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Pollution Incident Response Management Plan (PIRMP)



Hexham Bowling Club WWTP

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- Standards Australia, (2004) *AS/NZS 4360:2004 Risk Management*, Standards Australia International, Sydney.
- Standards Australia (2004) *HB 436:2004 Risk Management Guidelines Companion to AS/NZS 4360:2004*, Standards Australia International, Sydney. and

Pollution Incident Response Management Plan – Hexham Bowling Club WWTP

- NSW Environmental Protection Agency (2012) *Environmental Guidelines: Preparation of Pollution Incident Response Management Plans*.

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Executive Summary

This Pollution Incident Response Management Plan (PIRMP) was developed to assist the holder of Environmental Protection License (EPL #1586) in compliance with the new requirements introduced by the Protection of the Environment Legislation Amendment Act 2011 (POELA Act). The purpose of “the Plan” is to ensure;

- comprehensive and timely communication about a pollution incident to the relevant authorities and those who may be affected,
- risks of a pollution incident are minimised and controlled,
- the Plan is properly implemented by trained and responsible staff, and
- the Plan is regularly tested for accuracy, currency and suitability.

If a pollution incident occurs during the course of any activity relating to the operation of the Wastewater Treatment Plant (WWTP) at Hexham Bowling Club (HBC) so that material harm to the environment is caused or threatened, this PIRMP must be implemented immediately.

Those authorised to notify the relevant authorities of a pollution incident, must do so without delay, following the notification procedure outlined in Section 4.2 of this plan.

For ease of access, all necessary contact details are also reproduced in Table 1 (below). Included in the table is an order of notification, indicating who to contact and in what order, depending on the type and severity of the particular incident which has occurred.

Pollution Incident Response Management Plan – Hexham Bowling Club WWTP

Table 1: Contact Details and Notification Tree

Hazard	Revised Risk Rating	Notification Priority	Notification Reference	Organisation	Position Title	PIRMP Role	Name	Work Address	Email Address	Ph: Work	Ph: After Hours
Wastewater pollution	Medium	2, 3, 4, 5	N/A	HBC	General Manager	Notification of relevant authorities	Jon Chin	290 Old Maitland Rd, Hexham			0414 496 155
WWTP failure	Low	6, 7	N/A	HBC	Rostered Staff	WWTP Monitoring, plan activation		290 Old Maitland Rd, Hexham	Hexhambowls@bluepond.com	02 49648079	
Wet well pump failure	Low	6, 7									
Liquid chlorine pollution	Medium	2, 3, 4, 5	1	NSW Police, Ambulance, Fire and Rescue	N/A	Control and containment of incident	N/A			000	000
Groundwater contamination	Low	2, 3, 4, 5	2	EPA	Pollution incident reporting				info@environment.nsw.gov.au	1800 100 833 (Licensee Hotline) or 131 555 (General Public)	
Human or animal disease outbreak	Low	2, 3, 4, 5	3	Newcastle City Council	Environmental Services Unit			282 King St, Newcastle, 2300		02 4974 2525	
Availability of replacement parts	Low	6, 8/9	4	Ministry of Health	Local Public Health Unit			Locked Bag 10 wallsend, 2287		02 4924 6477	02 4924 6477
			5	Work Cover Authority						131 050	
Vandalism	Low	1	6	Whitehead & Associates	Senior Environmental Consultant	Advisory	Mark Saunders	197 Main Rd, Cardiff		02 4954 4996	
Fire	Low	1	7	Pumpout Contractor		Pollution Prevention					
			8	Cardiff Electrical	Electrician	Maintenance/Repair	Mark Hellier			0438 680 408	
Odour	Low	6	9	Parrott Plumbing	Plumber	Maintenance/Repair	Steve Parrott			0408 090 876	

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1. Introduction

Whitehead & Associates Environmental Consultants Pty Ltd ("W&A") were engaged by Hexham Bowling Club Co-operative Ltd (HBC) to prepare this Pollution Incident Response Management Plan (PIRMP) in relation to the activities carried out under authority of Environmental Protection License (EPL) #1586. This PIRMP is required by the Protection of the Environment Operations (General) Amendment (PIRMP) Regulation 2012 (commenced 29 February 2012), under Part 5.7A of the POEO Act 1997.

2. Site Description

2.1. Location

Hexham Bowling Club (HBC) is located immediately to the west-southwest of the Hunter River, at the southern intersection of Old Maitland Road and The Pacific Highway (Maitland Road), Hexham (see Figure 1). HBC is situated on an alluvial flood plain of negligible slope and an elevation between 1-2m above the high tide limit of the Hunter River.

2.2. Drainage

Natural site surface drainage is to the east, toward the Hunter River, though surface drainage across the majority of the HBC premises has been significantly modified. Several stormwater drains are located within the southern and western portions of the HBC car park and divert the majority of surface runoff to an underground stormwater pipe network. The stormwater pipes converge and drain to the Hunter River, approximately 130m south of the Wastewater Treatment Plant (WWTP). The remaining surface runoff drains to the east, to Old Maitland Road and the Hunter River. Locations of all stormwater drains on the premises and receiving environments are shown in Figure 2.

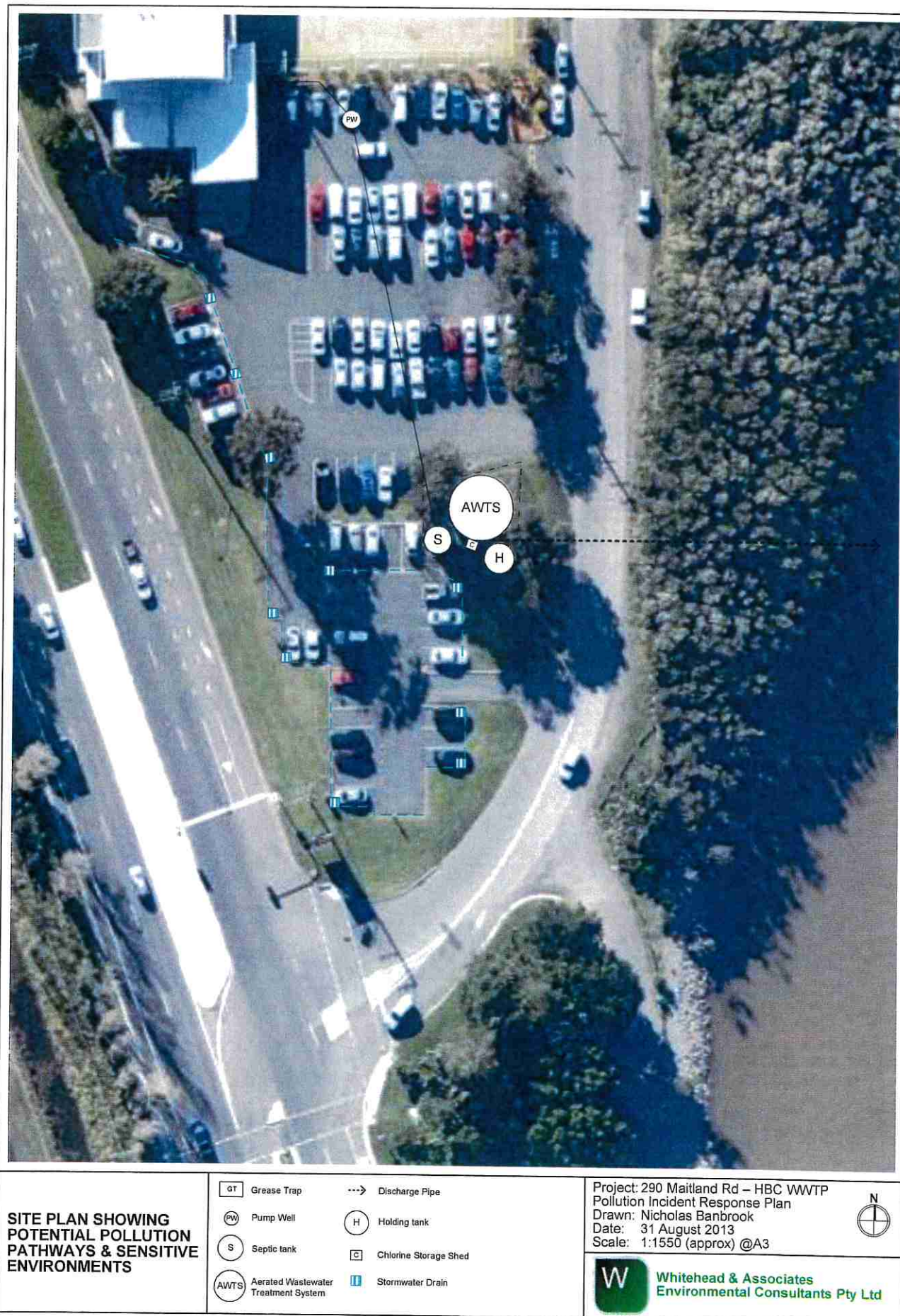
2.3. Wastewater Treatment

HBC is supplied by town water and is located ~3km from the nearest (Hunter Water) reticulated sewage network. Hence, generated wastewater is required to be treated on-site. The onsite sewage management (OSSM) system is owned by HBC (the Principal), who currently engage W&A to manage its operation and maintenance.

Generated wastewater from HBC is treated to secondary quality and discharged (under EPL #1586) directly to the Hunter River. The HBC wastewater treatment system provides two phases of treatment, incorporating both primary and secondary processes. Primary treatment components include a single in-ground concrete grease trap of 400L effective capacity and an in-ground 10kL wet well, which supplies (via macerator pump) an above ground 24kL cylindrical concrete septic tank at the south-eastern end of the HBC car park. The primary treated effluent is then displaced under gravity to a ~118kL above ground cylindrical-concrete extended-aeration treatment plant, which provides secondary treatment of effluent through settling, aeration and clarification. The treated effluent is then disinfected before discharge.

Figure 3 details the structure and flow of the HBC wastewater treatment system, including system inputs, outputs and other influencing factors that (may) occur. 'Green boxes' indicate factors that can be controlled by the Principal, 'red boxes' indicate potential interactions between the system and the external environment and the 'blue box' indicates the receiving environment. A thorough understanding of the treatment system and components is important in order to assess and manage any potential pollution incidents that may arise.





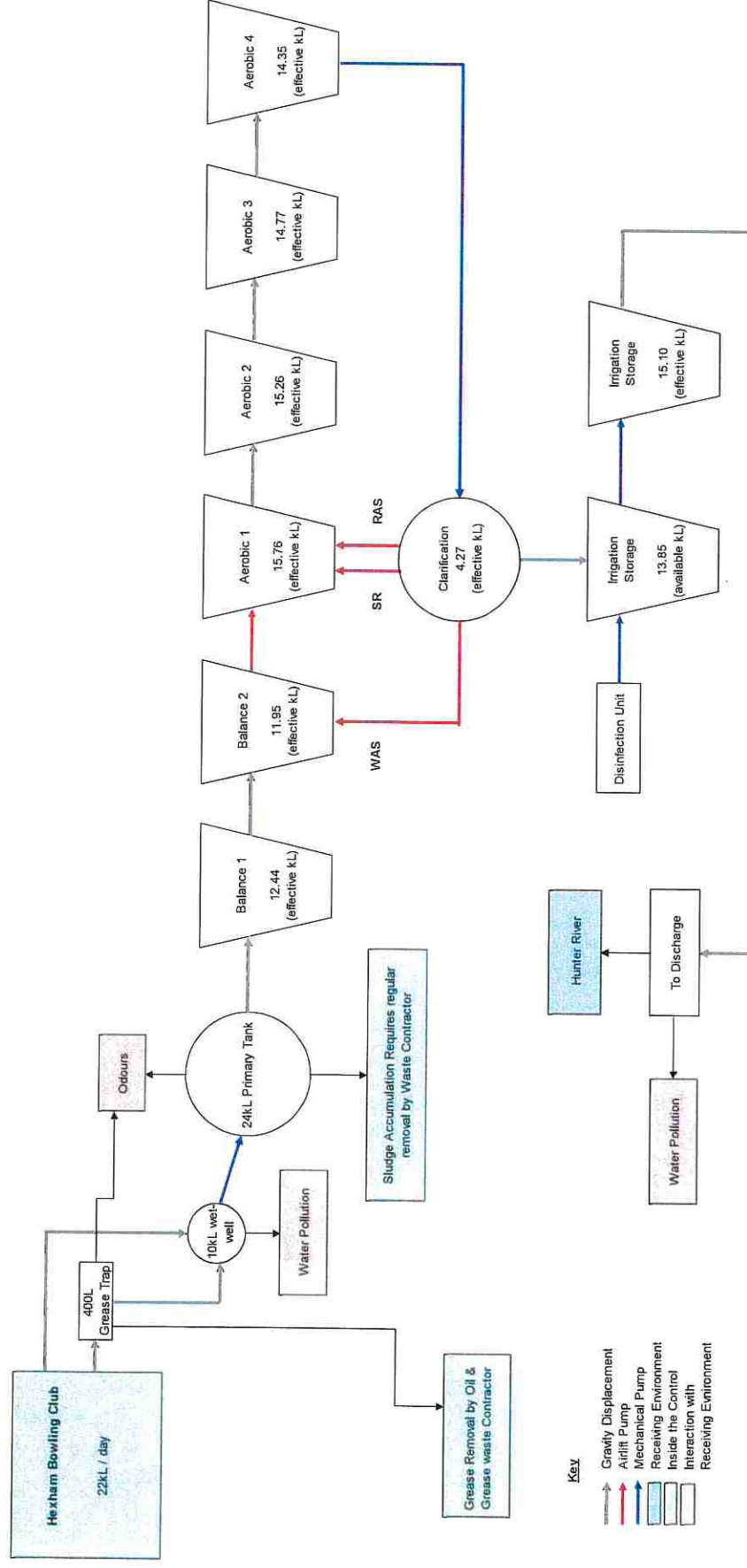


Figure 3: Wastewater Treatment Process Structure

3. Hazard Analysis

The analysis presented follows a risk management approach and applies Hazard Analysis and Critical Control Point (HACCP) principles in order to provide measurable and ongoing assurance that performance requirements are met. The principles are also being applied to ensure that, as far as possible, any non-conformance with the system requirements is detected before discharge of (treated or untreated) wastewater, to minimise the risk to public health and the environment.

The Australian Standard AS/NZS 4360:1999 *Risk Management* outlines three methods for ranking risks: qualitative, semi-quantitative and quantitative. A qualitative risk assessment was used to guide the preparation of this Plan. Qualitative assessments use a combination of:

- the likelihood of a risk event occurring, and
- the anticipated impact of that event occurring, to give an overall risk rating.

3.1. Hazard Description

Activities undertaken in association with EPL #1586 give rise to several forms of potential pollution hazards to both public health and nearby sensitive environmental receptors. Types of potential pollution incidents associated with wastewater treatment operations at HBC may result as a consequence of a leak, spill, or deposit of a harmful substance. The potentially hazardous substances stored, used or generated on the premises are described as follows:

Liquid Chlorine

Chlorine is a highly toxic agent via inhalation and ingestion. It is an intense respiratory irritant and a major potential hazard upon contact to skin and eyes. Chlorine in very low concentrations, also poses a significant health hazard to aquatic ecosystems.

A small quantity of liquid chlorine is used and stored on the premises at all times. Chlorine is used as a disinfectant in the final stage of the secondary treatment process, within the WWTP, prior to discharge to the Hunter River. A 50L chlorine reservoir and automatic dosing mechanism is located within a locked storage shed adjacent to the WWTP, which is enclosed by a 2.4m high security fence.

Wastewater

Untreated wastewater generated on the premises contains potentially hazardous pollutants of both a chemical and biological nature. These pollutants can be in large enough quantities to endanger public health and the environment. At HBC, untreated wastewater is of similar consistency to domestic wastewater, apart from elevated levels of oil and grease associated with operation of a restaurant / bistro on the premises.

Generated wastewater contains various concentrations of potential pollutants including organic matter (proteins, carbohydrates, fats and oils), nutrients (nitrogen and phosphorus), inorganic minerals, metals and chlorine, which can all potentially have adverse impacts on human health and aquatic ecosystems.

Typical pathogenic pollutants present in wastewater include disease-causing viruses, parasites, and bacteria. Gastroenteritis can result from a variety of pathogens in wastewater, and cases of illnesses caused by the parasitic protozoa *Giardia lamblia* and *Cryptosporidium* spp. are common. Other important wastewater related diseases include hepatitis A, typhoid, polio, cholera, and dysentery. Outbreaks of these diseases, while uncommon, can occur as a result of ingestion of wastewater, eating contaminated

fish, or direct contact with polluted waters. Some illnesses can also be spread by animals and insects that come into contact with wastewater.

In accordance with EPL #1586, HBC is required to maintain flow monitoring equipment for the WWTP. The volume of wastewater passing through the WWTP is recorded daily by HBC staff and reported to EPA quarterly. Examination of records for the past two years demonstrate that under typical (dry-weather) conditions, daily wastewater generation for HBC is between 10kL – 18kL. EPL #1586 permits the discharge of up to 24kL/day to the Hunter River.

3.2. Hazard Identification

W&A identified a number of risks and potential hazards associated with the general operation of the HBC wastewater treatment system (including the WWTP) at the premises. Table 2 (below) provides the details of the identified hazards including the frequency (timing), location and the potential pollution incident pathways.

Table 2: Identification of Hazards

Ref.	Hazard	Where will it happen?	When will it happen?	Why will it happen?	How will it happen?
1	Wastewater pollution	<ul style="list-style-type: none"> - Wet Well - WWTP - Hunter River 	Highly Infrequent	<ul style="list-style-type: none"> - Wet Well malfunction - WWTP malfunction - Incomplete effluent treatment 	<ul style="list-style-type: none"> - Overflow of Wet Well - Overflow of WWTP tanks - Discharge of poorly treated effluent
2	WWTP failure	WWTP	Infrequent	<ul style="list-style-type: none"> - Inadequate monitoring and maintenance - Power failure - Filter / Pipe blockage - Pump / Blower failure - Vandalism / Damage 	<ul style="list-style-type: none"> - Overflow of tanks - Groundwater infiltration - Solids build up in primary treatment tank - Failure to meet EPA compliance criteria
3	Pump failure	Wet-well	Infrequent	<ul style="list-style-type: none"> - Excessive wastewater inflows - Pump malfunction - Crack in wet well or inlet pipes - Pipe blockage 	<ul style="list-style-type: none"> - Wastewater surfacing to car park - Stormwater infiltration - Groundwater infiltration
4	Liquid chlorine pollution	<ul style="list-style-type: none"> - WWTP - Hunter River 	Highly Infrequent	<ul style="list-style-type: none"> - Chlorine dosing mechanism malfunction - Poor maintenance - Chlorine spillage or leakage 	<ul style="list-style-type: none"> - High chlorine concentrations in discharge effluent - Refilling chlorine reservoir - Chlorine reservoir or pipe damage
5	Groundwater contamination	Localised water table	Rarely to never	<ul style="list-style-type: none"> - System Malfunction - Pipe burst or breakage - WWTP overflow 	Soil seepage (localised)
6	Human or animal disease outbreak	<ul style="list-style-type: none"> - HBC staff - Plant operators - General public - Wildlife 	Rarely to never	<ul style="list-style-type: none"> - Poor OH&S practice - WWTP malfunction - Incomplete effluent treatment 	Contact with poorly treated effluent
7	Availability of replacement parts	WWTP	Infrequent	<ul style="list-style-type: none"> - Part malfunction - Wear and tear 	<ul style="list-style-type: none"> - Distance to suppliers - Specialised parts not in stock

Ref.	Hazard	Where will it happen?	When will it happen?	Why will it happen?	How will it happen?
8	Vandalism	WWTP	Rarely to never	- Theft - Forced entry to WWTP	- Damage to WWTP - Discharge of poorly treated effluent
9	Fire	WWTP	Rarely to never	- Faulty parts - Storm (lightning, water damage)	- Damage to WWTP - Discharge of poorly treated effluent
10	Odour	WWTP	Infrequent	- Poorly treated effluent - Part malfunction - Chlorine disinfection unit	- unsealed tanks, pipes - chlorine vapour

3.3. Incident Consequences

In the event of a pollution incident occurring as a result of the previously described hazards, a number of consequences may arise, depending on the incident type and degree of exposure to pollutants. There are several potential sources of pollution and receiving environments. A risk assessment matrix has been adopted from the interim NSW Guidelines for Management of Private Recycled Water Schemes (DWE, 2008).

The Guidelines provide a risk assessment framework for recycled water in NSW, which is considered applicable for use in this hazard analysis. Table 3 outlines the consequences required to be considered for human health and the environment. The consequences of each (hazard) incident occurring has been determined for use in the risk evaluation process.

Table 3: Risk Assessment Consequences

Rating	Descriptor	Definition	
		Human Health	Environment
5	Catastrophic	Severe illness or death affecting a large population	Severe permanent environmental impact
4	Major	Severe illness or death affecting a small population	Severe long term environmental impact
3	Moderate	Short term, low level illness, affecting large population	Localised medium term environmental impact
2	Minor	Short term, low level illness affecting small population	Localised short term environmental impact
1	Insignificant	No detectable human health illness	No detectable environmental impact

3.4. Incident Likelihood

The level of risk to human and environmental health associated with the normal operation of the WWTP at HBC is generally considered to be low. Table 4 outlines the rating scale for the likelihood of a risk event occurring. The likelihood of each risk occurring has been determined by W&A and HBC staff for use in the risk evaluation process.

Table 4: Assessment of Likelihood

Rating	Descriptor	Definition
E	Almost certain	Event is expected to occur (several times/year)
D	Likely	Event will probably occur (once every 1-3 years)
C	Possible	Event may or may not occur (once every 3-10 years)
B	Unlikely	Event occurrence is improbable (once every 20 years)
A	Rare	Event is highly improbable and may occur only in rare circumstances (once every 100 years)

3.5. Risk Analysis

The risk assessment rationale, as described above, was analysed and used to further assess the risk of each hazard for both its likelihood (probability) and consequences. Qualitative information has been used to establish a general indication of risk level and reveal the potential issues associated with the operation of the HBC wastewater treatment system. The combined likelihood and consequence score for each identified hazard has been used to determine the overall risk rating, as shown in Table 5.

Table 5: Risk rating Matrix

			Consequence				
			1	2	3	4	5
			Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	E	Almost Certain	Low	Medium	High	Very High	Very High
	D	Likely	Low	Medium	High	Very high	Very High
	C	Possible	Low	Medium	Medium	High	Very High
	B	Unlikely	Low	Low	Medium	High	High
	A	Rare	Low	Low	Low	Medium	High

Each of the ten (10) potential hazards identified in the risk assessment have been evaluated using the above methodology. Table 6 (following page) summarises the preliminary risk evaluation for each of the identified hazards. Each hazard was given a priority rating for the associated management of the risk. The priority rating considers factors such as financial, environmental, and social responsibilities associated with the risk.

Table 6: Evaluation of Risks

Ref	Hazard Identification	Consequence	Likelihood	Risk Rating	Risk Priority
1	Wastewater pollution	3	B	Medium	High
2	WWTP failure	2	C	Medium	Medium
3	Pump failure	2	D	Medium	Medium
4	Liquid chlorine pollution	2	C	Medium	High
5	Groundwater contamination	2	A	Low	High
6	Human or animal disease outbreak	3	A	Low	High
7	Availability of replacement parts	1	C	Low	Low
8	Vandalism	3	A	Low	Medium
9	Fire	3	A	Low	Very High
10	Odour	2	D	Medium	Low

The risks identified in the assessment process were given a priority that is dependent on balancing the cost of each management option against the benefits derived from it. In some instances legal and social responsibility may override financial costs.

For example, a wastewater pollution incident resulting in contamination of surface waters that are in close proximity to a public recreational fishing area may impact on human and aquatic species health. This would require immediate action to minimise harm to the general public and the aquatic environment. In other instances, financial costs gave the risk a high priority. An example of high financial priority is the failure of the WWTP, as HBC has a responsibility to provide it's customers with suitable amenities for continued operation of the Club.

In order to reduce the assigned risk ratings, an outline of the necessary control measures, actions and timing required is provided in the following incident response procedure (section 4).

3.6. Inventory of Pollutants

Potential pollutants stored and/or used in the carrying out of wastewater treatment and disposal activities at HBC are documented according to the maximum quantities that are likely to be stored or held at the premises at any time. Table 7, describes the type and quantity of hazardous pollutants, which can be safely stored or used at the premises.

Table 7: Quantity of Pollutants

Maximum Quantities stored at HBC			
Substance	State	Container Size (L)	Maximum Quantity (L)
Chlorine	Liquid	50	80
Oil & Grease	Liquid	400	400
Untreated Wastewater	Liquid	10,000	10,000
Primary Treated Effluent	Liquid	24,000	24,000
Secondary Treated Effluent	Liquid	117,750	117,750

4. Incident Response Procedure

4.1. Roles and Responsibilities

Plan Implementation

The overall implementation of this PIRMP will be the responsibility of HBC. The Club and its delegated representatives will be responsible to ensure all pollution hazards are mitigated as indicated to be necessary in the Plan. If the actions in the Plan are not considered feasible, then alternative measures should be investigated, assessed and discussed with the relevant stakeholders to ensure the risk is minimised. Any changes to the Plan should be noted in the pollution incident register, as provided in Appendix C.

WWTP Performance Monitoring

Monitoring of the WWTP performance is the primary responsibility of the HBC staff and designated plant operators. Wastewater discharge volumes and effluent quality indicators are required to be monitored daily by rostered HBC staff members and recorded in a log sheet kept on the premises. In addition, plant operators perform weekly maintenance inspections of the WWTP, weekly/monthly sampling of discharge effluent and quarterly sampling of ambient surface waters to ensure an acceptable standard of treatment is maintained, in accordance with the requirements of EPL #1586.

Staff Training

Effective PIRMP implementation requires adequate staff training in all areas pertaining to their relevant responsibilities. Table 8 provides a staff training program which describes the recommended training description, frequency and record keeping requirements. HBC must ensure that their staff members are fully aware of the potential hazards, pollution scenarios and the responses required in the event of an incident occurring.

Table 8: Staff Training Program

Position Title	PIRMP Role	Required Training	Timing Frequency	Record Keeping
General Staff	<ul style="list-style-type: none"> - Operational Performance monitoring - WWTP discharge monitoring - PIRMP activation 	<ul style="list-style-type: none"> - Familiarisation - Monitoring and Recording - Incident response procedure 	<ul style="list-style-type: none"> - Beginning of employment - Update to PIRMP - Annual PIRMP review 	<ul style="list-style-type: none"> - Data recording sheets kept on premises - Record of staff training kept on premises
General Manager	Incident notification	As detailed in section 4.2	<ul style="list-style-type: none"> - Update to PIRMP - Annual PIRMP review 	<ul style="list-style-type: none"> - Pollution incident register kept on premises

4.2. Incident Notification

Part 5.7 of the Protection of the Environmental Operations Act 1997 (POEO Act) specifies new requirements relating to the notification of pollution incidents. The

changes have taken effect from the 6 February 2012 and require the person carrying out the activity which is causing the pollution incident to immediately notify each relevant authority when “material harm to the environment is caused or threatened”.

In the event of a pollution incident, concerns should initially be raised with HBC staff. If possible, notify the General Manager (GM) or Duty Manager (DM) first and foremost. If the GM or DM is unavailable, notify a trained staff member.

Following this, the staff member responsible for reporting a pollution incident should call **000**, if the incident presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents.

If the incident does not require an emergency agency, or once a 000 call has been made, the relevant authorities must be notified in the specified order of priority. Table 1 (included in the Executive Summary) provides a guide to prioritising notification, based on the nature and severity of the incident. Also included in the table are the necessary contact details of each individual associated with the implementation of this PIRMP, the relevant authorities, appropriate cleanup services, and sources of specialist advice.

It is ultimately the responsibility of HBC to determine which types of incidents require notifying individual response agencies and which require reporting only. The necessary information about the pollution incident that requires notification includes;

- time, date, nature and duration of the incident.
- location where the pollution is occurring or is likely to occur.
- estimated quantity and concentration of the pollutants.
- circumstances in which the incident occurred, including the cause (if known).
- action taken or proposed to be taken to deal with the incident.

Notification is required immediately after a pollution incident becomes known. Any details required to be reported that are not known at the time the incident is notified, must be provided when they become known.

A sample ‘Pollution Incident Reporting Log Sheet’ is provided in Appendix A and outlines the necessary required information regarding the pollution incident to be reported.

4.3. Early Warning Mechanisms

HBC have installed a high water level alarm for the wet-well at the northern end of the car park, as shown in Figure 2. The alarm consists of a flashing light, mounted on top of the (pump operation) control box, which is associated with the primary and reserve pump operation for the wet-well. Likely triggers of the high water alarm include pump malfunctions, pipe blockages, alarm malfunction, or excessive inflows. If the light is flashing, firstly notify Whitehead & Associates and arrange a pumpout contractor if advised as necessary.

A similar high water level alarm system is installed in the irrigation pump well of the WWTP.

It is important to provide notification of WWTP pollution incidents to neighbours and the local community. Early warning and regular updates must be supplied to the owners

and occupiers of premises who may be affected by a pollution incident occurring, as a result of the operation of the WWTP. Forms of communication with the local community may include, but are not limited to;

- Incident notification on the HBC website and other social media networks,
- Telephone calls, SMS, or other message systems,
- Emails to community representatives, and
- Letterbox drops and door knocking of affected community members, as appropriate to the given circumstances.

In the event of a pollution incident such as discharge of un-treated effluent or hazardous contaminants to the Hunter River, HBC must notify adjacent premises and consider any downstream users, such as holders of water irrigation licenses, recreational water users (fishermen, boaters, etc), sensitive premises in close proximity and oyster growers. Determination of the extent of the necessary community notification must also consider factors such as high tide limit and flow direction, likely extent of the pollution and possible impacts on sensitive receptors.

4.4. Pollution Control & Mitigation Options

Potential harm to any person or sensitive environmental receptor by pollution incidents can be minimised through employment of mitigation and response measures, as described in Table 9.

Risks identified in the hazard analysis were assigned a revised risk rating, based on passive and active controls employed to reduce the risk. Also included are the necessary actions required to respond to hazards should they arise, and given that assigned controls are not sufficient.

Table 9: Hazard Mitigation & Control Measures

Reference	Identification of Hazards	Preliminary Risk rating		Treatment of Risk					Required Action	
		Risk Rating	Risk Priority	Passive Controls	Active Controls	Revised Rating	Comments	Treat Risk Y/N		
1	Wastewater pollution	Medium	High	Visible and Audible Alarms, Primary and Secondary effluent treatment process, disinfection	Operational Monitoring and Maintenance of WWTP	Medium	Risk reduced by engineering controls and oversight	Y	Notify relevant authorities and community members , erect signage and barriers, obtain suitable containment/control advice	
2	WWTP failure	Medium	Medium	Visible and Audible Alarms, Primary and Secondary effluent treatment process, disinfection	Operational Monitoring and Maintenance of WWTP	Low	Risk reduced by engineering controls and oversight	Y	Arrange pumpout contractor, identify cause and obtain suitable repair advice	
3	Pump failure	Medium	Medium	Visible and Audible Alarms, reserve (stand-by) pump arrangement	Monitoring, routine testing of reserve pump	Low	Risk reduced by engineering controls and oversight	Y	Arrange pumpout contractor, identify cause and obtain suitable repair advice	
4	Liquid chlorine pollution	Medium	High	Regulated chlorine dosing mechanism, disinfection	Containment drum, Bi-weekly system inspection, monitoring and part replacement	Medium	Risk reduced by engineering controls and oversight	Y	Notify relevant authorities and community members, erect signage and barriers, neutralise if feasible	
5	Groundwater contamination	Low	High	Primary and Secondary effluent treatment process, disinfection	Operational Monitoring and Maintenance of WWTP	Low		Y	Notify relevant authorities and community members, obtain suitable containment and remediation advice	
6	Human or animal disease outbreak	Low	High	WWTP secured and isolated from public, Primary and Secondary effluent treatment process, disinfection	OH&S procedures, Operational Monitoring and Maintenance of WWTP	Low		Y	Notify relevant authorities and community members, erect signage and barriers, obtain suitable containment/control advice	
7	Availability of replacement parts	Low	Low	Nil	Programed maintenance and repair (O&M), Source backup equipment and spare parts, estimate lead times	Low		N	Keep suppliers list	
8	Vandalism	Low	Medium	Security fence, lighting, locks, staff presence, signs, surveillance cameras	Staff observation and reporting	Low	Risk managed by Plan implementation	Y	Contact police, assess damage, obtain repair advice	
9	Fire	Low	High	Asset Protection Zone around WWTP	Water for fire control, Manpower	Low	Risk managed by Plan implementation	Y	Contact Fire Brigade for maintenance of APZ around WWTP	
10	Odour	Medium	Low	Primary and Secondary effluent treatment	Staff observation and reporting	Low	Risk reduced by oversight	Y	Arrange detailed WWTP inspection	

4.5. Safety Equipment

Appropriate safety equipment should be kept on the premises at all times. If any individual is at risk of exposure to the previously mentioned pollutants, use common sense and follow general Occupational Health and Safety (OH&S) considerations.

Important safety measures may include, but are not limited to;

- Use of appropriate Personal Protective Equipment (PPE) e.g. disposable rubber gloves, protective coveralls, long pants, boots, face mask (respirator), safety glasses, etc,
- Dispose of, or wash and disinfect soiled clothing, and
- Wash hands and face following potential exposure.

As required under the new regulation, material safety information regarding any chemicals used or stored at the premises must be kept readily available. All relevant chemical information is included in the Material Safety Data Sheet(s) presented in Appendix B.

5. Plan Testing and Update Schedule

Any changes or comments associated with the PIRMP should be included the PIRMP register (Appendix C) for annual review and incorporation into the revised PIRMP, issued for the following year.

Routine testing of this PIRMP should be carried out in a manner that ensures that the information included in the Plan is accurate and up to date and the Plan is capable of being implemented effectively. Testing of the PIRMP is required to be routinely carried out:

- At least once every twelve (12) months, and
- Within one (1) month of any pollution incident occurring in the course of any activity to which the license relates, in order to assess whether the information included in the Plan is still capable of being implemented in an effective workable manner.

6. Plan Availability

A copy of the current PIRMP, along with all supporting maps and documents must be retained at Hexham Bowling Club Co-op Ltd, 290 Old Maitland Road, Hexham ("the premises"). The PIRMP must be made readily available, upon request, to the relevant authorised EPA officers and to any person responsible for implementing the Plan.

7. References

Department of Water and Energy (DWE) Interim NSW Guidelines for Management of Private Recycled Water Schemes, May 2008.

NSW Environmental Protection Agency (2012) *Environmental Guidelines: Preparation of Pollution Incident Response Management Plans*.

Protection of the Environment Operation Act 1997 (POEO Act).

Protection of the Environment Operations (General) Regulation 2009 (POEO (G) Regulation).

Standards Australia, (2004) *AS/NZS 4360:2004 Risk Management*, Standards Australia International, Sydney.

Standards Australia (2004) *HB 4360:2004 Risk Management Guidelines Companion to AS/NZS 4360:2004*, Standards Australia International, Sydney.

8. Appendices

Appendix A

Pollution Incident Reporting Log Sheet

Pollution Incident Reporting Log Sheet

Date	Time	Location	Incident Description	Duration	Pollution Quantity/Severity	Response to Incident	Signature

Appendix B

Material Safety Data Sheets



MATERIAL SAFETY DATA SHEET (CHLORINE)

I. PRODUCT IDENTIFICATION

Chemical Name Chlorine
Trade Name Liquid Chlorine
Synonyms Liquefied chlorine gas, chlorine gas, chlor,
Molecular chlorine, diatomic chlorine, Cl₂

II. COMPOSITION / INGREDIENTS

Liquid Chlorine, % 99.99 % by volume
Chemical Formula Cl₂
Molecular Weight 70.90 g/mole
CAS Registry No. 7782-50-5

III. HAZARDS IDENTIFICATION

EXPOSURE TO THIS PRODUCT IS:

Highly toxic agent via inhalation and ingestion. Primarily an intense respiratory irritant and a major potential hazard upon contact to skin and eyes. Sufficient concentration of the gas irritates the mucous membranes. It can cause pulmonary edema. Liquid chlorine in contact with skin will cause frostbite, smothering of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure. Vapors will cause severe irritation of eyes and throat and can cause eye and lung injury. Vapors cannot be tolerated even at low concentrations. In extreme cases, difficulty of breathing may increase to the point where death can occur from suffocation. The characteristic, penetrating odor of chlorine gas gives warning of its presence in the air.

IV. FIRST AID MEASURES

GENERAL

Prompt treatment of anyone overcome or seriously exposed to chlorine, is of utmost importance. The patient should be removed from contaminated area. Obtain medical assistance as soon as possible.

CONTACT WITH SKIN OR MUCOUS MEMBRANES: immediately wash contaminated skin and clothing with copious amounts of water for a minimum of 15 minutes. Contaminated clothing should be removed under the shower and the chlorine should be washed off with very large quantities of water. Skin areas should be washed with large quantities of soap and water. Never attempt to neutralize chlorine with chemicals. Salves and ointment should not be applied unless directed by a physician. Call or see a physician. (If victim has also inhaled chlorine, first aid for inhalation should be given first).

CONTACT WITH EYES: Immediately flush eyes with large amount of running water for at least 15 minutes even if minute quantities of liquid chlorine enter the eyes. Never attempt to neutralize with chemicals. The eyelids should be held apart during this period to ensure contact of water with accessible tissues of the eyes and lids. Call a physician, preferably an eye specialist, at once. If physician is not immediately available, the eye irrigation should be continued for a second period of 15 minutes. No oils or oily ointments, or any medications should be instilled unless ordered by the physician.

INHALATION: Remove victim from source of exposure. If breathing has not ceased, the patient should be placed in a comfortable position and be kept warm and remain at rest until medical help arrives. If breathing stops, administer artificial respiration. If available, oxygen should be administered. Call a physician.

INGESTION: Not pertinent, ingestion unlikely (chlorine is a gas above -34.5 °C).


V. FIRE FIGHTING MEASURES


Autoignition Point: Not Applicable
Flash Point: Not Flammable
Flammability/Explosive limits: Not Flammable
Fire/Explosion Hazards: Toxic products are generated when combustibles burn with chlorine, although gas is not flammable.
Fire Prevention/Extinguishing Media: Not Applicable

VI. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR RELEASE:

Move people from the area. Move upwind. Avoid contact with acid. Stop leaks if safe to do so. Reposition container if this will reduce or stop leakage. If leak continues, remove leaking container from vehicle or move other materials from vehicle away from container. Never use water on a chlorine leak. Water will make the leak worst. If efforts to control leak fails, and the leakage continues, suitable provision should be available with air. Chlorine from the leaking containers. Chlorine may be absorbed in solution of caustic soda, soda ash or hydrated lime.

	MATERIAL SAFETY DATA SHEET (CHLORINE)																		
<p>VII. HANDLING AND STORAGE</p> <p>Storage Requirements: Protect against physical damage. Store outdoors or indoors in a well-ventilated, detached, or segregated area of noncombustible construction.</p> <p>Incompatible Materials: Store away from heat. Separate from combustible, organic, or easily oxidizable materials and especially isolate from acetylene, ammonia, hydrogen, hydrocarbons, ether, turpentine, and finely divided metals.</p> <p>Containers: 50Kg, 68Kg and 1 Ton cylinders.</p> <p>Use Instructions: Wear suitable protective clothing, gloves and eye/face protection. In case of insufficient ventilation, wear suitable respiratory equipment.</p> <p>EMERGENCY PROCEDURE for all emergencies – Shut off vehicle engine and any electrical equipment. Move people from immediate area, keep upwind. Consider initial evacuation distance of 100 meters in all directions. Send messenger, notify fire brigade telling them location, material, quantity, UN number and emergency contact as well as condition of vehicles and damaged observed. Do not move vehicle if movement could cause spillage. Warn traffic.</p> <p>VIII. EXPOSURE CONTROLS AND PROTECTION</p> <p>Ventilation: Use only in well-ventilated areas.</p> <p>Protective Equipment for the eyes and skin: Splash proof and face shield goggles, disposable latex/rubber apron, PVC rain suits, rubber boots with pant legs over boots.</p> <p>Respiratory Protection Requirements: NIOSH/MSHA approved respirator should be used.</p> <p>Precautionary Hygiene/health/control measures: Chlorine is not a serious industrial hazard if workers are adequately instructed and supervised in proper means of handling it. Avoid contact with skin, eyes, and clothing. Do not breathe mist or vapor. Wash thoroughly after handling. Safety showers and eye wash fountains should be available in storage and handling area. Any protective clothing contaminated with hydrochloric acid should be removed immediately and thoroughly laundered before wearing again.</p> <p>IX. PHYSICAL AND CHEMICAL PROPERTIES</p> <table style="width: 100%;"> <tr> <td style="width: 20%;">STATE</td> <td>: Gas at normal condition, liquefied compressed gas (as shipped)</td> </tr> <tr> <td>APPEARANCE</td> <td>: Greenish yellow gas, amber liquid in pressured container</td> </tr> <tr> <td>ODOR</td> <td>: characteristic choking/ pungent</td> </tr> <tr> <td>BOILING POINT</td> <td>: -34 °C = -28 °F at 1 atmosphere</td> </tr> <tr> <td>FREEZING POINT</td> <td>: -101 °C = -150 °F</td> </tr> <tr> <td>SPECIFIC GRAVITY</td> <td>: Liquid = 1.487 at 0 °C; 1.424 at 15 °C Vapor (Gas) = 2.4</td> </tr> <tr> <td>CRITICAL PRESSURE</td> <td>: 78.05 atm = 1118 psia</td> </tr> <tr> <td>CRITICAL TEMPERATURE</td> <td>: 144 °C = 291 °F</td> </tr> <tr> <td>SOLUBILITY IN WATER</td> <td>: slightly soluble</td> </tr> </table>	STATE	: Gas at normal condition, liquefied compressed gas (as shipped)	APPEARANCE	: Greenish yellow gas, amber liquid in pressured container	ODOR	: characteristic choking/ pungent	BOILING POINT	: -34 °C = -28 °F at 1 atmosphere	FREEZING POINT	: -101 °C = -150 °F	SPECIFIC GRAVITY	: Liquid = 1.487 at 0 °C; 1.424 at 15 °C Vapor (Gas) = 2.4	CRITICAL PRESSURE	: 78.05 atm = 1118 psia	CRITICAL TEMPERATURE	: 144 °C = 291 °F	SOLUBILITY IN WATER	: slightly soluble	<p>X. STABILITY AND REACTIVITY</p> <p>Stability: Stable.</p> <p>Hazardous polymerization: will not occur.</p> <p>Hazardous decomposition product: will not decompose.</p> <p>Reactivity with water: Forms a corrosive solution. Weak solutions of hydrochloric acid and hypochlorous acids are formed. Highly corrosive in the presence of moisture.</p> <p>Reactivity with metals: Reacts vigorously with most metals at high temperature. Copper may burn spontaneously.</p> <p>Reactions with other elements: Unites with most elements under specific conditions. These reactions may be extremely rapid.</p> <p>Reactions with Inorganic Compounds: Forms soda and lime bleaches (hypochlorites). Reacts with hydrogen sulfide, ammonia or ammonium compounds.</p> <p>Reactions with Organic Compounds: May form chlorinated derivatives and hydrogen chloride.</p> <p>XI. TOXICOLOGICAL INFORMATION</p> <p>ACUTE TOXICITY: When a sufficient concentration of chlorine gas is present, it will irritate the mucous membranes, the respiratory system and the skin. Large amounts cause irritation of eyes, coughing and labored breathing. If the duration of exposure or the concentration of chlorine is excessive, general excitement of the person affected, accompanied by restlessness, throat irritation, and sneezing and copious salivation results. The symptoms of exposure to high concentrations are itching and vomiting, followed by difficult breathing. Chlorine produces no systemic effect. All symptoms and signs result directly or indirectly from the local irritant action.</p> <p>CHRONIC TOXICITY: Low concentrations of chlorine gas in the air may have a minor irritating effect or may produce slight symptoms after several hours exposure, but careful examination of persons repeatedly exposed to such conditions reportedly have shown no chronic effect.</p> <p>Reproductive Effects/Cancer Information: No data available.</p> <p>XII. ECOLOGICAL INFORMATION</p> <p>ECOTOXICITY DATA: Combination of chlorine with ammonia, organic matter and cyanide maybe detrimental to fish life.</p> <p>WATER-POLLUTION RISK CLASSIFICATION: Harmful to aquatic life in very low concentrations.</p> <p>XIII. DISPOSAL CONSIDERATIONS</p> <p>Add to large volume of concentrated reducer (hydro, a bisulfite, or a ferrous salt and acidify with 3M H₂SO₄). When reduction is complete, add soda ash or dilute HCl to neutralize.</p> <p>Dispose of in accordance with all Government and Local regulations regarding health and safety.</p>
STATE	: Gas at normal condition, liquefied compressed gas (as shipped)																		
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SOLUBILITY IN WATER	: slightly soluble																		

	MATERIAL SAFETY DATA SHEET (CHLORINE)
XIV. TRANSPORT INFORMATION <u>Transportation of Dangerous Goods</u> TDG Classification: Do not ship by air DOT Hazard Classification: Nonflammable gas, Label: Nonflammable gas and poison DOT Shipping Name: Liquefied Chlorine Gas ID: UN 1017 XV. REGULATORY INFORMATION No data available	XVI. OTHER INFORMATION References: 1. Manufacturing Chemists' Association, 1825 Connecticut Avenue, N.W. Washington, D.C. 20009 Chemical Safety Data Sheet No. SD 80 "Chlorine" (1970) 2. Dangerous Properties of Industrial Material Report, Vol. 9, No. 4, 1989 "Chlorine" 3. "Chlorine Manual" Mobay Vinyl Corporation, Highm City

THE INFORMATION CONTAINED HEREIN IS PRESENTED IN GOOD FAITH AND BELIEVED TO BE CORRECT AS OF THE DATE OF ISSUE. HOWEVER, NO WARRANTY, EXPRESS OR IMPLIED IS GIVEN BY MOBAY VINYL CORPORATION REGARDING THE USE OF THIS MATERIAL SAFETY DATA SHEET (MSDS).

Appendix C

Pollution Incident Response Management Plan Register

Pollution Incident Response Management Plan – Hexham Bowling Club WWTP

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