg.min/L)	Turbidity	< 14.5	< 5.0	< 21.5	≥ 5.0 < 20	Production is stopped due to chlorination failure or low C.# (other than a type 1 incident).
Free chlorine Ct (mg.min/L)	Turbidity							
< 14.5	< 5.0							
< 21.5	≥ 5.0 < 20							
E. coli after chlorination	> 10 organisms / 100 mL at the chlorine contact tank outlet	> 4 organisms / 100 mL at the chlorine contact tank outlet.						
RECYCLED WATER – DUAL RETICULATION NETWORK								
PARAMETER	PRIORITY TYPE 1 CRITERIA							
Cross-connection Victor Harbor	Detection of any cross-connection or mis-connection where contamination of the drinking water network or drinking water supply of a private property with recycled water is confirmed (e.g. backflow)							
PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA						
Cross-connection Victor Harbor	Detection of any cross- connection or mis-connection with <i>potential to contaminate</i> the drinking water network or drinking water supply of a private property with recycled water.							

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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TABLE 25 : REGIONAL RECYCLED WATER SCHEMES-RESTRICTED USE

INCIDENT reporting to DHW call 1300 043 215

Priority Type 1 and Type 1 incidents will be notified and reported to agencies as indicated below:

- **DHW** immediately by telephone (Priority Type 1's are to be reported by direct voice contact and not via phone message) and within 24 hrs by SAAM notification/email.
- **OTR** (excluding *E.coli* exceedances) as soon as practicable by SAAM notification/email.

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.
- **OTR** (excluding *E.coli* exceedances) within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
CENTRAL - RECYCLED WATER SUPPLY SITES		
ANGASTON / GUMERACHA		
<i>E.coli</i>	> 10,000 organisms / 100 mL in final product water	>4,000 organisms/ 100 mL in final product water
BIRD IN HAND		
UV irradiation for disinfection	UV light system fails for a period exceeding 30 minutes and the recycled water storage is not isolated; Validated UV dose <58 mJ/cm ² continuously for a period exceeding 60 minutes and the offending reactor train is not taken off-line or the recycled water storage is not isolated	Daily average ^δ validated UV dose <58mJ/cm ² for any reactor
<i>E. coli</i> (or thermotolerant coliforms) after disinfection	> 1,000 organisms / 100 mL at the UV reactor outlet	> 400 organisms/ 100 mL at the UV reactor outlet
HAHNDORF		
Chlorination Recycled wastewater	Chlorinator fails for more than 60 continuous minutes before supply is stopped	
<i>E.coli</i>	> 1,000 organisms / 100 mL after chlorination	> 400 organisms/100 mL after chlorination

^δ The criteria based on daily averages for UV dose (noon to noon) only apply if the relevant process unit has been operated for a period greater than one continuous hour in a given day.

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REGIONAL REUSE SCHEMES – RESTRICTED USE continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
CENTRAL –RECYCLED WATER SUPPLY SITES continued		
MANNUM		
Chlorination Recycled wastewater	Chlorinator fails for more than 60 continuous minutes before supply is stopped to consumers	
E.coli	> 1,000 organisms / 100 mL after chlorination	>400 organisms/100 mL after chlorination
MURRAY BRIDGE		
UV disinfection	UV disinfection system failure for more than 60 continuous minutes and production is not stopped <i>or</i> Validated UV dose < 58mJ/cm ² continuously for 120 minutes on an individual reactor and the offending reactor is not taken offline	Daily average ^δ validated UV dose <58mJ/cm ² for any reactor
E.coli	> 1,000 organisms / 100 mL after UV disinfection	> 400 organisms/100 mL after UV disinfection
MYPONGA		
E.coli	> 10,000 organisms / 100 mL in final product water	> 4,000 organisms / 100 mL in final product water
MYPONGA BEACH		
E.coli	> 10,000 organisms / 100 mL after chlorination	>4,000 organisms/100 mL after chlorination
NORMANVILLE		
E.coli	> 1,000 organisms / 100 mL after chlorination	>400 organisms/100 mL after chlorination
THOMAS FOODS INTERNATIONAL WWTP MURRAY BRIDGE NORTH		
E.coli	> 1,000 organisms / 100 mL after chlorination	>400 organisms/100 mL after chlorination
Chlorine disinfection	Chlorination fails for more than 60 continuous minutes before recycled water supply is stopped	
Turbidity	Membrane permeate turbidity >0.5 NTU continuously for a period exceeding 60 minutes	Membrane permeate daily average turbidity > 0.2 NTU

^δ The criteria based on daily averages (noon to noon) for turbidity and UV dose only apply if the relevant process unit has been operated for a period greater than one continuous hour in a given day.

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REGIONAL REUSE SCHEMES – RESTRICTED USE continued

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA												
NORTHERN - RECYCLED WATER SUPPLY SITES														
PORT AUGUSTA WEST														
Chlorination Recycled wastewater	Chlorinator fails for more than 60 continuous minutes before supply is stopped													
E.coli	> 1,000 organisms / 100 mL after chlorination	>400 organisms/100 mL after chlorination												
LEIGH CREEK														
E.coli	>10,000 organisms/100mL after disinfection	>4,000 organisms/100mL after disinfection												
WHYALLA WRP														
Chlorine Disinfection (except during start-up of the chlorinator)	Chlorination fails for a period exceeding 120 minutes and production is not stopped or Free Chlorine C.t less than the value in Table 1 (at corresponding pH continuously for a period exceeding 180 minutes and production is not stopped	Production is stopped due to chlorination failure or low C.t (other than a Type 1 incident) #												
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Free chlorine Ct (mg.min/L)</th> <th>pH</th> </tr> </thead> <tbody> <tr> <td>3</td> <td><7.0</td> </tr> <tr> <td>6</td> <td>≥7.0 <7.5</td> </tr> <tr> <td>9</td> <td>≥7.5 <8.0</td> </tr> <tr> <td>12</td> <td>≥8.0 <8.5</td> </tr> <tr> <td>15</td> <td>≥8.5 ≤9.0</td> </tr> </tbody> </table>	Free chlorine Ct (mg.min/L)	pH	3	<7.0	6	≥7.0 <7.5	9	≥7.5 <8.0	12	≥8.0 <8.5	15	≥8.5 ≤9.0	
Free chlorine Ct (mg.min/L)	pH													
3	<7.0													
6	≥7.0 <7.5													
9	≥7.5 <8.0													
12	≥8.0 <8.5													
15	≥8.5 ≤9.0													
E.coli after chlorination	> 1,000 organisms/100mL at the first customer point of supply	> 400 organisms/100mL at the first customer point of supply												
WHYALLA WWTP														
E.coli	>100,000 organisms/100mL in final product water	>40,000 organisms/100mL in final product water												
SOUTH EAST – RECYCLED WATER SUPPLY SITES														
MILLICENT														
E.coli	>10,000 organisms/100mL after disinfection	>4,000 organisms/100mL after disinfection												

see Protocol Explanatory Notes in SAWR-WQ-008 (WQ-T08) for additional information on this criteria

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TABLE 26: REMOTE COMMUNITY - RECYCLED WATER SCHEMES

INCIDENT reporting to DHW call 1300 043 215

Type 1 incidents will be notified and reported to agencies as indicated below:

- **DHW** immediately by telephone and within 24 hrs by SAAM notification/email

Type 2 incidents are to be notified and reported to agencies as indicated below:

- **DHW** within 24 hrs by SAAM notification/email.

PARAMETER	TYPE 1 CRITERIA	TYPE 2 CRITERIA
AMATA / YALATA / PUKATJA		
<i>E.coli</i>	> 10,000 organisms / 100 mL in final product water	> 4000 organisms/100 mL in final product water
KOONIBBA / PT PEARCE		
<i>E.coli</i>	> 1,000 organisms / 100 mL in final product water	> 400 organisms/100 mL in final product water

6. Appendix

FIGURE 1. FLOW CHART INCIDENT REPORTING

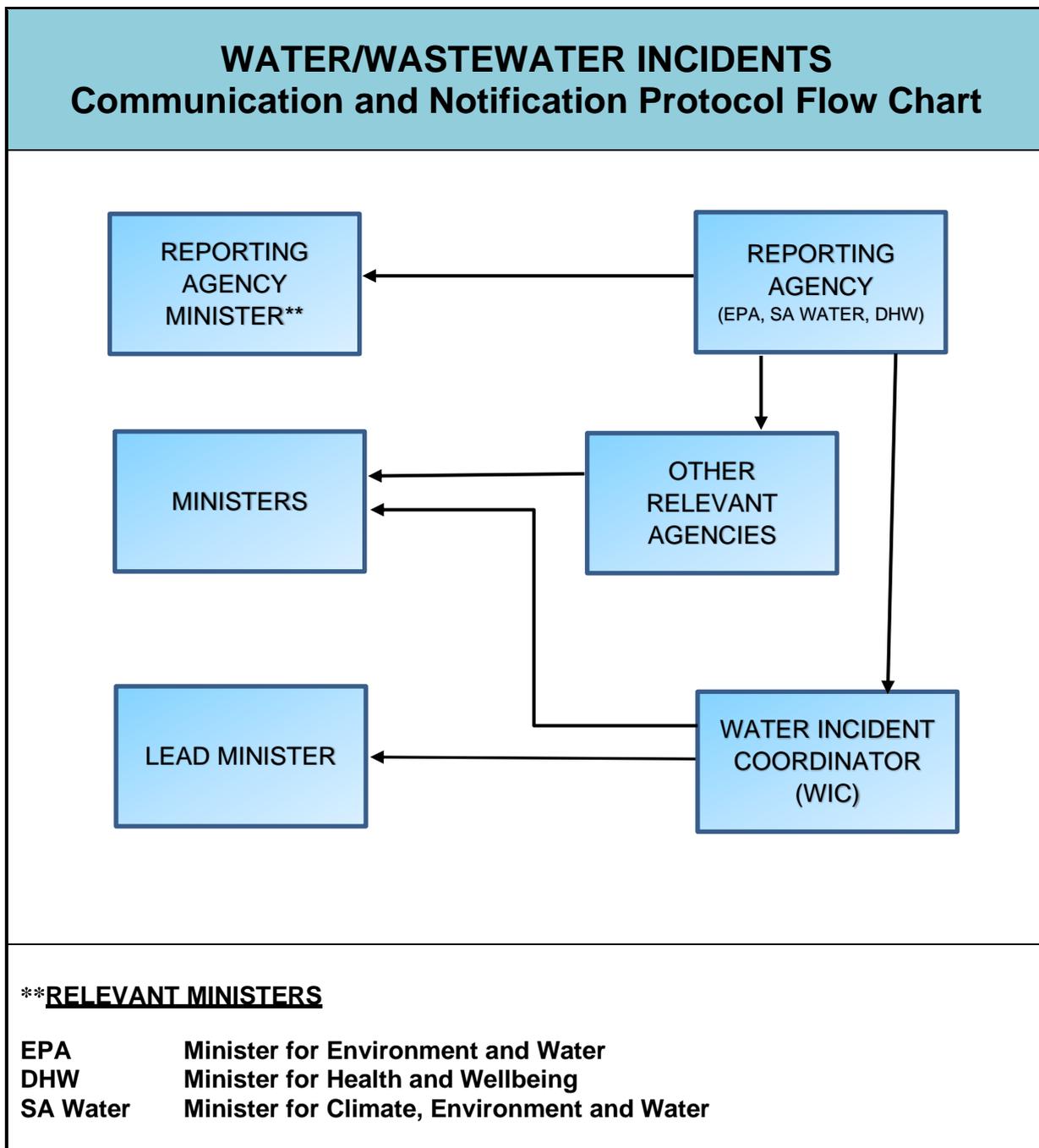


FIGURE 2: WATER INCIDENT COORDINATOR DUTIES

Duties of the Water Incident Coordinator (WIC)

Provide a single point of contact for the communication of water/wastewater incidents within the government and to ensure that the Minister for Health and Wellbeing and the Minister for Climate, Environment and Water are notified of serious (Priority Type 1 and Type 1) incidents.

Duties include:

- Receive incident reports and ensure that the required agencies and the Minister for Health and Wellbeing and the Minister for Climate, Environment and Water have been reported in accordance with the Water/Wastewater Incident Notification and Communication Protocol.
- Following receipt of an incident report of a serious nature
 - Liaise with the three Ministers and confirm the lead Minister
 - Liaise with the relevant agencies to ensure that accurate and up to date reports are received on the management and status of incidents
 - Keep the lead Minister informed and in conjunction with the lead Minister liaise with the Premier's Office
 - Assist the lead Minister with the communication of incidents to the public as required
- Be responsible for administration of the Water/Wastewater Incident Notification and Communication Protocol including emergency contact lists, to ensure its ongoing effectiveness.

Duties of the Lead Minister

Manage the communication of water/wastewater incidents to the Premier, Cabinet and the Public

Duties include:

- Liaise with other Agency Ministers
- Ensure that the Premier and Cabinet are provided with accurate and up to date reports on the management and status of incidents
- Evaluate the incident and determine whether the public should be advised
- Manage the communication of incidents to the public as required

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FIGURE 3: ADDENDUM TEMPLATE

An addendum template has been prepared to document any changes to the endorsed WWINC protocol from variations to approvals impacting incident criteria. This addendum will be tabled at quarterly Health Aspects of Water Quality (HAWQ) meetings

- Addendum to be updated by DHW-W or DHW-WW as the final stage of the variation of the approval process
- DHW-W to table at next HAWQ meeting and change to WWINC incident criteria to be minuted
- DHW-W to finalise the communication of change to WWNC incident criteria via email to SA Water, DHW-WW, OTR and EPA

DATE OF CHANGE	FILE No.	WWINC TABLE NO.	TREATMENT PLANT	CRITERIA REVISED IN NEW APPROVAL

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TABLE 27 : EMERGENCY CONTACTS

DEPARTMENT FOR HEALTH AND WELLBEING			
		<i>Telephone</i>	<i>Mobile</i>
SA Health (Health Protection and Licencing Services Office)		8226 7100	
WATER QUALITY			
Email notifications to waterquality@sa.gov.au			
Incident reporting to water quality on-call (24 hrs)			0421 618 311
David Cunliffe	Principal Water Quality Adviser	8226 7153 8264 2393 A/H	0401 124 829
Suzanne Froschio	Senior Water Quality Advisor	8226 6867	0475 823 537
Margaret Whittle	Senior Scientific Officer	8226 8469	0481 919 579
WASTEWATER –regional wastewater and recycled water treatment plants and networks			
Email notifications to HealthWastewaterManagement@sa.gov.au			
Incident reporting to wastewater on call (24 hrs)			1300 043 215
Karen Bennink	Manager, Wastewater Management		0466 244 125
Nina Allen	Senior Environmental Engineer		0435 655 992
Katie Koto	Senior Environmental Health Officer		0466 604 901
ENVIRONMENT PROTECTION AUTHORITY			
Email notifications to EPAwastewater@sa.gov.au			
PRIORITY TYPE 1 AND TYPE 1 INCIDENTS			
EPA First Point of Contact Emergency Response Team	Emergency response for all Priority Type 1 and Type 1 incidents (except where indicated under Tables 1 & 5)	1800 100 833 or 8204 2004 (only if no response from 1800 number)	
EPA Second Point of Contact Wastewater Incidents	Glen Cuttance Emergency and Incident Management Coord	8204 2340 0427 607 190	
TYPE 2 INCIDENTS			
Treated water	Water Quality Science, Water Quality Branch	Fax notification via SAAM	
Wastewater incidents	Wastewater Sector, EPA Compliance Branch	Fax notification via SAAM	
River Murray	Water Quality Science, Water Quality Branch	david.palmer@sa.gov.au andrew.solomon@sa.gov.au	
OFFICE OF THE TECHNICAL REGULATOR			
Email notifications to DEM.OTRWSInfrastructure@sa.gov.au			
Natalie Bolton	A/ Manager Water and Sewerage Infrastructure	8429 2139	0435 181 450
Emily Lohmann	Senior Water Infrastructure Officer	8429 3966	0466 239 724
Rob Faunt	Technical Regulator	8429 3182	0419 763 546
SOUTH AUSTRALIAN WATER CORPORATION			
SENIOR LEADERSHIP TEAM			
David Ryan	Chief Executive		0438 033 047
Chris Young	General Manager Operations		0447 557 003
David Coombe	General Manager Customer, Community & Engagement		0401 044 318
Nicola Murphy	General Manager Science & Strategy		0435 573 077

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		Telephone	Mobile
OPERATIONS			
Production and Treatment			
Lisa Hannant	Snr Mgr Production and Treatment	7424 1885	0428 111 832
Gavin Ralston	Mgr Field Water Quality and Remote Communities	8399 9914	0417 873 791
Pierre van der Merwe	Mgr Water Treatment Operations	7424 2080	0455 280 089
Justine Fergusson	Manager P&T Interfaces	7424 1364	0429 156 028
Natasha Hall	Mgr Wastewater Treatment	7424 3804	0429 835 196
Laughlin O'Donnell	Mgr Operations Control		0424 990 865
Trade Waste Emergency Spills and Leaks On-Call			0439 888 164
Shannon Uern	Mgr Trade Waste & Networks	7424 1320	0458 184 101
Technical Support / Treatment Process Officers			
Field Water Quality – On Call (After Hours)		7424 3466	
Nick Antarakis	Field Water Quality Lead		0409 693 734
Andrew Kay	Technical Support Officer		0497 310 097
Jules Leach	Technical Support Officer		0457 621 988
Tony Frasca	Source Water Advisor		0428 643 655
Foyjunnessa	Technical Support Officer		0411 983 955
Elise Michie	Source Water Officer		0417 916 739
Brett Kliem	Treatment Process Officer		0472 873 865
Michael Webber	Treatment Process Officer		0455 079 880
Remote Communities On-Call (After Hours)		7424 3553	
Daniel Brown	Remote Communities Lead	7424 1926	0479 135 228
Brody Usher	Project Engineer	7424 2970	0468 540 625
Justin Bryce	Remote Communities TSO	7424 6962	0447 206 756
Victoria Myers	Remote Communities Services Officer		0457 324 776
Wastewater Treatment Coordinator / Treatment Process Officers			
Martin Faulkner	Treatment Process Officer		0417 833 091
Mike O'Brien	Wastewater Treatment Coordinator		0467 786 497
Maree Shephard	Wastewater Treatment Coordinator		0418 841 205
Dan Squire	Wastewater Treatment Coordinator		0428 115 579
Ben Thwaites	Treatment Process Officer		0476 778 700
Field Operations			
Colin Bell	Snr Mgr Field Operations	7424 1940	0403 268 022
John Carr	Field Operations Regional Manager	7424 3006	0419 805 523
Caroline Auricht	Field Operations Regional Manager	8399 9919	0476 837 542
Chris Tscharke	Field Operations Regional Manager		0428 540 634
Robert Perry	Field Operations Regional Manager	7424 1752	0459 888 513
Gary Biermann	Mgr Metro Ops Field Technical		0409 692 507
Production & Treatment Alliance - Metro (SUEZ)			
Wafaa Khalifi	P& T Alliance General Manager		0409 209 296
Water Supply (SUEZ)			
Phil Wootton	Water O&M Manager		0407 793 693
Todd Lowe	Water Production Manager		0418 815 051
Andrew Sawilski	Barossa/Little Para Plant Supervisor		0407 500 004
Paul Liccione	Hope Valley/Anstey Hill Plant Supervisor		0417 823 152
Ian Holmes	Happy Valley Plant Supervisor		0418 658 430
Scott Cole	Water Maintenance Supervisor		0436 655 488
Ben Nicol	Customer Water Supply Supervisor		0417 239 229

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		Telephone	Mobile
Customer Water Quality	On-Call 24hr Customer Water Quality	7424 2870	
Denise Spry	Customer Water Quality Supervisor		0418 826 861
Trevor Gray	Customer Water Quality Coordinator		0419 805 707
Wastewater and Reuse (SUEZ)			
Paddy Atkinson	Wastewater and Reuse O&M Manager		0458 038 897
Steve Nettle	Wastewater and Reuse Treatment Mgr North		0448 672 261
Jennifer Dreyfus	Wastewater and Reuse Treatment Mgr South		0436 678 557
Ian Mackenzie	Plant Supervisor – Glenelg		0419 805 509
Adam James	Plant Supervisor – Christies Beach/Aldinga		0407 724 196
Michael Smith	Plant Supervisor – Bolivar ASR/SBR		0436 679 428
Stuart Walsh	Plant Supervisor – Bolivar DAFF/AWR		0400 435 355
Lucas Roediger	M&E Supervisor – Wastewater North		0476 859 886
Aldo Ricci	M&E Supervisor – Wastewater South		0419 805 612
Nick Perentes	Pump Station Team Leader – North		0427 797 306
Andris Zuks	Pump Station Team Leader – South		0419 805 593
Field Operations - Metro (Service Stream)			
Kym Martin	Service Delivery Manager		0447 654 027
James Neeson	Operations Manager, North		0417 844 726
Dan Parfitt	Operations Manager, South		0401 489 996
Steven Twigden	Sewer Supervisor – South		0437 928 474
Des Hilditch	Sewer Supervisor – South		0459 798 275
Shane Norris	Sewer Supervisor – North		0419 359 441
Matt Zonta	Sewer Supervisor – North		0438 649 955
Ashley Schutz	Water Supervisor – South		0417 816 215
Shae Jackman	Water Supervisor – South		0447 082 382
Grant Dannatt	Water Supervisor – South		0419 828 910
Neil Maguire	Water Supervisor – South		0439 082 108
Adam Martin	Water Supervisor – North		0428 092 171
Daniel Robins	Water Supervisor – North		0439 465 996
Jason King	Water Supervisor – North		0419 805 515
Darren Hansen	Water Supervisor – North		0429 025 459
Ben Holman	Water Supervisor – North		0459 968 123
Andrew Mackinnon	Dispatch and Performance Manager		0419 805 586
Tamara Frigot	HSEQ Manager		0419 805 586
OPERATIONS PERFORMANCE			
Mark Lewis	Snr Mgr Operations Performance	7424 1506	0408 894 802
Joe Barbaro	Manager Commercial Operations	7424 1341	0408 784 192
Adam Williams	Contract Manager (ADP)	7424 2153	0409 846 114
Kim Buckley	Contract Manager (P&T Alliance – SUEZ)		0447 216 296
Vanessa Loveder	Contract Manager (Service Stream)	7424 2093	0477 349 545
Darrell Nelson	Contract Manager (Trility)	7424 1212	0481 097 193

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		<i>Telephone</i>	<i>Mobile</i>
SCIENCE AND STRATEGY			
Water Expertise			
Lionel Ho	A/Snr Mgr Water Expertise	7424 1116	0418 854 042
Amber Lang	Mgr WQ Improvement & Compliance	7424 1301	0455 083 993
Raf Nicdao	WQ Incident and Assurance Specialist	7424 2022	0419 199 711
Gretchen Marshall	Recycled Water Specialist	7424 2194	0459 824 301
John Winter	WQ Monitoring and Assurance Specialist	7424 1089	0418 609 421
Jason West	Manager Treatment Expertise	7424 1866	0428 115 981
Environment and Energy			
James Crocker	Snr Mgr WW Environment and Energy	7424 1978	0419 834 464
Alex Donald	Mgr Env Perf Compliance Expertise	7424 2428	0417 832 728
Angela Dewdney	Snr Environ Management Officer	7424 1420	0405 388 719
Australian Water Quality Centre/Lab Services			
AWQC Emergency Response (24 hrs)			0417 863 575
Thorsten Mosisch	A/Snr Mgr Laboratory Services	7424 1984	0423 841 394
Kerrie Jooste	Mgr Chemistry	7424 1038	0428 493 244
Mira Banasiak	Mgr Field & Life Science Services	7424 2331	
Michelle Howson	Mgr Customer and Business Services	7424 1861	0436 820 180
CUSTOMER, COMMUNITY AND ENGAGEMENT			
Media, Communications and Stakeholder Engagement			
Media On-Call		7424 2477	0477 300 197
Kellie McDonald	A/Snr Mgr Brand, Communications and Media	7424 3238	0459 892 514
Clare Hesketh	Manager Media Relations	7424 2440	0477 723 973
Customer Growth			
Christine Murphy	Mgr Customer Technical Services	7424 1369	0406 522 920
Brad Ruge	CTS Coordinator Metro- South	7424 2136	0438 873 375
David Baker	CTS Coordinator Metro - North	7424 1298	0418 811 545
TRILITY			
Nicole Hughes	Regional Operations Manager SA & WA	8408 6589	0488 921 459
Max Gray	Operations Manager Riverland Region	8408 6576	0417 996 122
Russell Tinsley	Operations Manager Fleurieu Region	8408 6500	0427 844 608
ADELAIDE AQUA			
Javier Artal	Plant Manager		0418 801 152
Rimon Gergawy	Process Manager		0437 252 661

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ROYAL ADELAIDE HOSPITAL			
		Telephone	Mobile
RENAL DIALYSIS UNIT, BIOMEDICAL ENGINEERING			
Michael Connors	Specialist Technical Officer		0417 885 143
Scott Bond	CALHN Biomedical Engineering Manager	7074 5500	0402 385 855
Michelle Caitlin	Manager BME Rural Support Service		0439 361 277
SA COUNTRY FIRE SERVICE / SA METROPOLITAN FIRE SERVICE			
<i>Hazardous or dangerous materials</i>		000	
DEPARTMENT FOR INFRASTRUCTURE AND TRANSPORT			
<i>Contact in response to oil or hydrocarbon spills:</i>			
Marine Pollution on-call		8248 3505	
Gordon Panton	Manager Marine Safety and Compliance gordon.panton@sa.gov.au	8260 0027	0488 105 230
<i>For wastewater and sludge discharges impacting West Lakes:</i>			
Leon Mase (primary contact)	Asset Engineer leon.mase@sa.gov.au	84021809	0429 451 926
Clive Blanchard (secondary contact)	Asset Maintenance Engineer clive.blanchard@sa.gov.au	8260 0527	0401 120 243
DEPARTMENT FOR ENVIRONMENT AND WATER			
Chrissie Bloss	Manager Water Delivery (River Murray cyanobacteria etc)		0409 830 084
DEPARTMENT OF PRIMARY INDUSTRIES & REGIONS SA			
Email notifications to PIRSA.biosecuritysa@sa.gov.au			
Chloe McSkimming	Snr Biosecurity Officer, Aquatic Invasive Species		0401 122 207
Clinton Wilkinson	Program Leader SA Shellfish Quality Assurance Program	8688 3411	0428 105 649
Amelia Gillen	Senior Animal Health Adviser (for incidents impacting animal health)	7085 1737	0407 191 059

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LANDSCAPE SOUTH AUSTRALIA BOARDS			
		Telephone	Mobile
GREEN ADELAIDE dew.greenadelaide@sa.gov.au			
Sam Phillips	Senior Water Projects Engineer	7424 5760	0408 721 871
EYRE PENINSULA ep.landscapeboard@sa.gov.au			
David Cunningham	Water Resources Assessment Officer david.cunningham2@sa.gov.au	8688 3226	0428 815 487
Seb Drewer	Manager Landscape Operations seb.drewer@sa.gov.au	8688 3172	0427 004 324
HILLS AND FLEURIEU hf.landscapeboard@sa.gov.au			
Paul Wainwright	Team Leader, Water Resources		0429 678 475
Wendy Telfer	Manager Planning, Engagement & Participation		0418 672 790
Michael Garrod	General Manager		0417 807 425
KANGAROO ISLAND ki.landscapeboard@sa.gov.au			
	Kangaroo Island Office	8553 2476	
Jo Sullivan	Manager Sustainable Landscapes	Contact via office	
LIMESTONE COAST lc.landscapeboard@sa.gov.au			
Liz Perkins	Manager Planning & Evaluation	7424 5783	0457 567 862
Steve Bourne	General Manager	7424 5763	0427 663 857
MURRAYLANDS AND RIVERLAND mr.landscapeboard@sa.gov.au			
Melissa White	Water Resources Manager		0428 113 442
Amy Lee	Manager Strategy and Engagement		0439 501 264
Andrew Meddle	General Manager	8532 9100	0427 979 778
NORTHERN AND YORKE ny.landscapeboard@sa.gov.au			
	Northern and Yorke Office	8841 3444	
Jennifer Munro	Planning Officer		0437 543 992
Anthony (Tony) Fox	General Manager		0417 908 765
SOUTH AUSTRALIAN ARID LANDS saal.landscapeboard@sa.gov.au			
	SA Arid Lands Office	86485307	
Aaron Smith	Senior Water Resource Officer Aaron.Smith3@sa.gov.au		0417 643 956
Julia Short	Water Project Officer Julia.Short2@sa.gov.au		0409 896 402
Glen Del Fierro (Del)	Water Project Officer Glenn.DelFierro2@sa.gov.au		0455 487 433