

Water and Sewer Group

# Pollution Incident Response Management Plan

Environment Protection Licence 3088

Singleton Sewerage System and Sewage Treatment Plant



**SINGLETON**  
COUNCIL



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## Acronyms

Acronym	Definition	
<b>EP</b>	Equivalent persons	Measure of capacity of facilities
<b>EPL 3088</b>	Environment Protection Licence 3088	Licence issued to Singleton Council by the NSW EPA permitting the operation of the Singleton Sewerage System and STP
<b>IDEA</b>	Intermittent Decant Extended Aeration	Continuous sewerage treatment process that involves aeration (aerobic phase), settling (anaerobic phase) and decant of treated liquid
<b>NSW EPA</b>	NSW Environment Protection Authority	Regulatory body under POEO Act
<b>PIRMP</b>	Pollution Incident Response Management Plan	Plan that describes Council's preventative actions and response to incidents for its licenced activities
<b>POELA Act</b>	Protection of the Environment Legislation Amendment Act 2011	The POELA is a key piece of environment protection legislation administered by the NSW EPA. It was introduced to improve the way pollution incidents are reported and managed.
<b>POEO Act</b>	Protection of the Operations of the Environment Act 1997	The POEO Act is the key piece of environment protection legislation administered by the NSW EPA. The POEO Act that governs and permits the operation of the Singleton Sewerage System and Singleton STP
<b>PSS</b>	Pressure Sewer System	Tank and pump located on a private property that facilitates connection to town sewer in areas where there is insufficient fall for gravity sewer
<b>SDS</b>	Safety Data Sheets	Information on chemicals which is used to determine its composition, safe use and emergency response procedures
<b>Singleton STP</b>	Singleton Sewerage Treatment Plant	Singleton's 20,000 EP IDEA sewerage treatment plant located on Sewerage Works Lane (off Army Camp Road) Whittingham
<b>SPS</b>	Sewer Pump Stations	Pump stations situated in the sewer network that facilitate the transport of sewerage to the Singleton STP





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## 1. Introduction

The township of Singleton is located is 145 km north-north west of Sydney and 75km north west of Newcastle and is within the Singleton Local Government Area (LGA). Singleton LGA currently has a population of approximately 24,000 people.

Singleton Council owns, operates and maintains the Singleton Sewerage System and Sewage Treatment Plant (STP) which serves approximated 15,000 EP in the Singleton LGA. The Singleton Sewerage System services the suburbs of Singleton Heights, Hunterview, Dunolly, McDougalls Hill, Maison Dieu, Gowrie, Darlington, Singleton and the Singleton Army Camp.

### 1.1. Singleton Sewerage System

The Singleton Sewerage System and STP operate under the Environment Protection Licence (EPL) 3088 which is issued by the NSW Environment Protection Authority (NSW EPA).

The Singleton Sewerage System is shown in Figure 1 and comprises of the following:

- gravity mains;
- rising mains;
- sewer manholes;
- pressure sewer systems (PSS);
- Dunolly Sewer Pump Station (SPS);
  - Acacia SPS;
  - Wilkinson SPS;
  - Maison Dieu SPS;
- Bourke SPS;
  - Queen Street SPS;
  - Mercy SPS;
  - Kennedy SPS
  - Brucedale SPS;
  - Ardesier SPS;
  - Boonal SPS;
  - Dangar SPS;
- Kelso Street SPS;
- Crown SPS; and
- Army Camp SPS.

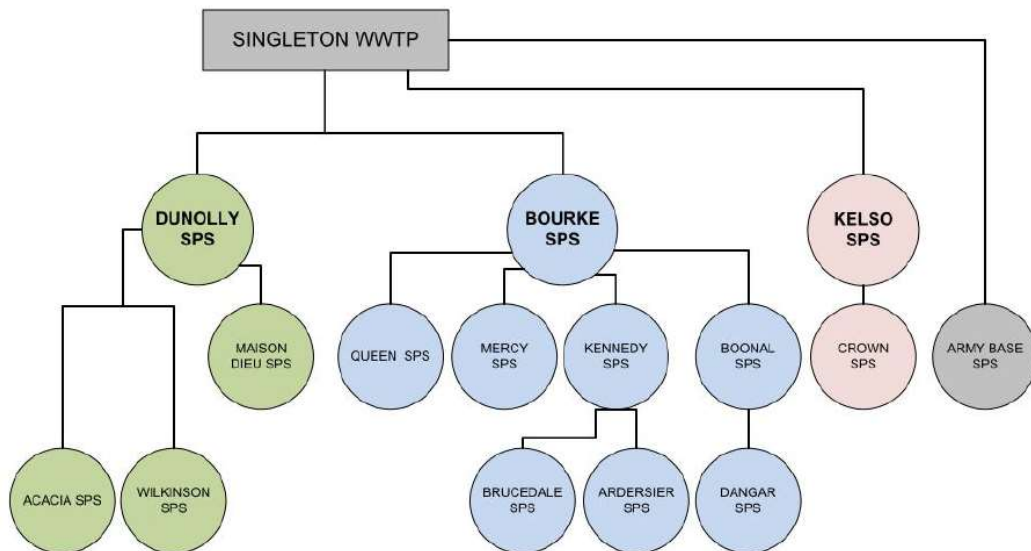
There is stormwater infrastructure in close proximity to the Singleton Sewerage System. The location of stormwater and drainage assets can be access through Council's Geographical Information System (GIS) or via Dial Before You Dig.





The location of the sewer mains and SPSs in the Singleton Sewerage System are shown in Appendix A. The location of the Singleton STP in relation to Singleton is also shown in Appendix A.

Figure 1: Singleton Sewerage System



## 1.2. Singleton Sewage Treatment Plant (STP)

The Singleton STP is situated on Sewerage Works Lane (off Army Camp Road) Whittingham, discharges treated effluent into Doughboy Hollow, and comprises of the following treatment/process units:

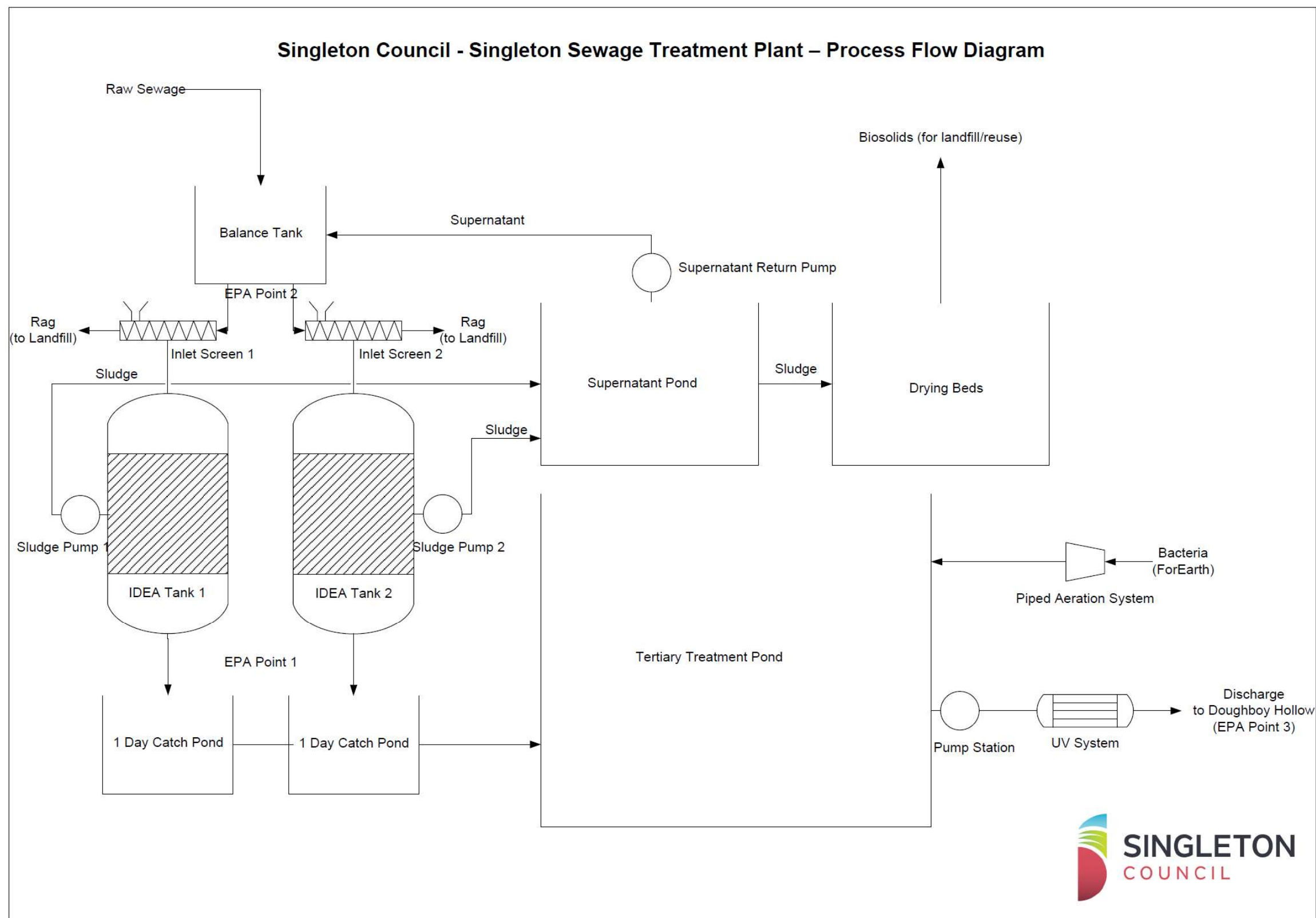
- balance tank and two inlet dividing channels;
- two screw-type inlet screens;
- two parallel Intermittent Decant Extended Aeration (IDEA) treatment ponds (10,000 EP each);
- two catch ponds (approximately 1-day detention each);
- one aerated tertiary treatment pond (approximately 9 days detention);
- UV disinfection system
- supernatant pond;
- 5 drying beds; and
- sludge lagoons.

There is no stormwater infrastructure on the Singleton STP site.

Figure 2 below shows the process flow diagram for Singleton STP.



Figure 2: Singleton Sewage Treatment Plant Process Flow Diagram





## 2. Context of the PIRMP

### 2.1. Background

The *Protection of the Environment Legislation Amendment Act 2011* ((POELA Act) includes the requirement under Part 5.7A of the *Protection of the Environment Operations Act 1997* (POEO Act) to prepare, keep, test and implement a Pollution Incident Response Management Plan (PIRMP).

The objectives of the PIRMP are to:

- ensure comprehensive and timely communication about a pollution incident to staff at the premises, the NSW Environment Protection Authority (NSW EPA), other relevant authorities specified in the Act (such as local councils, NSW Ministry of Health, WorkCover NSW, and Fire and Rescue NSW) and people outside the facility who may be affected by the impacts of the pollution incident;
- minimise and control the risk of a pollution incident at the facility by requiring identification of risks and the development of planned actions to minimise and manage those risks; and
- ensure that the plan is properly implemented by trained staff, identifying persons responsible for implementing it, and ensuring that the plan is regularly tested for accuracy, currency and suitability.

This document has been prepared in response to this requirement; it applies to the Singleton Sewerage System and STP as licenced by EPL 3088.

### 2.2. Definition of a Pollution Incident

The NSW EPA defines a pollution incident as:

*an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.*

This could be one or more of the following:

- air pollution including escape of significant dust or smoke;
- water pollution including escape of significant sediment, leachate or fuel off site to a watercourse;





- noise pollution including excess noise; and/or
- land pollution including escape of significant sediment, leachate or fuel off site to land.

### 2.3. Duty to Notify

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the POEO Act as:

(1) For the purposes of this Part:

- a) harm to the environment is material if:
  - i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or
  - ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and
- b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

(2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.

It is a requirement to report pollution incidents **immediately** (i.e. promptly and without delay) to the EPA, NSW Health, Fire and Rescue NSW, WorkCover NSW and the local council.

### 2.4. Scope of PIRMP

The scope of the PIRMP is as follows:

- description for the Singleton Sewerage System and its hazards;
- risk assessment of the hazard, their likelihoods and consequences;
- preventative actions to be undertaken;
- pollutant and chemical inventory;
- safety equipment;
- roles, responsibilities and contact details;
- communicating with neighbours and the community;
- incident action plans;
- harm minimisation to persons on the premises;
- continuous improvement through testing, evaluation, audit and review; and
- publication of the PIRMP.





In summary, the PIRMP is required to include the following:

- procedures regarding notification in the event of a pollution incident;
- description of actions to be undertaken immediately following an incident to control and minimise any pollution;
- procedures regarding notification and coordination with any notified authorities; and
- any other matters required by legislation.

## 2.5. Council's Commitment

Council is committed to protecting the health and safety of the community, Council employees and the environment. This commitment has been formalised in Council's Integrated Risk Management Policy.

## 2.6. Regulatory and Formal Requirements

The regulatory requirements of the Singleton Sewerage System and STP are shown below in Table 1. This PIRMP addresses how these legislative and licensing requirements are to be met.

Council's Manager – Water and Sewer is responsible for reviewing and updating this plan and for meeting the regulatory and other requirements.

Table 1: Regulatory Requirements for Singleton Sewerage System and STP

Parameter	Instrument	Regulatory Authority
<b>Sewerage System</b>	Water Management Act 2000	DPI Water
	Local Government Act 1993	DPI Water
<b>Public Health</b>	Environment Operations Act 2011	NSW Health, NSW EPA
<b>Environmental Health</b>	POEO Act 1997	NSW EPA
	EPL 3088	
	POELA Act 2011	
<b>Work Health and Safety (WHS)</b>	Work Health and Safety Act 2011	WorkCover NSW
<b>Plumbing, sewer connections and sewer mains</b>	AS/NZS 3500 (Plumbing and Drainage Code: Standards Australia 1996-2003)	Singleton Council
	Singleton Council Developer Specifications	

## 3. Risk Assessment

A risk assessment has been undertaken to determine the following with regards to the Singleton Sewerage System and STP:

- identification of hazards;
- identification of hazard events;





- identification of potential exacerbating circumstances;
- assessment of the maximum risk (likelihood and consequence);
- documentation of the preventative measures and monitoring; and
- assessment of the residual risk (likelihood and consequence).

This is consistent with Council's Managing Risks Procedure.

The criteria used to undertake the risk assessment including the definition of likelihood, consequence and the resultant risk matrix are shown below.

Table 2: Definition of Likelihood

LIKELIHOOD				
	WHS	Event Frequency	Historical	Project
<b>Almost Certain</b>	Expected to occur in most circumstances involving normal operations	More than once per year	Expected to occur, occurs regularly in the industry	Likely to occur in more than 1 in 2 projects of this kind
<b>Likely</b>	Could happen at any time	Once per year	Will probably occur, has occurred many times in the industry	Likely to occur in between 1 in 2 and 1 in 4 projects of this kind
<b>Possible</b>	Could happen sometimes	Once every 10 years	Might occur, has occurred several times in the industry	Likely to occur in between 1 in 4 and 1 in 10 projects of this kind
<b>Unlikely</b>	Could happen, but very rarely	Once every 50 years	Not likely to occur, has occurred once or twice in the industry	Likely to occur in less than 1 in 10 projects of this kind
<b>Rare</b>	Could happen but probably never will	Less than once every 50 years	May only occur in exceptional circumstances, unheard of in the industry	Will not happen





Table 3: Definition of Consequence

	CONSEQUENCE				
	Insignificant	Minor	Moderate	Major	Catastrophic
<b>People</b>	Minor injury, no first aid required	Minor injury; first aid required	Injury or illness requiring medical attention	Significant injury or long term illness; hospitalisation	Fatality; permanent disability, illness or disease
<b>Environmental</b>	Minimal environmental impact; isolated and immediately reversible	Minor environmental impact; isolated and reversible or localised and immediately reversible	Moderate environmental impact; localised and reversible or isolated and irreversible	Significant environmental impact; regional and reversible or localised and irreversible	Catastrophic environmental impact; national and reversible or regional and irreversible
<b>Legal</b>	Isolated non compliance or breach; minimal failure of internal controls	Contained non compliance or action with short term significance; some impact on normal operations	Significant claim or breach involving statutory authority or investigation; prosecution possible	Major breach with litigation/fines and long term significance; critical failure of internal controls	Extensive litigation/fines with possible class action; indictable offences
<b>Financial</b>	Negligible financial loss; less than \$10,000; up to 10% of program/project value	Minor financial loss; \$10,000 - \$50,000; 10% - 15% of program/project value	Significant financial loss; \$50,000 - \$500,000; 15% - 25% of program/project value	Major financial loss; \$500,000 - \$1m; 25% - 50% of program/project value	Extensive financial loss; in excess of \$1m; >50% of program/project value
<b>Reputation</b>	Isolated, internal or minimal attention or complaint	Heightened local community concerns and criticism	Significant public criticism with our without media attention; short to mid term loss of support from community	Serious public outcry, state media attention and long term loss of support from community	Extensive public outcry; national media attention; loss of State government support with appointment of administrator
<b>Service Delivery</b>	Isolated; internal or minimal impact on service delivery; little disruption to normal operation, low increase in normal operating costs	Contained impact on service delivery of short term significance; minor impact for small population, some manageable operational disruption, some increase in operating costs	Significant impact on service delivery involving investigation; minor impact for large population, significant modification to normal operation but manageable, operation costs increased, increased monitoring	Major impact on critical service delivery with long term significance; major impact for small population, systems significantly compromised and abnormal operation if at all, high level of monitoring required	Extensive impact/disruption to service delivery; threat to viability of critical program or whole of organisation; major impact for large population, complete failure of systems





	CONSEQUENCE				
	Insignificant	Minor	Moderate	Major	Catastrophic
<b>Technology &amp; Systems</b>	No measurable operational impact	Minor downtime or outage in single area of the organisation; addressed with local management and resources	Significant downtime or outage in multiple areas of the organisation; substantial management required	Loss of critical functions across multiple areas of the organisation; long term outage; extensive management with external resources required	Extensive and total loss of critical and/or entire organisation; disaster management required

Table 4: Risk Matrix

		C1	C2	C3	C4	C5
		Insignificant	Minor	Moderate	Major	Catastrophic
L5	Almost Certain	MEDIUM	HIGH	HIGH	EXTREME	EXTREME
L4	Likely	MEDIUM	MEDIUM	HIGH	HIGH	EXTREME
L3	Possible	LOW	MEDIUM	HIGH	HIGH	HIGH
L2	Unlikely	LOW	LOW	MEDIUM	MEDIUM	HIGH
L1	Rare	LOW	LOW	MEDIUM	MEDIUM	HIGH

### 3.1. Singleton STP Risk Assessment

The risk assessment and register for Singleton STP is seen below in Table 5. Current and proposed preventative actions used to manage these risks are detailed in Section 4.

Of the risks identified the following risks, following the application of preventative measures, remain above the As Low as Reasonably Practicable (ALARP) Line:

- SCADA/telemetry failure preventing STP from operating as required
- Structural failure of IDEA Tanks
- Contaminated influent to Singleton STP
- Treatment failure in IDEA Tanks (e.g. activated sludge death)
- Algae growth in Catch Ponds





- Algae growth in Tertiary Treatment Ponds
- Embankment failure of Tertiary Pond
- Power failure to UV System
- Equipment failure for UV System
- Influent contamination causing ineffective treatment by UV System
- Embankment failure of Supernatant Pond

### 3.2. Singleton Sewerage System Risk Assessment

The risk assessment and register for Singleton Sewerage System is seen below in Table 6. Current and proposed preventative actions used to manage these risks are detailed in Section 4.

Of the risks identified the following risks, following the application of preventative measures, remain above the ALARP Line:

- Stormwater ingress to SPS
- SCADA/telemetry failure preventing SPS operating as required
- Sewerage overflow as a result of pump failure
- Sewerage overflow as a result of power failure
- Blockages in gravity mains as a result of foreign material entering the sewer
- Collapsed gravity mains resulting in sewer overflow
- Damaged gravity sewer main as a result of excavation
- Blockages in rising mains as a result of foreign material entering the sewer
- Damaged rising sewer main as a result of excavation





Table 5: Risk Register – Sewage Treatment Plant

Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
Site	1	Sabotage/intentional contamination	Contaminated effluent		Major	Rare	High	Locked site Locked and alarmed buildings Operators attend site 7 days a week	Security patrols Telemetry and alarms	Major	Rare	Medium	
	2	SCADA/Process Control Software failure	Contaminated effluent & overflow	Wet weather	Major	Possible	High	Operators attend site 7 days a week Manual process control Routine maintenance and inspection Master/slave system Data and power backup systems Telemetry and alarms	Daily visual inspection Telemetry	Major	Possible	High	
	3	Chemical contamination	Contaminated effluent	Wet weather	Major	Possible	High	Limited chemical stored onsite Chemicals/fuel stored separate from treatment ponds Bulk chemical storage limited to innocuous chemicals (e.g. lime and bicarbonate soda)	Daily visual inspection	Major	Unlikely	Medium	
	4	Flood	Overflow	Wet weather	Major	Unlikely	Medium	Infrastructure built up above 1:100 year flood level Automatic process control independent of telemetry Generator with automatic start-up	Telemetry	Major	Rare	Medium	





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
Inlet Channels	5	Increased volume to STP (stormwater ingress)	Overflow	Wet weather	Major	Possible	High	Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Timed pumping from major SPS Sewer relining program Manhole maintenance program	Telemetry	Major	Unlikely	Medium	
	6	Concrete/pipe failure	Overflow	Septic sewage	Major	Unlikely	Medium	Operators attend site 7 days a week Capital renewal (concrete rehab and pipe replacement)	Daily visual inspection	Major	Rare	Medium	
Inlet Screens	7	Increased volume to STP (stormwater ingress)	Overflow	Wet weather	Major	Possible	High	Screens sized to accommodate maximum STP inflow of 480L/s Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Sewer relining program Manhole maintenance program	Telemetry	Minor	Unlikely	Low	Screens can be raised out of inlet channel with tractor in event of extended/extreme wet weather flows
	8	Mechanical failure (e.g. due to blockage)	Overflow		Minor	Almost certain	High	Routine maintenance and inspection Telemetry and alarms Screens can be raised during maintenance	Daily visual inspection	Minor	Possible	Medium	Screens can be raised out of inlet channel with tractor in event of major blockage requiring dismantling of equipment





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
	9	Power failure	Overflow	Storm	Minor	Possible	Medium	Generator with automatic start-up Telemetry and alarms Screens can be raised to allow for unimpeded inflow	Telemetry	Minor	Unlikely	Low	
IDEA Tanks	10	Increased volume to STP (stormwater ingress)	Overflow	Wet weather	Major	Possible	High	Plant outflow hydraulically controlled Process control – wet weather/storm cycle Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Sewer relining program Manhole maintenance program	Telemetry	Minor	Unlikely	Low	Design capacity of 20,000 EP (ADWF 4.8 ML/day and PWWF 33.6 ML/day) - current loading 3 - 4 ML/day indicating spare capacity
	11	Aerator failure (e.g. due to ragging)	Contaminated effluent	Inlet screen failure	Major	Possible	High	3 aerators Routine maintenance and inspection Telemetry and alarms On call operators (response 1 - 2 hrs)	Telemetry Daily and weekly testing	Major	Unlikely	Medium	Resultant anaerobic treatment should be sufficient to partially treat effluent
	12	Decant fails down (e.g. decant rope breaking)	Contaminated effluent	Power failure	Major	Unlikely	Medium	Plant outflow hydraulically controlled Routine maintenance and inspection Hitch points to manually raise decants Telemetry and alarms	Daily visual inspection	Major	Rare	Medium	





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
								On call operators (response 1 - 2 hrs)					
	13	Decant fails up (e.g. decant motor failure)	Overflow	Wet weather	Major	Unlikely	Medium	Routine maintenance and inspection Telemetry and alarms On call operators (response 1 - 2 hrs)	Daily visual inspection	Major	Rare	Medium	Temporary pumps to be installed to directly pump to catch ponds if required
	14	Sludge pump failure (e.g. blockage)	Contaminated effluent, overflow & solids accumulation		Moderate	Possible	High	Routine maintenance and inspection Replacement pump available onsite Telemetry and alarms On call operators (response 1 - 2 hrs)		Moderate	Unlikely	Medium	
	15	Power failure	Contaminated effluent	Storm	Major	Possible	High	Generator with automatic start-up Plant outflow hydraulically controlled	Telemetry	Major	Unlikely	Medium	
	16	Structural failure	Overflow	Earthquake, flood	Catastrophic	Rare	High	Asset inspection and capital renewal program		Catastrophic	Rare	High	Divert sewage to alternate onsite pond and setup temporary treatment process
	17	Influent contamination	Contaminated effluent		Catastrophic	Unlikely	High	Liquid trade waste agreements and annual inspections	Telemetry Daily and weekly testing	Catastrophic	Rare	High	Containment at pump station possible through valve isolation and external pump out if specific contamination identified Possible to divert effluent to head of STP for retreatment or divert influent to containment pond for alternative treatment Singleton does not currently have any Class C trade waste dischargers
	18	Concrete/pipe failure	Overflow	Septic sewage	Major	Unlikely	Medium	Operators attend site 7 days a week Asset inspection and capital		Major	Rare	Medium	





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
Catch Ponds								renewal (concrete rehab and pipe replacement)					
	19	Treatment failure	Contaminated effluent	Contaminated influent	Catastrophic	Unlikely	High	Process control (manual and automatic)	Daily and weekly testing	Catastrophic	Rare	High	Temporary pumps to be installed to pump to unused ponds for offsite disposal if required
	20	Tankered Septage	Unsuitable/contaminated waste		Catastrophic	Rare	High	STP does not accept tankered trade waste or septage		Insignificant	Rare	Low	
	21	Increased volume to STP (stormwater ingress)	Overflow	Wet weather	Major	Possible	High	Plant outflow hydraulically controlled Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Sewer relining program Manhole maintenance program		Minor	Unlikely	Low	Catch ponds are connected to tertiary treatment pond and will automatically drain through hydraulic control
Catch Ponds	22	Algae growth	Contaminated effluent	Wet weather, warm weather	Moderate	Almost Certain	High	Chemical dosing (e.g. activated carbon, bicarb soda, enzyme) dosing as required	Daily visual inspection Daily and weekly testing	Moderate	Almost Certain	High	EPA notification required if concentration exceeds limits at EPA Point 3 (particularly pH and TSS) Alternate temporary treatment process installation possible (e.g. alum) Fish Kill Notification Procedure to be followed in event of fish kill
	23	Solids accumulation	Contaminated effluent & overflow		Moderate	Unlikely	Medium	Control sludge blanket in IDEA to prevent sludge carryover Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Moderate	Rare	Medium	Drying beds can be used to dry accumulated solids following dredging from pond. Dried sludge can be disposed offsite
	24	Embankment failure	Overflow	Wet weather	Major	Rare	Medium	Routine maintenance and inspection Asset inspection and capital	Daily visual inspection	Major	Rare	Medium	Bypass catch ponds possible if required





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
								renewal program					
Tertiary Treatment Pond	25	Increased volume to STP (stormwater ingress)	Contaminated effluent & overflow	Wet weather	Major	Possible	High	Plant outflow hydraulically controlled Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Sewer relining program Manhole maintenance program	Daily and weekly testing	Minor	Unlikely	Low	Spillway is at end of treatment process (next to outflow weir); effluent going to spillway should have same level of treatment as that going out over outlet weir
	26	Algae growth	Contaminated effluent	Wet weather, warm weather	Moderate	Almost Certain	High	Chemical dosing (e.g. activated carbon, bicarb soda, enzyme) dosing as required	Daily visual inspection Daily and weekly testing	Moderate	Almost Certain	High	EPA notification required if concentration exceeds limits at EPA Point 3 (particularly pH and TSS) Alternate temporary treatment process installation possible (e.g. alum) Fish Kill Notification Procedure to be followed in event of fish kill
	27	Solids accumulation	Contaminated effluent & overflow		Moderate	Unlikely	Medium	Control sludge blanket in IDEA to prevent sludge carryover Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Moderate	Rare	Medium	Drying beds can be used to dry accumulated solids following dredging from pond. Dried sludge can be disposed offsite
	28	Embankment failure	Contaminated effluent & overflow	Wet weather	Catastrophic	Rare	High	Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Catastrophic	Rare	High	
UV System	29	Power failure	Partially treated effluent	Storm	Moderate	Possible	High	Telemetry and alarms Diverter pit allows bypass of UV System	Telemetry	Moderate	Possible	High	Tertiary treatment pond provides disinfection as well as UV System Generator unable to power UV System as power priority goes to IDEA Tanks





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
								during power failure					
	30	Equipment failure (e.g. lamp, ballast)	Partially treated effluent	Wet weather, excessive heat or cold, weather, algae growth, vermin (e.g. rats)	Moderate	Possible	High	Routine maintenance and inspection Vermin control Telemetry and alarms Diverter pit allows bypass of UV System during power failure	Telemetry Weekly cleaning of strainer	Moderate	Possible	High	Tertiary treatment pond provides disinfection as well as UV System
	31	Influent contamination (e.g. low UVT, presence of algae)	Partially treated effluent	Power failure	Moderate	Likely	High	Routine maintenance and inspection Inflow strainer Telemetry and alarms Diverter pit allows bypass of UV System during power failure	Telemetry Weekly cleaning of strainer	Moderate	Likely	High	EPA notification required if concentration exceeds limits at EPA Point 3 (particularly pH and TSS) Tertiary treatment pond provides disinfection as well as UV System Fish Kill Notification Procedure to be followed in event of fish kill
Supernatant Pond	32	Increased volume to STP (stormwater ingress)	Overflow	Wet weather	Moderate	Possible	High	Flow to supernatant pond controlled by sludge pump Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Sewer relining program Manhole maintenance program	Telemetry	Moderate	Unlikely	Medium	
	33	Supernatant pump failure (e.g. blockage)	Overflow & solids accumulation		Moderate	Possible	High	Duty/standby pump Routine maintenance and inspection Telemetry and alarms	Telemetry	Moderate	Unlikely	Medium	





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
								On call operators (response 1 - 2 hrs)					
	34	Solids accumulation	Contaminated effluent & overflow		Moderate	Possible	High	Solids sent to drying beds Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Moderate	Unlikely	Medium	Drying beds can be used to dry accumulated solids following dredging from pond. Dried sludge can be disposed offsite
	35	Embankment failure	Contaminated effluent & overflow	Wet weather	Catastrophic	Rare	High	Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Catastrophic	Rare	High	Recommission sludge lagoon as alternate supernatant pond
Drying Beds	36	Increased volume to STP (stormwater ingress)	Overflow	Wet weather	Minor	Possible	Medium	Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Sewer relining program Manhole maintenance program		Minor	Unlikely	Low	Drying beds clay-lined and surrounded by v-drains to prevent runoff
	37	Solids accumulation	Contaminated effluent & overflow		Moderate	Likely	High	Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Moderate	Unlikely	Medium	Dried sludge disposed offsite at approved waste facility
	38	Embankment/structural failure	Contaminated effluent & overflow	Wet weather	Major	Unlikely	Medium	2 drying beds in operation Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Minor	Unlikely	Low	Offsite disposal of sludge at approved waste facility possible if required





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
Sludge Lagoons	39	Increased volume to STP (stormwater ingress)	Overflow	Wet weather	Moderate	Possible	High	Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Sewer relining program Manhole maintenance program		Moderate	Unlikely	Medium	
	40	Solids accumulation	Contaminated effluent & overflow		Moderate	Unlikely	Medium	Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Moderate	Rare	Medium	Sludge lagoons not currently in operation
	41	Embankment failure	Contaminated effluent & overflow	Wet weather	Major	Rare	Medium	Routine maintenance and inspection Asset inspection and capital renewal program	Daily visual inspection	Moderate	Rare	Medium	Sludge lagoons not currently in operation





Table 6: Risk Register – Sewerage System

Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
Sewer Pump Stations (SPS)	1	Increased volume to SPS Stations (stormwater ingress)	Overflow	Wet weather	Major	Almost Certain	Extreme	Telemetry and alarms On call operators (response 1 - 2 hrs) At least 1 hour storage at each SPS with additional storage in the network Sewer relining program Manhole maintenance program	Telemetry	Major	Possible	High	Spare or temporary pumps can be installed in an emergency Tankers to transport sewage to alternate SPS or STP Fish Kill Notification Procedure to be followed in event of fish kill
	2	SCADA/Process Control Software failure	Overflow	Storm	Major	Likely	High	SPS pump control independent of SCADA Manual operation possible	Telemetry	Major	Possible	High	Tankers to transport sewage to alternate SPS or STP Fish Kill Notification Procedure to be followed in event of fish kill
	3	Pump failure	Overflow	Rag (incl. wet wipes, nappies etc.), roots, fat	Major	Likely	High	Duty/standby pumps in all SPS Spare pumps carried for most SPS Telemetry and alarms On call operators (response 1 - 2 hrs) At least 1 hour storage at each SPS with additional storage in the network	Telemetry	Major	Possible	High	Spare or temporary pumps can be installed in an emergency Tankers to transport sewage to alternate SPS or STP Fish Kill Notification Procedure to be followed in event of fish kill
	4	Power failure	Overflow	Wet weather, storm	Major	Possible	High	Generator with automatic start-up at major pump stations Telemetry and alarms On call operators (response 1 - 2 hrs) At least 1 hour storage at each SPS with additional storage in the network	Telemetry	Major	Possible	High	Temporary mobile generator can be installed in an emergency Generator operation and fuel levels checked at least monthly Tankers to transport sewage to alternate SPS or STP Fish Kill Notification Procedure to be followed in event of fish kill





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
	5	Flooding	Overflow	Wet weather	Major	Almost Certain	Extreme	SPS pump control independent of SCADA Duty/standby pumps in all SPS Generator with automatic start-up at major pump stations Telemetry and alarms On call operators (response 1 - 2 hrs) At least 1 hour storage at each SPS with additional storage in the network		Major	Unlikely	Medium	Major SPS in flood area, not all minor SPS in flood area Fish Kill Notification Procedure to be followed in event of fish kill
Gravity Mains	6	Blockage	Overflow	Rag (incl. wet wipes, nappies etc.), roots, fat	Minor	Likely	Medium	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program	Monthly review of CRMs and callouts to determine trends/changes to asset condition	Moderate	Possible	High	Spill kit available for overflow containment Temporary diversion pump available if necessary Fish Kill Notification Procedure to be followed in event of fish kill
	7	Collapsed main	Overflow	Wet weather, earthquake/ground movement	Minor	Likely	Medium	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program Sewer CCTV and water jetting program	Monthly review of CRMs and callouts to determine trends/changes to asset condition	Moderate	Possible	High	Spill kit available for overflow containment Temporary diversion pump available if necessary Fish Kill Notification Procedure to be followed in event of fish kill
	8	Damage due to excavation	Overflow	Wet weather, septic sewage, earthquake/ground movement	Minor	Likely	Medium	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Council supplies information through Dial Before You Dig system Regular updating of GIS records for sewer main locations		Moderate	Possible	High	Spill kit available for overflow containment Temporary diversion pump available if necessary Fish Kill Notification Procedure to be followed in event of fish kill





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
Rising Mains	9	Blockage	Overflow	Rag (incl. wet wipes, nappies etc.), roots, fat	Major	Likely	High	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program Sewer CCTV inspection and preventative and jetting program	Monthly review of CRMs and callouts to determine trends/changes to asset condition	Moderate	Possible	High	Spill kit available for overflow containment Temporary diversion pump available if necessary Fish Kill Notification Procedure to be followed in event of fish kill
	10	Collapsed main	Overflow	High pressure, pipe condition, wet weather, earthquake/ground movement	Major	Likely	High	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program Sewer CCTV inspection and water jetting program	Monthly review of CRMs and callouts to determine trends/changes to asset condition	Major	Unlikely	Medium	Spill kit available for overflow containment Temporary diversion pump available if necessary Fish Kill Notification Procedure to be followed in event of fish kill
	11	Damage due to excavation	Overflow	Wet weather, septic sewage, earthquake/ground movement	Major	Likely	High	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Council supplies information through Dial Before You Dig system Regular updating of GIS records for sewer main locations		Major	Possible	High	Spill kit available for overflow containment Temporary diversion pump available if necessary Fish Kill Notification Procedure to be followed in event of fish kill
Property Connection	12	Blockage	Overflow	Rag (incl. wet wipes, nappies etc.), roots, fat	Minor	Likely	Medium	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program Sewer CCTV inspection and	Monthly review of CRMs and callouts to determine trends/changes to asset condition	Minor	Likely	Medium	Spill kit available for overflow containment Temporary diversion pump available if necessary





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
								preventative jetting program					
	13	Collapsed shaft or junction	Overflow	Wet weather, earthquake/ground movement	Minor	Likely	Medium	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program Sewer CCTV inspection and preventative jetting program		Minor	Likely	Medium	Spill kit available for overflow containment
	14	Damage due to excavation	Overflow	Wet weather, septic sewage, earthquake/ground movement	Minor	Likely	Medium	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Council supplies information through Dial Before You Dig system Regular updating of GIS records for sewer main locations		Minor	Likely	Medium	Spill kit available for overflow containment
Manholes	15	Blockage	Overflow	Rag (incl. wet wipes, nappies etc.), roots, fat	Minor	Likely	Medium	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program	Monthly review of CRMs and callouts to determine trends/changes to asset condition	Minor	Possible	Medium	Spill kit available for overflow containment Temporary diversion pump available if necessary
	16	Stormwater ingress	Overflow	Wet weather	Minor	Possible	Medium	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Manhole maintenance program Sewer CCTV inspection and water jetting program		Minor	Likely	Medium	Spill kit available for overflow containment





Component	Risk ID	Hazardous Event	Potential Hazard	Exacerbating Circumstances	Consequence	Likelihood	Maximum Risk	Preventative Measures	Monitoring	Residual Consequence	Residual Likelihood	Hazardous Event Risk	Comments
Pressure Sewer Systems	17	Increased volume to Pump Stations (stormwater ingress)	Overflow	Wet weather	Minor	Possible	Medium	Automatic pump start up and localised control Localised alarms Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs)		Minor	Likely	Medium	Spill kit available for overflow containment
	18	Process Control Software failure	Overflow		Minor	Unlikely	Low	Localised alarms Spare pump controls available Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs)		Minor	Unlikely	Low	Council holds maintenance contracts with customers with at least yearly servicing
	19	Pump failure	Overflow	Rag (incl. wet wipes, nappies etc.), roots, fat	Minor	Possible	Medium	Localised alarms Spare pumps available On-site tank capable of at least 12 hours storage Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs)		Minor	Likely	Medium	Council holds maintenance contracts with customers with at least yearly servicing
	20	Power failure	Overflow	Wet weather storm	Minor	Possible	Medium	On-site tank capable of at least 12 hours storage		Minor	Unlikely	Low	Located on Customer's property - power supply is the responsibility of the customer





## 4. Preventative Actions

Council approaches preventative actions to the identified risks through a multiple barrier approach following the Hierarchy of Controls (listed in order of preference):

1. Elimination
2. Substitution
3. Isolation
4. Engineering
5. Administrative
6. PPE

Table 7 and Table 8 below shows the existing and proposed preventative measures to prevent sewer overflow from the Singleton Sewerage System and Singleton STP.

### 4.1. Sewage Overflow in Singleton Sewerage System

Overflows within the Singleton Sewerage System principally occur as a result of:

- blockage of sewer mains;
- sewer main collapse due to pipe condition; and
- excessive inflow.

#### 4.1.1. Gravity/Pressure/Rising Sewer Mains

The condition of Singleton's gravity sewer main has been assessed with most mains either in condition 2 or 3 (good of fair). The capacity of the system has been assessed and most sewer mains have sufficient capacity to carry increased loading as a result of stormwater ingress or development.

Council uses water jetting and vacuum equipment to clear blockages. Council has also undertaken a significant relining program throughout the sewerage network to get all pipes to at least fair condition. In addition, Council undertakes an annual program of sewer CCTV and main cleaning to identify issues and prevent blockages. Most blockages are caused by root intrusion and foreign objects flushed down the sewer.

The sewerage system experiences increased loading during wet weather events. Due to the topography of Singleton it is possible for manholes and SPS to be inundated during rain and flood events. This is exacerbated by potential illegal connections of stormwater to sewer as well as low lying gullies or boundary traps,

No major sewer overflows have been reported with most sewer overflows being classified as minor incidents. Additionally, there have been no sewer overflows reported due to weather events.





#### 4.1.2. Sewer Pump Stations (SPS)

Overflows from SPSs are mitigated through the provision of:

- sufficient pumping capacity;
- duty/standby pumps;
- sufficient emergency storage;
- remote monitoring and operator response;
- reliable power supply; and
- emergency response planning and procedures.

The capacities of the SPS have been assessed with most SPS having sufficient capacity to provide adequate pumping capacity for both current and proposed development. All SPS have a duty and standby pump arrangement in place. The Asset Management Plan – Sewer has identified those SPS that will require upgrading in line with development.

Bourke and Dunolly SPS have backup generators that automatically start in the event of a power failure. All other sites are in the process of being adapted to operate with Council's mobile emergency generator. Power outages are not common in the area and Council has a good relation with Ausgrid in regards to emergency response in the event of power outages.

All SPS have at least 1 hour ADWF emergency storage within the wet well as well as storage within the sewer network. This allows sufficient time to accommodate most mechanical and electrical failures. Council is in the process of reviewing the emergency storage at its SPS with a view to increasing the emergency storage in the wet well where possible.

All SPS in Singleton are monitored via telemetry with alarming going to the Treatment Plant Operators for first response. Instances of power, communication or pump failure as well as high well level alarms are sent to the Operators for response. Council's Response and Repair Timeframes and Priority Details are provided in Council's [Water and Sewer Group Customer Service Plan](#). These allow for response time dependent on priority and for most responses requiring activation of the PIRMP the response time is 1 hour during business hours and 2 hours after business hours.

#### 4.1.3. Pressure Sewer Systems (PSS)

Overflows from PSSs are mitigated through the provision of:

- sufficient emergency storage;
- alarming;
- operator response; and
- provision of critical spares and replacement parts.





All PSSs have at least 24 hours emergency storage within the wet well. This allows sufficient time to accommodate most mechanical and electrical failures. Council keeps critical spares and replacement parts in stock and is able to replace pumps at short notice if required. If required, Council has a vacuum truck that is able to pump out the PSS to ensure sufficient capacity remains whilst repairs are undertaken.

The PSS alarms locally and the customer is able to contact Council's Customer Service Centre (provided both during and after business hours) provided to record and initiate a response. Council's Response and Repair Timeframes and Priority Details are provided in Council's [Water and Sewer Group Customer Service Plan](#). These allow for response time dependent on priority and for most responses requiring activation of the PIRMP the response time is 1 hour during business hours and 2 hours after business hours.





Table 7: Existing and Proposed Preventative Measures - Sewerage System

Hazardous Event	Potential Hazard	Existing Preventative Measures	Proposed New Preventative Measures
<b>Increased volume to Pump Stations (stormwater ingress)</b>	Overflow	Telemetry and alarms On call operators (response 1 - 2 hrs) At least 1 hour storage at each SPS with additional storage in the network Sewer relining program Manhole maintenance program	Enact capacity upgrades as per Asset Management Plan
<b>SCADA/Process Control Software failure</b>	Overflow	SPS pump control independent of SCADA Manual operation possible	Review and upgrade of SCADA/Process Control software
<b>Pump failure</b>	Overflow	Duty/standby pumps in all SPS Spare pumps carried for most SPS Telemetry and alarms On call operators (response 1 - 2 hrs) At least 1 hour storage at each SPS with additional storage in the network	Develop Emergency Response Plan in the event of catastrophic pump failure
<b>Power failure</b>	Overflow	Generator with automatic start-up at major pump stations Telemetry and alarms On call operators (response 1 - 2 hrs) At least 1 hour storage at each SPS with additional storage in the network	Nil required
<b>Flooding</b>	Overflow	SPS pump control independent of SCADA Duty/standby pumps in all SPS Generator with automatic start-up at major pump stations Telemetry and alarms On call operators (response 1 - 2 hrs) At least 1 hour storage at each SPS with additional storage in the network	Nil required
<b>Blockage</b>	Overflow	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program Sewer CCTV and preventative jetting program	Nil required





Hazardous Event	Potential Hazard	Existing Preventative Measures	Proposed New Preventative Measures
<b>Collapsed main</b>	Overflow	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program Sewer CCTV and preventative jetting program	Nil required
<b>Damage due to excavation</b>	Overflow	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Council supplies information through Dial Before You Dig system Regular updating of GIS records for sewer main locations	Nil required
<b>Collapsed shaft or junction</b>	Overflow	Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs) Sewer relining program Sewer CCTV inspection and water jetting program	Nil required
<b>Stormwater ingress</b>	Overflow	Automatic pump start up and localised control Localised alarms Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs)	Nil required
<b>Process Control Software failure</b>	Overflow	Localised alarms Spare pump controls available Customer service/after hours number to record and initiate response to customer complaints On call operators (response 1 - 2 hrs)	Nil required





## 4.2. Singleton Sewage Treatment Plant (STP)

Overflows or non-compliant effluent discharge from Singleton STP principally occur as a result of:

- blocked/malfunctioning inlet screens;
- mechanical failure of aerators, decants, pumps or UV Disinfection System (treatment failure);
- SCADA/telemetry failure;
- power failure;
- excessive inflow;
- non-compliant inflow (e.g. trade waste incident);
- algae; and
- embankment failures.

Daily/weekly maintenance is undertaken mechanical equipment to prevent blockages and failures. All mechanical items on the Singleton STP site are controlled and monitored locally and via SCADA. Alarms, including those for telemetry/SCADA failure, are sent via telemetry with response via the on-call Treatment Plant Operator. Council's Response and Repair Timeframes and Priority Details are provided in Council's [Water and Sewer Group Customer Service Plan](#). These allow for response time dependent on priority and for most responses requiring activation of the PIRMP the response time is 1 hour during business hours and 2 hours after business hours.

Additionally, the Singleton STP operates through hydraulics and the only overflow possible is at the end of the treatment process (near the tertiary pond) meaning that any overflow has passed through the entirety of the treatment process.

The Singleton STP has a backup generator that automatically starts in the event of a power failure. The priority for the backup generator is to power the IDEA treatment process and is unable to power the UV Disinfection System in the event of a power failure. Power outages are not common in the area and Council has a good relation with Ausgrid in regards to emergency response in the event of power outages.

The Singleton STP experiences increased loading during wet weather events. The Singleton STP has approximately 25% spare capacity to deal with the increased flow. Additionally, during peak wet weather flow (PWWF) events Singleton STP SCADA reverts to the PWWF setting which automatically reduces the treatment cycle. Additionally, in extremely high PWWF events the Singleton STP SCADA has a storm cycle designed to prevent overflow without the sewerage proceeding throughout the entire treatment process.

Council actively manages discharges to the sewerage network through liquid trade waste approvals and annual inspections. Non-compliance detected through water





quality testing or during maintenance activities is referred to the Liquid Trade Waste Officer for investigation and corrective action as required.

The Singleton STP is liable for algae growth; this occurs primarily in the tertiary treatment pond. The potential for algae growth is managed through the nutrient minimisation through the treatment process, aeration, bacteria dosing and ultrasonic algae units.

Failure of ponds/embankments is prevented through maintenance of vegetation on the banks as well as routine asset inspection and maintenance as required.





Table 8: Existing and Proposed Preventative Measures - Singleton STP

Hazardous Event	Potential Hazard	Existing Preventative Measures	Proposed New Preventative Measures
<b>Sabotage/intentional contamination</b>	Contaminated effluent	Locked site Locked and alarmed buildings Operators attend site 7 days a week	Security upgrade of STP site
<b>SCADA/Process Control Software failure</b>	Contaminated effluent & overflow	Operators attend site 7 days a week Manual process control Routine maintenance and inspection Master/slave system Data and power backup systems Telemetry and alarms	Review and upgrade of SCADA/Process Control software
<b>Chemical contamination</b>	Contaminated effluent	Limited chemical stored onsite Chemicals/fuel stored separate from treatment ponds Bulk chemical storage limited to innocuous chemicals (e.g. lime and bicarbonate soda)	Nil required
<b>Flooding</b>	Overflow	Infrastructure built up above 1:100 year flood level Automatic process control independent of telemetry Generator with automatic start-up	Nil required
<b>Increased volume to STP (stormwater ingress)</b>	Overflow	Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Timed pumping from major SPS Sewer relining program Manhole maintenance program Plant outflow hydraulically controlled Process control – wet weather/storm cycle	Enact capacity upgrades as per Asset Management Plan





Hazardous Event	Potential Hazard	Existing Preventative Measures	Proposed New Preventative Measures
<b>Concrete/pipe failure</b>	Overflow	Operators attend site 7 days a week Capital renewal (concrete rehab and pipe replacement)	Visual inspection to determine asset condition
<b>Screen mechanical failure (e.g. due to blockage)</b>	Overflow	Routine maintenance and inspection Telemetry and alarms Screens can be raised during maintenance	Nil required
<b>Power failure</b>	Overflow	Generator with automatic start-up Telemetry and alarms Screens can be raised to allow for unimpeded inflow Plant outflow hydraulically controlled	Investigate generator replacement to have UV System on backup generator
<b>Aerator failure (e.g. due to ragging)</b>	Contaminated effluent	3 aerators Routine maintenance and inspection Telemetry and alarms On call operators (response 1 - 2 hrs)	Nil required
<b>Decant fails down (e.g. decant rope breaking)</b>	Contaminated effluent	Plant outflow hydraulically controlled Routine maintenance and inspection Hitch points to manually raise decants Telemetry and alarms On call operators (response 1 - 2 hrs)	Alarms reconfigured to notify when Decant Weir fails to raise. Installation of mechanical measures to raise and hold the Decant Weir in the event of a failure.
<b>Decent fails up (e.g. decant motor failure)</b>	Overflow	Routine maintenance and inspection Telemetry and alarms On call operators (response 1 - 2 hrs)	Alarms reconfigured to notify when Decant Weir fails to lower. Installation of mechanical measures to lower the Decant Weir in the event of a failure.
<b>Pump failure (e.g. blockage)</b>	Contaminated effluent, overflow & solids accumulation	Routine maintenance and inspection Replacement pump available onsite Telemetry and alarms On call operators (response 1 - 2 hrs)	Nil required





Hazardous Event	Potential Hazard	Existing Preventative Measures	Proposed New Preventative Measures
<b>Power failure</b>	Contaminated effluent	Generator with automatic start-up Plant outflow hydraulically controlled	Nil required
<b>Influent contamination</b>	Contaminated effluent	Liquid trade waste agreements and annual inspections	Nil required
<b>Treatment failure</b>	Contaminated effluent	Process control (manual and automatic)	Nil required
<b>Tankered Septage</b>	Unsuitable/contaminated waste	STP does not accept tankered trade waste or septage	Nil required
<b>Algae growth</b>	Contaminated effluent	Chemical dosing (e.g. activated carbon, bicarb soda, enzyme) dosing as required	Install temporary aeration as required
<b>Solids accumulation</b>	Contaminated effluent & overflow	Control sludge blanket in IDEA to prevent sludge carryover Routine maintenance and inspection Asset inspection and capital renewal program	Nil required
<b>Embankment/structural failure</b>	Overflow	Routine maintenance and inspection Asset inspection and capital renewal program	Nil required
<b>Increased volume to STP (stormwater ingress)</b>	Contaminated effluent & overflow	Plant outflow hydraulically controlled Operators attend site 7 days a week Telemetry and alarms On call operators (response 1 - 2 hrs) Sewer relining program Manhole maintenance program	Nil required





Hazardous Event	Potential Hazard	Existing Preventative Measures	Proposed New Preventative Measures
<b>Solids accumulation</b>	Contaminated effluent & overflow	Control sludge blanket in IDEA to prevent sludge carryover Routine maintenance and inspection Asset inspection and capital renewal program	Nil required
<b>UV equipment failure (e.g. lamp, ballast)</b>	Partially treated effluent	Routine maintenance and inspection Vermin control Telemetry and alarms Diverter pit allows bypass of UV System during power failure	Nil required
<b>Solids accumulation</b>	Contaminated effluent & overflow	Solids sent to drying beds Routine maintenance and inspection Asset inspection and capital renewal program	Nil required





## 5. Pollutant and Chemical Inventory

### 5.1. Pollutants

The following pollutants are present in the Singleton Sewerage System and STP and are potentially hazardous to public health and the environment:

- raw sewage (collected in the network);
- screenings (produced at STP inlet works);
- sludge;
- supernatant; and
- treated effluent (discharged from STP following treatment).

The typical concentration of pollutants in raw sewage and effluent from the STP are shown below in Table 9.

Table 9: Typical Sewage and Effluent Composition

Parameter	Units	Raw Sewage	Treated Effluent	EPL 90% Limit	EPL 100% Limit
<b>Biochemical oxygen demand (BOD5)</b>	mg/L	4 - 415	< 2 – 7	30	35
<b>Total suspended solids (TSS)</b>	mg/L	4 – 676	< 1 – 17	-	35
<b>Total nitrogen</b>	mg/L	7.6 – 66.6	1.6 – 5.2	-	25
<b>Total phosphorous</b>	mg/L	1 – 10.9	4.3 – 8.5	-	15
<b>Oil &amp; Grease</b>	mg/L	< 2 - 95	< 2	-	15
<b>E.Coli</b>	cfu/100mL	270,000 – 320,000,000	~ 9 – 190	1000	
<b>Enterococci</b>	cfu/100mL	12,000 – 32,000,000	< 9 – 55	230	
<b>pH</b>	-	6.8 – 7.5	7.8 – 8.5	-	6.5 – 8.5

### 5.2. Treatment and Other Chemicals

The following chemicals are kept at the STP site in small quantities and separate to the treatment ponds:

Table 10: Treatment Chemicals

Chemical	Typical Analysis	Use(s)	Storage Location(s)	Maximum Amount Stored
<b>Calcium hydroxide (lime)</b>	SDS	Odour control, pH correction, phosphorous control	STP Fittings Shed	40 x 25 kg bags
<b>Sodium bicarbonate</b>	SDS	Odour control, pH correction	STP Fittings Shed	40 x 25 kg bags





Chemical	Typical Analysis	Use(s)	Storage Location(s)	Maximum Amount Stored
<b>Biologically activated carbon</b>	SDS	Algae control	STP Fittings Shed	20 x bags
<b>For Earth</b>	SDS	Algae & sludge control	STP Fittings Shed	100 L

Table 11: Other Chemicals

Chemical	Typical Analysis	Use(s)	Storage Location(s)	Maximum Amount Stored
<b>Diesel</b>	SDS	Fuel for mobile equipment	STP Mowing Shed	500 L
<b>Diesel</b>	SDS	Fuel for generators	STP Generator Shed Dunolly SPS Bourke St SPS	500 L
<b>Petrol</b>	SDS	Handheld equipment	STP Mowing Shed	200 L
<b>Herbicide</b>	SDS	Weed control	STP Mowing Shed	200 L
<b>Sodium Hypochlorite</b>	SDS	Disinfection	STP Mowing Shed	200 L
<b>Nutrient Test Kits</b>	SDS	Nutrient Testing	STP Laboratory	20 kits

The safety data sheets (SDS) for the above chemicals are contained in Appendix B.

## 6. Safety Equipment and PPE

Safety equipment and personal protective equipment (PPE) are provided to workers to minimise the risk to human health and the environment. The purpose of this safety equipment and PPE is to contain, control or prevent contact with potential pollutants and includes PPE, SDS, monitoring devices and spill containment.

### 6.1. Safety Equipment and PPE

The following safety equipment and PPE is provided to workers at the STP and in the Singleton Sewerage System.





Table 12: Safety Equipment and PPE

Equipment	Purpose	Location
<b>Protective overalls</b>	Prevent bodily contact with contaminants	STP, Water Depot, Operator PPE Bags
<b>Nitrile gloves</b>	Prevent bodily contact with contaminants	STP, Water Depot, Operator PPE Bags
<b>Needle stick gloves</b>	Prevent needle stick injuries and bodily contact with contaminants	STP, Water Depot, Operator PPE Bags
<b>Safety glasses</b>	Prevent contaminants entering eyes	STP, Water Depot, Operator PPE Bags
<b>Dust mask</b>	Prevent inhalation/ingestion of contaminants	STP, Water Depot, Operator PPE Bags
<b>Lime</b>	Disinfectant	STP
<b>Disinfectant spray</b>	Disinfectant	Water Depot
<b>Vacuum trailer</b>	Prevent stormwater/treatment pond contamination by removing contaminated material for treatment/disposal	Water Depot
<b>Spill containment boom(s)</b>	Contain spills and prevent entering stormwater or treatment ponds	Water Depot
<b>Safety harnesses</b>	Prevent drowning in treatment ponds	STP
<b>Life jackets</b>	Prevent drowning in treatment ponds	STP
<b>Lifesaving rings</b>	Prevent drowning in treatment ponds	STP
<b>SDS</b>	Information on hazards pertaining to a chemical	STP & Intranet

## 6.2. Sewerage System Monitoring Devices

The following monitoring devices are present onsite at the STP and in the Singleton Sewerage System.

Table 13: Monitoring Devices at the STP and in Singleton's Sewerage System

Location	Monitoring Device
<b>STP</b>	Tank level Flowrate – inflow Flowrate – outflow Inlet screen(s) operation/failure Aerator(s) operation/ failure Decant(s) operation/failure Sludge pump operation/failure Supernatant pump operation/failure UV System operation/failure Generator running/fuel level/failure Telemetry communications failure
<b>SPS (typical)</b>	Well level Pump operation/failure Mixer operation/failure (where applicable) Spray operation/failure (where applicable)





Location	Monitoring Device
	Vent fan operation/failure (where applicable) Sump pump operation/failure (where applicable) Generator operation/fuel level/failure (where applicable) Telemetry communications failure
<b>PSS</b>	Monitored on-site and reported by Customer: Well level Pump failure (duplex units)

## 7. Roles, Responsibilities and Contact Details

### 7.1. Stakeholder Responsibilities and Engagement

Council is committed to operating its sewerage system and Singleton STP in a safe, effective and environmentally responsible manner. Council utilises effective stakeholder management in support of this commitment. Table 14 details the stakeholder involvement in the system, their role and the communication expectation of them. Incident reporting communication plans are presented in Section 8 of this plan.





Table 14: Stakeholder Responsibilities and Engagement

Stakeholder	Responsibility	Communicates With	When
<b>Coordinator – Water &amp; Sewer Delivery</b>	Emergency response coordinator	Manager – Water & Sewer	Reporting of incidents, operations and maintenance issues
		NSW EPA	Reporting on EPL 3088 compliance, reporting and management of incidents
		NSW Health	Health advice, reporting of notifiable incidents
		WorkCover (via Integrated Risk Management Team)	Reporting of notifiable incidents
		Emergency Services	Reporting of notifiable incidents
		Singleton Community	Reporting of notifiable incidents
	Overall scheme operation/responsibility	STP and Network Operators, Supervisors and Water & Sewer Staff	Management of operations & maintenance, staff, reporting, compliance and issues management.
<b>Manager – Water &amp; Sewer</b>	Management of scheme operation and maintenance, emergency response	Director – Planning & Infrastructure Services and General Manager	Reporting of incidents, operations and maintenance issues
<b>Coordinator Utilities Engineering</b>	Emergency response coordinator	Manager – Water & Sewer	Reporting of incidents, operations and maintenance issues
<b>Utilities Engineers</b>	Utilities engineering	Coordinator Utilities Engineering	Communicates issues regarding operation, maintenance and compliance, reporting of incidents
<b>Utilities Engineer – Process</b>	Environmental compliance	All Water & Sewer Staff	Reviewing environmental compliance and updating PIRMP
<b>Liquid Trade Waste Officer</b>	Liquid Trade Waste	Manager Water & Sewer	Communicates issues regarding liquid trade waste compliance
<b>STP and Network Operators, Supervisors and Water &amp; Sewer Staff</b>	Sewage Treatment & Sewer Network	Coordinator – Water & Sewer Delivery and Manager – Water & Sewer	Communicates issues regarding operation, maintenance and compliance
<b>Integrated Risk Management Team</b>	Integrated risk management		
<b>Director – Planning &amp; Infrastructure</b>	Planning and infrastructure services	Manager – Water & Sewer and General Manager	Communication regarding notifiable incidents





Stakeholder	Responsibility	Communicates With	When
<b>General Manager (incl. Communication Team)</b>	All Council Services	Councillors, media and other affected parties (as required)	Communication regarding major incidents
<b>Emergency Services (including Police, Fire &amp; Rescue, Ambulance, HAZMAT, SES &amp; WorkCover)</b>	Incident response	Coordinator – Water & Sewer Delivery, Manager – Water & Sewer, Director – Planning & Infrastructure Services	Response to emergencies including spills, injuries and accidents





## 7.2. Procedure for Contacting Staff to Respond to Possible Incident

### 7.2.1. Incident notification during normal business hours

The following incident notification procedure is used during normal business hours (8:30am to 4:30pm Monday to Friday) to notify the relevant Water & Sewer Staff member of potential incidents.

Table 15: Incident Notification Procedure during Normal Business Hours – Sewerage System

Who	What	When
<b>Customer/resident</b>	Contact Singleton Council Customer Service on (02) 6578 7290	As required
<b>Customer Service Officer</b>	Collects the details of the incident (including location and details of person reporting the incident) and lodges a CRM	Upon receiving customer/resident contact
<b>Customer Service Officer</b>	Contacts the relevant officer on the phone in the following order until staff member answers: <ol style="list-style-type: none"> <li>1. Network Supervisor</li> <li>2. Network Team Leader</li> <li>3. Utilities Plumber</li> <li>4. Coordinator – Water &amp; Sewer Delivery</li> <li>5. Coordinator – Utilities Engineering</li> <li>6. Manager – Water &amp; Sewer</li> <li>7. Other Water &amp; Sewer Staff</li> <li>8. Director – Planning &amp; Infrastructure Services</li> </ol>	Immediately
<b>Customer Service Officer</b>	Sends CRM to Water & Sewer Staff	Immediately
<b>Water &amp; Sewer Staff</b>	Responds to incident and notifies Coordinators – Water & Sewer Delivery/ Supervisor(s)/ Manager – Water & Sewer as required	Immediately

Table 16: Incident Notification Procedure during Normal Business Hours – Singleton STP

Who	What	When
<b>Treatment Plant Operator</b>	Responds to incident and notifies Coordinators – Water & Sewer Delivery/ Supervisor(s)/ Manager – Water & Sewer as required	As required
<b>Treatment Plant Operator</b>	Contacts the relevant officer on the phone in the following order until staff member answers: <ol style="list-style-type: none"> <li>1. Treatment Supervisor</li> <li>2. Coordinator – Water &amp; Sewer Delivery</li> <li>3. Coordinator – Utilities Engineering</li> <li>4. Utilities Engineer(s)</li> <li>5. Manager – Water &amp; Sewer</li> <li>6. Other Water &amp; Sewer Staff</li> <li>7. Director – Planning &amp; Infrastructure Services</li> </ol>	Immediately





### 7.2.2. Incident notification outside normal business hours

The following incident notification procedure is used outside normal business hours (4:30pm to 8:30am Monday to Friday and all day Saturday, Sunday and Public Holidays) to notify the relevant Water & Sewer Staff member of potential incidents.

Table 17: Incident Notification Procedure outside Normal Business Hours – Sewerage System

Who	What	When
<b>Customer/resident</b>	Contact Singleton Council After Hours Service on (02) 6572 1400	As required
<b>After-hours Call Centre Officer</b>	Collects the details of the incident (including location and details of person reporting the incident)	Upon receiving customer/resident contact
<b>After-hours Call Centre Officer</b>	Contacts the relevant officer on the phone in the following order until staff member answers: <ol style="list-style-type: none"> <li>1. On-call Network Operator (Primary)</li> <li>2. On-call Network Operator (Secondary)</li> <li>3. On-call Treatment Plant Operator</li> <li>4. Network Team Leader</li> <li>5. Network Supervisor</li> <li>6. Utilities Plumber</li> <li>7. Coordinator – Water &amp; Sewer Delivery</li> <li>8. Coordinator – Utilities Engineering</li> <li>9. Utilities Engineer(s)</li> <li>10. Manager – Water &amp; Sewer</li> <li>11. Other Water &amp; Sewer Staff</li> <li>12. Director – Planning &amp; Infrastructure Services</li> </ol>	Immediately
<b>Water &amp; Sewer Staff</b>	Responds to incident and notifies Coordinators – Water & Sewer Delivery/ Supervisor(s)/ Manager – Water & Sewer as required	Immediately

Table 18: Incident Notification Procedure during Normal Business Hours – Singleton STP

Who	What	When
<b>Treatment Plant Operator</b>	Responds to incident and notifies Coordinators – Water & Sewer Delivery/ Supervisor(s)/ Manager – Water & Sewer as required	As required
<b>Treatment Plant Operator</b>	Contacts the relevant officer on the phone in the following order until staff member answers: <ol style="list-style-type: none"> <li>1. Treatment Supervisor</li> <li>2. Coordinator – Water &amp; Sewer Delivery</li> <li>3. Coordinator – Utilities Engineering</li> <li>4. Utilities Engineer(s)</li> <li>5. Manager – Water &amp; Sewer</li> <li>6. Other Water &amp; Sewer Staff</li> <li>7. Director – Planning &amp; Infrastructure Services</li> </ol>	Immediately





### 7.3. Emergency Contact Details

Contact details of relevant staff and stakeholders are listed below in Table 19 and Table 20.

Table 19: Council Emergency Contact Details

Organisation	Position	Person	Phone	Email
Singleton Council	Customer Service Officer		(02) 6578 7290	
	Director – Planning & Infrastructure Services	Justin Fitzpatrick Barr		
	Manager – Water & Sewer	Katie Hardy	(02) 6578 7281 0423 500 528	<a href="mailto:khardy@singleton.nsw.gov.au">khardy@singleton.nsw.gov.au</a>
	Coordinator – Water & Sewer Delivery	Jon Fitzgerald	(02) 6578 7231 0429 237 102	<a href="mailto:jfitzgerald@singleton.nsw.gov.au">jfitzgerald@singleton.nsw.gov.au</a>
	Coordinator – Utilities Engineering	David Tynan	(02) 6578 7282 0450 323 198	<a href="mailto:dtynan@singleton.nsw.gov.au">dtynan@singleton.nsw.gov.au</a>
	Utilities Engineer – Electrical & PLC	Ibrar Shah	0420 456 272	<a href="mailto:ishah@singletonnsw.gov.au">ishah@singletonnsw.gov.au</a>
	Utilities Engineer – Process	Dinesh Nutalapati	(02) 6578 7393 0421 669 300	<a href="mailto:dnutalapati@singleton.nsw.gov.au">dnutalapati@singleton.nsw.gov.au</a>
	Utilities Engineer – Civil	Brian Oberdorf	(02) 6578 7358 0420 927 282	<a href="mailto:boberdorf@singleton.nsw.gov.au">boberdorf@singleton.nsw.gov.au</a>
	Utilities Engineer – Mechanical	Katie Bell	(02) 6578 7359 0421 386 240	<a href="mailto:kbell@singleton.nsw.gov.au">kbell@singleton.nsw.gov.au</a>
	Treatment Supervisor	Ihsan Hamawand	0428 606 325	<a href="mailto:ihamawand@singleton.nsw.gov.au">ihamawand@singleton.nsw.gov.au</a>
	Network Supervisor	Chris Smith	0417 630 158	<a href="mailto:cdsmith@singleton.nsw.gov.au">cdsmith@singleton.nsw.gov.au</a>
	Network Team Leader	Ricky Andrews	0403 249 582	<a href="mailto:randrews@singleton.nsw.gov.au">randrews@singleton.nsw.gov.au</a>
	Network Team Leader	Cameron Rich	0419 894 574	<a href="mailto:crich@singleton.nsw.gov.au">crich@singleton.nsw.gov.au</a>
	Network Team Leader	Shane Sumners	0407914393	<a href="mailto:Ssumners@singleton.nsw.gov.au">Ssumners@singleton.nsw.gov.au</a>
	Utilities Plumber	Ben Carter	0437 636 356	<a href="mailto:bcarter@singleton.nsw.gov.au">bcarter@singleton.nsw.gov.au</a>
After Hours Provider	Liquid Trade Waste Officer	Martin Westphal	0427 918 184	<a href="mailto:mwestphal@singleton.nsw.gov.au">mwestphal@singleton.nsw.gov.au</a>
	After-hours Call Centre Officer		(02) 6572 7290	





**Table 20: External Emergency Contact Details**

Organisation	Position	Person	Phone	Email
<b>NSW EPA</b>	NSW EPA Pollution Line	Natasha Ryan	13 15 00	<a href="mailto:hunter.region@epa.nsw.gov.au">hunter.region@epa.nsw.gov.au</a>
<b>NSW Health</b>	Public Health Unit (Newcastle Office) (diverts to John Hunter Hospital)	Public Health Officer	(02) 4924 6477	
	Environmental Health Officer	Carolyn Herlihy	(02) 4924 6602	<a href="mailto:carolyn.herlihy@hnehealth.nsw.gov.au">carolyn.herlihy@hnehealth.nsw.gov.au</a>
<b>Dol Water</b>	General Enquiries		1800 353 104	
<b>Emergency Services</b>	Police, Fire & Rescue, Ambulance, HAZMAT	Emergency Only	000	
<b>Fire &amp; Rescue NSW</b>	Pollution Incident Notification		1300 729 579	
	Singleton Fire Station		(02) 6572 1495	
	Fire & Rescue NSW Zone Office	Business hours	(02) 6331 6372	
	Regional West 2 – Upper Hunter and Central West	8:30am - 4:30pm		
<b>SES</b>	State Emergency Service	Emergency Only	132 500	
	State Emergency Service - Singleton	Emergency Only	(02) 6572 4669	
<b>WorkCover</b>			13 10 50	
<b>NSW Fisheries</b>			1800 043 536	
<b>Dol Biosecurity</b>			(02) 4982 1232	
<b>Local Land Services Board</b>			1300 795 299	
<b>Regional Algae Coordinating Committee</b>			1800 999 457	





## 8. Communicating with Neighbours and the Community

As the communication strategy is dependent on the incident type, the incident must be classified to determine the correct communication strategy to deploy. Incidents are to be classified as either a minor, moderate or major risk incident (refer Section 8.1 below).

### 8.1. Incident Classification

#### 8.1.1. Minor Risk Incident

A minor risk incident presents a low risk to health and the environment and is typically managed by established procedures and works practices.

Table 21: Minor Risk Identification

Minor Risk Identification	
<b>Risk Definition</b>	<ul style="list-style-type: none"> <li>incident affects small area only; AND</li> <li>incident is easy to clean up without additional assistance; AND</li> <li>there is no risk of material harm to humans or the environment.</li> </ul>
<b>Notifiable?</b>	No

Examples of minor risk incidents include:

- chokes in the network;
- blockage of single pump at SPS;
- power or electrical failure (short term); or
- minor spills to the ground that are contained.

#### 8.1.2. Moderate Risk Incident - NOTIFIABLE

A moderate risk incident presents a moderate risk to health and the environment and is typically managed by through adjusting operations and maintenance to reduce consequence, likelihood and exposure. Moderate risk incidents may require further investigation to establish root cause and require assessment of different options for management of the incident.

Table 22: Moderate Risk Identification

Moderate Risk Identification	
<b>Risk Definition</b>	<ul style="list-style-type: none"> <li>incident affects more than one property; OR</li> <li>results in actual or potential loss or property damage greater than \$10,000; OR</li> <li>there is a risk of pollution or material harm to the environment; BUT</li> <li>clean up can be completed without assistance; AND</li> <li>there is no danger to humans.</li> </ul>
<b>Notifiable?</b>	Yes





Examples of moderate risk incidents include:

- major spills to ground and/or a sensitive environment;
- sewage spills to storm water/waterway;
- large sewer overflows that cause > \$10,000 damage (including those contained entirely within one property/building); or
- power or electrical failure (extended).

### 8.1.3. Major Risk Incident - NOTIFIABLE

A major risk incident presents a high risk to health and the environment and is typically managed by through immediately adjusting operations and maintenance to reduce consequence, likelihood and exposure; containment, clean-up and notification are high priority. Major risk incidents require further detailed investigation to establish root cause and require assessment of different options for management of the incident.

Table 23: Major Risk Identification

Major Risk Identification	
<b>Risk Definition</b>	<ul style="list-style-type: none"> <li>• potential or actual harm to humans and the environment; AND/OR</li> <li>• assistance is required for clean-up by other agencies.</li> </ul>
<b>Notifiable?</b>	<b>Yes</b>

Examples of major risk incidents include:

- major sewage spill to storm water/waterway; or
- power or electrical failure (extended) during wet weather;
- complete failure of SPS;
- earthquake or structural collapse causing structural damage.

## 8.2. Incident Reporting Communication Protocols

The incident reporting communication protocol is described below in Sections 8.2.1 to 8.2.3 and is shown schematically in Figure 3. This communication protocol will form part of water and sewer staff and contractor training and awareness. Incident reporting includes both communicating and recording the incident.

All incidents are to be recorded in the 'Sewer Overflow Record Form' in Appendix C (also available in CM9 17/39747 or via iAuditor), moderate/major incidents also to be reported in DoneSafe (available on Council's Intranet, a link to the webpage is provided in Appendix D) and reported to EPA. In addition to incident reporting, identified hazards are to be reported on DoneSafe. Incident/Hazard reporting will typically be completed by the Network Operators, Treatment Plant Operators or the Coordinator – Water & Sewer Delivery. Incidents are also to be added to the Incident Register in CM9 17/61486 as per the Incident Action Plans (see Section 9).





The following roles will act as alternates in the event of staff unavailability:

Table 24: Alternate Roles for Incident Notification

Primary	Alternate
<b>Treatment Operator</b>	<ol style="list-style-type: none"> <li>1. Supervisor – Water &amp; Sewer Treatment</li> <li>2. Coordinator – Water &amp; Sewer Delivery</li> <li>3. Supervisor – Water &amp; Sewer Network</li> </ol>
<b>Network Operator</b>	<ol style="list-style-type: none"> <li>1. Team Leader – Water &amp; Sewer Network</li> <li>2. Supervisor – Water &amp; Sewer Network</li> <li>3. Coordinator – Water &amp; Sewer Delivery</li> </ol>
<b>Coordinator – Water &amp; Sewer Delivery</b>	<ol style="list-style-type: none"> <li>1. Coordinator Utilities Engineering</li> <li>2. Manager – Water &amp; Sewer</li> <li>3. Liquid Trade Waste Officer</li> <li>4. Utilities Engineers</li> </ol>
<b>Manager – Water &amp; Sewer</b>	<ol style="list-style-type: none"> <li>1. Coordinator – Water &amp; Sewer Delivery</li> <li>2. Coordinator Utilities Engineering</li> <li>3. Director – Planning &amp; Infrastructure Services</li> </ol>
<b>Director – Planning &amp; Infrastructure Services</b>	<ol style="list-style-type: none"> <li>1. Manager – Water &amp; Sewer</li> <li>2. Director – Corporate &amp; Community</li> <li>3. General Manager</li> </ol>
<b>General Manager (incl. Communications Team)</b>	<ol style="list-style-type: none"> <li>1. Director – Planning &amp; Infrastructure Services</li> <li>2. Director – Corporate &amp; Community</li> </ol>

### 8.2.1. Minor Risk Incident

The following process is to be followed for notification of a minor risk incident.

Table 25: Minor Risk Incident Notification

Who	What	To Whom	When
<b>Treatment Operator or Network Operator</b>	Report minor incidents	Coordinator – Water & Sewer Delivery	As soon as possible (within 24 hours)
<b>Coordinator – Water &amp; Sewer Delivery</b>	Report minor incidents	Manager – Water and Sewer Utilities Engineer - Process	Within 48 hours
<b>Utilities Engineer - Process</b>	Record minor incidents	PIRMP Register	Within 7 days
<b>Manager – Water &amp; Sewer</b>	Weekly reporting	Director – Planning & Infrastructure Services	Bi-monthly

### 8.2.2. Moderate Risk Incident – NOTIFIABLE

The following process is to be followed for notification of a moderate risk incident.

Table 26: Moderate Risk Incident Notification

Who	What	To Whom	When
<b>Treatment Operator or Network Operator</b>	Report moderate incidents	Coordinator – Water & Sewer Delivery	Immediately
<b>Coordinator – Water &amp; Sewer Delivery</b>	Report moderate incidents	NSW EPA and NSW Health;	Immediately





Who	What	To Whom	When
		WorkCover (as required – through Integrated Risk Team)	
	Report moderate incidents	Written details of incident to EPA as per EPL 3088 (including any other agencies as required)	Within 7 days
	Report moderate incidents	Manager – Water & Sewer	As soon as practicable
	Report moderate incidents	Integrated Risk Team	Within 24 hours (immediately as required)
	Inform stakeholders	Neighbours affected by incident	Immediately (as required)
<b>Utilities Engineer - Process</b>	Record moderate incidents	PIRMP Register	Within 7 days
<b>Manager – Water &amp; Sewer</b>	Report moderate incidents	Director – Planning & Infrastructure Services	As soon as practicable (if required) and at least bi-monthly
<b>Director – Planning &amp; Infrastructure Services</b>	Report moderate incidents	General Manager	As soon as practicable (If required)

Note: Integrated Risk Team must be consulted, wherever practicable, if WorkCover needs to be contacted regarding a moderate risk incident.

### 8.2.3. Major Risk Incident – NOTIFIABLE

The following process is to be followed for notification of a major risk incident.

Table 27: Major Risk Incident Notification

Who	What	To Whom	When
<b>Treatment Operator or Network Operator</b>	Report major incidents	Coordinator – Water & Sewer Delivery	Immediately
	Report major incidents	NSW EPA, NSW Health, WorkCover (through Integrated Risk Team) and Fire & Rescue NSW Other emergency services (as required)	Coo
<b>Coordinator – Water &amp; Sewer Delivery</b>	Report major incidents	NSW EPA, NSW Health, WorkCover (through Integrated Risk Team) and Fire & Rescue NSW Other emergency services (as required)	Immediately
	Report major incidents	Written details of incident to EPA as per EPL 3088	Within 7 days





		(including any other agencies as required)	
	Report major incidents	Manager – Water & Sewer	Immediately
	Report major incidents	Integrated Risk Team	Immediately
	Inform stakeholders	Neighbours affected by incident	Immediately (as required)
<b>Utilities Engineer - Process</b>	Record major incidents	PIRMP Register	Within 7 days
<b>Manager – Water &amp; Sewer</b>	Report major incidents	Director – Planning & Infrastructure Services	Immediately (as required)
<b>Director – Planning &amp; Infrastructure Services</b>	Report major incidents	General Manager	Immediately (as required)
<b>General Manager (incl. Communications Team)</b>	Inform stakeholders	Councillors, media and other affected parties (as required)	Immediately (as required)

Note: Integrated Risk Team must be consulted, wherever practicable, if WorkCover needs to be contacted regarding a major risk incident.

#### 8.2.4. Sewerage System or STP Causing Fish Kill - NOTIFIABLE

The following process is to be followed, in addition to the requirements of the moderate or major incident notification procedures above, for notification of a fish kill associated with the Sewerage System (e.g. sewer overflow to stormwater/waterway) or Singleton STP (e.g. fish kill in the tertiary, Doughboy Hollow in vicinity of EPA Point 3 or downstream in Doughboy Hollow where reasonable grounds it is associated with Singleton STP).

Table 28: Fish Incident Notification – Additional to Moderate/Major Risk Incident Notification

Who	What	To Whom	When
<b>Coordinator – Water &amp; Sewer Delivery</b>	Report moderate/major incidents	NSW EPA, NSW Health, NSW Fisheries, Department of Industry – Water, Department of Industry – Biosecurity, Local Land Services Board, Regional Algae Coordinating Committee (if algae suspected)	Immediately
	Record moderate/major incidents	<i>Protocol for Investigating and Reporting Fish Kills</i>	As soon as possible

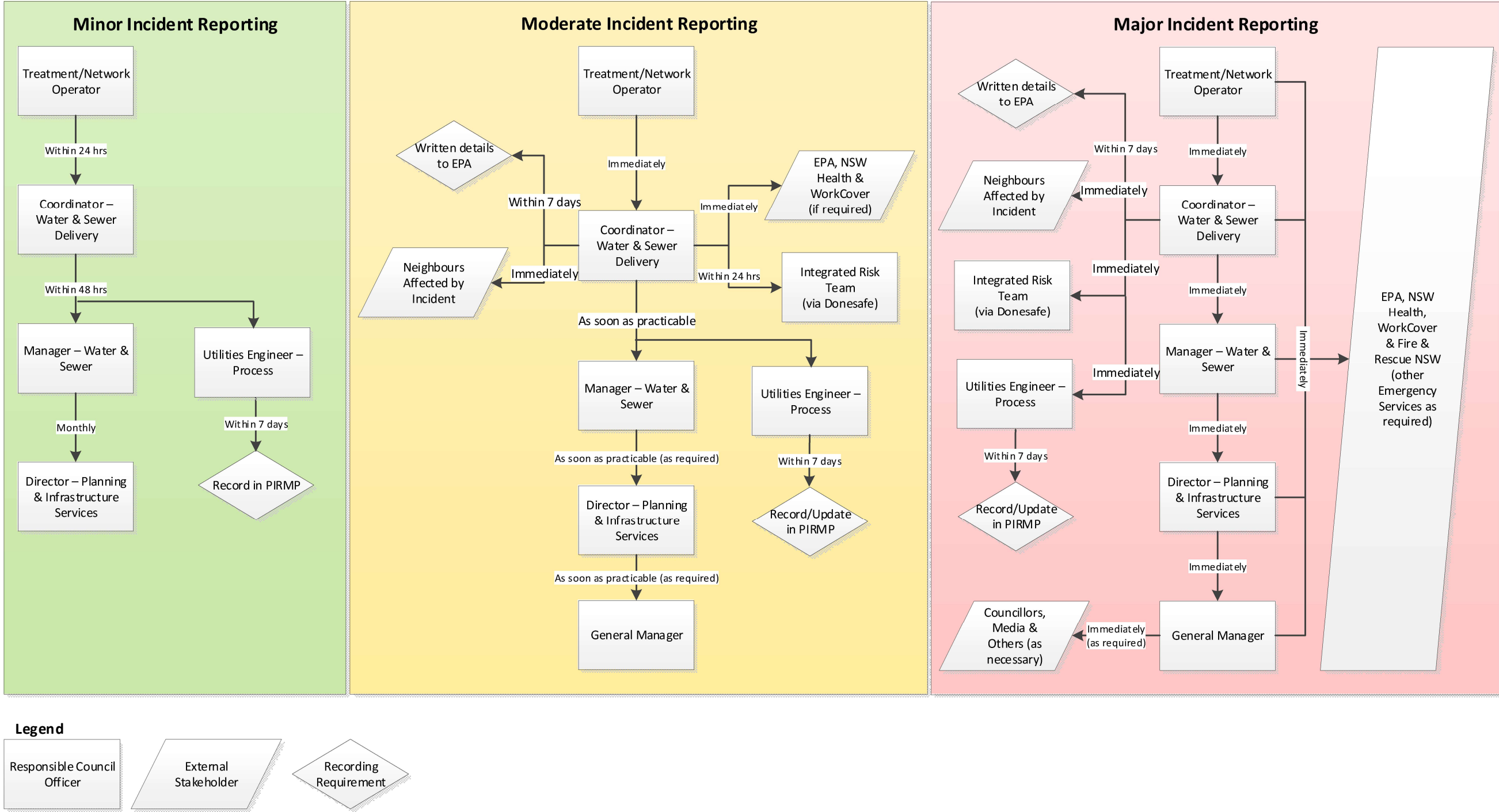
The *Protocol for Investigation and Reporting Fish Kills 2011* (NSW Department of Industry & Investment), is available in Appendix E.





Figure 3: Incident Reporting Communication Protocol

EPL 3088 PIRMP - Incident Reporting Communication Protocol





### 8.3. Incident Reporting Communication Methods

Regular communication and notification is to be undertaken until the incident and clean-up of the affected area has been completed.

#### 8.3.1. Regulators and Emergency Services

Notification of the regulators and emergency services is to be undertaken primarily by phone, utilising the contact details in Table 20. The regulator may request additional information or written notification to be provided; this may be undertaken by e-mail or letter.

Regular communication and notification is to be provided until the incident and clean-up of impacted site and affected areas has been completed. Council will advise the regulator and emergency services, when applicable, when normal operations have been resumed.

Notifications made to the EPA by the Environment Service Line (13 15 55) must be followed up with written details of the notification to the EPA within 7 days of the date on which the incident occurred; this is a requirement of EPL 3088. This may include:

- the cause, time and duration of the event;
- the type, volume and concentration of every pollutant discharged as a result of the event;
- the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
- the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- details of any measure taken or proposed to be taken to prevent or mitigated against a recurrence of such an event; and
- any other relevant matters.

#### 8.3.2. Affected Neighbours and the Community

Notification and communication methods to the affected neighbours and the community will be determined on a case-by-case basis and may include:

- site visits/door knocking;
- letter drops;
- phone calls;
- media releases (e.g. radio/television/newspaper/internet/social media); or
- warning signs.





In the event of a sewage spill from the sewerage system or Singleton STP, stormwater or waterway on in the case of non-compliance discharge from Singleton STP, Council Staff will:

- advise the public to avoid the use of water in creeks, rivers or stormwater systems affected, or likely to be affected by this event
- notify premises downstream of the Singleton STP along Doughboy Hollow or along other stormwater or waterway and will notify downstream users (including any water irrigation licence holders or recreational water facilities) of the sewerage spill;
- erect appropriate signage in prominent/high use areas
- remove signage following completion of clean-up activities as the impacted site and affected areas.

An example of suitable signage for a sewage spill is shown below in Figure 4 and suitable signage for algae is shown below in

Figure 5.

Figure 5

Figure 4: Warning Sign – Sewage Spill





Figure 5: Warning Sign – Harmful Algae



#### 8.4. WHS Incidents

Part 3 of the *Work Health and Safety Act 2011* (WHS Act) requires the following and failing to notify is a criminal offence and penalties apply:

- immediate notification of a 'notifiable incident' to the regulator after becoming aware of it
- if the regulator asks — written notification with 48 hours of the request, and
- preservation of the incident site until an inspector arrives or directs otherwise (subject to some exceptions).

A 'notifiable incident', as outlined in the WHS Act, arises out of the conduct of a business or undertaking at a workplace and is:

- death of a person
- 'serious injury or illness', or
- 'dangerous incident'.





'Notifiable incidents' include the following:

- immediate treatment as an in-patient in a hospital;
- immediate treatment for the amputation of any part of the body;
- immediate treatment for a serious head injury;
- immediate treatment for a serious eye injury;
- immediate treatment for a serious burn;
- immediate treatment for the separation of skin from an underlying tissue (such as degloving or scalping);
- immediate treatment for a spinal injury;
- immediate treatment for the loss of a bodily function;
- immediate treatment for serious lacerations; and
- medical treatment within 48 hours of exposure to a substance.

Notification, as 'dangerous incidents' is also required of any incident in relation to a workplace that exposes a worker or any other person to a serious risk resulting from an immediate or imminent exposure to:

- an uncontrolled escape, spillage or leakage of a substance;
- an uncontrolled implosion, explosion or fire;
- an uncontrolled escape of gas or steam;
- an uncontrolled escape of a pressurised substance;
- electric shock;
- the fall or release from a height of any plant, substance or thing;
- the collapse, overturning, failure or malfunction of, or damage to, any plant that is required to be design or item registered under the Work Health and Safety Regulations;
- the collapse or partial collapse of a structure;
- the collapse or failure of an excavation or of any shoring supporting an excavation;
- the inrush of water, mud or gas in workings, in an underground excavation or tunnel; or
- the interruption of the main system of ventilation in an underground excavation or tunnel.

Incident notification and investigation is to follow Council's Incident, Hazard, Near Miss Reporting and Investigation Procedure.

## 8.5. Investigation of Incidents and Emergencies

Emergencies and incidents that will be investigated under Council's Incident, Hazard, Near Miss Reporting and Investigation Procedure. This will involve the formation of an incident investigation team. The investigation team will undertake the investigation, prepare a report and debrief all staff involved to discuss performance during the incident and to address any improvement items.





The investigation will consider factors such as:

- primary and contributing causal factors;
- when the problem was first identified;
- what were the most critical actions;
- communication issues and solutions;
- immediate and/or longer term consequences;
- corrective actions; and
- how the PIRMP (including associated procedures) functioned.

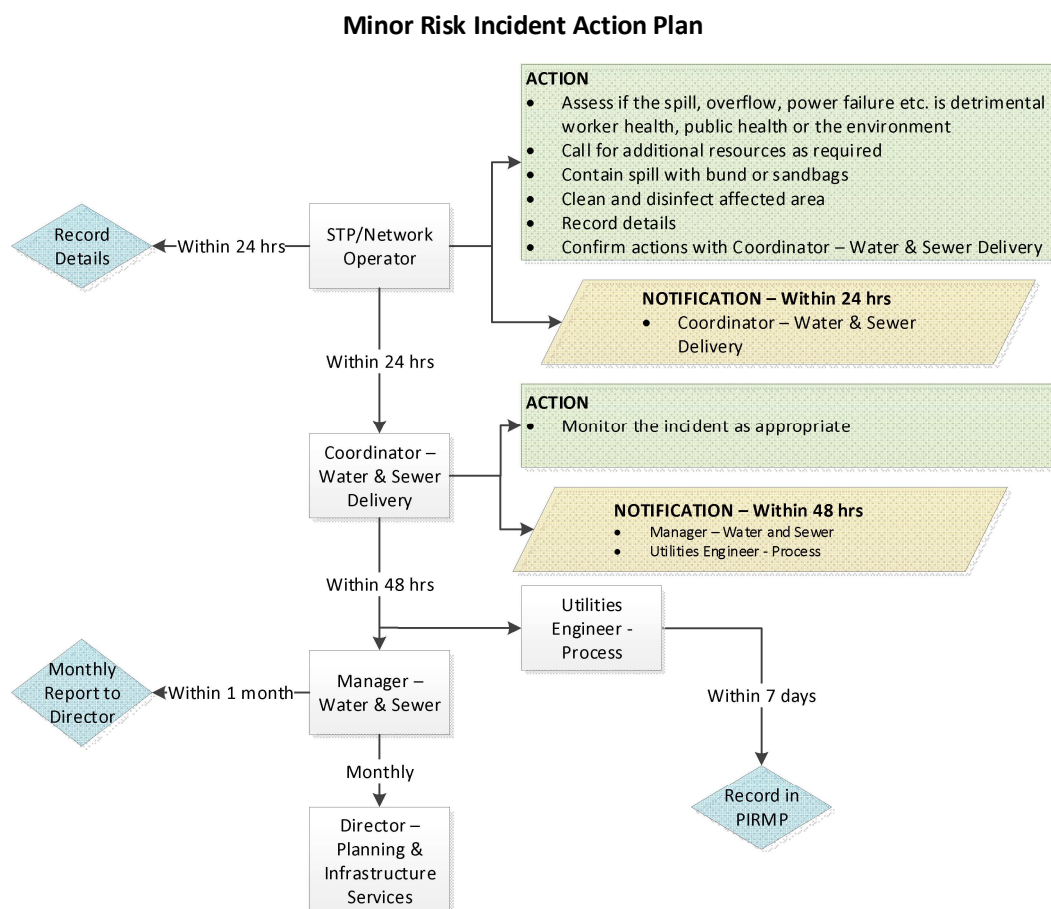
## 9. Incident Action Plans

The actions to be undertaken as a result of minor, moderate and major risk incidents are shown below in Figure 6 to Figure 8.

### 9.1. Minor Risk Incident Action Plan

The incident action plan for minor risk incidents is shown below in Figure 6.

Figure 6: Minor Risk Incident Action Plan

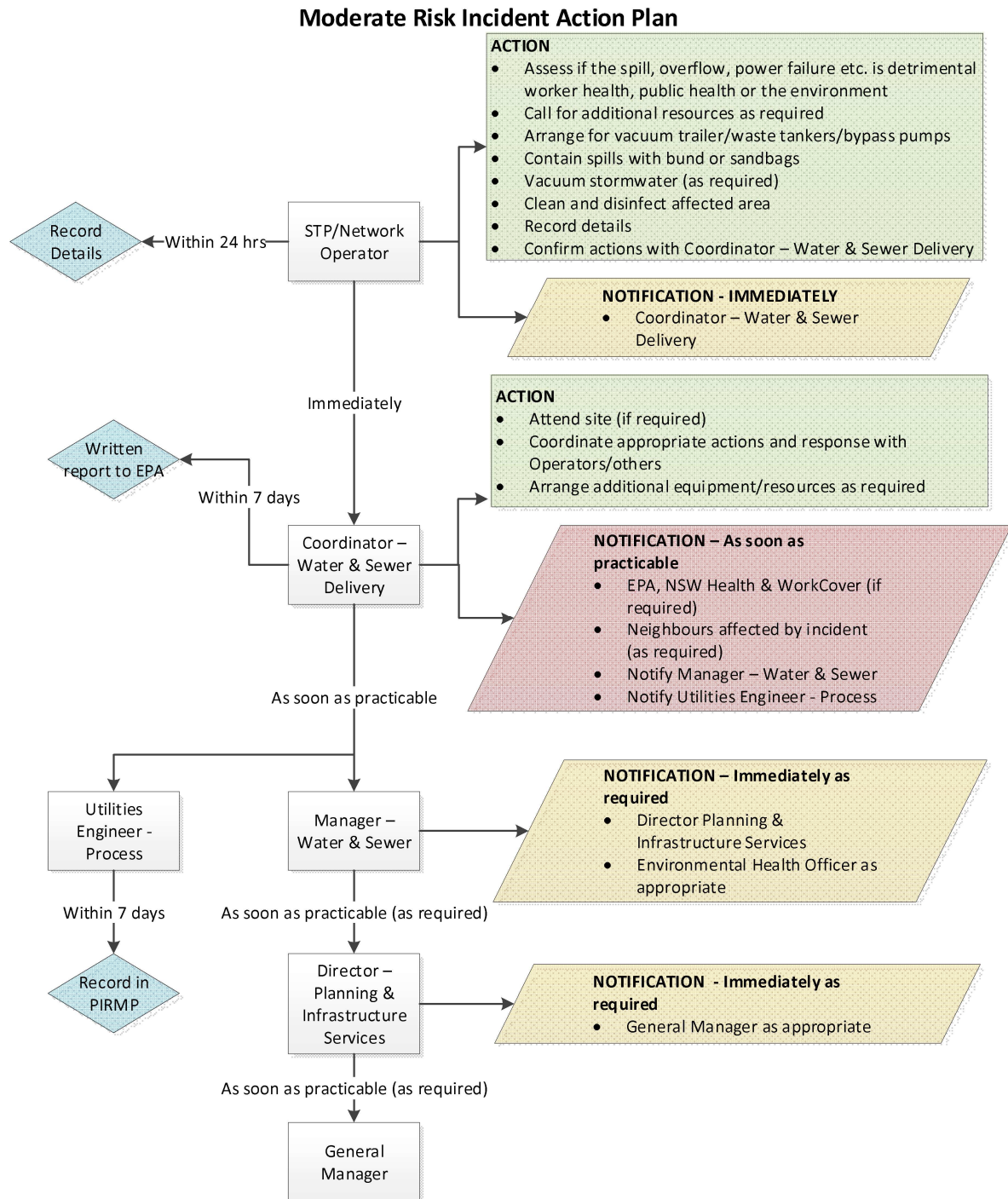




## 9.2. Moderate Risk Incident Action Plan

The incident action plan for moderate risk incidents is shown below in Figure 7.

Figure 7: Moderate Risk Incident Action Plan

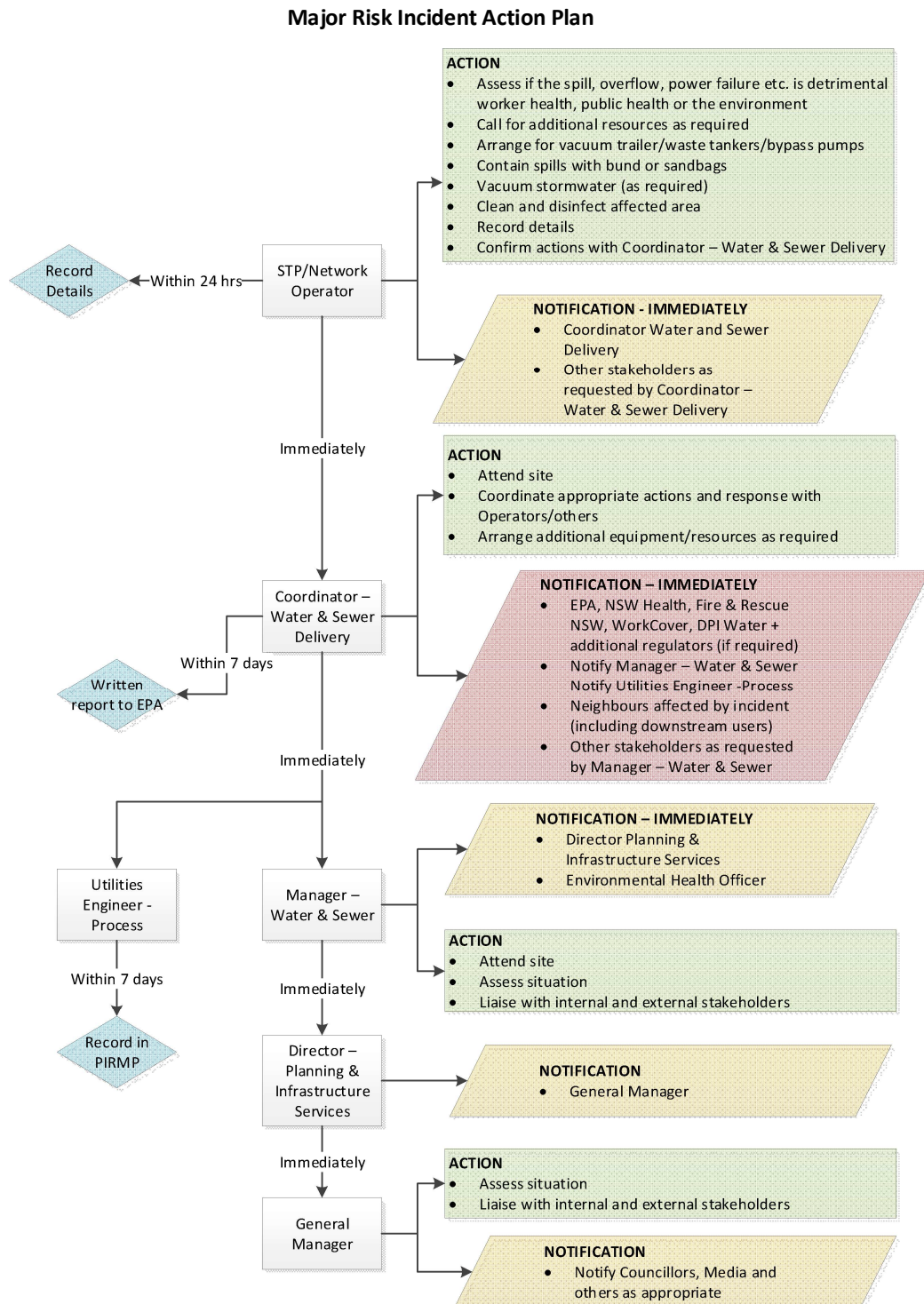




### 9.3. Major Risk Incident Action Plan

The incident action plan for major risk incidents is shown below in Figure 8.

Figure 8: Major Risk Incident Action Plan





## **10. Minimising Harm to Persons on the Premises**

### **10.1. Visitors to Site**

A visitor's book is to be maintained at the STP. All visitors to the STP are to be signed in and out of the site for each visit.

### **10.2. Site Inductions**

All Council staff and Contractors conducting work at the Singleton STP are to be inducted to the site by the Treatment Operator or Supervisor – Water & Sewer Treatment. Council staff who do not routinely work at the STP are required to undertake an induction if they are required to undertake work at the STP site.

All work carried out will be managed under Council's Integrated Risk Management Framework and prior to completing any task a risk assessment, standard operating procedure and/or safe work method statement will be completed and adhered to.

### **10.3. Evacuation Procedure**

In the event of an emergency, Council staff will notify all workers and visitors onsite through either air horn or by verbal communication. All Council staff and visitors are to go the emergency assembly point, located by the automatic sliding gate at the entry to the STP.

### **10.4. Specialist Advice**

Council maintains a preferred suppliers list of environmental and engineering specialists and has engaged the services of a medical professional. In the event of an incident, these consultants would be available on short notice to assist in providing specialist advice on medical, toxicology or environmental impact advice.

### **10.5. Training**

Training is provided to all Council staff and Contractors conducting work at the STP and on Council's sewerage system. The nature of the training is determined by the level of risk and likelihood of incidents and is related to the position the employee holds. Training is provided with the principle objective of statutory compliance and knowledge and application of procedures and plans. Additional training is provided to supplement knowledge and skills as well as providing breadth knowledge. This training is either completed to ensure compliance (i.e. before the expiry date of the ticket/qualification) or at regular intervals (i.e. every one to two years as applicable). Training is provided in the form of:

- formal training courses/certificates;
- toolbox talks; and
- internal training on PIRMP and incident response.





A register of training required and undertaken by Water and Sewer Staff is maintained and training records are stored in Council's document management system (CM9) for at least 7 years after a staff member's resignation. The current training register for each position is shown in Appendix E.

## **11. Continuous Improvement through Testing, Evaluation, Audit and Review**

### **11.1. Testing**

The PIRMP will be tested at least once every 12 months. The testing is to be carried out in such a manner as to ensure that the information included in the plan is accurate and up to date, and that each plan is capable of being implemented in a workable and effective manner.

Testing will be undertaken either by desktop simulations or practical exercises/drills and must cover all components of the plan, including the effectiveness of training.

Plans must also be tested within one month of any pollution incident to assess, in the light of that incident, whether the information included in the PIRMP is accurate and up to date, and the PIRMP is still capable of being implemented in a workable and effective manner.

Records must be kept detailing the following:

- the manner in which they are to be tested and maintained;
- the dates on which they have been tested and the name of the staff members who carried out the testing; and
- the dates on which they are updated.

The most recent test date, responsible staff member and the next testing date is shown in Document Control for the PIRMP. Records for each test will be kept in Council's record keeping system (CM9).

### **11.2. Evaluation**

A systematic review of the PIRMP will be undertaken by the Utilities Engineer – Process at least annually.

The evaluation of the PIRMP will consist of the following:

- assessment of the risk assessments for the Singleton Sewage System and STP against current operations and control measures;
- identification of any additional or emerging issues or trends;
- assessment of the communication efficacy between Council operational, technical and managerial staff as well as between Council and regulators;
- determination of priorities in procedural improvements and asset upgrades;





- analysis of incident investigations and impacts on the PIRMP; and
- determination of audit items for the next 12 months.

The result of this evaluation will be documented and the PIRMP updated; this will be communicated to all stakeholders.

The next review date is shown in Document Control for the PIRMP. Each reviewed copy will be kept in Council's record keeping system (CM9).

### **11.3. Audit**

Auditing of the pollutant inventory is to be done annually by the Utilities Engineer - Process. An audit may also be triggered by a significant incident or if a process or control is changed.

## **12. Publication of the PIRMP**

The PIRMP is publically available on the Singleton Council website [www.singleton.nsw.gov.au](http://www.singleton.nsw.gov.au) in the Environment tab as per the requirements of EPL 3088. Copies of the PIRMP will be provided to any person who makes a written request.

A copy of this plan will be issued to relevant Council Staff. A copy will be held, at a minimum, in the following locations:

- CM9 (Council's document management system);
- STP;
- Water Depot;
- Obanvale Water Treatment Plant
- Mobile Devices (accessed through Council's intranet).

## **13. Related Information**

### **13.1. Relevant Legislation and External Documents**

Acts, Regulations and external documents relevant to the PIRMP are detailed below:

- Protection of the Operations of the Environment Act 1997
- Protection of the Environment Operations (general) Regulation 2009
- Protection of the Environment Legislation Amendment Act 2011
- Water Management Act 2000
- Local Government Act 1993
- Work Health and Safety Act 2011
- Environmental Guidelines – Preparation of pollution incident response management plans 2012 (NSW EPA)





- Protocol for Investigating and Reporting Fish Kills 2011 (Department of Industry & Investment)
- AS/NZS 3500 (Plumbing and Drainage Code: Standards Australia 1996-2003)
- Environment Protection Licence 3088

### 13.2. Relevant Internal Documents

Related documents, listed below, are internal documents directly related to or referenced in this document:

Number	Meaning
POL/26031.1	Sewer Supply Services Policy
POL/9008	Integrated Risk Management Policy
18/76302	Integrated Risk Management Framework
18/18870	Managing Risks Procedure
17/52746	Incident, Hazard and Near Miss Reporting & Investigation Procedure
16/75763	Incident/Hazard Report
17/954	Incident Investigation Template
16/49899	PIRMP Risk Register
17/61486	PIRMP Incident Register
16/49898	Incident Action Plans
16/49839	Incident Reporting Protocol & Warning Signage
17/39747	PIRMP Sewer Overflow Record
12/47502	PIRMP Incident Reporting Form

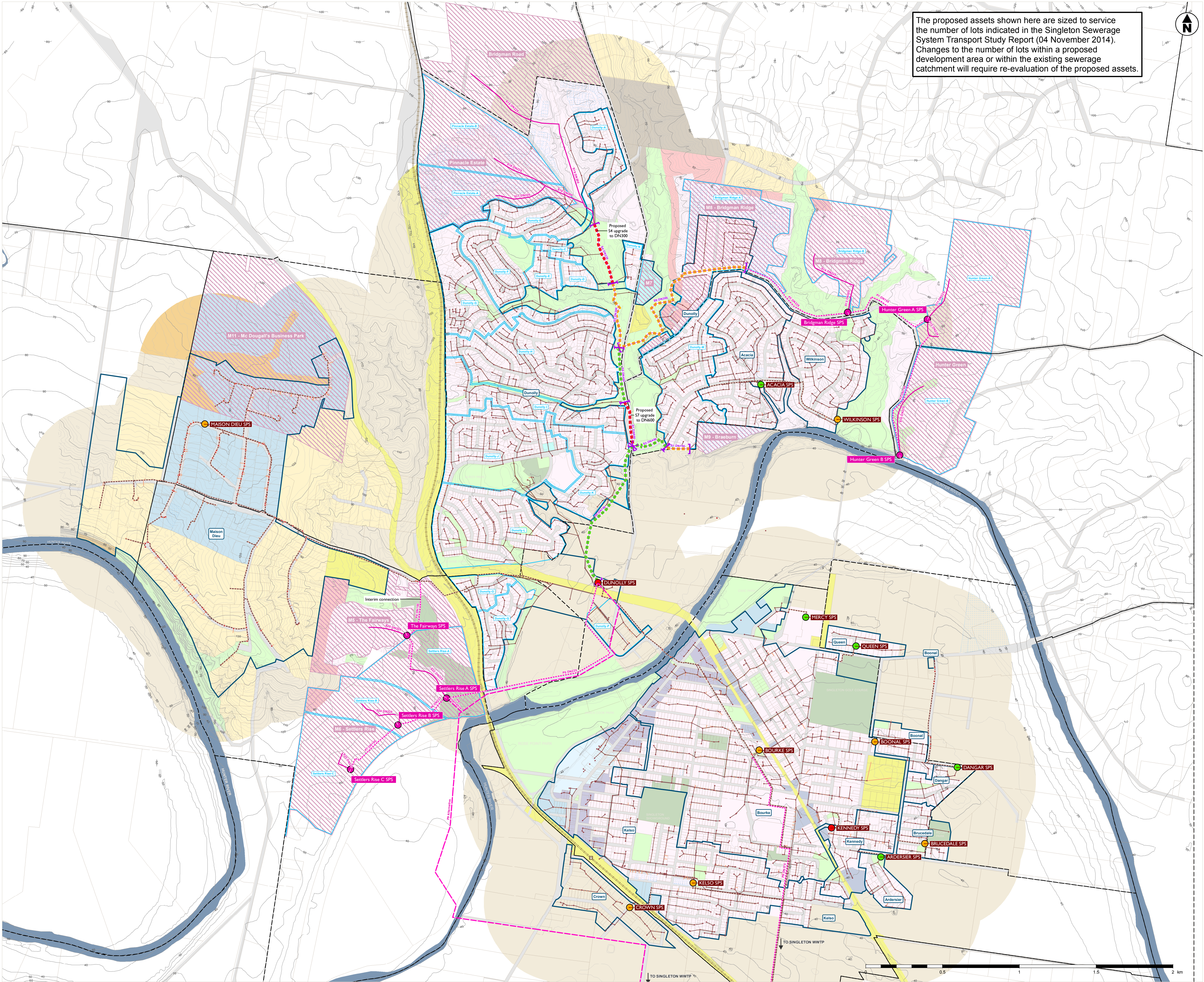




## **Appendix A – Location of Singleton Sewerage System, SPS and Singleton STP**







**Proposed Assets**

- Sewage Pumping Station
- Gravity Sewer
- Rising Main
- Alternative Rising Main

**Assessment of Existing Assets**

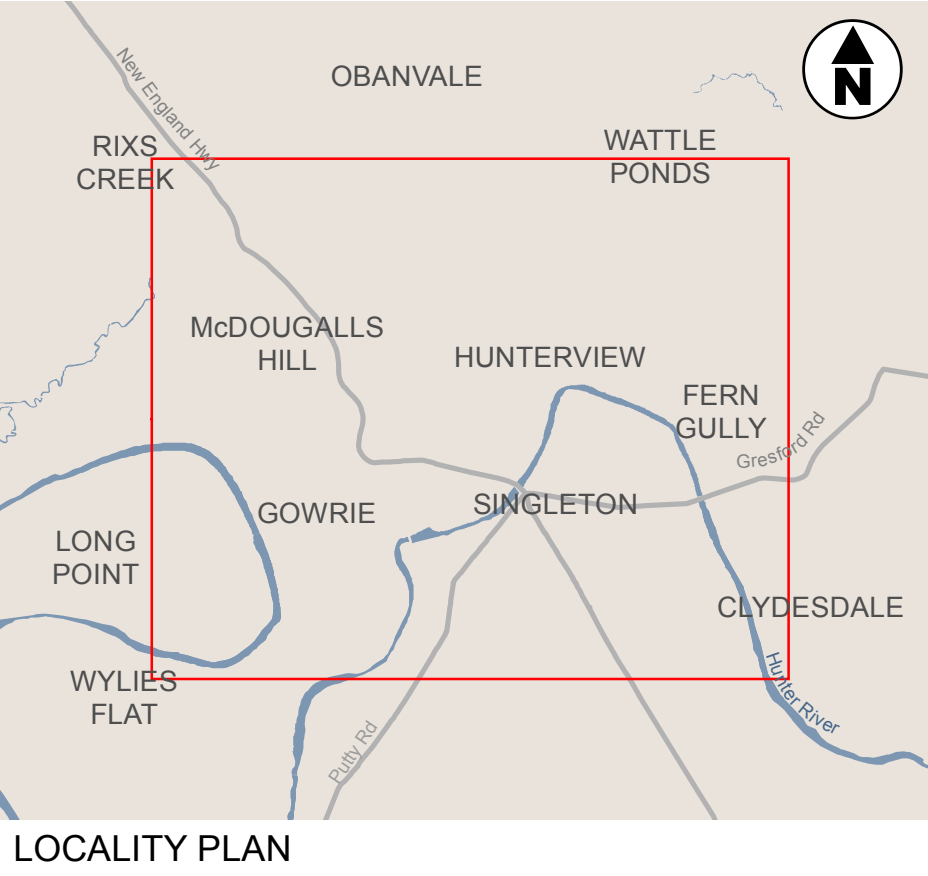
- Assessed Gravity Sewer - Under capacity
- Assessed Gravity Sewer - No spare capacity
- Assessed Gravity Sewer - Overloaded
- Sewage Pumping Station - Under capacity
- Sewage Pumping Station - No spare capacity
- Sewage Pumping Station - Overloaded
- Maintenance Hole
- Pressure Sewerage Connection

**Gravity Sewer**

- <= DN150 mm
- DN 225 mm
- >= DN300 mm
- 2 m Contour
- 10 m Contour

**Local Environmental Plan 2014**

- Business Development
- Commercial Core
- Enterprise Corridor
- Environmental Conservation
- Environmental Living
- General Residential
- Infrastructure
- Low Density Residential
- Mixed Use
- Neighbourhood Centre
- Primary Production
- Private Recreation
- Public Recreation
- Rural Landscape
- Suburb Boundary



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SCALE: 1:11,500

SHEET 1 of 1

TITLE: SEWERAGE SYSTEM PLAN 2014

PROJECT: SINGLETON SEWERAGE SYSTEM TRANSPORT STUDY

CLIENT: SINGLETON COUNCIL

DRAWN: AO PROJECT #: EN04450 MAP #: REV VER

CHECK: PB DATE: 04/11/2014 F01\_A1 63



# Singleton Sewage Treatment Plant



- Legend**
- Line\_Road\_over5Kto200K
  - Current Land Parcels**
    - Standard Lot
    - Strata Lot
    - Strata Unit
    - Valuation Lot
    - Proposed Lot



Date: 25-Aug-2017  
Projection: GDA\_1994\_MGA\_Zone\_56

**DISCLAIMER:**  
While every care is taken to ensure the accuracy of this data, Singleton Council makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose, and also disclaims all responsibility and all liability (including without limitation, liability in negligence) for any expenses, losses, damages (which includes consequential damage) and costs which you might incur as a result of data being inaccurate or incomplete for any reason. Any resale of this data is strictly prohibited.



## Appendix B – Safety Data Sheets





## Hazardous Substance, Non-Dangerous Goods

### 1. MATERIAL AND SUPPLY COMPANY IDENTIFICATION

**Product name:** Automotive Diesel Fuel

**Synonyms**

Active Tec<sup>D</sup>  
Alpine Diesel XLSD  
Clean Tec<sup>D</sup>  
Diesel Fuel Unmarked  
Extra Low Sulphur Diesel  
Highland Diesel XLSD  
Power Tec<sup>D</sup>  
Vortex Premium Diesel

**Product Code**

**Recommended use:** Fuel.

**Supplier:** Caltex Australia Petroleum Pty Ltd  
**ABN:** 17 000 032 128  
**Street Address:** 2 Market Street  
Sydney NSW 2000  
Australia  
**Telephone:** +612 9250-5000  
**Facsimile:** +612 9250-5742

**Emergency telephone number:** 1800 033 111

### 2. HAZARDS IDENTIFICATION

This material is hazardous according to health criteria of Safe Work Australia.



**Signal Word**

Danger

**Hazard Classifications**

Flammable Liquids - Category 4  
Acute Toxicity - Oral - Category 4  
Aspiration Hazard - Category 1  
Skin Corrosion/Irritation - Category 2  
Carcinogenicity - Category 2  
Specific Target Organ Toxicity (Repeated Exposure) - Category 2  
Chronic Hazard to the Aquatic Environment - Category 2

**Hazard Statements**

H227 Combustible liquid.  
H302 Harmful if swallowed.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H351 Suspected of causing cancer.  
H373 May cause damage to organs through prolonged or repeated exposure.



# Safety Data Sheet



H411 Toxic to aquatic life with long lasting effects.

## Prevention Precautionary Statements

- P102 Keep out of reach of children.  
P103 Read label before use.  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P260 Do not breathe dust, fume, gas, mist, vapours or spray.  
P264 Wash hands, face and all exposed skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P281 Use personal protective equipment as required.

## Response Precautionary Statements

- P101 If medical advice is needed, have product container or label at hand.  
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P302+P352 IF ON SKIN: Wash with plenty of soap and water.  
P314 Get medical advice/attention if you feel unwell.  
P362 Take off contaminated clothing and wash before reuse.

## Storage Precautionary Statements

- P403+P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.

## Disposal Precautionary Statement

- P501 Dispose of contents/container in accordance with local, regional, national and international regulations.

**Poison Schedule:** S5. Caution

## DANGEROUS GOOD CLASSIFICATION

Not classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements.

## 3. COMPOSITION INFORMATION

CHEMICAL ENTITY	CAS NO	PROPORTION
Fuels, diesel	68334-30-5	95 - 100 %
Methyl esters from lipid sources	67784-80-9	0 - 5 %
		100 %

## 4. FIRST AID MEASURES

If poisoning occurs, contact a doctor or Poisons Information Centre (Phone Australia 131 126, New Zealand 0800 764 766).

**Inhalation:** Remove victim from exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice if effects persist.

**Skin Contact:** If skin or hair contact occurs, immediately remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre or a Doctor; or for 15 minutes and transport to Doctor or Hospital. For gross contamination, immediately drench with



# Safety Data Sheet



water and remove clothing. Continue to flush skin and hair with plenty of water (and soap if material is insoluble). For skin burns, cover with a clean, dry dressing until medical help is available. If blistering occurs, do NOT break blisters. If swelling, redness, blistering, or irritation occurs seek medical assistance.

**Eye contact:** If in eyes wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

**Ingestion:** Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water to drink. Never give anything by the mouth to an unconscious patient. If vomiting occurs give further water. Immediately call Poisons Centre or Doctor.

**Notes to physician:** Treat symptomatically.

## 5. FIRE FIGHTING MEASURES

**Hazchem Code:** Not Applicable

**Suitable extinguishing media:** If material is involved in a fire use water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder).

**Specific hazards:** Combustible liquid.

**Fire fighting further advice:** On burning may emit toxic fumes. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion.

## 6. ACCIDENTAL RELEASE MEASURES

### SMALL SPILLS

Wear protective equipment to prevent skin and eye contamination. Avoid inhalation of vapours or dust. Wipe up with absorbent (clean rag or paper towels). Collect and seal in properly labelled containers or drums for disposal.

### LARGE SPILLS

If safe to do so, shut off all possible sources of ignition. Clear area of all unprotected personnel. Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contamination and the inhalation of vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Use a spark-free shovel. Collect and seal in properly labelled containers or drums for disposal. If contamination of crops, sewers or waterways has occurred advise local emergency services.

**Dangerous Goods – Initial Emergency Response Guide No:** Not Applicable

## 7. HANDLING AND STORAGE

**Handling:** Avoid eye contact and skin contact. Avoid inhalation of vapour, mist or aerosols.

**Storage:** Store in a cool, dry, well-ventilated place and out of direct sunlight. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Store away from sources of heat and/or ignition. Store locked up. Keep container standing upright. Keep containers closed when not in use - check regularly for leaks.

Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements.

This material is a Scheduled Poison Schedule 5 (Caution) and must be stored, maintained and used in accordance with the relevant regulations.



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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### National occupational exposure limits:

	TWA		STEL		NOTICES
	ppm	mg/m3	ppm	mg/m3	
Oil mist, refined mineral	-	5	-	-	-

As published by Safe Work Australia.

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) - the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept too as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during product manufacture.

**Biological Limit Values:** As per the "National Model Regulations for the Control of Workplace Hazardous Substances (Safe Work Australia)" the ingredients in this material do not have a Biological Limit Allocated.

**Engineering Measures:** Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Use only in well ventilated areas. Use with local exhaust ventilation or while wearing appropriate respirator. Vapour heavier than air - prevent concentration in hollows or sumps. Do NOT enter confined spaces where vapour may have collected.

**Personal Protection Equipment:** SAFETY SHOES, OVERALLS, GLOVES, SAFETY GLASSES.

Wear safety shoes, overalls, gloves, safety glasses. Available information suggests that gloves made from nitrile rubber should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

**Hygiene measures:** Keep away from food, drink and animal feeding stuffs. When using do not eat, drink or smoke. Wash hands prior to eating, drinking or smoking. Avoid contact with clothing. Avoid eye contact and skin contact. Avoid inhalation of vapour, mist or aerosols. Ensure that eyewash stations and safety showers are close to the workstation location.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Form:</b>	Liquid
<b>Colour:</b>	Colours is variable - water white through to light brown/straw colour light to fluorescent green
<b>Odour:</b>	Characteristic
<b>Solubility:</b>	Insoluble in water
<b>Specific Gravity:</b>	0.82 - 0.85
<b>Relative Vapour Density (air=1):</b>	>1
<b>Vapour Pressure (20 °C):</b>	<1 mmHg
<b>Flash Point (°C):</b>	>61.5
<b>Flammability Limits (%):</b>	N Av
<b>Autoignition Temperature (°C):</b>	>250



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**CALTEX**

<b>Melting Point/Range (°C):</b>	N Av
<b>Boiling Point/Range (°C):</b>	200 - 400
<b>pH:</b>	N App
<b>Viscosity:</b>	3.0 cSt
<b>Total VOC (g/Litre):</b>	N Av

(Typical values only - consult specification sheet)

N Av = Not available, N App = Not applicable

## 10. STABILITY AND REACTIVITY

**Chemical stability:** This material is thermally stable when stored and used as directed.

**Conditions to avoid:** Elevated temperatures and sources of ignition.

**Incompatible materials:** Oxidising agents.

**Hazardous decomposition products:** Oxides of carbon and nitrogen, smoke and other toxic fumes.

**Hazardous reactions:** No known hazardous reactions.

## 11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

### Acute Effects

**Inhalation:** Material may be an irritant to mucous membranes and respiratory tract.

**Skin contact:** Contact with skin will result in irritation.

**Ingestion:** Harmful if swallowed. Swallowing can result in nausea, vomiting and irritation of the gastrointestinal tract. May cause lung damage if swallowed. Small amounts of liquid aspirated into the respiratory system during ingestion or vomiting may cause bronchopneumonia or pulmonary oedema.

**Eye contact:** May be an eye irritant.

### Acute toxicity

**Inhalation:** This material has been classified as non-hazardous. Acute toxicity estimate (based on ingredients): >20 mg/L

**Skin contact:** This material has been classified as non-hazardous. Acute toxicity estimate (based on ingredients): >2,000 mg/Kg

**Ingestion:** This material has been classified as a Category 4 Hazard. Acute toxicity estimate (based on ingredients): 300 - 2,000 mg/Kg

**Corrosion/Irritancy:** Eye: this material has been classified as not corrosive or irritating to eyes. Skin: this material has been classified as a Category 2 Hazard (reversible effects to skin).

**Sensitisation:** Inhalation: this material has been classified as not a respiratory sensitiser. Skin: this material has been classified as not a skin sensitiser.

**Aspiration hazard:** This material has been classified as Aspiration Hazard – Category 1

**Specific target organ toxicity (single exposure):** This material has been classified as non-hazardous.



# Safety Data Sheet



## Chronic Toxicity

**Mutagenicity:** This material has been classified as non-hazardous.

**Carcinogenicity:** This material has been classified as a Category 2 Hazard.

**Reproductive toxicity (including via lactation):** This material has been classified as non-hazardous.

**Specific target organ toxicity (repeat exposure):** This material has been classified as a Category 2 Hazard.

## 12. ECOLOGICAL INFORMATION

Avoid contaminating waterways.

**Acute aquatic hazard:** This material has been classified as non-hazardous. Acute toxicity estimate (based on ingredients): >100 mg/L

**Long-term aquatic hazard:** This material has been classified as a Category Chronic 2 Hazard. Non-rapidly or rapidly degradable substance for which there are adequate chronic toxicity data available OR in the absence of chronic toxicity data, Acute toxicity estimate (based on ingredients): 1 - 10 mg/L, where the substance is not rapidly degradable and/or BCF  $\geq$  500 and/or log  $K_{ow} \geq$  4.

**Ecotoxicity:** No information available.

**Persistence and degradability:** No information available.

**Bioaccumulative potential:** No information available.

**Mobility:** No information available.

## 13. DISPOSAL CONSIDERATIONS

Persons conducting disposal, recycling or reclamation activities should ensure that appropriate personal protection equipment is used, see "Section 8. Exposure Controls and Personal Protection" of this SDS.

If possible material and its container should be recycled. If material or container cannot be recycled, dispose in accordance with local, regional, national and international Regulations.

## 14. TRANSPORT INFORMATION

### ROAD AND RAIL TRANSPORT

Not classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

This material is not subject to the Australian Dangerous Goods Code 7th Edition; Australian Special Provisions, AU02.

### MARINE TRANSPORT

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea. This material is classified as a Marine Pollutant (P) according to the International Maritime Dangerous Goods Code.





# Safety Data Sheet



UN No: 3082  
Dangerous Goods Class: 9  
Packing Group: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S.

## AIR TRANSPORT

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.



UN No: 3082  
Dangerous Goods Class: 9  
Packing Group: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S. (DIESEL OIL)

## 15. REGULATORY INFORMATION

**This material is not subject to the following international agreements:**

Montreal Protocol (Ozone depleting substances)  
The Stockholm Convention (Persistent Organic Pollutants)  
The Rotterdam Convention (Prior Informed Consent)

**This material is subject to the following international agreements:**

Basel Convention (Hazardous Waste)

- Waste oils/water, hydrocarbons/water mixtures, emulsions

International Convention for the Prevention of Pollution from Ships (MARPOL)

- Annex I - Oil
- Annex II - Noxious Liquid Substances carried in Bulk
- Annex III - Harmful Substances carried in Packaged Form

**This material/constituent(s) is covered by the following requirements:**

- The *Standard for the Uniform Scheduling of Medicines and Poisons* (SUSMP) established under the Therapeutic Goods Act (Commonwealth).
- All the constituents of this material are listed on the *Australian Inventory of Chemical Substances* (AICS).

## 16. OTHER INFORMATION

### Literary reference

Reason for issue: Revised. Minor text update.

Material Safety Data Sheets are updated frequently. Please ensure that you have a current copy.

CHEMICAL EMERGENCIES: 1 800 033 111



# Safety Data Sheet



TECHNICAL ADVICE, RING TECHNICAL SOLUTIONS: 1300 364 169

PLEASE NOTE that although every care has been taken in compiling the above information, it is solely reliant upon data available to us at the date hereof. We believe the data to be correct, however for the reason just stated we are not in a position to warrant its accuracy. With that in mind and given that the full range of possibilities and conditions under which the information may be applied simply cannot be anticipated, YOU ARE CAUTIONED to make your own determinations as to the veracity and the suitability of the information to the particular circumstances that apply, or may apply, to you from time to time. Consistent with that approach it is recommended that where you have a particular purpose which would necessitate a reliance on information of the nature herein you obtain your own independent expert advice particularly structured to the relevant purpose. If this material is printed, circulated, distributed or copied in any manner, it is not to be modified without prior written permission, and further, it is to include the wording of the above disclaimer.

This MSDS has been prepared by Chemical Data Services Pty Ltd ([chemdata.com.au](http://chemdata.com.au)) on behalf of its client.





**Safety Data Sheet**  
**Activated Carbon (Non-DG)**  
**Revision 2, Date 01 Oct 2012**

## 1. IDENTIFICATION

<b>Product Name</b>	<b>Activated Carbon (Non-DG)</b>
<b>Other Names</b>	Activated Charcoal; Active Carbon; Carbon
<b>Uses</b>	Decolourizing of sugar, water & air purification, solvent recovery, waste treatment, removal of sulphur dioxide from stack gases & 'clean' rooms, deodorant, removal of jet fumes from airports, catalyst for natural-gas purification, brewing, chromium electroplating, air-conditioning.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	C
<b>Chemical Name</b>	Activated Carbon (Non-DG)
<b>Product Description</b>	Steam activated carbon, black granular extrudate or powder. This product is an odourless black granule or extruded pellet. Never enter a confined space containing activated carbon as it will adsorb oxygen and asphyxiation may result. Prolonged or repeated exposure to dust may cause eye and respiratory tract irritation.

### Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	2132A E. Dominguez Street Carson CA 90810 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

### Emergency Contact Details

*For emergencies only; DO NOT contact these companies for general product advice.*

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

## 2. HAZARD IDENTIFICATION

**Poisons Schedule (Aust)** No Data Available

### Globally Harmonised System

Redox Pty Ltd  
Corporate Office Sydney  
Locked Bag 15 Minto NSW 2566 Australia  
2 Swettenham Road Minto NSW 2566 Australia  
All Deliveries: 4 Holmes Road Minto NSW 2566 Australia

Phone +61 2 9733 3000  
Fax +61 2 9733 3111  
E-mail [sydney@redox.com](mailto:sydney@redox.com)  
Web [www.redox.com](http://www.redox.com)  
ABN 92 000 762 345

<b>Australia</b> Adelaide Brisbane Melbourne Perth Sydney	<b>New Zealand</b> Auckland Christchurch Hawke's Bay	<b>Malaysia</b> Kuala Lumpur <b>USA</b> Los Angeles
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<b>Hazard Classification</b>	NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
<b>Signal Word</b>	None

**National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road &amp; Rail (ADG Code)

<b>Dangerous Goods Classification</b>	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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**3. COMPOSITION/INFORMATION ON INGREDIENTS****Ingredients**

Chemical Entity	Formula	CAS Number	Proportion
Activated Carbon	No Data Available	7440-44-0	100.0 %

**4. FIRST AID MEASURES****Description of necessary measures according to routes of exposure**

<b>Swallowed</b>	Rinse mouth with water. Give 1/2 pint of warm water to drink. Do NOT induce vomiting. Seek medical attention urgently.
<b>Eye</b>	Promptly flush with running water for 15 minutes including water under eyelids. Obtain medical attention.
<b>Skin</b>	Wash affected area well with water. Remove clothing, clean and dry thoroughly before re-use. Get medical help if irritation develops.
<b>Inhaled</b>	Remove to fresh air. Get medical help if irritation develops.
<b>Advice to Doctor</b>	Treat symptomatically based on individual reactions of patient and judgement of doctor.
<b>Medical Conditions Aggravated by Exposure</b>	No information available on medical conditions aggravated by exposure to this product.

**5. FIRE FIGHTING MEASURES**

<b>General Measures</b>	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk.
<b>Flammability Conditions</b>	Product is a non-flammable solid.
<b>Extinguishing Media</b>	Water fog, foam, dry chemical.
<b>Fire and Explosion Hazard</b>	Product is a combustible solid.
<b>Hazardous Products of Combustion</b>	Material will burn in a fire, releasing combustion products of carbon monoxide and carbon dioxide. Other material adsorbed onto the carbon may also be released.
<b>Special Fire Fighting Instructions</b>	Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
<b>Personal Protective Equipment</b>	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves).
<b>Flash Point</b>	No Data Available
<b>Lower Explosion Limit</b>	60 g/m <sup>3</sup>
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	160 °C



**Hazchem Code**

No Data Available

## 6. ACCIDENTAL RELEASE MEASURES

<b>General Response Procedure</b>	Avoid accidents, clean up immediately. Slippery when spilt. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Use clean, non-sparking tools and equipment. Notify safety personnel for large spills.
<b>Clean Up Procedures</b>	Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labelled container and dispose of promptly.
<b>Containment</b>	Stop leak if safe to do so. Isolate the danger area.
<b>Environmental Precautionary Measures</b>	Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management.
<b>Evacuation Criteria</b>	Evacuate all unnecessary personnel.
<b>Personal Precautionary Measures</b>	Personnel involved in the clean-up should wear full protective clothing as listed in section 8.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Follow good handling and housekeeping procedures, avoid spills, accumulation of dust and generation of airborne dust. Avoid prolonged contact with skin and eyes. Avoid inhalation of dust. Wear protective gloves and safety glasses or goggles. Use in a well ventilated area.
<b>Storage</b>	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Keep away from strong oxidisers, strong acids, ignition sources, combustible materials, and heat. This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.
<b>Container</b>	Store in original packaging as approved by manufacturer.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	<p>No exposure standard has been established for this product by the Australian Safety and Compensation Council (ASCC). However, the exposure standard for dust not otherwise specified is 10mg/m<sup>3</sup> (for inspirable dust) and 3mg/m<sup>3</sup> (for respirable dust).</p> <p>Supplier Information: Maximum permissible exposure limit for inert dust: 6 mg/m<sup>3</sup>. When exceeded, an irritation of respiratory tract is possible.</p> <p>NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.</p> <p>These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.</p>
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available on biological limit values for this product.
<b>Engineering Measures</b>	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
<b>Personal Protection Equipment</b>	<p>RESPIRATOR: Wear an effective dust mask where dusts/vapours are generated and engineering controls are inadequate (AS1715/1716).</p> <p>EYES: Wear safety glasses with side shields, safety goggles or a face shield, especially in dusty conditions. Provide an eye wash station nearby (AS1336/1337).</p> <p>HANDS: Wear gloves (AS2161).</p> <p>CLOTHING: Long-sleeved overalls and safety footwear (AS3765/2210).</p>
<b>Work Hygienic Practices</b>	No Data Available



## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Extruded, Granules, Powder
<b>Odour</b>	Typical
<b>Colour</b>	Black
<b>pH</b>	1 - 10
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	No Data Available
<b>Melting Point</b>	No Data Available
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Insoluble
<b>Specific Gravity</b>	No Data Available
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	160 °C
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	approx. 200 - 700g/L
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available
<b>Density</b>	No Data Available
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	No Data Available
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	TGA/TDA under air: 307 deg C (medium reactivity) MIE of dust cloud: >1200mJ (low propensity) Explosivity severity: P max: 6.3 bar (20l sphere) VMP: 175 bar/s Kmax or Kst: 47 bar.m.s-1 Class: St1
<b>Potential for Dust Explosion</b>	Under normal conditions no danger of explosion. In unfavorable conditions may form an explosive dust / air mixture
<b>Fast or Intensely Burning Characteristics</b>	No Data Available
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No Data Available
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No Data Available
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	No Data Available
<b>Reactions That Release Gases or Vapours</b>	No Data Available
<b>Release of Invisible Flammable Vapours and Gases</b>	No Data Available



**10. STABILITY AND REACTIVITY**

<b>General Information</b>	Combustible solid.
<b>Chemical Stability</b>	Product is stable under normal conditions of use, storage and temperature.
<b>Conditions to Avoid</b>	Heat and ignition sources, strong oxidisers and combustible materials
<b>Materials to Avoid</b>	Keep away from strong oxidisers, strong acids, ignition sources, combustible materials, and heat.
<b>Hazardous Decomposition Products</b>	On burning, this product will emit toxic fumes, including those of oxides of carbon.
<b>Hazardous Polymerisation</b>	None

**11. TOXICOLOGICAL INFORMATION**

<b>General Information</b>	No Data Available
<b>Eye/Irritant</b>	Prolonged or repeated exposure to dust may cause eye irritation.
<b>Inhalation</b>	Prolonged or repeated exposure to dust may cause respiratory tract irritation. Never enter a confined space containing activated carbon as it will adsorb oxygen and asphyxiation may result.
<b>Carcinogen Category</b>	No Data Available

**12. ECOLOGICAL INFORMATION**

<b>Ecotoxicity</b>	Slightly Hazardous
<b>Persistence/Degradability</b>	No Data Available
<b>Mobility</b>	No Data Available
<b>Environmental Fate</b>	No Data Available
<b>Bioaccumulation Potential</b>	No Data Available
<b>Environmental Impact</b>	No Data Available

**13. DISPOSAL CONSIDERATIONS**

<b>General Information</b>	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
<b>Special Precautions for Land Fill</b>	Contact a specialist disposal company or the local waste regulator for advice.

**14. TRANSPORT INFORMATION**



**General Information**

UN1362: Not Classified as Dangerous Goods Due to Special provisions 223 (A3) and 925:

SP 223 (A3):

If the chemical or physical properties of a substance covered by this description are such that, when tested, it does not meet the established defining criteria for the class or division listed in Column C, or any other class or division, it is not subject to these Regulations.

SP 925:

The provisions of this Code do not apply to:

- non-activated carbon blacks of mineral origin;
- a consignment of carbon if it passes the tests for self-heating substances as reflected in the UN Manual of Tests and Criteria (see 33.3.1.3.3), and is accompanied by a certificate from a laboratory accredited by the competent authority, stating that the product to be loaded has been correctly sampled by trained staff from that laboratory and that the sample was correctly tested and has passed the test; and
- carbons made by a steam activation process

Third party testing demonstrates that dangerous self-heating can occur with this material in a 100 mm sample cube at 140 deg C, but did not occur in a sample cube of 25 mm at 140 deg C, nor in a sample cube of 100 mm at a temperature of 120 deg C.

**Land Transport (Australia)**

ADG Code

<b>Proper Shipping Name</b>	ACTIVATED CARBON
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	223; 925

**Land Transport (New Zealand)**

NZS5433

<b>Proper Shipping Name</b>	ACTIVATED CARBON
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	223; 925

**Land Transport (Sri Lanka)**

<b>Proper Shipping Name</b>	ACTIVATED CARBON
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	223; 925

**Land Transport (United States of America)**

US DOT



<b>Proper Shipping Name</b>	ACTIVATED CARBON
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

#### Sea Transport

IMDG Code

<b>Proper Shipping Name</b>	ACTIVATED CARBON
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	223; 925
<b>EMS</b>	No Data Available
<b>Marine Pollutant</b>	No

#### Air Transport

IATA DGR

<b>Proper Shipping Name</b>	ACTIVATED CARBON
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	A3 (223)

#### National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

<b>Dangerous Goods Classification</b>	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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### 15. REGULATORY INFORMATION

<b>General Information</b>	No Data Available
<b>Poisons Schedule (Aust)</b>	No Data Available

#### Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

<b>Approval Code</b>	Not Assessed
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#### National/Regional Inventories



<b>Australia (AICS)</b>	Listed
<b>Canada (DSL)</b>	Not Determined
<b>Canada (NDSL)</b>	Not Determined
<b>China (IECSC)</b>	Not Determined
<b>Europe (EINECS)</b>	Not Determined
<b>Europe (REACH)</b>	Not Determined
<b>Japan (ENCS/METI)</b>	Not Determined
<b>Korea (KECI)</b>	Not Determined
<b>Malaysia (EHS Register)</b>	Not Determined
<b>New Zealand (NZIoC)</b>	Not Determined
<b>Philippines (PICCS)</b>	Not Determined
<b>Switzerland (Giftliste 1)</b>	Not Determined
<b>Switzerland (Inventory of Notified Substances)</b>	Not Determined
<b>Taiwan (NCSR)</b>	Not Determined
<b>USA (TSCA)</b>	Not Determined

**Additional Information**

IMPORTANT TRANSPORT INFORMATION: Product is classified as UN1362, Dangerous Goods Classification 4.2 (Substances liable to spontaneous combustion). However, this product has been tested and it does not meet the established defining criteria for the UN classification 4.2, therefore following special provisions apply to the below listed international transport regulations: ROAD/RAIL TRANSPORT: Special Provision 223 (ADG7) SEA TRANSPORT : Special Provisions 223, 925 (IMDG 34) AIR TRANSPORT : Special provision A3 (DGR 2009, 50th Edition)

## 16. OTHER INFORMATION

**Related Product Codes**

ACCARB0100, ACCARB0101, ACCARB0200, ACCARB0201, ACCARB0300, ACCARB0301, ACCARB0400, ACCARB0401, ACCARB0500, ACCARB0501, ACCARB0600, ACCARB0700, ACCARB0701, ACCARB0800, ACCARB0801, ACCARB0900, ACCARB0901, ACCARB1000, ACCARB1001, ACCARB1002, ACCARB1003, ACCARB1004, ACCARB1005, ACCARB1006, ACCARB1007, ACCARB1008, ACCARB1009, ACCARB1010, ACCARB1011, ACCARB1012, ACCARB1013, ACCARB1014, ACCARB1015, ACCARB1016, ACCARB1100, ACCARB1101, ACCARB1200, ACCARB1201, ACCARB1300, ACCARB1301, ACCARB1302, ACCARB1400, ACCARB1401, ACCARB1500, ACCARB1501, ACCARB1502, ACCARB1503, ACCARB1600, ACCARB1700, ACCARB1701, ACCARB1800, ACCARB1801, ACCARB1900, ACCARB1901, ACCARB2000, ACCARB2001, ACCARB2100, ACCARB2200, ACCARB2201, ACCARB2202, ACCARB2300, ACCARB2301, ACCARB2400, ACCARB2401, ACCARB2402, ACCARB2500, ACCARB2501, ACCARB2502, ACCARB2600, ACCARB2700, ACCARB2800, ACCARB2900, ACCARB3000, ACCARB3001, ACCARB3100, ACCARB3200, ACCARB3300, ACCARB3301, ACCARB3302, ACCARB3500, ACCARB3501, ACCARB3600, ACCARB3601, ACCARB3700, ACCARB3701, ACCARB4000, ACCARB4001, ACCARB4002, ACCARB4100, ACCARB4101, ACCARB4200, ACCARB4201, ACCARB4300, ACCARB4301, ACCARB4400, ACCARB4401, ACCARB4500, ACCARB4600, ACCARB4700, ACCARB4701, ACCARB4800, ACCARB4801, ACCARB5000, ACCARB5100, ACCARB5200, ACCARB5300, ACCARB5500, ACCARB5600, ACCARB5700, ACCARB5701, ACCARB5800, ACCARB5801, ACCARB5900, ACCARB5901, ACCARB6000, ACCARB6100, ACCARB6200, ACCARB6201, ACCARB6300, ACCARB6400, ACCARB6500, ACCARB6600, ACCARB6601, ACCARB6700, ACCARB6701, ACCARB6800, ACCARB6801, ACCARB6900, ACCARB6901, ACCARB6902, ACCARB7000, ACCARB7100, ACCARB7101, ACCARB7200, ACCARB7201, ACCARB7300, ACCARB7301, ACCARB7400, ACCARB7401, ACCARB7500, ACCARB7501, ACCARB7600, ACCARB7601, ACCARB7700, ACCARB7701, ACCARB7800, ACCARB7801, ACCARB7900, ACCARB7901, ACCARB8000, ACCARB8001, ACCARB8002, ACCARB8100, ACCARB8101, ACCARB8102, ACCARB8200, ACCARB8201, ACCARB8300, ACCARB8301, ACCARB8302, ACCARB8303, ACCARB8400, ACCARB8401, ACCARB8500, ACCARB8501, ACCARB8502, ACCARB8600, ACCARB8601, ACCARB8602, ACCARB8700, ACCARB8701, ACCARB8800, ACCARB8801, ACCARB9000, ACCARB9100, ACCARB9200, ACCARB9300, ACCARB9400, ACCARB9500, ACCARB9600, ACCARB9700, ACCARB9800, ACCARB9900, ACCARB3602, ACCARB3210, ACCARB4020, ACCARB4010, ACCARB1802, ACCARB1803,



ACCARB1804, ACCARB1805, ACCARB4030, ACCARB0450, ACCARB8420, ACCARB4031, ACCARB1450, ACCARB5010, ACCARB2510, ACCARB3205, ACCARB2515, ACCARB8850, ACCARB4050, ACCARB0451, ACCARB8851, ACCARB3650, ACCARB8450, ACCARB4060, ACCARB4061, ACCARB3101, ACCARB3670, ACCARB0460, ACCARB1350, ACCARB1250, ACCARB0510, ACCARB1505, ACCARB4402, ACCARB0710, ACCARB3680, ACCARB8852, ACCARB0455, ACCARB3705, ACCARB2516, ACCARB5902, ACCARB4040, ACCARB1255, ACCARB8050, ACCARB8003, ACCARB0470

**Revision**

2

**Revision Date**

01 Oct 2012

**Key/Legend**

< Less Than  
> Greater Than  
**AICS** Australian Inventory of Chemical Substances  
**atm** Atmosphere  
**CAS** Chemical Abstracts Service (Registry Number)  
**cm<sup>2</sup>** Square Centimetres  
**CO<sub>2</sub>** Carbon Dioxide  
**COD** Chemical Oxygen Demand  
**deg C (°C)** Degrees Celcius  
**EPA (New Zealand)** Environmental Protection Authority of New Zealand  
**deg F (°F)** Degrees Farenheit  
**g** Grams  
**g/cm<sup>3</sup>** Grams per Cubic Centimetre  
**g/l** Grams per Litre  
**HSNO** Hazardous Substance and New Organism  
**IDLH** Immediately Dangerous to Life and Health  
**immiscible** Liquids are insoluable in each other.  
**inHg** Inch of Mercury  
**inH<sub>2</sub>O** Inch of Water  
**K** Kelvin  
**kg** Kilogram  
**kg/m<sup>3</sup>** Kilograms per Cubic Metre  
**lb** Pound  
**LC<sub>50</sub>** LC stands for lethal concentration. LC<sub>50</sub> is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.  
**LD<sub>50</sub>** LD stands for Lethal Dose. LD<sub>50</sub> is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.  
**ltr** or **L** Litre  
**m<sup>3</sup>** Cubic Metre  
**mbar** Millibar  
**mg** Milligram  
**mg/24H** Milligrams per 24 Hours  
**mg/kg** Milligrams per Kilogram  
**mg/m<sup>3</sup>** Milligrams per Cubic Metre  
**Misc** or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.  
**mm** Millimetre  
**mmH<sub>2</sub>O** Millimetres of Water  
**mPa.s** Millipascals per Second  
**N/A** Not Applicable  
**NIOSH** National Institute for Occupational Safety and Health  
**NOHSC** National Occupational Heath and Safety Commission  
**OECD** Organisation for Economic Co-operation and Development  
**Oz** Ounce  
**PEL** Permissible Exposure Limit  
**Pa** Pascal  
**ppb** Parts per Billion  
**ppm** Parts per Million  
**ppm/2h** Parts per Million per 2 Hours  
**ppm/6h** Parts per Million per 6 Hours  
**psi** Pounds per Square Inch  
**R** Rankine  
**RCP** Reciprocal Calculation Procedure  
**STEL** Short Term Exposure Limit  
**TLV** Threshold Limit Value  
**tne** Tonne  
**TWA** Time Weighted Average  
**ug/24H** Micrograms per 24 Hours  
**UN** United Nations  
**wt** Weight



# Safety Data Sheet



## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name:** **SODIUM BICARBONATE (ALL GRADES)**

**Other name(s):** Sodium hydrogen carbonate; Baking soda; Bicarbonate of soda; Sodium acid carbonate; Bicarbonato de sodio; Carbonato acido de sodio; Carbonato hidrogeno de sodio

**Recommended Use of the Chemical and Restrictions on Use** Wide variety of industrial, chemical and food related applications.

**Supplier:** Ixom Operations Pty Ltd  
**ABN:** 51 600 546 512  
**Street Address:** Level 8, 1 Nicholson Street  
East Melbourne Victoria 3002  
Australia

**Telephone Number:** +61 3 9906 3000  
**Emergency Telephone:** **1 800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

## 2. HAZARDS IDENTIFICATION

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

Based on available information, not classified as hazardous according to Safe Work Australia; NON-HAZARDOUS CHEMICAL.

**Poisons Schedule (SUSMP):** None allocated.

## 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Carbonic acid, monosodium salt	144-55-8	>99%	-
Other non-hazardous components	-	to 100%	-

## 4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

### Inhalation:

Remove victim from area of exposure - avoid becoming a casualty. Seek medical advice if effects persist.

### Skin Contact:

If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.

### Eye Contact:

If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

*Product Name:* SODIUM BICARBONATE (ALL GRADES)  
*Substance No:* 000031018101

*Issued:* 17/02/2014  
*Version:* 5



# Safety Data Sheet

**Ingestion:**

Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek medical advice.

**Indication of immediate medical attention and special treatment needed:**

Treat symptomatically.

## 5. FIRE FIGHTING MEASURES

**Suitable Extinguishing Media:**

Not combustible, however, if material is involved in a fire use: Extinguishing media appropriate to surrounding fire conditions.

**Specific hazards arising from the chemical:**

Non-combustible material.

**Special protective equipment and precautions for fire-fighters:**

Decomposes on heating emitting toxic fumes, including those of oxides of carbon . Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.

## 6. ACCIDENTAL RELEASE MEASURES

**Emergency procedures/Environmental precautions:**

If contamination of sewers or waterways has occurred advise local emergency services.

**Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:**

Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact. Avoid breathing in dust. Work up wind or increase ventilation. Collect and seal in properly labelled containers or drums for disposal. Wash area down with excess water.

## 7. HANDLING AND STORAGE

**Precautions for safe handling:**

Avoid skin and eye contact and breathing in dust.

**Conditions for safe storage, including any incompatibilities:**

Store in a cool, dry, well ventilated place. Keep containers sealed as material may absorb moisture. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for spills.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control Parameters:** No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for particulates:

Dusts not otherwise classified: 8hr TWA = 10 mg/m<sup>3</sup>



# Safety Data Sheet



As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

## Appropriate engineering controls:

Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Workplace Exposure Standards. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

## Individual protection measures, such as Personal Protective Equipment (PPE):

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES, DUST MASK.



Wear overalls, safety glasses and impervious gloves. Avoid generating and inhaling dusts. If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state:</b>	Crystalline Powder
<b>Colour:</b>	White
<b>Odour:</b>	Odourless
<b>Molecular Formula:</b>	CH <sub>2</sub> O <sub>3</sub> .Na
<b>Solubility:</b>	Soluble in water.
<b>Specific Gravity:</b>	2.159 (bulk density about 1.0)
<b>Relative Vapour Density (air=1):</b>	Not available
<b>Vapour Pressure (20 °C):</b>	Not available
<b>Flash Point (°C):</b>	Not applicable
<b>Flammability Limits (%):</b>	Not applicable
<b>Autoignition Temperature (°C):</b>	Not applicable
<b>Melting Point/Range (°C):</b>	Starts to decompose at about 70°C.
<b>Decomposition Point (°C):</b>	Starts at about 70°C.

Product Name: SODIUM BICARBONATE (ALL GRADES)  
Substance No: 000031018101

Issued: 17/02/2014  
Version: 5



# Safety Data Sheet



pH: ca. 8.4 (1% aqueous solution)

## 10. STABILITY AND REACTIVITY

<b>Reactivity:</b>	No information available.
<b>Chemical stability:</b>	Stable under normal conditions of use.
<b>Possibility of hazardous reactions:</b>	Hazardous polymerisation will not occur.
<b>Conditions to avoid:</b>	Avoid dust generation. Avoid exposure to moisture. Avoid temperatures above 30 °C.
<b>Incompatible materials:</b>	Incompatible with acids , and water .
<b>Hazardous decomposition products:</b>	Carbon dioxide. Sodium compounds.

## 11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

<b>Ingestion:</b>	No adverse effects expected, however, large amounts may cause nausea and vomiting.
<b>Eye contact:</b>	May be an eye irritant. Exposure to the dust may cause discomfort due to particulate nature. May cause physical irritation to the eyes.
<b>Skin contact:</b>	Contact with skin may result in irritation.
<b>Inhalation:</b>	Breathing in dust may result in respiratory irritation.
<b>Acute toxicity:</b>	Oral LD50 (rat): 4220 mg/kg

**Chronic effects:** Not listed as carcinogenic according to the International Agency for Research on Cancer (IARC).

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Avoid contaminating waterways.
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## 13. DISPOSAL CONSIDERATIONS

**Disposal methods:**  
Refer to Waste Management Authority. Dispose of contents and container in accordance with local, regional, national, international regulations.

## 14. TRANSPORT INFORMATION



# Safety Data Sheet



## **Road and Rail Transport**

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

## **Marine Transport**

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

## **Air Transport**

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

## **15. REGULATORY INFORMATION**

### **Classification:**

Based on available information, not classified as hazardous according to Safe Work Australia; NON-HAZARDOUS CHEMICAL.

**Poisons Schedule (SUSMP):** None allocated.

This material is listed on the Australian Inventory of Chemical Substances (AICS).

## **16. OTHER INFORMATION**

Supplier Safety Data Sheet; 08/ 2013.

'Registry of Toxic Effects of Chemical Substances'. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinnati, 2013.

This safety data sheet has been prepared by Ixom Operations Pty Ltd Toxicology & SDS Services.

### **Reason(s) for Issue:**

5 Yearly Revised Primary SDS

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.



# Safety Data Sheet



## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name:** **CAUSTIC SODA - LIQUID (46%-50%)**

**Other name(s):** Sodium hydroxide - liquid (46%-50%), Soda lye solution (46%-50%), Caustic soda solution (46%-50%), Sodium hydroxide solution (46%-50%), Liquid caustic soda (46%-50%), LCS 46%, Rezolv 46, Algane C46, Rezolv 50.

**Recommended Use of the Chemical and Restrictions on Use** Chemical manufacture; neutralising agent; pulp and paper, aluminium, detergent, and textile processing; vegetable oil refining; reclaiming rubber; etching and electroplating; food additive.

**Supplier:** Ixom Operations Pty Ltd  
**ABN:** 51 600 546 512  
**Street Address:** Level 8, 1 Nicholson Street  
East Melbourne Victoria 3002  
Australia

**Telephone Number:** +61 3 9906 3000  
**Emergency Telephone:** **1 800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

## 2. HAZARDS IDENTIFICATION

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

This material is hazardous according to Safe Work Australia; HAZARDOUS CHEMICAL.

### Classification of the chemical:

Corrosive to Metals - Category 1  
Skin Corrosion - Sub-category 1A  
Eye Damage - Category 1

**SIGNAL WORD:** DANGER



### Hazard Statement(s):

H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.

### Precautionary Statement(s):

#### Prevention:

P234 Keep only in original container.  
P260 Do not breathe dust / fume / gas / mist / vapours / spray.  
P264 Wash hands thoroughly after handling.  
P280 Wear protective gloves / protective clothing / eye protection / face protection.



# Safety Data Sheet

**Response:**

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P363 Wash contaminated clothing before re-use.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P310 Immediately call a POISON CENTER or doctor/physician.  
P321 Specific treatment (see First Aid Measures on Safety Data Sheet).  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P390 Absorb spillage to prevent material damage.

**Storage:**

P405 Store locked up.  
P406 Store in corrosive resistant container with a resistant inner liner.

**Disposal:**

P501 Dispose of contents and container in accordance with local, regional, national, international regulations.

**Poisons Schedule (SUSMP):** S6 Poison.

## 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Sodium hydroxide	1310-73-2	46-50%	H290 H314 H318
Water	7732-18-5	50-54%	-

## 4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

**Inhalation:**

Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. For all but the most minor symptoms arrange for patient to be seen by a doctor as soon as possible, either on site or at the nearest hospital.

**Skin Contact:**

If spilt on large areas of skin or hair, immediately drench with running water and remove clothing. Continue to wash skin and hair with plenty of water (and soap if material is insoluble) until advised to stop by the Poisons Information Centre or a doctor.

**Eye Contact:**

If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes.

**Ingestion:**

Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek immediate medical assistance.

**Indication of immediate medical attention and special treatment needed:**

Treat symptomatically. Can cause corneal burns.

## 5. FIRE FIGHTING MEASURES

Product Name: CAUSTIC SODA - LIQUID (46%-50%)  
Substance No: 000031006701

Issued: 11/05/2015  
Version: 6



# Safety Data Sheet

**Suitable Extinguishing Media:**

Not combustible, however, if material is involved in a fire use: Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

**Hazchem or Emergency Action Code:** 2R

**Specific hazards arising from the chemical:**

Non-combustible material.

**Special protective equipment and precautions for fire-fighters:**

Not combustible, however following evaporation of aqueous component residual material can decompose if involved in a fire, emitting toxic fumes. Contact with metals may liberate hydrogen gas which is extremely flammable. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.

## 6. ACCIDENTAL RELEASE MEASURES

**Emergency procedures/Environmental precautions:**

Clear area of all unprotected personnel. If contamination of sewers or waterways has occurred advise local emergency services.

**Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:**

Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact and breathing in vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. Caution - heat may be evolved on contact with water.

## 7. HANDLING AND STORAGE

This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

**Precautions for safe handling:**

Avoid skin and eye contact and breathing in vapour, mists and aerosols.

**Conditions for safe storage, including any incompatibilities:**

Store in cool place and out of direct sunlight. Store away from incompatible materials described in Section 10. Store away from foodstuffs. Do not store in aluminium or galvanised containers nor use die-cast zinc or aluminium bungs; plastic bungs should be used. At temperatures greater than 40°C, tanks must be stress relieved. Keep containers closed when not in use - check regularly for leaks.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control Parameters:** No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for constituent(s):

Sodium hydroxide: Peak Limitation = 2 mg/m<sup>3</sup>



# Safety Data Sheet



As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

Peak Limitation - a maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period of time which does not exceed 15 minutes.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

## Appropriate engineering controls:

Ensure ventilation is adequate to maintain air concentrations below Workplace Exposure Standards. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

## Individual protection measures, such as Personal Protective Equipment (PPE):

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, CHEMICAL GOGGLES, FACE SHIELD, GLOVES (Long), APRON, RUBBER BOOTS.



Wear overalls, chemical goggles, face shield, elbow-length impervious gloves, splash apron or equivalent chemical impervious outer garment, and rubber boots. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

If determined by a risk assessment an inhalation risk exists, wear a suitable mist respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state:</b>	Liquid
<b>Colour:</b>	Colourless to Slightly Coloured
<b>Solubility:</b>	Miscible with water.
<b>Specific Gravity:</b>	1.48-1.52 @20°C
<b>Relative Vapour Density (air=1):</b>	Not available
<b>Vapour Pressure (20 °C):</b>	1.34 mm Hg (calculated)
<b>Flash Point (°C):</b>	Not applicable
<b>Flammability Limits (%):</b>	Not applicable
<b>Autoignition Temperature (°C):</b>	Not applicable
<b>Boiling Point/Range (°C):</b>	ca. 145 (literature)
<b>pH:</b>	14 (literature)
<b>Freezing Point/Range (°C):</b>	ca. 12 (calculated)

Product Name: CAUSTIC SODA - LIQUID (46%-50%)  
Substance No: 000031006701

Issued: 11/05/2015  
Version: 6



## 10. STABILITY AND REACTIVITY

<b>Reactivity:</b>	Reacts violently with acids. Reacts exothermically on dilution with water.
<b>Chemical stability:</b>	Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Absorbs carbon dioxide from the air.
<b>Possibility of hazardous reactions:</b>	Reacts with ammonium salts, evolving ammonia gas. Reacts readily with various reducing sugars (i.e. fructose, galactose, maltose, dry whey solids) to produce carbon monoxide. Take precautions including monitoring the tank atmosphere for carbon monoxide to ensure safety of personnel before vessel entry.
<b>Conditions to avoid:</b>	Avoid exposure to moisture.
<b>Incompatible materials:</b>	Incompatible with ammonium salts , aluminium , tin , and zinc .
<b>Hazardous decomposition products:</b>	None known.

## 11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

<b>Ingestion:</b>	Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract.
<b>Eye contact:</b>	A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury.
<b>Skin contact:</b>	Contact with skin will result in severe irritation. Corrosive to skin - may cause skin burns.
<b>Inhalation:</b>	Breathing in mists or aerosols may produce respiratory irritation.
<b>Acute toxicity:</b>	No LD50 data available for the product. For the constituent Sodium hydroxide :
<b>Skin corrosion/irritation:</b>	Severe irritant (rabbit).
<b>Chronic effects:</b>	No information available for the product.

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Avoid contaminating waterways.
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## 13. DISPOSAL CONSIDERATIONS

**Disposal methods:**  
Refer to Waste Management Authority. Dispose of contents and container in accordance with local, regional, national, international regulations.

## 14. TRANSPORT INFORMATION



# Safety Data Sheet



## Road and Rail Transport

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.



**UN No:** 1824  
**Transport Hazard Class:** 8 Corrosive  
**Packing Group:** II  
**Proper Shipping Name or Technical Name:** SODIUM HYDROXIDE SOLUTION  
**Hazchem or Emergency Action Code:** 2R

## Marine Transport

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

**UN No:** 1824  
**Transport Hazard Class:** 8 Corrosive  
**Packing Group:** II  
**Proper Shipping Name or Technical Name:** SODIUM HYDROXIDE SOLUTION

**IMDG EMS Fire:** F-A  
**IMDG EMS Spill:** S-B

## Air Transport

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

**UN No:** 1824  
**Transport Hazard Class:** 8 Corrosive  
**Packing Group:** II  
**Proper Shipping Name or Technical Name:** SODIUM HYDROXIDE SOLUTION

## 15. REGULATORY INFORMATION

### **Classification:**

This material is hazardous according to Safe Work Australia; HAZARDOUS CHEMICAL.

### **Classification of the chemical:**

Corrosive to Metals - Category 1  
Skin Corrosion - Sub-category 1A  
Eye Damage - Category 1

### **Hazard Statement(s):**

H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.

**Poisons Schedule (SUSMP):** S6 Poison.

*Product Name:* CAUSTIC SODA - LIQUID (46%-50%)  
*Substance No:* 000031006701

*Issued:* 11/05/2015  
*Version:* 6



# Safety Data Sheet



All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

## 16. OTHER INFORMATION

'Registry of Toxic Effects of Chemical Substances'. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinnati, 2014.

This safety data sheet has been prepared by Ixom Operations Pty Ltd Toxicology & SDS Services.

### **Reason(s) for Issue:**

Change in company details

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.





**SIBELCO**  
AUSTRALIA

# SAFETY DATA SHEET

## HYDRATED LIME

Infosafe No.: LPVW0

ISSUED Date : 04/11/2014

ISSUED by: SIBELCO AUSTRALIA LIMITED

### 1. IDENTIFICATION

---

**GHS Product Identifier**

HYDRATED LIME

**Company Name**

SIBELCO AUSTRALIA LIMITED

**Address**

49-55 Woodlands Drive Braeside

Vic 3195 Australia

**Telephone/Fax Number**

Tel: (03)9586 5400

Fax: (03)9586 5413

**Emergency phone number**

1800 638 556

**Recommended use of the chemical and restrictions on use**

Used in building applications, water treatment and road stabilisation.

### 2. HAZARD IDENTIFICATION

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**GHS classification of the substance/mixture**

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Not classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Classification:

Skin Corrosion/Irritation: Category 2

Eye Damage/Irritation: Category 1

**Signal Word (s)**

DANGER

**Hazard Statement (s)**

H315 Causes skin irritation.

H318 Causes serious eye damage.

**Pictogram (s)**

Corrosion



**Precautionary statement – Prevention**

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

**Precautionary statement – Response**

EYES:



P321 The use of diphoterine has been shown to significantly reduce the risk of permanent injury. It is essential that the diphoterine is used as quickly as possible in order to obtain the maximum benefit from its absorbent and neutralising properties. As quickly as possible means within 10 seconds of contact with lime. Seek immediate medical attention while treating with diphoterine.

P310 Immediately call a POISON CENTER or doctor/physician.

SKIN:

P321 Flush skin and hair with diphoterine.

P332+P313 If skin irritation occurs: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Ingredients

Name	CAS	Proportion
Calcium hydroxide	1305- 62- 0	> 93 %
Calcite (Ca(CO <sub>3</sub> ) )		<6 %
Other minerals	Mixture	<1 %
Ingredients determined not to be hazardous.		Balance

### 4. FIRST-AID MEASURES

#### Inhalation

If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms persist seek medical attention.

#### Ingestion

Do not induce vomiting. Wash out mouth thoroughly with water. Seek immediate medical attention.

#### Skin

Remove all contaminated clothing immediately. Flush skin and hair with diphoterine. Ensure contaminated clothing is washed before re-use or discard. Seek immediate medical attention.

#### Eye contact

The use of diphoterine has been shown to significantly reduce the risk of permanent injury. It is essential that the diphoterine is used as quickly as possible in order to obtain the maximum benefit from its absorbent and neutralising properties. As quickly as possible means within 10 seconds of contact with lime. Seek immediate medical attention while treating with diphoterine.

#### First Aid Facilities

Eyewash and normal washroom facilities.

#### Advice to Doctor

Treat symptomatically.

#### Other Information

For advice in an emergency, contact a Poisons Information Centre or a doctor at once. (131 126)

### 5. FIRE-FIGHTING MEASURES

#### Suitable Extinguishing Media

Use appropriate fire extinguisher for surrounding environment.

#### Hazards from Combustion Products

Under fire conditions this product may emit toxic and/or irritating fumes and gases. The product decomposes with loss of water at approx 580°C to form calcium oxide (quicklime).

#### Specific Hazards Arising From The Chemical

Non-combustible material. At 580°C calcium hydroxide decomposes and gives off corrosive fumes of calcium oxide.

#### Decomposition Temperature

580°C



### Precautions in connection with Fire

Fire fighters should wear Self-Contained Breathing Apparatus (SCBA) operated in positive pressure mode and full protective clothing to prevent exposure to vapours or fumes. Water spray may be used to cool down heat-exposed containers. Fight fire from safe location. This product should be prevented from entering drains and watercourses.

## 6. ACCIDENTAL RELEASE MEASURES

---

### Emergency Procedures

Increase ventilation. Evacuate all unprotected personnel. Wear sufficient respiratory protection and full protective clothing to prevent exposure. Sweep up material avoiding dust generation or dampen spilled material with water to avoid airborne dust, then transfer material to a suitable container. Wash surfaces well with soap and water. Seal all wastes in labelled containers for subsequent recycling or disposal. Dispose of waste according to the applicable local and national regulations. If contamination of sewers or waterways occurs inform the local water and waste management authorities in accordance with local regulations.

## 7. HANDLING AND STORAGE

---

### Precautions for Safe Handling

Avoid inhalation of dust, and skin or eye contact. Use only in a well ventilated area. Keep containers sealed when not in use. Prevent the build up of dust in the work atmosphere. Maintain high standards of personal hygiene i.e. Washing hands prior to eating, drinking, smoking or using toilet facilities.

### Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area, out of direct sunlight and moisture. Store in suitable, labelled containers. Keep containers tightly closed. Store away from incompatible materials. Ensure that storage conditions comply with applicable local and national regulations.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

---

### Occupational exposure limit values

No exposure value assigned for this material by Safe Work, Australia. However, the available exposure limits for ingredients are listed below:

Safe Work, Australia Exposure Standards:

Calcium hydroxide

TWA: 5 mg/m<sup>3</sup>

Dust not otherwise specified:

TWA: 10 mg/m<sup>3</sup>

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

STEL (Short Term Exposure Limit): The average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

### Biological Limit Values

No biological limits allocated.

### Appropriate Engineering Controls

Provide sufficient ventilation to keep airborne levels below the exposure limits. Where dusts are generated, particularly in enclosed areas, and natural ventilation is inadequate, a local exhaust ventilation system is required.

### Respiratory Protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable dust/particulate filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements.

Reference should be made to Australian/New Zealand Standards AS/NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

### Eye Protection



Safety glasses with side shields or chemical goggles should be worn. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.

#### **Hand Protection**

Wear gloves of impervious material such as PVC. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

#### **Body Protection**

Suitable protective work wear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

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#### **Appearance**

Off-White powder

#### **Odour**

Odourless

#### **Decomposition Temperature**

580°C

#### **Melting Point**

580°C (decomposes)

#### **Boiling Point**

Not available

#### **Solubility in Water**

Sparingly soluble (1.6-1.8 g/L)

#### **Specific Gravity**

2.30-2.40

#### **pH**

12.0 (aqueous slurry)

#### **Vapour Pressure**

Not available

#### **Vapour Density (Air=1)**

Not available

#### **Evaporation Rate**

Not available

#### **Odour Threshold**

Not available

#### **Viscosity**

Not available

#### **Partition Coefficient: n-octanol/water**

Not available

#### **Flash Point**

Not available

#### **Flammability**

Non-flammable solid

#### **Auto-Ignition Temperature**

Not available

#### **Explosion Limit - Upper**

Not available

#### **Explosion Limit - Lower**

Not available

## **10. STABILITY AND REACTIVITY**

---



**Reactivity**

Reacts with incompatible materials.

**Chemical Stability**

Stable under normal conditions of storage and handling.

**Conditions to Avoid**

Extremes of temperature, dust accumulation and direct sunlight. Moisture.

**Incompatible materials**

Oxidising agents, strong acids, nitro-organic compounds, maleic anhydride and phosphorus.

**Hazardous Decomposition Products**

Thermal decomposition may result in the release of toxic and/or irritating fumes and gases. Decomposes with loss of water at approx 580°C to form calcium oxide (quicklime).

**Possibility of hazardous reactions**

Reacts exothermically with acids. Absorbs carbon dioxide from air. Attacks aluminium, lead and brass in the presence moisture. Decomposes with loss of water at approx 580°C to form calcium oxide (quicklime).

**Hazardous Polymerization**

Will not occur.

## 11. TOXICOLOGICAL INFORMATION

---

**Toxicology Information**

No toxicity data available for this material. The available acute toxicity data for the ingredient/s is/are given below.

**Acute Toxicity - Oral**

For calcium hydroxide:

LD50 (rat): 7,340 mg/kg

**Ingestion**

Ingestion of this product may irritate the gastric tract causing nausea and vomiting.

**Inhalation**

Inhalation of dusts may irritate the respiratory system.

**Skin**

Causes skin irritation. Skin contact will cause redness, itching and swelling. Repeated exposure may cause skin dryness and cracking and may lead to dermatitis.

**Eye**

Causes serious eye damage. On eye contact this product will cause tearing, stinging, blurred vision, and redness.

For calcium hydroxide:

Eye Irritation (rabbit): Severe (Standard Draize Test, 10 mg)

**Respiratory sensitisation**

Not expected to be a respiratory sensitiser.

**Skin Sensitisation**

Not expected to be a skin sensitiser.

**Germ cell mutagenicity**

Not considered to be a mutagenic hazard.

**Carcinogenicity**

Not considered to be a carcinogenic hazard.

**Reproductive Toxicity**

Not considered to be toxic to reproduction.

**STOT-single exposure**

Not expected to cause toxicity to a specific target organ.

**STOT-repeated exposure**

Not expected to cause toxicity to a specific target organ through repeated or prolonged exposure.

**Aspiration Hazard**

Not expected to be an aspiration hazard.

**Other Information**

Chronic exposure by inhalation may aggravate pre-existing upper respiratory and lung disorders such as bronchitis, emphysema and asthma. Onset and progression are related to dust concentrations and duration of exposure.



## 12. ECOLOGICAL INFORMATION

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### Ecotoxicity

No ecological data are available for this material.

### Persistence and degradability

Not available

### Mobility

Not available

### Bioaccumulative Potential

Not available

### Environmental Protection

Prevent this material entering waterways, drains and sewers.

## 13. DISPOSAL CONSIDERATIONS

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### Disposal considerations

The disposal of the spilled or waste material must be done in accordance with applicable local and national regulations.

## 14. TRANSPORT INFORMATION

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### Transport Information

Road and Rail Transport (ADG Code):

Not classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code) (7th edition).

Marine Transport (IMO/IMDG):

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

Air Transport (ICAO/IATA):

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

### U.N. Number

None Allocated

### UN proper shipping name

None Allocated

### Transport hazard class(es)

None Allocated

### NOM UNNo.

None Allocated

### NOM Proper Shipping Name

None Allocated

### NOM Class

None Allocated

### IMDG Marine pollutant

No

### Other Information

Hydrated Lime should be stored and transported in a manner to prevent ingress of water, strong oxidants or acids and emission of dust.

## 15. REGULATORY INFORMATION

---

### Regulatory information



Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Not classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

**Poisons Schedule**

Not Scheduled

## 16. OTHER INFORMATION

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**Date of preparation or last revision of SDS**

SDS Reviewed: November 2014

Supersedes: October 2006, April 2011

**References**

Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice.

Standard for the Uniform Scheduling of Medicines and Poisons.

Australian Code for the Transport of Dangerous Goods by Road & Rail.

Model Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Workplace exposure standards for airborne contaminants, Safe work Australia.

American Conference of Industrial Hygienists (ACGIH).

Globally Harmonised System of classification and labelling of chemicals.

**Contact Person/Point**

Emergency Advice: ACOHS ERS - 1800 638 556 (24 Hours)

**PLEASE NOTE:**

The information contained herein is based on data available to Sibelco Australia Limited from both our own technical sources and from recognised published references and is believed to be both accurate and reliable. Sibelco Australia Limited has made no effort to censor nor to conceal deleterious aspects of this product. Since we cannot anticipate or control the many different conditions under which this information and our products may be used, each user should review these recommendations in the specific context of the intended application and confirm whether they are appropriate. It is therefore recommended that you undertake your own risk assessment in relation to your method of handling and proposed use of this product. Sibelco Australia Limited accepts no liability whatsoever for damage or injury caused from the use of this information or of suggestions contained herein.

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## END OF SDS

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# SAFETY DATA SHEET

## DOW AGROSCIENCES AUSTRALIA LIMITED

**Product name:** GRAZON™ Extra Herbicide

**Issue Date:** 25.10.2016

**Print Date:** 25.10.2016

DOW AGROSCIENCES AUSTRALIA LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

---

### SECTION 1: IDENTIFICATION: PRODUCT IDENTIFIER AND CHEMICAL IDENTITY

---

**Product name:** GRAZON™ Extra Herbicide

**Recommended use of the chemical and restrictions on use**

**Identified uses:** End use herbicide product

#### COMPANY IDENTIFICATION

DOW AGROSCIENCES AUSTRALIA LIMITED  
LVL 5 20 RODBOROUGH RD  
FRENCHS FOREST NSW 2086  
AUSTRALIA

**Customer Information Number:**

1800-700-096

auscustomerservice@dow.com

#### EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** 613-9663-2130

**Local Emergency Contact:** 1800-033-882

**For advice, contact a doctor (at once) or the Australian Poisons Information Centre:** 131 126

**Transport Emergency Only Dial** 000

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### SECTION 2: HAZARD(S) IDENTIFICATION

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#### GHS Classification

Flammable liquids - Category 4

Serious eye damage/eye irritation - Category 2A

Skin sensitisation - Category 1

Specific target organ toxicity - repeated exposure - Category 2

Acute aquatic toxicity - Category 1

Chronic aquatic toxicity - Category 1

#### GHS label elements

**Hazard pictograms**





Signal word: **WARNING!**

**Hazard statements**

Combustible liquid.

May cause an allergic skin reaction.

Causes serious eye irritation.

May cause damage to organs (Kidney) through prolonged or repeated exposure.

Very toxic to aquatic life with long lasting effects.

**Precautionary statements****Prevention**

Keep away from heat/sparks/open flames/hot surfaces. No smoking.

Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

Avoid release to the environment.

Wear protective gloves/ eye protection/ face protection.

**Response**

Get medical advice/ attention if you feel unwell.

If skin irritation or rash occurs: Get medical advice/ attention.

If eye irritation persists: Get medical advice/ attention.

Wash contaminated clothing before reuse.

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Collect spillage.

**Other hazards**

No data available

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**SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS, IN ACCORDANCE WITH SCHEDULE 8**

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This product is a mixture.

Component	CASRN	Concentration
Triclopyr-2-butoxyethyl ester	64700-56-7	36.35%
Picloram	1918-02-1	8.71%
Aminopyralid	150114-71-9	0.7%
Oxirane, polymer with	37251-69-7	< 10.0 %



methyloxirane,  
mono(nonylphenyl)ether

Hexyloxypropylamine	16728-61-3	< 10.0 %
Balance	Not available	<= 38.24 %

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## SECTION 4: FIRST AID MEASURES

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### Description of first aid measures

**General advice:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

**Skin contact:** Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

**Eye contact:** Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

**Ingestion:** No emergency medical treatment necessary.

**Most important symptoms and effects, both acute and delayed:** Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

### Indication of any immediate medical attention and special treatment needed

**Notes to physician:** Skin contact may aggravate preexisting dermatitis. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

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## SECTION 5: FIREFIGHTING MEASURES

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### Hazchem Code

•2X

**Suitable extinguishing media:** Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

**Unsuitable extinguishing media:** No data available



**Special hazards arising from the substance or mixture**

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen fluoride. Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

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**SECTION 6: ACCIDENTAL RELEASE MEASURES**

---

**Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. No smoking in area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

---

**SECTION 7: HANDLING AND STORAGE, INCLUDING HOW THE CHEMICAL MAY BE SAFELY USED**

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**Precautions for safe handling:** Keep away from heat, sparks and flame. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Keep out of reach of children. Avoid prolonged or repeated contact with



skin. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Conditions for safe storage:** Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

## SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m <sup>3</sup>
	Dow IHG	TWA	SKIN, DSEN, BEI
Picloram	ACGIH	TWA	10 mg/m <sup>3</sup>
	AU OEL	TWA	10 mg/m <sup>3</sup>
Aminopyralid	Dow IHG	TWA	10 mg/m <sup>3</sup>

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

### Exposure controls

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

### Individual protection measures

**Eye/face protection:** Use chemical goggles.

#### Skin protection

**Hand protection:** Use chemical resistant gloves classified under standard AS/NZS 2161.10: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Neoprene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to AS/NZS 2161.10) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to AS/NZS 2161.10) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-



pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

**Other Information:** Selection and use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian/New Zealand Standards, including:

AS/NZS 1336: Eye and face protection – Guidelines.

AS/NZS 1337: Personal eye protection - Eye and face protectors for occupational applications.

AS/NZS 1715: Selection, use and maintenance of respiratory protective equipment.

AS/NZS 2161: Occupational protective gloves.

AS/NZS 2210: Occupational protective footwear.

AS/NZS 4501: Occupational protective clothing Set

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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### Appearance

Physical state	Liquid.
Color	Brown
Odor	Ester.
Odor Threshold	No data available
pH	No data available
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	200 °C
Flash point	<b>closed cup</b> 82 °C <i>Closed Cup</i>
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	No data available
Water solubility	emulsifiable
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Liquid Density	1.148 g/ml



**Molecular weight** No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

---

## SECTION 10: STABILITY AND REACTIVITY

---

**Reactivity:** No dangerous reaction known under conditions of normal use.

**Chemical stability:** Thermally stable at recommended temperatures and pressures.

**Possibility of hazardous reactions:** Polymerization will not occur.

**Conditions to avoid:** Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

**Incompatible materials:** Avoid contact with: Acids. Bases. Oxidizers.

**Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen fluoride. Nitrogen oxides. Toxic gases are released during decomposition.

---

## SECTION 11: TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is available.*

### Acute toxicity

#### Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

For similar material(s):

LD50, Rat, male and female, > 2,000 mg/kg No deaths occurred at this concentration.

#### Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

For similar material(s):

LD50, Rat, male and female, > 4,000 mg/kg No deaths occurred at this concentration.

#### Acute inhalation toxicity

Prolonged excessive exposure to mist may cause adverse effects. Mist may cause irritation of upper respiratory tract (nose and throat).

As product: The LC50 has not been determined.

### Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

May cause drying and flaking of the skin.



**Serious eye damage/eye irritation**

May cause moderate eye irritation.

May cause slight corneal injury.

**Sensitization**

For the active ingredient(s):

Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

For the active ingredient(s):

In animals, effects have been reported on the following organs:

Kidney.

Liver.

Gastrointestinal tract.

For the solvent(s):

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Carcinogenicity**

For the active ingredient(s): Picloram. Did not cause cancer in laboratory animals.

For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals.

For the solvent(s): Did not cause cancer in laboratory animals.

**Teratogenicity**

For the active ingredient(s): Triclopyr butoxyethyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For the active ingredient(s): Picloram. Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother. For the solvent(s): Did not cause birth defects or any other fetal effects in laboratory animals.

**Reproductive toxicity**

For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. For the active

ingredient(s): Picloram. In animal studies, did not interfere with reproduction. For the solvent(s):

Studies in laboratory animals indicate that diethylene glycol monoethyl ether (DEGEE) is not a reproductive toxicant even when given in large amounts (a few percent in the drinking water).

However, at the highest doses, it caused some toxic effects in offspring of treated animals: increased liver weight, decreased brain weight, reduced sperm motility.

**Mutagenicity**

For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

For the solvent(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.



**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**COMPONENTS INFLUENCING TOXICOLOGY:****Triclopyr-2-butoxyethyl ester****Acute inhalation toxicity**

Prolonged exposure is not expected to cause adverse effects. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.

LC50, Rat, 4 Hour, dust/mist, > 4.8 mg/l The LC50 value is greater than the Maximum Attainable Concentration.

**Picloram****Acute inhalation toxicity**

Vapors are unlikely due to physical properties. Prolonged excessive exposure to dust may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

LC50, Rat, male and female, 4 Hour, dust/mist, > 0.035 mg/l

Maximum attainable concentration. No deaths occurred at this concentration.

**Aminopyralid****Acute inhalation toxicity**

No adverse effects are anticipated from single exposure to dust. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.

LC50, Rat, male and female, 4 Hour, dust/mist, > 5.5 mg/l

**Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether****Acute inhalation toxicity**

The LC50 has not been determined.

**Hexyloxypropylamine****Acute inhalation toxicity**

Excessive exposure may cause severe irritation to the upper respiratory tract (nose and throat).

The LC50 has not been determined.

**Balance****Acute inhalation toxicity**

The LC50 has not been determined.

---

**SECTION 12: ECOLOGICAL INFORMATION**

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*Ecotoxicological information appears in this section when such data is available.*



**Ecotoxicity****Triclopyr-2-butoxyethyl ester****Acute toxicity to fish**

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, *Lepomis macrochirus* (Bluegill sunfish), flow-through test, 96 Hour, 0.36 mg/l

LC50, Fish, 96 Hour, 0.310 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, *Daphnia magna* (Water flea), 48 Hour, 2.9 mg/l, OECD Test Guideline 202

**Acute toxicity to algae/aquatic plants**

ErC50, *Pseudokirchneriella subcapitata* (green algae), 96 Hour, Growth rate inhibition, > 3.00 mg/l, OECD Test Guideline 201

ErC50, *Myriophyllum spicatum*, 14 d, 0.0473 mg/l

NOEC, *Myriophyllum spicatum*, 14 d, 0.00722 mg/l

**Chronic toxicity to fish**

NOEC, Rainbow trout (*Oncorhynchus mykiss*), 0.0263 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, *Daphnia magna* (Water flea), 21 d, number of offspring, 1.6 mg/l

LOEC, *Daphnia magna* (Water flea), 21 d, number of offspring, 5.1 mg/l

MATC (Maximum Acceptable Toxicant Level), *Daphnia magna* (Water flea), 21 d, number of offspring, 2.9 mg/l

**Toxicity to Above Ground Organisms**

Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).

Material is slightly toxic to birds on a dietary basis (LC50 between 1001 and 5000 ppm).

oral LD50, *Colinus virginianus* (Bobwhite quail), 21 d, 735mg/kg bodyweight.

dietary LC50, *Colinus virginianus* (Bobwhite quail), 8 d, 1890mg/kg diet.

oral LD50, *Apis mellifera* (bees), 48 Hour, mortality, > 110µg/bee

contact LD50, *Apis mellifera* (bees), 48 Hour, mortality, > 100µg/bee

**Toxicity to soil-dwelling organisms**

LC50, *Eisenia fetida* (earthworms), 14 d, > 1,042 mg/kg

**Picloram****Acute toxicity to fish**

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, *Oncorhynchus mykiss* (rainbow trout), static test, 96 Hour, 8.8 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, *Daphnia magna* (Water flea), 48 Hour, 44.2 mg/l

**Acute toxicity to algae/aquatic plants**

ErC50, *Pseudokirchneriella subcapitata* (green algae), 72 Hour, Growth rate inhibition, > 78.7 mg/l

EC50, *Lemna gibba*, Growth inhibition, 14 d, 102 mg/l

ErC50, *Myriophyllum spicatum*, 14 d, 0.558 mg/l

NOEC, *Myriophyllum spicatum*, 14 d, 0.0095 mg/l



**Toxicity to bacteria**

EC50, activated sludge, 3 Hour, > 100 mg/l

**Chronic toxicity to fish**

Rainbow trout (*Oncorhynchus mykiss*), flow-through test, 70 d, 0.55 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, *Daphnia magna* (Water flea), static test, 21 d, number of offspring, 6.79 mg/l

LOEC, *Daphnia magna* (Water flea), static test, 21 d, number of offspring, 13.5 mg/l

MATC (Maximum Acceptable Toxicant Level), *Daphnia magna* (Water flea), static test, 21 d, number of offspring, 9.57 mg/l

**Toxicity to Above Ground Organisms**

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

oral LD50, *Anas platyrhynchos* (Mallard duck), 14 d, > 2510mg/kg bodyweight.

dietary LC50, *Anas platyrhynchos* (Mallard duck), > 5000mg/kg diet.

contact LD50, *Apis mellifera* (bees), 48 Hour, > 100micrograms/bee

oral LD50, *Apis mellifera* (bees), 48 d, > 74micrograms/bee

**Toxicity to soil-dwelling organisms**

LC50, *Eisenia fetida* (earthworms), 14 d, survival, > 5,000 mg/kg

**Aminopyralid****Acute toxicity to fish**

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 Hour, > 100 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, *Daphnia magna* (Water flea), 48 Hour, > 100 mg/l, OECD Test Guideline 202 or Equivalent

EC50, eastern oyster (*Crassostrea virginica*), 96 Hour, > 89 mg/l

**Acute toxicity to algae/aquatic plants**

ErC50, diatom *Navicula* sp., 72 Hour, 18 mg/l

EC50, *Lemna gibba*, 14 d, > 88 mg/l

ErC50, *Myriophyllum spicatum*, 14 d, 0.363 mg/l

NOEC, *Myriophyllum spicatum*, 14 d, 0.0639 mg/l

**Toxicity to bacteria**

Bacteria, > 1,000 mg/l

**Chronic toxicity to fish**

NOEC, *Pimephales promelas* (fathead minnow), flow-through test, 36 d, growth, 1.36 mg/l

NOEC, *Cyprinodon variegatus* (sheepshead minnow), 0.1 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, water flea *Daphnia magna*, 100 mg/l

**Toxicity to Above Ground Organisms**

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

dietary LC50, *Colinus virginianus* (Bobwhite quail), > 5620mg/kg diet.



oral LD50, *Colinus virginianus* (Bobwhite quail), > 2250mg/kg bodyweight.  
oral LD50, *Apis mellifera* (bees), 48 Hour, > 120micrograms/bee  
contact LD50, *Apis mellifera* (bees), 48 Hour, > 100micrograms/bee

**Toxicity to soil-dwelling organisms**

LC50, *Eisenia fetida* (earthworms), 14 d, > 1,000 mg/kg

**Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether****Acute toxicity to fish**

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 Hour, 86 mg/l

**Hexyloxypropylamine****Acute toxicity to fish**

No relevant data found.

**Balance****Acute toxicity to fish**

No relevant data found.

**Persistence and degradability****Triclopyr-2-butoxyethyl ester**

**Biodegradability:** Chemical degradation (hydrolysis) is expected in the environment.

Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

10-day Window: Fail

**Biodegradation:** 18 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301B or Equivalent

**Theoretical Oxygen Demand:** 1.39 mg/mg

**Stability in Water (1/2-life)**

Hydrolysis, half-life, 8.7 d, pH 7, Half-life Temperature 25 °C

**Photodegradation**

**Atmospheric half-life:** 5.6 Hour

**Method:** Estimated.

**Picloram**

**Biodegradability:** Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions. Biodegradation may occur under aerobic conditions (in the presence of oxygen). Surface photodegradation is expected with exposure to sunlight.

10-day Window: Fail

**Biodegradation:** 1.95 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301

**Stability in Water (1/2-life)**

Hydrolysis, half-life, > 1.8 year, pH 5 - 9, Half-life Temperature 45 °C, Measured



**Photodegradation****Test Type:** Half-life (indirect photolysis)**Sensitizer:** OH radicals**Atmospheric half-life:** 12.5 Hour**Aminopyralid****Biodegradability:** Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Fail

**Biodegradation:** 19.5 %**Exposure time:** 28 d**Method:** OECD Test Guideline 301**Stability in Water (1/2-life)**

Hydrolysis, pH 5 - 9, Half-life Temperature 20 °C, Stable

Hydrolysis, pH 5 - 9, Half-life Temperature 50 °C, Stable

**Photodegradation****Test Type:** Half-life (indirect photolysis)**Sensitizer:** OH radicals**Atmospheric half-life:** 6.4 d**Method:** Estimated.**Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether****Biodegradability:** No relevant information found.**Hexyloxypropylamine****Biodegradability:** No relevant data found.**Balance****Biodegradability:** No relevant data found.**Bioaccumulative potential****Triclopyr-2-butoxyethyl ester****Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).**Partition coefficient: n-octanol/water(log Pow):** 4.62**Bioconcentration factor (BCF):** 110 Fish**Picloram****Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**Partition coefficient: n-octanol/water(log Pow):** -1.92**Bioconcentration factor (BCF):** 0.54 *Lepomis macrochirus* (Bluegill sunfish)**Aminopyralid****Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**Partition coefficient: n-octanol/water(log Pow):** -2.87**Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether****Bioaccumulation:** No relevant data found.



**Hexyloxypropylamine**

**Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

**Partition coefficient: n-octanol/water(log Pow):** 4 Estimated.

**Bioconcentration factor (BCF):** 10 Fish Estimated.

**Balance**

**Bioaccumulation:** No relevant data found.

**Mobility in Soil****Triclopyr-2-butoxyethyl ester**

Calculation of meaningful sorption data was not possible due to very rapid degradation in the soil.

For the degradation product:

Triclopyr.

Potential for mobility in soil is very high (Koc between 0 and 50).

**Picloram**

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 35

**Aminopyralid**

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 14

**Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether**

No relevant data found.

**Hexyloxypropylamine**

Potential for mobility in soil is medium (Koc between 150 and 500).

**Partition coefficient (Koc):** 217.7 Estimated.

**Balance**

No relevant data found.

**Results of PBT and vPvB assessment****Triclopyr-2-butoxyethyl ester**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Picloram**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Aminopyralid**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).



**Hexyloxypropylamine**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Balance**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Other adverse effects****Triclopyr-2-butoxyethyl ester**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Picloram**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Aminopyralid**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Hexyloxypropylamine**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Balance**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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**SECTION 13: DISPOSAL CONSIDERATIONS**

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**Disposal methods:** If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

This product when disposed of in its unused and uncontaminated state should be treated as a hazardous waste.

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**SECTION 14: TRANSPORT INFORMATION**

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**ADG**

<b>Proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Triclopyr-2-butoxyethyl ester, Picloram)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	III
<b>Marine pollutant</b>	Triclopyr-2-butoxyethyl ester, Picloram



**Classification for SEA transport (IMO-IMDG):**

<b>Proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Triclopyr-2-butoxyethyl ester, Picloram)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	III
<b>Marine pollutant</b>	Triclopyr-2-butoxyethyl ester, Picloram
<b>Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code</b>	Consult IMO regulations before transporting ocean bulk

**Classification for AIR transport (IATA/ICAO):**

<b>Proper shipping name</b>	Environmentally hazardous substance, liquid, n.o.s.(Triclopyr-2-butoxyethyl ester, Picloram)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	III

**Hazchem Code**

•2X

**Further information:**

Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to the Australian Code for the Transport of Dangerous Goods (ADG). This applies when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs per ADG Special Provision AU01.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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**SECTION 15: REGULATORY INFORMATION**

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**Poison Schedule**

S6

APVMA Approval Number: 60830

**Australia Inventory of Chemical Substances (AICS)**

The product is used in a biocide/pesticide application and is subject to the applicable regulation. It contains a component exempt from inventory listing requirements. Because an intentional component of the product is not on the inventory, the product may only be used in the exempt application.



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**SECTION 16: ANY OTHER RELEVANT INFORMATION**

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**Revision**

Identification Number: 101205028 / A143 / Issue Date: 25.10.2016 / Version: 2.0

DAS Code: GF-1544

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

ACGIH	USA. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV)
AU OEL	Australia. Workplace Exposure Standards for Airborne Contaminants.
Dow IHG	Dow Industrial Hygiene Guideline
SKIN, DSEN, BEI	Absorbed via Skin, Skin Sensitizer, Biological Exposure Indice
TWA	Exposure standard - time weighted average

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**Section 1 - Identification of The Material and Supplier**

**PCT Holdings Pty Ltd**  
**1/74 Murdoch Circuit**  
**Acacia Ridge, Qld 4110**

**Phone: 1800 630 877 (all hours)**

**Chemical nature:** MCPA is an aryloxyalkanoic acid; Dicamba is a benzoic acid derivative.

**Trade Name** **Surefire Dicamba M Selective Herbicide**

**APVMA Code:** 62657

**Product Use:** Agricultural herbicide for use as described on the product label.

**Creation Date:** **August, 2015**

**This version issued:** **August, 2015** and is valid for 5 years from this date.

**Poisons Information Centre: Phone 13 1126 from anywhere in Australia**

**Section 2 - Hazards Identification****Statement of Hazardous Nature**

This product is classified as: Xn, Harmful. Xi, Irritating. N, Dangerous to the environment. Hazardous according to the criteria of SWA.

Not a Dangerous Good according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.

**Risk Phrases:** R38, R41, R20/21/22, R52/53. Irritating to skin. Risk of serious damage to eyes. Harmful by inhalation, in contact with skin, and if swallowed. Harmful to aquatic organisms, may cause long-term adverse effects to the aquatic environment.

**Safety Phrases:** S23, S26, S28, S61, S24/25, S37/39. Do not breathe spray mists. In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre. After contact with skin, wash immediately with plenty of soap and water. Avoid release to the environment. Refer to special instructions/Safety Data Sheets. Avoid contact with skin and eyes. Wear suitable gloves and eye/face protection.

**SUSMP Classification:** S5

**ADG Classification:** None allocated. Not a Dangerous Good under the ADG Code.

**UN Number:** None allocated

**GHS Signal word: WARNING.****HAZARD STATEMENT:**

- H302: Harmful if swallowed.
- H312: Harmful in contact with skin.
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H332: Harmful if inhaled.
- H412: Harmful to aquatic life with long lasting effects.

**PREVENTION**

- P102: Keep out of reach of children.
- P261: Avoid breathing fumes, mists, vapours or spray.
- P262: Do not get in eyes, on skin, or on clothing.
- P264: Wash contacted areas thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors or in a well ventilated area.
- P273: Avoid release to the environment.
- P280: Wear protective gloves, protective clothing and eye or face protection.

**RESPONSE**

- P362: Take off contaminated clothing and wash before reuse.
- P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
- P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P302+P352: IF ON SKIN: Wash with plenty of soap and water.
- P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

**SAFETY DATA SHEET**



P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P332+P313: If skin irritation occurs: Get medical advice.  
P337+P313: If eye irritation persists: Get medical advice.  
P370+P378: Not combustible. Use extinguishing media suited to burning materials.

**STORAGE**

P402+P404: Store in a dry place. Store in a closed container.  
P403+P235: Store in a well-ventilated place. Keep cool.

**DISPOSAL**

P501: Dispose of contents and containers as specified on the registered label.

**Emergency Overview**

**Physical Description & Colour:** Clear, slightly coloured liquid.

**Odour:** Mild amine odour.

**Major Health Hazards:** Symptoms in humans from very high acute exposure could include slurred speech, twitching, jerking and spasms, drooling, low blood pressure, and unconsciousness. This product may cause serious damage to eyes, harmful if swallowed, skin irritant.

**Section 3 - Composition/Information on Ingredients**

Ingredients	CAS No	Conc, %	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )
MCPA as dimethylamine salt	94-74-6 *	340g/L	not set	not set
Dicamba as dimethylamine salt	1918-00-9 *	80g/L	not set	not set
Other non hazardous ingredients	various	160g/L	not set	not set
Water	7732-18-5	to 100	not set	not set

\* CAS numbers given are for uncombined ingredients.

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

**Section 4 - First Aid Measures****General Information:**

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

**Inhalation:** If symptoms of poisoning become evident, contact a Poisons Information Centre, or call a doctor at once. Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.

**Skin Contact:** Wash gently and thoroughly with warm water (use non-abrasive soap if necessary) for 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard.

**Eye Contact:** Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.

**Ingestion:** If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

**Section 5 - Fire Fighting Measures**

**Fire and Explosion Hazards:** There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.

This product is likely to decompose only after heating to dryness, followed by further strong heating.

Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

**Extinguishing Media:** Not Combustible. Use extinguishing media suited to burning materials.

**Fire Fighting:** If a significant quantity of this product is involved in a fire, call the fire brigade.

**SAFETY DATA SHEET**



<b>Flash point:</b>	Does not burn.
<b>Upper Flammability Limit:</b>	Does not burn.
<b>Lower Flammability Limit:</b>	Does not burn.
<b>Autoignition temperature:</b>	Not applicable - does not burn.
<b>Flammability Class:</b>	Does not burn.

## Section 6 - Accidental Release Measures

**Accidental release:** In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective chemically resistant clothing including eye/face protection, gauntlets and self contained breathing apparatus. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned below (section 8). Otherwise, not normally necessary.

Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this SDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

## Section 7 - Handling and Storage

**Handling:** Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

**Storage:** This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Some liquid preparations settle or separate on standing and may require stirring before use. Check packaging - there may be further storage instructions on the label.

## Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: **AS/NZS 4501** set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

**SWA Exposure Limits**                      **TWA (mg/m<sup>3</sup>)**                      **STEL (mg/m<sup>3</sup>)**

Exposure limits have not been established by SWA for any of the significant ingredients in this product.

The ADI for MCPA is set at 0.01mg/kg/day. The corresponding NOEL is set at 1.1mg/kg/day.

The ADI for Dicamba is set at 0.03mg/kg/day. The corresponding NOEL is set at 3mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, June 2014.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

**Ventilation:** This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

**Eye Protection:** Protective glasses or goggles must be worn when this product is being used. Failure to protect your eyes may lead to severe harm to them or to general health. Emergency eye wash facilities must also be available in an area close to where this product is being used.

**Skin Protection:** Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.

**Protective Material Types:** We suggest that protective clothing be made from the following materials: rubber, PVC.

## SAFETY DATA SHEET



**Respirator:** Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above. Otherwise, not normally necessary.

Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being used.

## Section 9 - Physical and Chemical Properties:

<b>Physical Description &amp; colour:</b>	Clear, slightly coloured liquid.
<b>Odour:</b>	Mild amine odour.
<b>Boiling Point:</b>	Approximately 100°C at 100kPa.
<b>Freezing/Melting Point:</b>	Below 0°C.
<b>Volatiles:</b>	Water component.
<b>Vapour Pressure:</b>	2.37 kPa at 20°C (water vapour pressure).
<b>Vapour Density:</b>	No data.
<b>Specific Gravity:</b>	Approx 1.12 at 20°C
<b>Water Solubility:</b>	Completely soluble in water.
<b>pH:</b>	No data.
<b>Volatility:</b>	No data.
<b>Odour Threshold:</b>	No data.
<b>Evaporation Rate:</b>	No data.
<b>Coeff Oil/water Distribution:</b>	No data
<b>Autoignition temp:</b>	Not applicable - does not burn.

## Section 10 - Stability and Reactivity

**Reactivity:** This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

**Conditions to Avoid:** Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

**Incompatibilities:** strong acids, strong bases, strong oxidising agents.

**Fire Decomposition:** This product is likely to decompose only after heating to dryness, followed by further strong heating. Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Hydrogen chloride gas, other compounds of chlorine. Water. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

**Polymerisation:** This product will not undergo polymerisation reactions.

## Section 11 - Toxicological Information

**Toxicity:** An information profile for MCPA is available at <http://extoxnet.orst.edu/pips/ghindex.html>

**Acute toxicity:** MCPA acid is harmful via ingestion, with reported oral LD<sub>50</sub> values for the technical product in rats ranging from 700 mg/kg to 1160 mg/kg and ranging in mice from 550 to 800 mg/kg. It is also harmful dermally, with reported dermal LD<sub>50</sub> values ranging from greater than 1000 mg/kg in rats to greater than 4000 mg/kg in rabbits.

**Chronic toxicity:** Dietary levels of approximately 50 mg/kg/day and 125 mg/kg/day over 7 months caused reduced feeding rates and retarded growth rates in rats. White blood cell counts and ratios were not affected, but some reductions in red blood cell counts and haemoglobin did appear to be associated with exposure to MCPA at oral dose levels of approximately 20 mg/kg/day. In the same study, oral doses of approximately 5 mg/kg/day caused increased relative kidney weights, and oral doses of approximately 20 mg/kg/day caused increased relative liver weights. Another study in rats showed no effects on kidney or liver weights over an unspecified period at oral doses of 60 mg/kg/day, but oral doses of 150 mg/kg/day did cause reversible increases in these weights over a course of 3 months. Very high dermal doses of 500 mg/kg/day caused reduced body weight, and even higher dermal doses of 1000 and 2000 mg/kg/day resulted in increased mortality and observable changes in liver, kidney, spleen, and thymus tissue.

**Reproductive effects:** A two-generation rat study at doses of up to 15 mg/kg/day affected reproductive function. It is unlikely that humans will experience these effects under normal exposure conditions.

**Teratogenic effects:** Offspring of pregnant rats fed low to moderate doses of MCPA (20 to 125 mg/kg) on days 6 to 15 of gestation, had no birth defects. Teratogenic effects in humans are unlikely at expected exposure levels.

**Mutagenic effects:** MCPA is reportedly weakly mutagenic to bone marrow and ovarian cells of hamsters, but negative results were reported for other mutagenic tests. It appears that the compound poses little or no mutagenic risk.

**Carcinogenic effects:** All of the available evidence on MCPA indicates that the compound does not cause cancer. Forestry and agricultural workers occupationally exposed to MCPA in Sweden did not show increased cancer incidence.

**Organ toxicity:** Target organs identified in animal studies include the liver, kidneys, spleen, and thymus. Farm worker exposure has resulted in reversible anaemia, muscular weakness, digestive problems, and slight liver damage.

## SAFETY DATA SHEET



**Fate in humans and animals:** MCPA is rapidly absorbed and eliminated from mammalian systems. Rats eliminated nearly all of a single oral dose within 24 hours, mostly through urine with little or no metabolism. Humans excreted about half of a 5 mg dose in the urine within a few days. No residues were found after day 5. There is no data to hand indicating any particular target organs.

### Classification of Hazardous Ingredients

Ingredient	Risk Phrases
MCPA, salts and esters	Conc>=25%: Xn; R20/21/22
Dicamba	>=5%Conc<10%: Xi; R36

### Potential Health Effects

#### Inhalation:

**Short Term Exposure:** Available data shows that this product is harmful, but symptoms are not available. Also product may be irritating, although unlikely to cause anything more than mild transient discomfort.

**Long Term Exposure:** No data for health effects associated with long term inhalation.

#### Skin Contact:

**Short Term Exposure:** Available data shows that this product is harmful, but symptoms are not available.

Available also data indicates that this product is a skin irritant. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.

**Long Term Exposure:** No data for health effects associated with long term skin exposure.

#### Eye Contact:

**Short Term Exposure:** This product is a severe eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms such as swelling of eyelids and blurred vision may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment is likely to cause permanent damage.

**Long Term Exposure:** No data for health effects associated with long term eye exposure.

#### Ingestion:

**Short Term Exposure:** Significant oral exposure is considered to be unlikely. Available data shows that this product is harmful, see symptoms above. However, this product is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. Other symptoms may also become evident, but all should disappear once exposure has ceased.

**Long Term Exposure:** No data for health effects associated with long term ingestion.

#### Carcinogen Status:

**SWA:** No significant ingredient is classified as carcinogenic by SWA.

**NTP:** No significant ingredient is classified as carcinogenic by NTP.

**IARC:** No significant ingredient is classified as carcinogenic by IARC.

### Section 12 - Ecological Information

Harmful to aquatic organisms, may cause long-term adverse effects to the aquatic environment. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

**Effects on birds:** MCPA is moderately toxic to wildfowl; the LD<sub>50</sub> of MCPA in bobwhite quail is 377 mg/kg.

**Effects on aquatic organisms:** MCPA is only slightly toxic to freshwater fish, with reported LC<sub>50</sub> values ranging from 117 to 232 mg/L in rainbow trout. MCPA is practically nontoxic to freshwater invertebrates, and estuarine and marine organisms.

**Effects on other organisms:** It is nontoxic to bees, with a reported oral LD<sub>50</sub> of 104µg/bee.

#### Environmental Fate:

**Breakdown in soil and groundwater:** MCPA and its formulations are rapidly degraded by soil microorganisms and it has low persistence, with a reported field half-life of 14 days to 1 month, depending on soil moisture and soil organic matter. MCPA and its formulations show little affinity for soil.

**Breakdown in water:** It is relatively stable to light breakdown, but can be rapidly broken down by microorganisms. In rice paddy water, MCPA is almost totally degraded by aquatic microorganisms in under 2 weeks.

**Breakdown in vegetation:** MCPA is readily absorbed and translocated in most plants. It is actively broken down in plants, the major metabolite being 2-methyl-4-chlorophenol.

### Section 13 - Disposal Considerations

**Disposal:** Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 <http://www.chemclear.com.au/> and for help with the

### SAFETY DATA SHEET



disposal of empty drums, contact DrumMuster <http://www.drummuster.com.au/> where you will find contact details for your area.

### Section 14 - Transport Information

**UN Number:** This product is not classified as a Dangerous Good by ADG, IATA or IMDG/IMSBC criteria. No special transport conditions are necessary unless required by other regulations.

### Section 15 - Regulatory Information

**AICS:** All of the significant ingredients in this formulation are compliant with NICNAS regulations. The following ingredients: MCPA, Dicamba, are mentioned in the SUSMP.

### Section 16 - Other Information

**This SDS contains only safety-related information. For other data see product literature.**

#### Acronyms:

<b>ADG Code</b>	Australian Code for the Transport of Dangerous Goods by Road and Rail (7 <sup>th</sup> edition)
<b>AICS</b>	Australian Inventory of Chemical Substances
<b>SWA</b>	Safe Work Australia, formerly ASCC and NOHSC
<b>CAS number</b>	Chemical Abstracts Service Registry Number
<b>Hazchem Code</b>	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
<b>IARC</b>	International Agency for Research on Cancer
<b>NOS</b>	Not otherwise specified
<b>NTP</b>	National Toxicology Program (USA)
<b>R-Phrase</b>	Risk Phrase
<b>SUSMP</b>	Standard for the Uniform Scheduling of Medicines & Poisons
<b>UN Number</b>	United Nations Number

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This SDS is prepared in accord with the SWA document "Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice" (December 2011)  
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<http://www.kilford.com.au/> Phone (02)9251 4532

### SAFETY DATA SHEET



## 1. Product identifier & identity for the chemical

<b>Product Identifier</b>	<b>Butamine 500 Selective Herbicide</b>
<b>Active Constituent</b>	2,4DB (present as the dimethylamine salt)
<b>Other means of identification</b>	Agricultural Herbicide Grow Choice Product Code:380 APVMA Registered number: 69869/61925
<b>Formulation type</b>	Liquid
<b>Use</b>	For the pre-or post-emergence control of certain weeds in Centrosema (Cavalcade), chickpeas, faba beans, field peas, lucerne, mung beans, peanuts, serradella and soybeans.
<b>Suppliers name, address and phone number:</b>	Grow Choice Pty Ltd 113 Fitzroy Street   TAMMORTH NSW 2340 Phone: 02 6766 3979 1800 817 676 Fax: 02 6766 2922   Email: rfagan@growchoice.com.au
<b>Emergency phone #</b>	In Case Of Emergency Dial 000
<b>Poisons Information Centre</b>	Phone: 13 11 26 and speak to a Poisons Information Specialist. Fax: +61 2 9845 3597 <a href="http://www.chw.edu.au/poisons/contact.htm">http://www.chw.edu.au/poisons/contact.htm</a>

## 2. Hazard Identification

Classified as **HAZARDOUS** in accordance with the Safe Work Australia, Globally Harmonized System of Classification and Labelling of Chemicals (the GHS).

**Not classified** as a dangerous goods under the ADG 7.

This product is classified as: **Environmentally Hazardous Substance, Liquid, N.O.S by the IMDG (2015)**

<b>GHS Category</b>	Acute toxicity - Category 4 Eye damage – Category 1 Hazardous to the aquatic environment (chronic) - Category 2
<b>Hazard Statement Code and Statement</b>	H302 <b>Harmful if swallowed</b> H318 <b>Causes serious eye damage</b> H411 <b>Toxic to aquatic life with long lasting effects</b>
<b>GHS symbol</b>	Exclamation mark      Corrosion      Environmental



**Signal word**

**Danger**

**General Precautionary Statements.**

P101 If medical advice is needed, have product container or label at hand.  
P102 Keep out of reach of children.  
P103 Read label before use.

**Precautionary Code and Statements**

P264: **Wash hands, forearms and face thoroughly with soap and water after handling. After each day's use, wash contaminated clothing and safety equipment.**

P270: **Do not eat, drink or smoke when using this product.**

P280 **Wear protective gloves, eye protection/face protection and clothing. Refer section 8.**

P301 + P312: **IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.**

P330: **Rinse mouth**

P305 + P351 + P338: **IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**

P310: **Immediately call a POISON CENTER or doctor/physician.**

**Storage**

No specified – refer to section 7

**Disposal**

P501: **Dispose of contents/container to in accordance with State and Local Regulations.**

**Other information**

Poison Schedule S5

## 3. Composition/information on ingredients

Chemical ingredients:	Component	CAS No	Proportion (w/v)
<b>CAS number and other unique identifiers:</b>	2,4-DB (present as the dimethylamine salt)	94-82-6	500 g/L
<b>Concentration of ingredients:</b>	Water		Balance
	Other; Ingredients (considered non-hazardous)		10-30%

## 4. First Aid Measures (continued on page 2)

**Swallow**

If swallowed do NOT induce vomiting; seek medical advice immediately and show the container or label or contact the Poisons Information Centre on 13 11 26 (Aust).

Make every effort to prevent vomit from entering the lungs by careful placement of the patient. The above first aid instructions are mandated by the Commonwealth Department of Health and Ageing via the National Drugs and Poisons Schedule.

These instructions are suitable for ingestion of spray solution and small amounts of concentrate; however, if SUBSTANTIAL AMOUNTS of the concentrate have been swallowed (more than about one tablespoon for an adult person; AND if medical assistance is more than 30 minutes away, the induction of vomiting should be



CONSIDERED preferably based on MEDICAL ADVICE if a physician can be contacted by phone.  
All care must be taken to prevent vomit from being inhaled.  
Do not give anything by mouth to a semi-conscious or unconscious person.

<b>Eye:</b>	If product gets in eyes, wash it out immediately with water for at least 15 minutes. Seek medical attention.
<b>Skin:</b>	Remove contaminated clothing and wash affected areas thoroughly with soap and water.
<b>Inhaled</b>	Move affected person to fresh air and keep at rest until recovered.
<b>First Aid</b>	In Case Of Emergency Dial 000 and/or Poisons Information Centre: Phone: 13 11 26 and speak to a Poisons Information Specialist.
<b>Advice to doctor</b>	No specific antidote exists. Treat symptomatically. Present patient with a copy of this Safety Data Sheet.

#### 5. Fire Fighting Measures

<b>Suitable extinguishing media</b>	If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material.
<b>Specific hazards arising from the chemical</b>	If involved in a fire, it will emit carbon monoxide, phosgene and possibly oxides of phosphorous.
<b>Special protective equipment and precautions for fire fighters</b>	Fire fighters should wear Safe Work Australia approved self-contained breathing apparatus (AS/NZS 1715/1716) and full protective gear. Keep unnecessary people away.

STOP FIRE WATER FROM ENTERING DRAINS OR WATER BODIES.

#### 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	In case of spillage it is important to take all steps necessary to: <ul style="list-style-type: none"> <li>• Avoid eye and skin contact;</li> <li>• Avoid contamination of waterways;</li> <li>• Keep all bystanders away; and</li> <li>• Refer Section 8 for PPE.</li> </ul>
<b>Environmental precautions</b>	Reposition any leaking containers so as to minimise leakage. Dam and absorb spill with an absorbent material (eg sand or soil). Shovel the absorbed spill into drums
<b>Methods and materials for containment and cleaning up</b>	Contain spill and absorb with clay, sand, soil or proprietary absorbent (such as vermiculite) Collect in sealed open top containers for disposal. For large spills contact GROW CHOICE 1800 817 676

#### 7. Handling and Storage

<b>Precautions for safe handling</b>	Store in tightly sealed original containers in a dry secure place away from fertilizers, feed and food. Store out of direct sunlight. Keep container tightly sealed and do not store with seed, fertilizers or foodstuffs. Equipment that has been used for this chemical should not be used for the application of other materials to sensitive plants, unless it has been well washed out with hot soapy water or 1% solution of ammonia, followed by several clear water rinses. Sprayed weed may become more palatable to stock and a higher intake of some weeds may result in stock poisoning and death from causes such as nitrate poisoning. Care should be taken especially where Capeweed, Paterson's curse and variegated thistles predominate in the pasture. Always read the label and attached leaflet before use.
<b>Conditions for safe storage, including any incompatibilities:</b>	Keep out of reach of children, unauthorised persons and animals. Store in the closed, original container in a dry, well ventilated area out of direct sunlight.

#### 8. Exposure controls/personal protection

<b>Control parameters – exposure standards, biological monitoring</b>	No exposure standard for this product has been set; however, an exposure standard has been set for methylamine vapor at 2 ppm. Use in a well ventilated area only. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash contaminated clothing and safety equipment
<b>Appropriate engineering controls</b>	No special requirements. Product is used outdoors.
<b>Personal protective equipment (PPE):</b>	When opening the container and preparing the spray wear cotton overalls, buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant PVC gloves and face shield or goggles. When using the prepared spray wear cotton overalls buttoned to the neck and wrist and washable hat. Recommended to use Australian and New Zealand Standard PPE:
	Overalls AS 3765, Clothing for protection against Hazardous chemicals
	Gloves: AS/NZS 2161, Industrial safety gloves and mittens (not electrical and medical gloves)
	Goggles and face shield As/NZS 1337, Eye protectors for industrial applications.
	Footwear AS/NZS 2210, Occupational protective footwear
	Respirators AS NZS 1715 Selection, Use and Maintenance of Respiratory Protective Devices AS/NZS 1716, Respiratory Protective Devices
<b>Requirements Concerning Training</b>	Check State and/or Territory regulations that require people who use pesticides in their job or business to have adequate training in the application of the materials.

#### 9. Physical and chemical properties (continued on page 3)

<b>Appearance</b>	Brown liquid
<b>Odor</b>	Faint ammoniac odor
<b>pH (1% deion. Water);</b>	9.8 – 10.1
<b>Melting point</b>	Approx -5°C
<b>Boiling Point</b>	100°C



<b>Flash point</b>	Not flammable
<b>Flammability</b>	Not flammable
<b>Behavior in water</b>	Soluble in water
<b>Viscosity</b>	No data available
<b>Surface tension</b>	No data available
<b>Corrosiveness</b>	No data available
<b>Combustibility</b>	Non-combustible.
<b>Explosive properties</b>	Non-explosive.
<b>Specific gravity</b>	1.179-1.181

## 10. Stability and Reactivity

<b>Reactivity and chemical stability</b>	Reaction of the concentrate or spray mix with acids will precipitate solid 2,4-DB acid and largely deactivate the product and cause blockages in spray equipment. Dimethylamine is moderately toxic, LD50 (oral, rat) is 700 mg/kg and a TLV of 2 ppm (TWA) has been set.
<b>Conditions to avoid</b>	Do not spray in high winds. Do not contaminate dams, waterways or sewers with this product.
<b>Incompatible materials and possible hazardous reactions</b>	The addition of a strong alkali such as caustic soda will cause release of dimethylamine vapor.
<b>Hazardous decomposition products</b>	Hazardous polymerisation is not possible.

## 11. Toxicological information

No harmful effects are expected if the precautions on the label and this SDS are followed.	
Inhalation	When applying the product as a spray avoid breathing in spray mist.
Ingestion	May cause irritation to mouth, throat and stomach.
Skin	Prolonged contact with the concentrate may cause irritation and cause skin eruptions
Eye	This concentration will cause severe irritation and possible damage unless washed off immediately.
Chronic Effects	Chronic overexposure; Weight loss and damage to liver and kidneys may be expected if exposure is excessive.
Acute Toxicity – Oral	LD50 (rat) 700 mg/kg for technical 2,4-DB LD50 (rat) 700 mg/kg for dimethylamine
Acute Toxicity	LD50 (rat) 800 mg/kg for technical 2,4-DB
Dermal Human Effects	Symptoms of acute overexposure may include; headache, nausea, dizziness and vomiting. In extreme cases, possibly twitching and spasms, dyspnea, cyanosis and exhaustion.
Other Information	The Australian Acceptable Daily Intake (ADI) for 2,4 DB for a human is 0.01 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 1 mg/kg/day. Two-year rat study; based on abnormal renal morphology at the next higher dose of 5 mg/kg bw/d. year dog study. The ADI was supported by the same NOELs (based on kidney effects) observed in a 2-year mouse and 1 year dog study. Reference: Australian Government Department of Health, Office of Chemical Safety, ADI List, Acceptable Daily Intakes For Agricultural And Veterinary Chemicals, current as at 30 June 2014.

## 12. Ecological information

<b>Persistence and degradability</b>	Average field half-life of 2,4-DB dimethylamine salt is 10 days
Environ. Protection	Spray drift can cause damage, read the label for more information. Acute Toxicity – Fish The following is data for the active ingredient, 2,4-DB amine salt and esters LD50 (96hr) for rainbow trout is 4 mg/L Acute Toxicity
Other Precautions	Not toxic to bees. Do not spray in high winds Do not contaminate dams, waterways or sewers with this product.

## 13. Disposal considerations

<b>Disposal of product</b>	On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®).
<b>Disposal of Container</b>	Do not use this container for any other purpose. Triple rinse containers, add rinsate to the spray tank, then offer the container for recycling/reconditioning, or puncture top, sides and bottom and dispose of in landfill in accordance with local regulations. drumMUSTER is the national program for the collection and recycling of empty, cleaned, non returnable crop production and on-farm animal health chemical containers. If the label on your container carries the drumMUSTER symbol, triple rinse the container, ring your local Council, and offer the container for collection in the program. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, puncture or shred and bury containers in local authority landfill. If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.



#### 14. Transport information

**Transport Information:** It is good practice not to transport agricultural chemical products with food, food related materials and animal feedstuffs. Storage and Transport

Considered **non dangerous** for transport by the Australian Code for Transport of Dangerous Goods by Road and Rail. (ADG Code 7<sup>th</sup> Edition)

##### IMDG Code

**This product is classified as: Environmentally Hazardous Substance, Liquid, N.O.S**

UN No: **3082**

Class: **9**

Packing Group: **III**

Special Provisions: **274 335969**

Limited Quantities: **5 L**

Excepted Quantities: **E1**

Emergency Schedule: **F-A, S-F**

Packing: Instructions: **P001 LP01** Provisions: **PP1**

IBCs: Instructions: **IBC03**

Tanks: Instructions: **T4** Provisions: **TP2 TP29**

Stowage and Handling: **Category A**

#### 15. Regulatory information

Poisons Schedule number	S5
Safety, health and environmental regulations specific for the product in question	CAUTION   KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING All of the components in this product are listed on the Australian Inventory Chemical Substances (AICS). of Chemical Substances AICS (Australia)

#### 16. Other information

Date of Review This Safety Data Sheet (SDS) was completed 17 April 2015.

##### Acronyms:

AVPMA: Australian Pesticides and Veterinary Medicines Authority.

GHS: Globally Harmonised system of Classification and Labelling of chemicals

HSIS: Hazardous Substances Information System

NOHSC: National Occupational Health and Safety Commission

CAS No.: unique numerical identifier assigned by Chemical Abstracts Service (division of the American Chemical Society)

TWA: Exposure Standard - time weighted average

STEL Exposure standard - short term exposure limit.

mg/m<sup>3</sup> Milligrams of substance per cubic metre of air at 25°C and one atmosphere pressure. The value is exact.

AS/NZS: Australian Standards and New Zealand Standards for Personal protective equipment

ADI: Acceptable Daily Intakes For Agricultural And Veterinary Chemicals

ADG: Australian Dangerous Goods Code 7<sup>th</sup> Edition

IMDG: International Maritime Dangerous Goods Code

**End of SDS**

##### DISCLAIMER:

This SAFETY DATA SHEET has been developed according to the Work Health and Safety Regulations (WHS Regulations) Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals December 2011. The data, information and recommendations herein ("information") are represented in good faith and believed to be correct as of the date hereof. The purpose of this SAFETY DATA SHEET is to describe product in terms of their safety requirements. Grow Choice Pty Ltd makes no representation of merchantability, fitness for a particular purpose of application, or of any other nature with respect to the information or the product to which the information refers ("the product"). The information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purpose prior to the use of the product. The physical data shown herein are typical values based on the material tested. These values should not be construed as a guaranteed analysis of any specific lot or as guaranteed specification for the product or specific lots thereof.

Due care should be taken to make sure that the use or disposal of this product and/or its packaging is in compliance with Relevant Federal, State and Local Government regulations.



# Safety Data Sheet

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name:** Roundup Ultra MAX Herbicide

**Recommended Use of the Chemical and Restrictions on Use** Herbicide.

**Supplier:** Sinochem International Australia Pty Ltd  
**Street Address:** Level 8 / 606 St Kilda Road  
Melbourne, Victoria, 3004  
Australia

**Telephone Number:** +61 3 9520 8888  
**Facsimile:** +61 3 9520 8888  
**Emergency Telephone:** **Australia 1800 033 111 or +61 3 9663 2130 (All Hours)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

## 2. HAZARDS IDENTIFICATION

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

Environmentally Hazardous Substances meeting the descriptions of UN 3077 or 3082 are not subject to the provisions of the Australian Code for the Transport of Dangerous Goods by Road and Rail when transported by road or rail in packagings, IBC's, or any other receptacle not exceeding 500 kg(L).

This material is hazardous according to Safe Work Australia; HAZARDOUS CHEMICAL.

### Classification of the chemical:

Skin Irritation - Category 2  
Eye Irritation - Category 2A

The following health/environmental hazard categories fall outside the scope of the Workplace Health and Safety Regulations:

Acute Aquatic Toxicity - Category 2  
Chronic Aquatic Toxicity - Category 2

**SIGNAL WORD:** WARNING

### Hazard Statement(s):

H315 Causes skin irritation.  
H319 Causes serious eye irritation.

### Precautionary Statement(s):

#### Prevention:

P264 Wash hands thoroughly after handling.  
P280 Wear protective gloves / protective clothing / eye protection / face protection.

#### Response:

P302+P352 IF ON SKIN: Wash with plenty of soap and water.  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313 If eye irritation persists: Get medical advice/attention.  
P321 Specific treatment (see First Aid Measures on Safety Data Sheet).  
P362 Take off contaminated clothing and wash before reuse.



# Safety Data Sheet

**Storage:**

No storage statements.

**Disposal:**

No disposal statements.

**Poisons Schedule (SUSMP):** S5 Caution.

## 3. COMPOSITION AND INFORMATION ON INGREDIENTS

**Product Description:** Active ingredient is Potassium salt of glyphosate.

Components	CAS Number	Proportion	Hazard Codes
Potassium salt of glyphosate	70901-12-1	51.16%	H319 H411
Surfactant(s), water and minor formulating ingredients	-	48.84%	-

## 4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

**Inhalation:**

Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice if effects persist.

**Skin Contact:**

If skin or hair contact occurs, immediately remove any contaminated clothing and wash skin and hair thoroughly with running water. If swelling, redness, blistering or irritation occurs seek medical assistance.

**Eye Contact:**

If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes.

**Ingestion:**

Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Never give anything by the mouth to an unconscious patient. Seek medical advice.

**Indication of immediate medical attention and special treatment needed:**

This product is not an inhibitor of cholinesterase. Treatment with atropine and oximes is not indicated.

## 5. FIRE FIGHTING MEASURES

**Suitable Extinguishing Media:**

Not combustible, however, if material is involved in a fire use: Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

**Hazchem or Emergency Action Code:** - 3Z

**Specific hazards arising from the chemical:**

Not combustible, however following evaporation of the water component of the material, the residual material can burn if ignited. On burning will emit toxic fumes, including those of oxides of carbon, oxides of phosphorus, oxides of nitrogen.



# Safety Data Sheet

## Special protective equipment and precautions for fire-fighters:

Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion. Equipment should be thoroughly decontaminated after use.

## 6. ACCIDENTAL RELEASE MEASURES

### Emergency procedures/Environmental precautions:

Clear area of all unprotected personnel. Do not allow container or product to get into drains, sewers, streams or ponds. If contamination of sewers or waterways has occurred advise local emergency services.

### Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:

Slippery when spilt. Avoid accidents, clean up immediately. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. After cleaning, flush away any residual traces with water.

## 7. HANDLING AND STORAGE

This material is a Scheduled Poison S5 and must be stored, maintained and used in accordance with the relevant regulations.

### Precautions for safe handling:

Avoid skin and eye contact and breathing in vapour, mists and aerosols. When using do not eat, drink or smoke. Keep out of reach of children. Wash hands thoroughly after handling. Thoroughly clean equipment after use. Launder contaminated clothing before reuse. If the product is frozen allow it to thaw.

### Conditions for safe storage, including any incompatibilities:

Store in a cool, dry, well ventilated place. Store below 60°C. Store in the original container, tightly closed and away from foodstuffs. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for leaks.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control Parameters:** No value assigned for this specific material by Safe Work Australia.

### Appropriate engineering controls:

Use in well ventilated areas. Keep containers closed when not in use.

### Individual protection measures, such as Personal Protective Equipment (PPE):

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES.



Wear overalls, chemical goggles and impervious gloves. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use. If determined by a risk assessment an inhalation risk exists, wear a suitable mist respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.



# Safety Data Sheet

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Clear Liquid
Colour:	Blue
Odour:	Odourless
Solubility:	Miscible in water.
Specific Gravity:	1.379 @ 25°C
Relative Vapour Density (air=1):	Not available
Vapour Pressure (20 °C):	Not available
Flash Point (°C):	Not applicable
Flammability Limits (%):	Not applicable
Autoignition Temperature (°C):	Not available
Boiling Point/Range (°C):	Not available
pH:	4.3 - 4.8 (60 g/L)
Viscosity:	Not available
Evaporation Rate:	Not available
Partition Coefficient:	log Pow: -3.2 @ 25°C (glyphosate)

## 10. STABILITY AND REACTIVITY

Reactivity:	Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form explosive mixture with air.
Chemical stability:	Stable under normal conditions of use.
Possibility of hazardous reactions:	None known.
Conditions to avoid:	Avoid exposure to direct sunlight. Avoid contact with foodstuffs.
Incompatible materials:	Incompatible with strong alkalis.
Hazardous decomposition products:	Oxides of carbon. Oxides of phosphorus. Oxides of nitrogen.

## 11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion:	No adverse effects expected, however, large amounts may cause nausea and vomiting.
Eye contact:	An eye irritant.
Skin contact:	Contact with skin will result in irritation.
Inhalation:	Breathing in mists or aerosols may produce respiratory irritation.

**Acute toxicity:** No LD50 data available for the product. However, based on similar product(s):

Oral LD50 (rat): >5000 mg/kg

Dermal LD50 (rat): >4000 mg/kg

Inhalation LC50 (rat): >0.95 mg/L/4H (aerosol)

**Skin corrosion/irritation:** Severe irritant (rabbit).

**Serious eye damage/irritation:** Moderate irritant (rabbit).

**Chronic effects:** No information available for the product.

Product Name: Roundup Ultra MAX Herbicide  
Substance No: 000000062005

Issued: 20/10/2016  
Version: 1



# Safety Data Sheet

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Avoid contaminating waterways.
<b>Aquatic toxicity:</b>	Toxic to aquatic organisms. May cause long lasting harmful effects to aquatic life.
48hr EC50 (Daphnia magna):	8.0 mg/L (for similar formulation)
96hr LC50 (bluegill sunfish):	5.2 mg/L (for similar formulation)
96hr LC50 (fish):	4 mg/L (cyprinus carpio, for similar formulation)

## 13. DISPOSAL CONSIDERATIONS

### Disposal methods:

Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site.

If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots in compliance with relevant local, state or territory government regulations. Do not burn empty containers or product.

For refillable container, empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage. Do not reuse empty container.

## 14. TRANSPORT INFORMATION

### Road and Rail Transport

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

Environmentally Hazardous Substances meeting the descriptions of UN 3077 or 3082 are not subject to the provisions of the Australian Code for the Transport of Dangerous Goods by Road and Rail when transported by road or rail in packagings, IBC's, or any other receptacle not exceeding 500 kg(L).



<b>UN No:</b>	3082
<b>Transport Hazard Class:</b>	9 Miscellaneous Dangerous Goods
<b>Packing Group:</b>	III
<b>Proper Shipping Name or Technical Name:</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS POTASSIUM SALT OF GLYPHOSATE)
<b>Hazchem or Emergency Action Code:</b>	· 3Z

### Marine Transport

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

<b>UN No:</b>	3082
<b>Transport Hazard Class:</b>	9 Miscellaneous Dangerous Goods
<b>Packing Group:</b>	III
<b>Proper Shipping Name or Technical Name:</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS POTASSIUM SALT OF GLYPHOSATE)

Product Name: Roundup Ultra MAX Herbicide  
Substance No: 000000062005

Issued: 20/10/2016  
Version: 1



# Safety Data Sheet

IMDG EMS Fire: F-A  
IMDG EMS Spill: S-F

## Air Transport

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN No: 3082  
Transport Hazard Class: 9 Miscellaneous Dangerous Goods  
Packing Group: III  
Proper Shipping Name or Technical Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS POTASSIUM SALT OF GLYPHOSATE)

## 15. REGULATORY INFORMATION

### Classification:

This material is hazardous according to Safe Work Australia; HAZARDOUS CHEMICAL.

### Classification of the chemical:

Skin Irritation - Category 2

Eye Irritation - Category 2A

The following health/environmental hazard categories fall outside the scope of the Workplace Health and Safety Regulations:

Acute Aquatic Toxicity - Category 2

Chronic Aquatic Toxicity - Category 2

### Hazard Statement(s):

H315 Causes skin irritation.

H319 Causes serious eye irritation.

**Poisons Schedule (SUSMP):** S5 Caution.

This product is registered in Australia by the Australian Pesticides & Veterinary Medicines Authority (APVMA).  
APVMA product number 68506

## 16. OTHER INFORMATION

### References:

Supplier Safety Data Sheet; 05/ 2015.

This safety data sheet has been prepared by Ixom Operations Pty Ltd Toxicology & SDS Services.

### Reason(s) for Issue:

First Issue Primary SDS



# Safety Data Sheet

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.



**Section 1 - Identification of the Material and Supplier**

**PCT Holdings Pty Ltd**  
**1/74 Murdoch Circuit**  
**Acacia Ridge QLD 4110 AUSTRALIA**

**Phone: 1800 630 877**

**Chemical nature:** Triclopyr is an aryloxyalkanoic acid derivative; Picloram is a pyridinecarboxylic acid derivative.

**Trade Name:** **Surefire Raizon Herbicide**

**APVMA Code:** 70360

**Product Use:** Agricultural herbicide for use as described on the product label.

**Creation Date:** **September, 2015**

**This version issued:** **September, 2015** and is valid for 5 years from this date.

**Poisons Information Centre: Phone 13 1126 from anywhere in Australia**

**Section 2 - Hazards Identification****Statement of Hazardous Nature**

This product is classified as: Xn, Harmful. Xi, Irritating. Hazardous according to the criteria of SWA.

Not subject to the ADG Code when transported in Australia by Road or Rail in packages 500kg(L) or less; or IBCs (refer to SP AU01). However if transported by Air or Sea, this provision does not apply. Then the product is classed as Dangerous (Class 9 Environmentally Hazardous) by IATA and IMDG/IMSBC respectively. See details below and in Section 14 of this SDS.

**Risk Phrases:** R20/21/22, R36/37/38. Harmful by inhalation, in contact with skin, and if swallowed. Irritating to eyes, respiratory system and skin.

**Safety Phrases:** S2, S20, S23, S38, S45, S51, S7/9, S24/25, S37/39. Keep out of reach of children. When using, do not eat or drink. Do not breathe vapours or spray mists. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately (show this SDS where possible). Use only in well ventilated areas. Keep container tightly closed and in a well ventilated place. Avoid contact with skin and eyes. Wear suitable gloves and eye/face protection.

**SUSMP Classification:** S6

**ADG Classification:** Class 9: Miscellaneous Dangerous Goods.

**UN Number:** 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

**GHS Signal word: WARNING****HAZARD STATEMENT:**

- H227: Combustible liquid.
- H302: Harmful if swallowed.
- H312: Harmful in contact with skin.
- H315: Causes skin irritation.
- H320: Causes eye irritation.
- H332: Harmful if inhaled.
- H335: May cause respiratory irritation.

**PREVENTION**

- P102: Keep out of reach of children.
- P261: Avoid breathing fumes, mists, vapours or spray.
- P262: Do not get in eyes, on skin, or on clothing.
- P264: Wash contacted areas thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors or in a well ventilated area.
- P280: Wear protective gloves, protective clothing and eye or face protection.

**RESPONSE**

- P312: Call a POISON CENTRE or doctor if you feel unwell.
- P362: Take off contaminated clothing and wash before reuse.
- P301+P312: IF SWALLOWED: Call a POISON CENTRE or doctor if you feel unwell.

**SAFETY DATA SHEET**



P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332+P313: If skin irritation occurs: Get medical advice.

P337+P313: If eye irritation persists: Get medical advice.

P370+P378: In case of fire, use carbon dioxide, dry chemical, foam, water fog. Alcohol resistant foam is the preferred firefighting medium but, if it is not available, normal foam can be used.

#### STORAGE

P410: Protect from sunlight.

P402+P404: Store in a dry place. Store in a closed container.

P403+P235: Store in a well-ventilated place. Keep cool.

#### DISPOSAL

P501: Dispose of contents and containers as specified on the registered label.

### Emergency Overview

**Physical Description & Colour:** Clear brown to black coloured liquid.

**Odour:** Slight characteristic pungent odour.

**Major Health Hazards:** harmful by inhalation, in contact with skin, and if swallowed, irritating to eyes, respiratory system and skin.

### Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, %	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )
Triclopyr (as butoxyethyl ester)	64700-56-7	300g/L	not set	not set
Picloram (as hexyloxypropylamine salt)	1918-02-1	100g/L	10	not set
Other non hazardous ingredients	secret	to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

### Section 4 - First Aid Measures

#### General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

**Inhalation:** If symptoms of poisoning become evident, contact a Poisons Information Centre, or call a doctor at once. Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.

**Skin Contact:** Wash gently and thoroughly with warm water (use non-abrasive soap if necessary) for 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard. If irritation persists, repeat flushing and seek medical attention.

**Eye Contact:** Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.

**Ingestion:** If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

### Section 5 - Fire Fighting Measures

**Fire and Explosion Hazards:** The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is little risk of an explosion from this product if commercial quantities are involved in a fire. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

### SAFETY DATA SHEET



**Extinguishing Media:** In case of fire, use carbon dioxide, dry chemical, foam, water fog. Alcohol resistant foam is the preferred firefighting medium but, if it is not available, normal foam can be used. Try to contain spills, minimise spillage entering drains or water courses.

**Fire Fighting:** If a significant quantity of this product is involved in a fire, call the fire brigade. There is little danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is full fire kit and breathing apparatus.

**Flash point:** 82°C

**Upper Flammability Limit:** No data.

**Lower Flammability Limit:** No data.

**Autoignition temperature:** No data.

**Flammability Class:** Flammable Category 4 (GHS), C1 combustible (AS 1940)

## Section 6 - Accidental Release Measures

**Accidental release:** In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective clothing including eye/face protection. All skin areas should be covered. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include no specific manufacturer recommendations. Use impermeable gloves with care. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned below (section 8).

Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Because of the environmentally hazardous nature of this product, special care should be taken to restrict release to waterways or drains. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this SDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

## Section 7 - Handling and Storage

**Handling:** Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

**Storage:** This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Check packaging - there may be further storage instructions on the label.

## Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

**SWA Exposure Limits**      **TWA (mg/m<sup>3</sup>)**

Picloram (as Hexyloxypropylamine salt)

**STEL (mg/m<sup>3</sup>)**

10      not set

The ADI for Picloram (as Hexyloxypropylamine salt) is set at 0.07mg/kg/day. The corresponding NOEL is set at 7mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, June 2014.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

**Ventilation:** This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

**Eye Protection:** Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.

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**Skin Protection:** Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.

**Protective Material Types:** There is no specific recommendation for any particular protective material type.

**Respirator:** Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above.

Eyebaths or eyewash stations and safety deluge showers should, if practical, be provided near to where this product is being handled commercially.

### Section 9 - Physical and Chemical Properties:

<b>Physical Description &amp; colour:</b>	Clear brown to black coloured liquid.
<b>Odour:</b>	Slight characteristic pungent odour.
<b>Boiling Point:</b>	Approx 190°C at 100kPa
<b>Freezing/Melting Point:</b>	No specific data. Liquid at normal temperatures.
<b>Volatiles:</b>	No specific data. Expected to be low at 100°C.
<b>Vapour Pressure:</b>	No data.
<b>Vapour Density:</b>	No data.
<b>Specific Gravity:</b>	1.124 at 20°C
<b>Water Solubility:</b>	Emulsifiable.
<b>pH:</b>	7.0-7.9
<b>Volatility:</b>	No data.
<b>Odour Threshold:</b>	No data.
<b>Evaporation Rate:</b>	No data.
<b>Coeff Oil/water Distribution:</b>	No data.
<b>Autoignition temp:</b>	No data.

### Section 10 - Stability and Reactivity

**Reactivity:** This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

**Conditions to Avoid:** Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

**Incompatibilities:** oxidising agents.

**Fire Decomposition:** Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

**Polymerisation:** This product will not undergo polymerisation reactions.

### Section 11 - Toxicological Information

**Local Effects:**

**Target Organs:** There is no data to hand indicating any particular target organs.

### Potential Health Effects

**Inhalation:**

**Short Term Exposure:** Available data shows that this product is harmful, but symptoms are not available. In addition product is an inhalation irritant. Symptoms may include headache, irritation of nose and throat and increased secretion of mucous in the nose and throat. Other symptoms may also become evident, but they should disappear after exposure has ceased.

**Long Term Exposure:** No data for health effects associated with long term inhalation.

**Skin Contact:**

**Short Term Exposure:** Available data shows that this product is harmful, but symptoms are not available. In addition product is a skin irritant. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.

**Long Term Exposure:** No data for health effects associated with long term skin exposure.

**Eye Contact:**

**Short Term Exposure:** This product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms

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should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.

**Long Term Exposure:** No data for health effects associated with long term eye exposure.

#### Ingestion:

**Short Term Exposure:** Significant oral exposure is considered to be unlikely. Available data shows that this product is harmful, but symptoms are not available. However, this product is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. Other symptoms may also become evident, but all should disappear once exposure has ceased.

**Long Term Exposure:** No data for health effects associated with long term ingestion.

#### Carcinogen Status:

**SWA:** No significant ingredient is classified as carcinogenic by SWA.

**NTP:** No significant ingredient is classified as carcinogenic by NTP.

**IARC:** Picloram (as Hexyloxypropylamine Salt) is Class 3 - unclassifiable as to carcinogenicity to humans.

See the IARC website for further details. A web address has not been provided as addresses frequently change.

### Classification of Hazardous Ingredients

#### Ingredient

#### Risk Phrases

No ingredient mentioned in the HSIS Database is present in this product at hazardous concentrations.

### Section 12 - Ecological Information

This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

### Section 13 - Disposal Considerations

**Disposal:** Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 <http://www.chemclear.com.au/> and for help with the disposal of empty drums, contact DrumMuster <http://www.drummuster.com.au/> where you will find contact details for your area.

### Section 14 - Transport Information

**Not subject to the ADG Code when transported by Road or Rail in Australia, in packages 500kg(L) or less; or IBCs, but classed as Dangerous by IATA and IMDG/IMSBC when carried by Air or Sea transport (see details below).**

**UN Number:** 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

**Hazchem Code:** •3Z

**Special Provisions:** 179, 274, 331, 335, AU01

**Limited quantities:** ADG 7 specifies a Limited Quantity value of 5 L for this class of product.

**Dangerous Goods Class:** Class 9: Miscellaneous Dangerous Goods.

**Packaging Group:** III

**Packaging Method:** P001, IBC03, LP01

Class 9 Miscellaneous Dangerous Goods shall not be loaded in the same vehicle or packed in the same freight container with Dangerous Goods of Class 1 (Explosives).

### Section 15 - Regulatory Information

**AICS:** All of the significant ingredients in this formulation are compliant with NICNAS regulations.

The following ingredient: Triclopyr, is mentioned in the SUSMP.

### Section 16 - Other Information

**This SDS contains only safety-related information. For other data see product literature.**

#### Acronyms:

<b>ADG Code</b>	Australian Code for the Transport of Dangerous Goods by Road and Rail (7 <sup>th</sup> edition)
<b>AICS</b>	Australian Inventory of Chemical Substances
<b>SWA</b>	Safe Work Australia, formerly ASCC and NOHSC
<b>CAS number</b>	Chemical Abstracts Service Registry Number
<b>Hazchem Code</b>	Emergency action code of numbers and letters that provide information to emergency services especially firefighters

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<b>IARC</b>	International Agency for Research on Cancer
<b>NOS</b>	Not otherwise specified
<b>NTP</b>	National Toxicology Program (USA)
<b>R-Phrase</b>	Risk Phrase
<b>SUSMP</b>	Standard for the Uniform Scheduling of Medicines & Poisons
<b>UN Number</b>	United Nations Number

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This SDS is prepared in accord with the SWA document "Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice" (December 2011)

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<http://www.kilford.com.au/> Phone (02)9251 4532

## **SAFETY DATA SHEET**



## Appendix C – Sewer Overflow Reporting Form





Instructions:

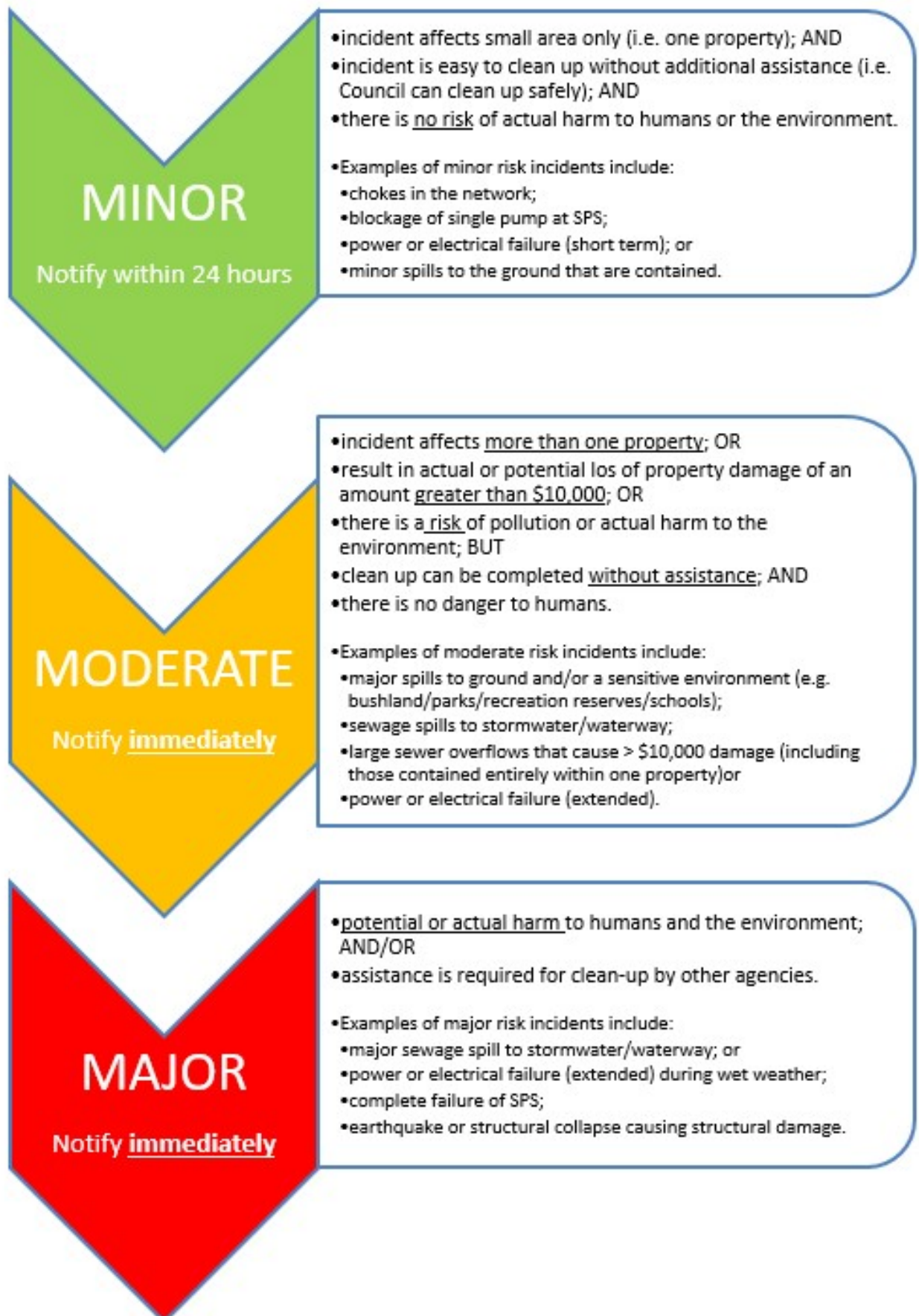
- Form MUST be completed for each sewer overflow/PIRMP incident
- All boxes must be filled in and tick (✓) options where required
- All incidents are to be reported to Utilities Engineer(s) regardless of severity

Form completed by			
Overflow address or location			
Date			
Overflow start time (est. if unknown)		Duration	
Estimated overflow volume (L)			
Overflow type	<input type="checkbox"/> Dry weather overflow	<input type="checkbox"/> Wet weather overflow	
Overflow description and diagram (as required)			
Area(s) affected	<input type="checkbox"/> One property		
	<input type="checkbox"/> Multiple properties		
	<input type="checkbox"/> School/child care centre/aged care facility		
	<input type="checkbox"/> Public park/recreation area/sports ground		
	<input type="checkbox"/> Stormwater/waterway		
	<input type="checkbox"/>		
Incident Classification (refer back page)	<input type="checkbox"/> Minor		
	<input type="checkbox"/> Moderate		
	<input type="checkbox"/> Major		
<b>FOLLOW PIRMP NOTIFICATION PROCEDURES</b>			
Person Notified			
Time and Date			
Probable cause of overflow			
Actions taken to stop overflow	<input type="checkbox"/> Cleared blockage		
	<input type="checkbox"/> Bunded area/drains		
Actions taken to clean up overflow	<input type="checkbox"/> Disinfected area		
	<input type="checkbox"/> Vacuumed area		
Actions taken to prevent overflow recurrence			
Investigation Required?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Notes			
Evidence Collected	<input type="checkbox"/> Photos	<input type="checkbox"/> Statement(s)	





Tick (✓) applicable statements to determine incident classification





## Appendix D – Refer to DoneSafe

Singleton Council DoneSafe Incident/Hazard Reporting Link;

<https://singleton.donesafe.com/>





## **Appendix E – Protocol for Investigating and Reporting Fish Kills**





**Industry &  
Investment**

## PROTOCOL FOR INVESTIGATING AND REPORTING FISH KILLS

**All fish kills are potentially significant and should be investigated thoroughly and as soon as possible.**

Information on fish kills is available at <http://www.dpi.nsw.gov.au/fisheries/habitat/threats/fish-kills>

### Notification

When a report of a fish kill is received all information is to be recorded on the ***Fish Kill Notification & Investigation Report [Part A]***. Officers of Industry and Investment NSW (I&I NSW) who receive this information are to notify the nearest Department of Environment, Climate Change and Water (DECCW) office and vice versa. Local offices of the Catchment Management Authority and Council should also be notified.

Fax the completed Part A forms to the relevant Regional Offices of I&I NSW and DECCW for their information. Each agency is responsible for information exchange within their respective departments.

### Initial assessment

The officer receiving notification of the fish kill will decide whether a field investigation is warranted. This decision will be made following discussions with other staff (e.g. I&I NSW or DECCW biologists) on the basis of: size of kill, sensitivity of waterway, potential cause, species affected, potential public interest, etc. If a field investigation is warranted, and I&I NSW or DECCW officers are not available, the department with primary responsibility for the investigation (see below) will endeavour to arrange an inspection by the local council or another government department, whichever is most appropriate.

### Field investigation

Generally, I&I NSW officers will investigate fish kills in non-metropolitan areas while DECCW officers will investigate fish kills in Sydney, Newcastle and Wollongong metropolitan areas. In many cases a joint inspection will be appropriate. Regardless of the location, DECCW Officers will be responsible for detailed investigation of kills which appear to be related to pollution events, hazardous chemical incidents or discharges from commercial or industrial premises.

Please note that all Fisheries Offices in NSW have fish kill response kits available with required fish and water sampling and water quality testing equipment.

Investigating officers will inspect the site and complete the ***Notification & Investigation Report [Part B]***. If officers of a Council or a department other than DECCW or I&I NSW investigate a fish kill, the investigating officer should discuss the fish kill with their regional I&I NSW Fisheries Conservation Manager at the earliest opportunity (see contact list). Completed Part B forms should be faxed to both the relevant I&I NSW and DECCW offices.



## Collection and analysis of samples

**Water quality** - on-site water quality measurements should be undertaken where possible. Regional Fisheries Conservation Managers, DECCW officers or local Council generally have digital meters available to undertake such assessments (see list of contacts at the back of the protocol). Water samples should be taken if a pollutant, algae or disease is possible, particularly during or immediately following an event where fish are still dying or recently dead. Water samples should be taken from the affected area and if possible from a nearby unaffected area for comparison. Water samples should be kept cold, but not frozen. Specialist advice should be sought regarding relevant sampling procedures (i.e. Manager Aquatic Biosecurity (ph 4916 3904) for disease, or DECCW officers for pollutants or algae (see list of contacts for specialist advice). Water samples will need to be logged with an appropriate laboratory for testing as soon as possible and again, advice from the appropriate specialists should be sought.

**Fish samples for a possible disease** - where a disease agent is possible, fish samples should be obtained but only after consultation with the Manager, Aquatic Biosecurity (ph 4916 3904). All fish samples are to be lodged with the I&I NSW Elizabeth Macarthur Agriculture Institute laboratory for analysis. Transport of live fish is ideal, but if not feasible, approximately six, **dying** (not yet dead) individuals of each species affected should be placed in separate plastic bags and placed on ice, NOT FROZEN. Dead fish should not be submitted for disease diagnosis as any deterioration in the condition of the fish post death will confound the results. The final report on the samples will be received and reviewed by the Manager (Aquatic Biosecurity) before being forwarded to the reporting officer to assist with interpretation of results and advice on appropriate course of action to take if results for disease are positive. Results will generally be provided within two weeks of submission.

**Fish samples where another agent, other than disease is possible** – another set of fish samples should also be obtained where poor water quality, pollution, algal bloom or other agent is possible. Approximately six recently dead or dying individuals of each species affected should be placed in separate plastic bags and placed on ice. If immediate delivery is not possible fish samples should be frozen. Fish samples should only be lodged with a DECCW laboratory in consultation with the Manager, Fisheries Ecosystems or regional Fisheries Conservation Manager (see contact list).

## Reporting of laboratory analysis

The reporting officer responsible for organising the submission of water and fish samples will be responsible for reporting results of the analysis to all other organisations previously involved with the fish kill notification and investigation. Reporting of results to the general public or media will be coordinated by the Manager (Fisheries Ecosystems) (see contact list) in consultation with the reporting officer.

## Media contact

Fish kills can generate significant media interest. Prior to any response to the media, a common view should be established between DECCW and I&I NSW officers and other relevant parties. The Manager, Fisheries Ecosystems is the I&I NSW co-ordinator for media contact (phone 6626 1369 or 0419 185 534). Alternatively Fisheries Conservation Managers can provide a regional response (see contact list).

## Database

All completed **Notification and Investigation Report** forms and results of analyses are to be forwarded to I&I NSW Fish Kill Database Coordinator for inclusion on the state-wide fish kill database. Information from the database is available on request (see contact details provided on Part A).



# FISH KILL Notification & Investigation Report

## Part A – Notification

NAME OF WATERBODY: .....

CATCHMENT: .....

(e.g. Murray River, Sydney Harbour, Tuggerah Lakes)

PRECISE LOCATION WITHIN WATERBODY: .....

HABITAT DESCRIPTION: (circle as appropriate)

(A) Freshwater / estuarine / marine

(B) stream / river / anabranch / lake / billabong / swamp / drain / channel / impoundment / bay / lagoon / farm dam / beach / open ocean / other:.....

REPORTED BY: .....

(Name, address, phone)

TIME / DATE REPORTED ..... TIME / DATE KILL FIRST OBSERVED.....

WEATHER CONDITIONS PRIOR TO OBSERVATION OF KILL: .....

TIDAL STATE/WATER LEVEL AT TIME OF KILL (if applicable):.....

NUMBERS OF FISH AFFECTED (circle): less than 10 / 10 to 100 / 100s / 1000s / 10,000s / 100,000s / millions

CONDITION OF FISH (circle): dying / freshly dead / few hours old / few days old / decomposed

SIZE OF FISH (circle): all similar size (.....cm) / range of size classes (..... to .....cm)

SPECIES OF FISH AFFECTED (circle): one species only / few species / many different species

Please list if known: .....

LOCATION OF FISH (circle): floating in water / on bottom / along waters edge / onshore

EXTENT OF KILL (area (ha) or length (m) of habitat affected): .....

GENERAL OBSERVATIONS OF REPORTING PERSON: .....

OTHER FORMS OF WILDLIFE AFFECTED? (specify): .....

WHAT IS THE SUSPECTED CAUSE? .....

OTHER INDIVIDUALS & AUTHORITIES NOTIFIED

INDIVIDUAL	DEPARTMENT	LOCATION	COMMENTS

REPORTED TO : ..... POSITION: ..... LOCATION.....

ORGANISATION : ..... DATE: ..... PHONE.....

**REMINDER. Send copies of Parts A and B to:**

**I&I NSW Fish Kill Database Coordinator**

**1243 Bruxner Hwy,  
Wollongbar NSW 2477  
(fax (02) 6626 1377)**



# FISH KILL Notification & Investigation Report

## Part B - Investigation

TIME/DATE KILL INVESTIGATED: .....

HABITAT DESCRIPTION: (circle as appropriate)

(A) Freshwater / estuarine / marine

(B) stream / river / anabranch / lake / billabong / swamp / drain / channel / impoundment / bay / lagoon / farm dam / beach / open ocean / other:.....

ADJACENT LAND USES (specify): .....

PHYSICAL EVIDENCE OF POLLUTION (OR ALGAL BLOOMS) OBSERVED:.....

ON-SITE WATER SAMPLING RESULTS WATER SAMPLES COLLECTED: Yes / No

Sample no.	1	2	3	4	5	6
Name of sampling site						
pH						
Temp. (°C)						
Dissolved Oxygen						
Others (specify)						

**Attach map/diagram showing total area of fish kill and sample sites. Colour photographs would also assist analysis and identification.**

CONDITION OF FISH (circle): dying / freshly dead / few hours old / few days old / decomposed

OTHER COMMENTS: (eg behaviour/appearance of fish) .....

AFFECTED FISH SPECIES (Full name)	LENGTH RANGE (cm)	NUMBERS	SAMPLES COLLECTED
			Yes / No
			Yes / No
			Yes / No
			Yes / No

SUSPECTED CAUSE OF FISH KILL: .....

WATER SAMPLES DESPATCHED TO:.....TO BE TESTED FOR: .....

FISH SAMPLES DESPATCHED TO:.....TO BE TESTED FOR: .....

INVESTIGATED BY: ..... POSITION: .....

ORGANISATION: ..... DATE: .....

RECOMMENDATION(S) FOR FUTURE ACTION: .....

**REMINDER.** Send copies of Parts A and B to:

I&I NSW Fish Kill Database Coordinator  
1243 Bruxner Hwy,  
Wollongbar NSW 2477  
(fax (02) 6626 1377)



## Contacts

### Industry and Investment NSW

**24 hour service 1800 043 536**

**Media Contact** Manager, Fisheries  
Ecosystems 6626 1369 or 0419 185 534

#### District Fisheries Offices

Albury	02 6042 4200
Ballina	02 6618 1800
Batemans Bay	02 4472 4032
Bathurst	02 6331 1428
Coffs Harbour	02 6652 3977
Dareton (Lower Murray)	03 5019 8408
Deniliquin	03 5881 9928
Eden	02 6496 1377
Huskisson (Shoalhaven)	02 4428 3402
Illawarra	02 4295 1809
Inverell	02 6722 1129
Jindabyne	02 6451 3400
Maclean	02 6645 0504
Narooma	02 4476 2072
Narrandera	02 6959 9066
Nelson Bay (Port Stephens)	02 4982 3934
Port Macquarie	02 5524 0600
Swansea	02 4971 1201
Sydney Metropolitan (Wollstonecraft)	02 8437 4903
Sydney South (Sans Souci)	02 9529 6021
Tamworth	02 6763 1132
Narara	02 4328 8618
Tumut	02 6947 9028
Tuncurry	02 6591 6300
Tweed Heads	07 5523 6900

### Advice on pathology testing, disease and sampling procedures:

Manager (Aquatic Biosecurity) 02 4916 3904

### Fisheries Conservation Managers

Wollongbar	02 6626 1200
Tamworth	02 6763 1255
Port Stephens	02 4916 3931
Huskisson	02 4428 3401
Batemans Bay	02 4478 9103
Cronulla	02 9527 8552
Albury	02 6042 4213

### Dept of Environment, Climate Change and Water

**Pollution Line 24 hr service 13 15 55**

#### Regional Offices

Albury	02 6041 4963
Armidale	02 6773 7000
Bathurst	02 6332 1838
Dubbo	02 6884 9745
Gosford	02 4323 9875
Grafton	02 6640 2500
Griffith	02 6964 1880
Newcastle	02 4926 9986
Queanbeyan	02 6299 3330
Sydney	02 9995 6810
Wollongong	02 4226 8424

#### Specialist Advice

Algae (NSW Office of Water – State Coordinator)	02 4904 2568
Ecotoxicology	02 9995 5539 or 0411 157 900 (AH)
Waters & Coastal Science	02 9995 5509
Laboratories	02 9995 5037



## Appendix F – Training Register

Qualification or Training / Required?	Treatment Plant Operator	Network Team Leader Water and Sewer	Utilities Engineers	Utilities Plumber	Treatment Plant Operator	Liquid Trade Waste Officer	Network Operator	Treatment Plant Supervisor	Network Supervisor
Driver Licence	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dangerous Goods	Yes	Yes	No	No	Yes	No	Yes	Yes	No
Certificate III in Water Industry Operation	No	Yes	No	Yes	No	No	No	Yes	No
Certificate III in Water Industry Treatment	Yes	No	No	No	Yes	No	Yes	No	No
Certificate IV in Water Industry Operation	No	Yes	No	Yes	No	Yes	No	Yes	No
Certificate IV in Water Industry Treatment	Optional	No	No	No	Yes	No	Yes	No	No
Diploma in Water	No	N/A	No	N/A	No	No	Yes	N/A	No
Fluoridation of Public Water Supplies	Yes	Yes	Yes	N/A	Yes	No	Yes	N/A	No
Cert III in Water Operations Sewerage	Yes	N/A	No	Optional	No	No	No	No	No
STP Update (Seminar after they have done the certificate III)	Yes	N/A	No	Optional	No	No	N/A	Yes	No
WTP Update (Seminar after they have done the Certificate III)	Yes	No	No	No	Yes	No	Yes	No	No
Confined Spaces Training	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Self-Contained Breathing Apparatus	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Certificate IV in Training and Assessment	Optional	No	No	No	Optional	No	Yes	Yes	No
Asbestos Awareness	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Traffic Controller - Formally Blue Card	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Implement Traffic Control Plans - Formally Yellow Card	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Prepare a Workzone Traffic Management Plan - Similar to former Orange Card	No	Yes	No	Yes	No	No	No	Yes	No
WHS General Construction Induction (White Card)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No





Qualification or Training / Required?	Treatment Plant Operator	Network Team Leader Water and Sewer	Utilities Engineers	Utilities Plumber	Treatment Plant Operator	Liquid Trade Waste Officer	Network Operator	Treatment Plant Supervisor	Network Supervisor
<b>Certificate in Chemical Level III (ChemUse AQF3)</b>	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
<b>Excavator</b>	Yes	Yes	No	Yes	Yes	No		Yes	No
<b>Forklift (National Licence to Perform High Risk Work or National Certificate of Competency Licence)</b>	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
<b>Crane Operators/ Dogging</b>	No	N/A	No	N/A	No	No	No	N/A	No
<b>Front End Loader/ Backhoe</b>	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
<b>Apply First Aid</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
<b>Supervisor Training</b>	No	N/A	No	N/A	No	No	Yes	Yes	No
<b>Certificate in Plumbing - Trade</b>	No	N/A	No	Yes	No	No	No	N/A	No
<b>Certificate IV in Plumbing Technology</b>	No	N/A	No	Yes	No	No	No	N/A	No
<b>Back Flow Prevention Device testing course</b>	N/A	N/A	No	N/A	N/A	No	N/A	N/A	No
<b>Telemetry Course</b>	Yes	N/A	No	N/A	Yes	No	Yes	No	No
<b>Welding/MDG25 Hotwork</b>	Optional	Yes	No	Yes	Optional	No	Optional	Yes	No
<b>Laboratory Techniques</b>	Yes	No	No	No	Yes	No	Yes	No	No
<b>Safe Work Near Powerlines</b>	Optional	Yes	No	Yes	Optional	No	Optional	Yes	No
<b>Working Safely at Heights</b>	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
<b>Identify, Locate and Protect Underground Services</b>	No	Yes		Optional	No		No	No	
<b>Electrical Safety Awareness - Working with Metallic Pipes</b>	No	Optional		Optional	No		No	Yes	
<b>Manual Handling Awareness &amp; Training</b>	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
<b>Electrical Hazard Awareness</b>	No	No		No	No		No	No	
<b>Fire Warden</b>	No	No		No	No		No	No	
<b>Operate and Maintain Chainsaw</b>	No	No		No	Optional		No	No	
<b>Microsoft Suite</b>	No	No		No	No		Yes	No	
<b>Managing Difficult People</b>	Yes	No		No	Yes		Yes	No	
<b>Conflict Resolution</b>	Yes	Yes		Yes	Yes	Yes	Yes	No	Yes
<b>Ethics and Conduct (2009)</b>	Yes	Yes	Yes	Yes	Yes		Yes	Yes	





Qualification or Training / Required?	Treatment Plant Operator	Network Team Leader Water and Sewer	Utilities Engineers	Utilities Plumber	Treatment Plant Operator	Liquid Trade Waste Officer	Network Operator	Treatment Plant Supervisor	Network Supervisor
Code of Conduct. Online	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Effective Performance Discussions	No	No		No	No		Yes	No	
Work Safely in Construction	Optional	No		No				No	
Plumbing, Gasfitting and Draining BEN only	No	No		Yes	No		No	No	
Introduction to Incident Investigation	Optional	Yes	optional	Yes	optional	Optional	Yes	Yes	Yes
Preparation to Transport Dangerous Goods by Road (TLILIC3013A)	No	No		Yes	No		No	No	





**For more information**

Visit [www.singleton.nsw.gov.au](http://www.singleton.nsw.gov.au)

Call 02 6578 7290

Email [ssc@singleton.nsw.gov.au](mailto:ssc@singleton.nsw.gov.au)

**Send mail to:**

Singleton Council – Water and Sewer Group  
P O Box 314  
SINGLETON NSW 2330

**In person:**

Civic Administration Centre  
Queen Street, SINGLETON NSW 2330