PILBARA PORTS AUTHORITY

PORT OF DAMPIER - ANHYDROUS AMMONIA EMERGENCY RESPONSE PLAN

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DOCUMENT AMENDMENT TABLE

Version	Amendment	Made by	Date
1	Original Dampier Port Authority Plan approved	Security and Emergency Response Coordinator	10/12/2010
2	Emergency Control Organisation structure updated	Security and Emergency Response Coordinator	26/04/2014
3	All persons to "shelter in place"	Security and Emergency Response Coordinator	05/07/2014
4	PPA branding and ECO structure updated.	Security and Emergency Response Coordinator	14/09/2015
5	Removed DMSF and Building block buildings as places for shelter in place and added Landside operations building as place to activate emergency siren.	Security and Emergency Response Coordinator	15/09/2015
6	General formatting	Marine Administration	02/10/2015
7	Slight change to title	Marine Administration	09/10/2015
8	Slight formatting	Marine Administration	28/10/2015
9-11	Review and updated Maps, ECO structure and added use of Hand Held Card Readers.	Security Supervisor	23/01/2017
12	Review and update of entire document	Security Supervisor	29/08/2017
13	Update Contact details.	Security Supervisor	27/11/2017
14	Revised in line with commencement of Ammonia Muster Points (AMP)	Deputy Harbour Master (Traffic)	10/09/2018

EMERGENCY CONTACT NUMBERS	
Emergency Services	**Call 000 First for all Emergency Situations**
YARA PILBARA CONTROL ROOM (24 HOURS)	(08) 9183 4165
BLB JETTY LANDLINE	(08) 9185 6577
YARA JETTY OPERATOR EMERGENCY MOBILE	0417 757650
DEPARTMENT OF FIRE AND EMERGENCY SERVICES (DFES – KARRATHA)	(08) 9159 1400
FIRE (HMA)	000
AMBULANCE	000
POLICE KARRATHA POLICE	000 (08) 9143 7200
KARRATHA HEALTH CAMPUS	(08) 9144 7777
DEPARTMENT OF TRANSPORT – ACCIDENTS/INCIDENTS	(08) 9431 1000

PPA CONTACT DETAILS		
PPA Personnel	**Office**	**Mobile**
Vessel Traffic Services Centre (VTSC)	(08) 9159 6556	0428 888 800
Security Gatehouse	(08) 9159 6584	0407 904 226

1. INTRODUCTION

This plan provides details of actions to be taken in the event of an unplanned release of anhydrous ammonia and potential impacts. To facilitate effective and efficient emergency response to an unplanned anhydrous ammonia release this plan incorporates clarification of roles, accountabilities and background information.

1.1 OBJECTIVES

- To ensure Pilbara Ports Authority (PPA) staff, visitors other stakeholders onsite and in the Security Gatehouse are considered in emergency response activities.
- To ensure that PPA is in a state of readiness for an unplanned release of anhydrous ammonia that presents a risk to people.
- To ensure the timely notification of all personnel, vessels at berth and vessels within Dampier Port that may be impacted by an anhydrous ammonia release.
- To ensure a return to normal operations as soon as possible after the 'all clear' is given.

1.2 SCOPE

The scope of this plan includes all personnel working on, or visiting the PPA Landside Restricted Zone (LRZ), Security Gatehouse, all vessels and their crews berthed alongside PPA facilities and vessels within the Port of Dampier in an area that may be impacted upon by an anhydrous ammonia release.

1.3 DEFINITIONS

Ammonia Muster Point (AMP): A location where mustering (shelter in place) is required when the ammonia siren (oscillating air raid tone) has been activated

Anhydrous Ammonia (NH_3): A colourless water soluble gas with a pungent odor and acrid taste, liquefied at a temperature of -33^{o}C, classified as a hazardous substance.

Emergency Control Organisation (ECO): PPA staff who are tasked with assisting staff, visitors and contractors on site to relocate to the nearest AMP during an anhydrous ammonia emergency. It consists of a Chief Warden (CW), Area Wardens (AW) and Wardens (W) who follow Duty Cards to complete their allocated tasks.

EMQNET: A multi-channel urgent communication system utilised by Yara Pilbara to notify external stakeholders that may be impacted by an anhydrous ammonia release event (SMS, voice to mobile, voice to landline and email). Recipients for PPA are Dampier VTS, Dampier Security Gate House and Dampier Security Supervisor.

Hazard Management Agency (HMA): Department of Fire and Emergency Services (DFES).

Incident Control Team (ICT): Refers to the Harbour Master and Deputy Harbour Masters and their delegates. *Note: This ICT is responsible for the initial on-site*

response. Once the HMA (DFES) has been notified of the incident, this ICT will take advise from and provide advise/updates to the DFES.

Mitigating Measures: Refers to actions taken to minimise the potential health impacts arising from an anhydrous ammonia release.

These actions may take the form of site evacuation, relocating to an AMP and/or utilising personal protective equipment (including emergency escape hoods).

Parts Per Million (ppm): Unit concentration measure for anhydrous ammonia.

PPA Landside Restricted Zone: Common areas and land inside of the Maritime Security Zone including the main access road, Dampier Cargo Wharf, Dampier Bulk Liquids Berth, Heavy Load Out Facility, Alternate Load Out Facility and lay down areas, PPA buildings, infrastructure and leased areas.

Shelter in Place: This mitigating measure is where shelter is sought in the event of a suspected/confirmed release of anhydrous ammonia. The prescribed locations for sheltering in place are the AMPs.

1.4 REFERENCE DOCUMENTS

- Australian Standard 3745 Planning for emergencies in facilities
- Operating Procedures for AMP – APPENDIX B
- Safety Data Sheet – Anhydrous Ammonia (extract only) – APPENDIX A.

1.5 INTEGRATION WITH OTHER EMERGENCY RESPONSE PLANS

This plan is integrated with and supported by the following documents:

- Port of Dampier Emergency Response Plan

1.6 RESPONSIBILITIES

RESPOPNSIBILITIES	
Role/Title	**Responsibility**
General Manager Operations	• Approve this plan after each review.
Harbour Master	• Ensure this plan is maintained, implemented, periodically reviewed and updated as required. • Ensure the Emergency Control Organisation (ECO) is adequately resourced • Is the Incident Controller (IC) and leads the ICT for the initial on-site response in the case of a suspected/confirmed release of Anhydrous Ammonia. Initial response will be carried out in close coordination and communication with Yara and DFES. *Note: if the Harbour Master is not present at the time of an anhydrous ammonia Emergency event, then any available member of the Incident Control Team will assume the role of IC*
Deputy Harbour Master	• Member of the PPA ICT who will assist the IC during anhydrous ammonia emergency events.
Security Supervisor Dampier	• Ensure ECO members receive and maintain familiarisation commensurate with their roles. • Coordination of resources to facilitate the PPA responding to an anhydrous ammonia release. • Ensure that information is correctly displayed identifying ECO roles in the workplace. • Maintain emergency kits by conducting regular stock-takes and replenishing supplies / Personal Protective Equipment as necessary.
Vessel Traffic Services Officer (VTSO)	• Responsible for all prescribed messaging with marine stakeholders as directed by the IC.
Maritime Security Guards (MSG)	• Control access to the PPA LRZ. • Generate a list of all personnel onsite and provide this to the CW. • Unlock all security doors on activation of the ammonia siren. • Deactivate site entry boom gate on hearing the ammonia siren, then follow IC directions.
PPA Personnel	• Follow the directions of the ECO. • Assist ECO.
Masters of Vessels	• Undertake mitigating measures in accordance with the ship's emergency plan.
Leaseholders	• Undertake mitigating measures in accordance with their own emergency plan.
Authorised Personnel	• Landside Service Officers, Members of the Security Team & VTSOs.

2. ANHYDROUS AMMONIA PIPELINE AND BULK LIQUIDS BERTH

Yara Pilbara operates an anhydrous ammonia production plant located on the Burrup Peninsular, North West of Karratha. Yara Pilbara export liquefied anhydrous ammonia from the production facility via a 5.2km (approx.) pipeline to a ship loading arm on the Bulk Liquids Berth. The pipeline generally contains recirculating anhydrous ammonia.

3. DETECTING AND COMMUNICATING AN ANHYDROUS AMMONIA RELEASE

3.1 ANHYDROUS AMMONIA DETECTION

Anhydrous ammonia liquid vapourises to form ammonia gas (anhydrous ammonia) when it is exposed to the atmosphere (temperature above -33°C). An anhydrous ammonia release may be detected through the following mechanisms:

- Anhydrous ammonia detectors – located at key positions within the Landside Restricted Zone (Refer APPENDIX C: Location of Emergency Devices). The ammonia gas detectors are set to alarm at 25 parts per million (ppm) and the signals are repeated on the WAL System (Refer 3.2 below)
- All three AMP's have stand-alone ammonia detectors inside and outside of their structure.
- Visual – anhydrous ammonia will form a white cloud on contact with the air due to the condensation of water vapour in the air.
- Odour – anhydrous ammonia is highly irritating with a sharp, pungent odour noticeable at a level above 5 ppm.
- Effects – Exposure to anhydrous ammonia up to **100** ppm – no adverse effect for the average person.

  400 ppm – immediate nose and throat irritation with no serious effect after 30 minutes to 1 hour

  700 ppm – immediate eye irritation with no serious effect after 30 minutes to one hour

  1,700 ppm – convulsive coughing; severe eye, nose and throat irritation; could be fatal after 30 minutes

  2,000 - 5,000 ppm – convulsive coughing, severe eye, nose, and throat irritation; could be fatal after 15 minutes

  Over 5,000 ppm – respiratory spasm, rapid asphyxia and fatal within minutes.

3.2 WATER, AMMONIA AND LIGHTING SYSTEM (WAL)

The WAL monitors water, ammonia and lighting on the PPA Dampier site. The system provides real time monitoring of the eight ammonia sensors located around the site, but excludes the readings from the sensors located inside and outside of the AMPs. (Ref APPENDIX C for sensor location & displays)

3.3 COMMUNICATION OF AN ANHYDROUS AMMONIA RELEASE

All known or suspected anhydrous ammonia releases must be communicated to PPA via:

- the Vessel Traffic Services Centre on 08 9159 6556 or 0428 888 800,
- Security Gatehouse on 9159 6584,
- VHF Ch11 or UHF Ch17.

Note: *Yara Pilbara will provide periodic updates regarding the nature and extent of the ammonia release event via EMQNET.*

Yara Pilbara is responsible for communicating the nature and scale of an ammonia release event to all stakeholders with the potential to be impacted. The IC or delegate is responsible for communicating with personnel within the LRZ and the Security Gatehouse.

3.4 ACTIVATION OF THE AMMONIA SIRENS

PPA have installed emergency sirens (oscillating air raid tone) that when activated indicate a suspected/confirmed anhydrous ammonia emergency. In the event of a suspected or confirmed anhydrous ammonia release the emergency siren will be manually activated by authorised personnel. All ammonia sirens on site sound at the same time (Refer APPENDIX C for siren locations).

The ammonia sirens can be manually activated at the following locations:

- Vessel Traffic Service Centre (VTSC)
- Security Gatehouse
- Landside Operations Building
- Bulk Liquids Berth Control Room

Immediately following notification that there is a suspected or confirmed anhydrous ammonia emergency the IC will undertake all reasonable measures to ascertain the nature and extent of the anhydrous ammonia release and provide advice to the ECO regarding appropriate mitigating measures.

The ammonia siren, ECO radio network and public address system are tested Tuesday at 9am

3.5 STAKEHOLDER NOTIFICATION

The Public Address System, e-mail, landline, mobile phones and/or VHF Ch11 and UHF Ch17 may be used for notification of stakeholders as per the discretion of the IC.

Once the emergency response has commenced the IC may notify and/or maintain contact with relevant emergency stakeholders listed on page 4 under “EMERGENCY CONTACT NUMBERS”.

4. RESPONDING TO AN AMMONIA SIREN

Upon hearing the emergency siren all personnel must take mitigating measures in accordance with this plan. Shelter in place is the first stage of response in case of a suspected/confirmed ammonia gas release event. The PPA recommended Shelter in place locations are the AMP’s (Refer APPENDIX D).

Emergency escape hoods are provided at all PPA workstations. Additional emergency escape hoods are stocked at the ECO emergency stations in all PPA occupied buildings, for the use of visitors to facilitate their relocation to the AMP’s.

Immediately following activation of the emergency siren the MSGs will close the entry boom to the PPA LRZ, allow vehicles to exit through the exit boom gate (without swiping their access card) and deactivate all security doors.

4.1 FOR PERSONNEL INSIDE A BUILDING:

4.1.1 Retrieve an emergency escape hood located at PPA staff work stations or from the ECO emergency stations. (Refer APPENDIX C)

4.1.2 Follow directions of ECO team members.

4.1.3 Don the emergency escape hood and if safe to do so, proceed to the nearest AMP and wait within the vestibule after closing the external door (APPENDIX G).

4.1.4 Entry into the REFUGE CHAMBER (this room is the inner room with air scrubbing equipment – Refer APPENDIX G) of the AMP should be made under the guidance/instructions of an ECO warden.

4.1.5 If no ECO warden is available, entry into the **REFUGE CHAMBER** (inner room) must only be made after confirming that the buildings external door is closed.

The locations of the AMP’s are detailed in APPENDIX D and also listed below;

- Training & Incident Management Building (TIM AMP) – can accommodate 60 persons for minimum 4 hours
- Landside Operations Building (Landside AMP) – can accommodate 60 persons for minimum 4 hours
- Bulk Liquid Berth (BLB AMP) – can accommodate 12 persons for minimum 36 hours
- The IC may choose to remain in the VTSC if required and safe to do so.

4.2 FOR PERSONNEL OUTSIDE:

4.2.1 Move immediately to the nearest AMP if safe to do so.

4.2.2 Close the external door of the AMP (APPENDIX G).

4.2.3 Entry into the REFUGE CHAMBER (this room is the inner room with air scrubbing equipment) of the AMP must only be made under the guidance/instructions of an ECO warden.

4.2.4 If no ECO warden is available, entry into the REFUGE CHAMBER (inner room) must only be made after confirming that the buildings external door is closed.

4.2.5 If personnel cannot safely access an AMP, enter a vehicle, close all windows and vents and depart the site. All attempts must be made to then contact the VTS to advise location and situation (If possible call the VTSO mobile number on 0428 888 800, VHF 11 or UHF 17)

4.2.6 If unable to safely access an AMP or vehicle, then consider embarking onto the nearest vessel and follow instructions from the vessels staff.

4.3 FOR VESSELS WITHIN PORT WATERS:

Masters of vessels berthed at PPA berths are advised through the “NOTICE OF ANHYDROUS AMMONIA TRANSFER AT DAMPIER BULK LIQUID BERTH” form when anhydrous ammonia is being transferred onto a ship at the Bulk Liquids Berth and that contingency plans are requested in case of accidental release. Masters of vessels alongside PPA berths and within port waters are responsible for the health and safety of their crews and should take appropriate action(s) in accordance with their own ship’s emergency plan in the event of an anhydrous ammonia emergency.

4.4 PERSONNEL WITHIN THE SECURITY GATEHOUSE:

The AW in the Security Gatehouse will account for all personnel within the building, then report details to the CW. The MSG’s must also complete their Ammonia Release Checklist tasks and follow advice from the IC regarding whether to evacuate site or relocate to the nearest AMP, if safe to do so.

4.5 VESSEL TRAFFIC SERVICES OFFICERS:

Upon hearing the emergency siren the VTSO will immediately complete the actions outlined in the VTSO Anhydrous Ammonia Release checklist, then shelter at the AMP and maintain contact with the ECO and/or IC.

4.6 MISSING PERSONS

ECO Wardens will conduct roll calls at the AMPs and report to the CW. The CW will report to the IC and maintain a master list of all personnel believed to be onsite. These role calls may be facilitated by the use of hand held electronic access card readers. This list will be handed over to the appointed HMA as soon as practicable. Any responsibility to search for, identify and render assistance to missing persons sits with the HMA.

5. ACTIONS AT AN AMP

In the event of an anhydrous ammonia release there are two mitigating measures:

- Shelter in place, (preferably at an AMP), ***Note:*** *if it is not safe to relocate to an AMP, refer to 4.2 above.*
- Site evacuation

Site evacuation will be decided and communicated by the IC, dependent on the location, size, concentration and direction of travel of the anhydrous ammonia plume. This decision will be conveyed to the Chief Warden.

5.1 SHELTER IN PLACE

ECO team members will direct all personnel at the AMP & ensure:

- The following entry protocols are observed:
- The first ECO warden to the AMP must ensure that the AMP is activated. (Refer APPENDIX B).
- ***Note:*** *At no time should both internal and external vestibule doors be open simultaneously (Refer APPENDIX G).*
- Personnel arriving to the AMP should first wait in the vestibule of the AMP before being advised to enter the **REFUGE CHAMBER**. (Refer APPENDIX G)
- Entry from the vestibule into the **REFUGE CHAMBER** will only occur once all external AMP doors have been closed.
- Once inside the **REFUGE CHAMBER**, all personnel must swipe their electronic access control cards on the hand held muster card reader.
- Each subsequent arrival of personnel to the vestibule should ensure that they do not enter the **REFUGE CHAMBER** until invited to do so by the Warden who is managing the AMP at that time.
- Communications equipment is working.

- AMP is secured & operational.
- A head count is conducted and updates on the progress of the emergency event are communicated to all personnel in the AMP.

Personnel will continue to shelter in place at the AMPs until notified that it is safe to evacuate the site or return to work by the IC.

6. SITE EVACUATION

A site evacuation will only commence when instructed by the IC. Site evacuation will be coordinated in a manner that, as far as practicable ensures efficient egress of all personnel from the PPA LRZ. ECO team members will take all reasonable measures to account for persons at their AMP's prior to evacuation. The ECO Wardens will take all reasonable measures to ensure appropriate vehicular resources are identified prior to evacuating site. Before each AMP is evacuated, personnel should don a new escape hood. There are sufficient escape hoods in each AMP for the personnel capacity of the AMP. As each AMP is evacuated, the ECO Warden will post signs at the entry door(s) to the AMP indicating that an evacuation has occurred. The sign will also direct any subsequent personnel arriving to the AMP, to precede offsite if safe to do so or shelter at the AMP and call 000. Upon evacuating the AMP, the ECO Warden must ensure that the access to the AMP is secured effectively to prevent ingress of ammonia vapors by ensuring that at no time both internal and external vestibule doors are open simultaneously.

Site evacuations will be coordinated in a staged manner so as to avoid traffic congestion. The evacuation route from each AMP is indicated on the map at APPENDIX D.

There is no requirement for personnel to swipe their access card at the exit boom gate during an anhydrous ammonia emergency site evacuation.

The IC will direct personnel to evacuate to their residence or an alternate location which may include a medical facility for health check.

7. ALL CLEAR

When an anhydrous ammonia emergency no longer represents a danger, IC will communicate to the CW and ECO team the "All Clear" status. This may be done by switching the ammonia siren to one long continuous tone followed by an announcement over the public-address system. PPA LRZ lease areas not covered by the public-address system may be contacted by e-mail, phone, EMQNET or radio.

8. PERSONAL PROTECTION MEASURES

8.1 RESPIRATORY PROTECTION

Emergency escape hoods are located at each work station and also in the Emergency Stations in each building (Refer APPENDIX C). Emergency escape hoods are an air purifying, full-face respirator equipped with a chemical cartridge. These emergency escape hoods are equipped with a highly efficient combination filter. The PPA has Dräger PARAT 4520 Industrial Escape Hoods which provide a minimum of 15 minutes escape protection against toxic industrial gases, fumes, and particles. (Refer APPENDIX F).

8.2 WIND DIRECTION

An anhydrous ammonia release may develop into a plume (cloud). The time of day, weather conditions and quantity of anhydrous ammonia will determine the visibility of the plume of anhydrous ammonia. Personnel relocating to the nearest AMP or taking other mitigating measures should (if possible) make note of the wind direction using the wind socks. Taking note of the wind direction may assist in determining the direction that an ammonia gas plume is travelling. Windsocks are located at the Bulk Liquids Berth, Landside Service Area Car Park and the Administration Building Car Park (Refer APPENDIX C). Wherever possible, personnel should move across or upwind from the anhydrous ammonia plume

8.3 FIRST AID MANAGEMENT

Prompt action is essential if there is an anhydrous ammonia release emergency. Trained First Aid representatives are directed to consult the Anhydrous Ammonia Material Safety Data Sheet (Refer APPENDIX A).

9. EMERGENCY CONTROL ORGANISATION

An ECO has been established (Refer APPENDIX E) and is under the direction of the IC to assist PPA to respond appropriately in the event of an anhydrous ammonia emergency. In accordance with the *Occupational Safety and Health Regulations 1996* the primary role of the ECO is to preserve the safety of all PPA personnel including staff, contractors and visitors.

PPA licensees and leaseholders hold the primary responsibility for their personnel. Duty Cards have been established for all ECO members

10. FAMILIARISATON

Two levels of familiarisation are required to support this plan, the higher level being (AMP operator) for those staff who may be required to operate the AMP's during an emergency.

The second level (basic familiarisation for use of an AMP under AMP OPERATOR supervision) will be for all other PPA staff that are normally based at Dampier.

Note: *The Dampier site induction includes instruction on the recommendation to muster at an AMP during an ammonia emergency and follow the instruction of the ECO.*

10.1 10.1 AMP OPERATORS

All Dampier based members of the ECO, IC, Incident Control Team and VTSO's will be required to undertake AMP OPERATOR level familiarisation annually, this training will provide instruction on the operation of this Plan and on the use of the AMPs.

10.2 10.2 DRILLS AND EXERCISES

There will be a site wide anhydrous ammonia emergency drill run a minimum of once each year, with more drills to be completed if deemed appropriate by the IC.

1. PROCESS OWNER

The Harbour Master is responsible for this External Document.

Date approved:	30/10/2018	Review date:	30/10/2020
Version:	17	Approved by:	General Manager Operations

APPENDIX A: EXTRACT OF ANHYDROUS AMMONIA SAFETY DATA SHEET

Based on GHS (rev 3) (2009)
- Australia

Date of issue/ Date of revision	:	24.03.2015
Date of previous issue	:	15.08.2013
Version	:	2.0

SAFETY DATA SHEET

Anhydrous Ammonia

Section 1. Identification

Product name	:	Anhydrous Ammonia
Other means of identification	:	ammonia, anhydrous
Product type	:	gas (Liquefied gas.)
Product code	:	PA01HL
ADG Class	:	AMMONIA, ANHYDROUS

Uses

Area of application	:	Industrial applications, Professional applications
Material uses	:	Manufacture of fertilizers and technical ammonium nitrate.

Supplier

Supplier's details	:	YARA PILBARA FERTILISERS PTY LTD

Address

Street	:	Level 5, 182 St Georges Terrace
Postal code	:	6000
City	:	Perth
Country	:	Australia
Telephone number	:	+61 8 9183 4000
Fax no.	:	+61 8 9185 6776
e-mail address of person responsible for this SDS	:	Info.yara.pilbara@yara.com
Emergency telephone number (with hours of operation)	:	1800 117 506 (24 HRS)

National advisory body/Poison Center

Name	:	WA Poisons Information Centre
Telephone number	:	131126
Hours of operation	:	24 hours, within Australia only

Section 2. Hazards identification

Classification and labelling have been performed following the guidelines and recommendation of GHS and the intended use.

Classification of the substance or mixture	:	FLAMMABLE GASES - Category 2 GASES UNDER PRESSURE - Liquefied gas ACUTE TOXICITY (INHALATION) - Category 3 SKIN CORROSION/IRRITATION - Category 1B AQUATIC TOXICITY (ACUTE) - Category 1 AQUATIC TOXICITY (CHRONIC) - Category 2

Anhydrous Ammonia		
Hazard pictograms	:	
Signal word	:	Danger
Hazard statements	:	Flammable gas. Contains gas under pressure; may explode if heated. Toxic if inhaled. Causes severe skin burns and eye damage. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
Precautionary statements		
Prevention	:	Wear protective gloves/clothing and eye/face protection. Do not breathe gas or vapour.
Response	:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
Storage	:	Protect from sunlight and store in well-ventilated place.
Classification according to Directive 67/548/EEC [DSD]		
Classification	:	R10 T, R23 C, R34 N, R50/53
Risk phrases	:	R10 - Flammable. R23 - Toxic by inhalation. R34 - Causes burns. R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Statement of hazardous/dangerous nature	:	HAZARDOUS SUBSTANCE. DANGEROUS GOODS. Anhydrous ammonia is classified for physicochemical hazards and specified as dangerous in the Australian code for Transport of dangerous Goods by Road and rail (ADG code) 6th edition.
Other hazards which do not result in classification	:	Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients

Substance/mixture	:	Substance
CAS number/other identifiers		
Other means of identification	:	ammonia, anhydrous

Date of issue : 24.03.2015 Page:2/15

Note: Complete (all 15 pages) Safety Data Sheets are located in all AMP's and ECO emergency stations

APPENDIX B: PROCEDURE FOR USE OF AMMONIA MUSTER POINT

A

Entry to Shelter-in-Place, PPMS, Air Scrubbing System operation, and Aura-FX Gas Monitoring

STEP 1 » STEP 7

mineARC SYSTEMS

ENTER & ACTIVATE THE SHELTER

STEP 1
Entry & Lighting

- Enter and seal shelter in place.

STEP 2
PRESS Red Button on PPMS

- Activate emergency compressed air system by pressing red button on PPMS (Positive Pressure Maintenance System) manifold.

PRESS

AIR SCRUBBING SYSTEM

STEP 3
Install Marcisorb CO_2 Cartridges

- Remove two (2) MARCISORB CO_2 Cartridges (BLUE) from their packaging and place on top right hand side and center of scrubber unit.

NOTE: REPLACE BOTH CARTRIDGES WHEN CO_2 REACHES 1%.

STEP 4
Install Marcisorb CO Cartridge

- Remove one (1) MARCISORB CO Cartridge (YELLOW) from its packaging and place on the top left hand side of scrubber unit.

NOTE: DO NOT REMOVE ONCE INSTALLED.

STEP 5
Turn ON Scrubber Unit

- Turn scrubber unit ON by pressing the emergency operation button on the front panel (this button is a white cross in a green square).

STEP 6
Commence Gas Monitoring

Commence gas monitoring with Aura-FX (Fixed Gas Monitor). Open external gas monitoring valve.

Refer to the 'Gas Testing Guide' at the rear of this manual for procedures for both digital and manual gas sampling.

NOTE: Aura-FX (DGM) will periodically alarm when it detects changes in gas levels. Only alarms displaying readings OUTSIDE the acceptable gas levels require attention: REFER TO THE REAR OF THIS MANUAL FOR GUIDE ON READING ALARMS to ensure breathing air quality is maintained.

STEP 7
Turn ON Emergency Lighting

- Turn lights to "manual" mode by pushing LIGHTS button on controller module.

B AODS (Automatic Oxygen Delivery System) operation and Life Support Setting Tables

mineARC SYSTEMS

AODS SYSTEM

Standard Operation - AODS System

Under normal circumstances, the Automated Oxygen Delivery System (AODS) is operational at all times. As such occupants need only monitor Oxygen levels via Aura-FX and act accordingly if Oxygen levels read outside of acceptable levels.

AODS System Bypass

IF AODS is operational, and O2 falls below 18.5%, install provided oxygen flowmeter into quick-connect fitting on the AODS, and adjust to 0.5 litres per shelter occupant - see LIFE SUPPORT SETTINGS TABLE (round up to nearest flow rate marked on regulator).

1. Align Quick Connect Couplings

2. Insert Quick Connect Fitting Vertically Into Position

3. Adjusting the Flow Rate Up

4. Adjusting the Flow Rate Down

LIFE SUPPORT SETTINGS TABLES

CO_2 Chemical Changeout Table

NUMBER OF PERSONS	CO_2 CHEMICAL REPLACEMENT APPROXIMATE (HOURS)
3	61.2
6	30.6
9	20.4
12	15.3
15	12.2
18	10.2
21	8.7
24	7.7
27	6.8
30	6.1
33	5.6
36	5.1
39	4.7
42	4.4
45	4.1

Oxygen Regulator Setting Table

(Only applicable when AODS Bypass is installed)

NUMBER OF PERSONS	SET FLOW RATE AT (LITERS)
3	1.5
6	3
9	4.5
12	6
15	7.5
18	9
21	10.5
24	12
27	13.5
30	15
33	16.5
36	18
39	19.5
42	21
45	22.5

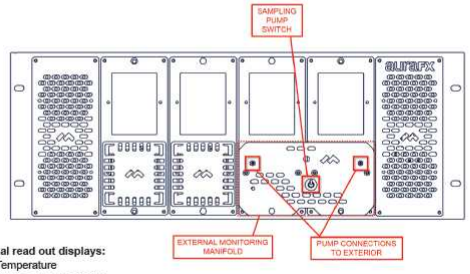
C | **Aura-FX alarms and actions required when gas levels read outside of acceptable levels**

mineARC SYSTEMS

GAS TESTING GUIDE

Aura-FX Information

Aura-FX is operational at all times. It displays a current reading and a trend for the previous hour (1) for temperature, and each gas being monitored. To sample external gases, activate SAMPLING PUMP SWITCH on right side of Aura-FX. For more information on external gas monitoring refer to section ***1.1.3 External Gas monitoring*** in the Aura-FX Operation Manual.

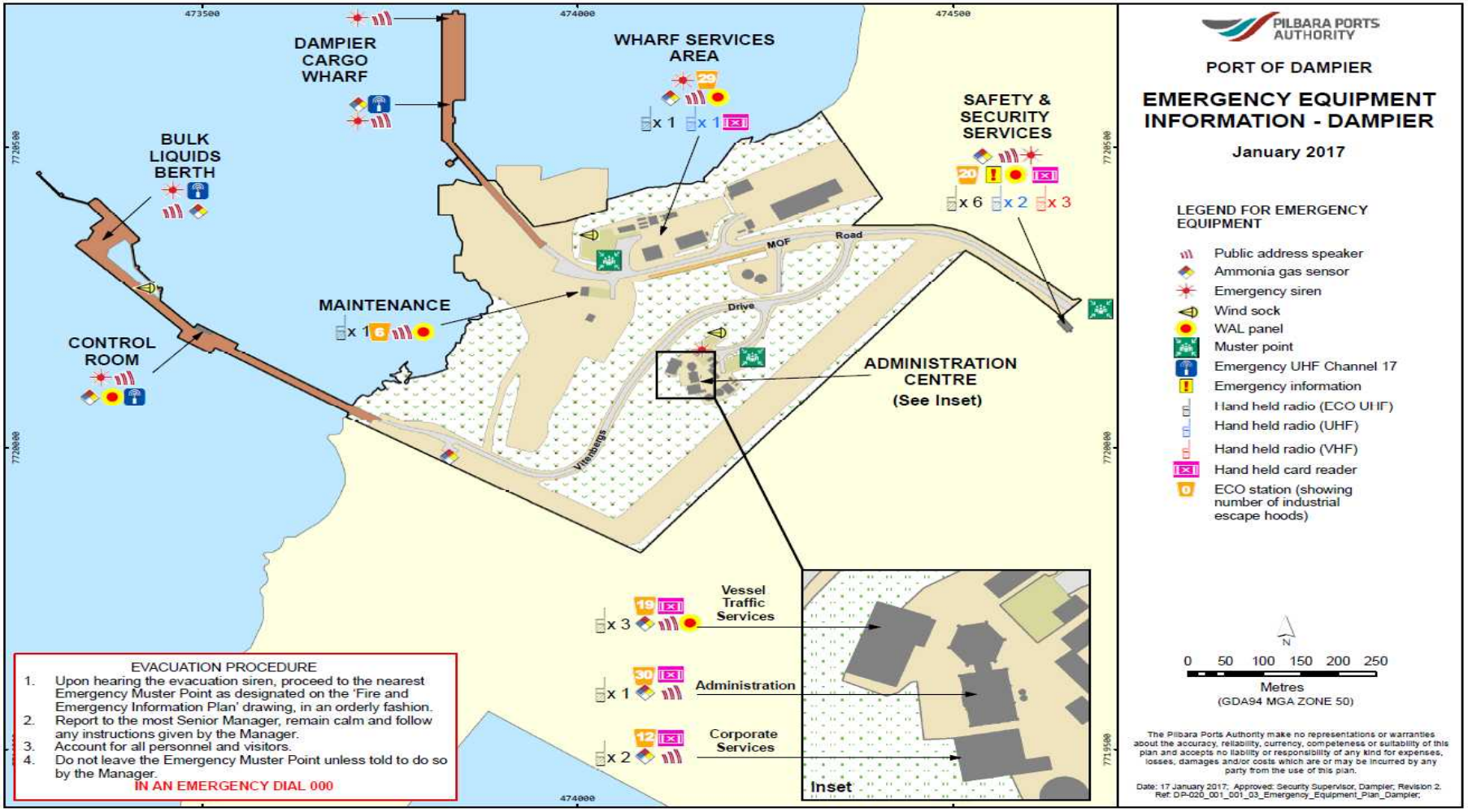


Digital read out displays:

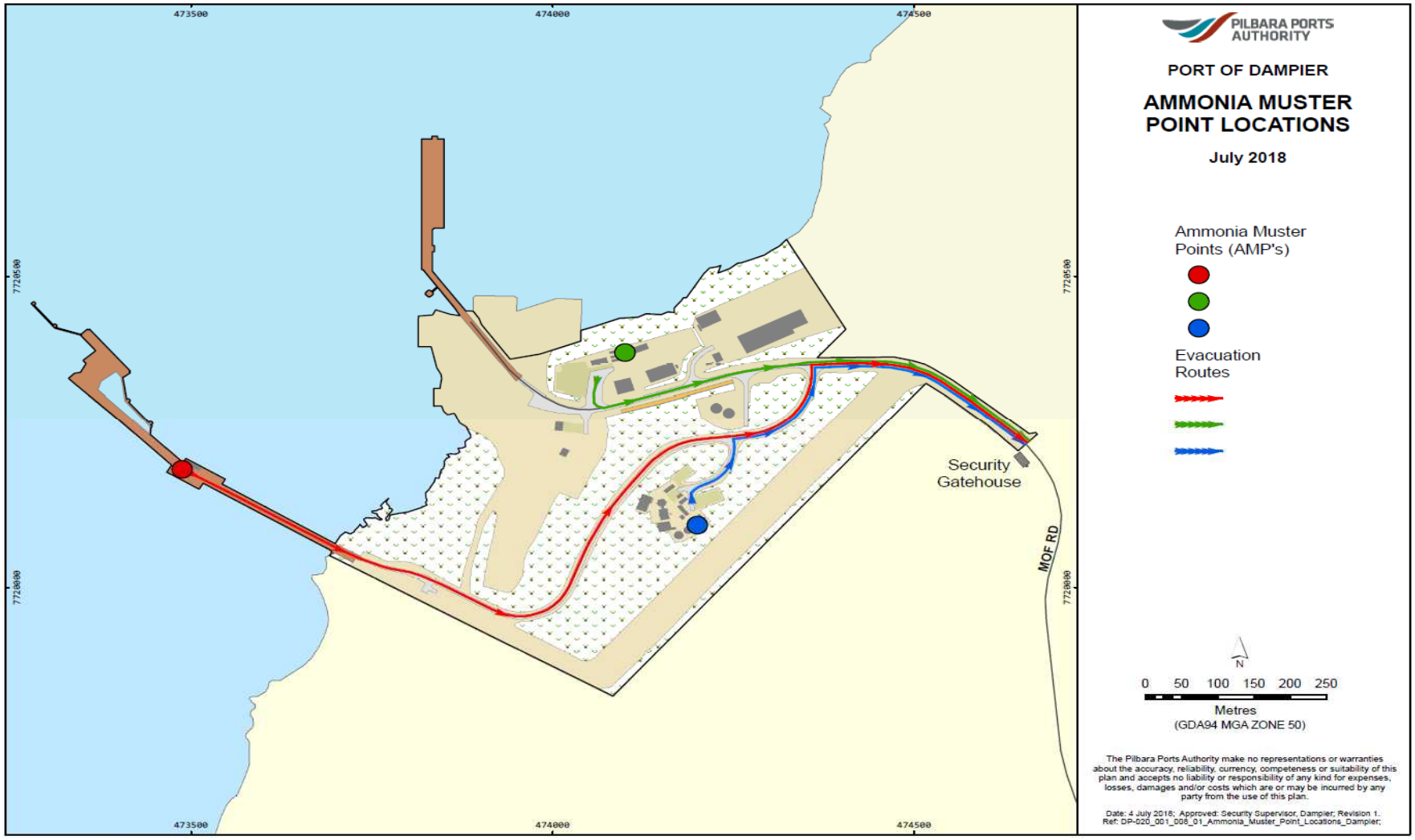
- Temperature
- Oxygen Level Indicator
- Carbon Dioxide Level Indicator
- Carbon Monoxide Level Indicator
- Optional site specific gas concentration monitor(s)

ALARM TYPE		ACTION
CO2 Levels ABOVE **1%** Indicated on Aura-FX Screen		**Action:** Remove Both MARCISORB CO_2 Cartridges from scrubber and replace with new cartridges. **Note:** Refer to LIFE SUPPORT SETTINGS TABLE on Page 7 for approximate chemical change out durations.
CO Levels ABOVE **25ppm** Indicated on Aura-FX Screen		**Action:** Ensure MARCISORB CO Cartridge has been placed on scrubber.
O2 Levels ABOVE **23%** Indicated on Aura-FX Screen		**Action:** Turn O_2 regulator DOWN one (1) notch. Ensure regulator is set to correct flow rate (e.g. if 10 persons, set to 5 liters of flow). Refer to LIFE SUPPORT SETTING TABLE on Page 7. **Note:** To adjust oxygen flow rate, AODS bypass must be installed. Refer to AODS Bypass Instructions on Page 6.
O2 Levels BELOW **18.5%** Indicated on Aura-FX Screen		**Action:** Turn O_2 regulator UP one (1) notch (repeat as necessary). **Note:** To adjust oxygen flow rate, AODS bypass must be installed. Refer to AODS Bypass Instructions on Page 6.

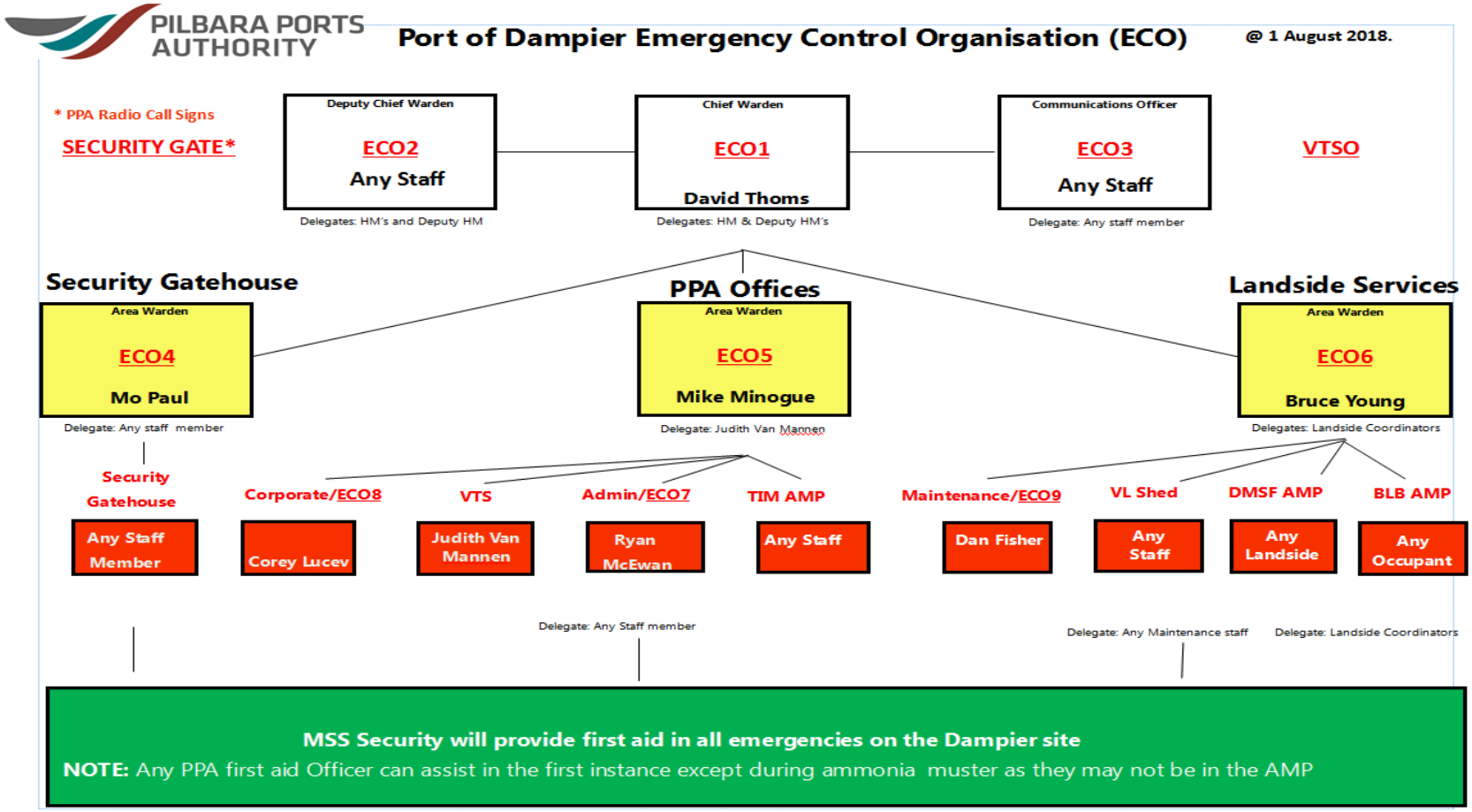
APPENDIX C: LOCATION OF EMERGENCY DEVICES



APPENDIX D: AMP LOCATIONS AND EVACUATION ROUTES



APPENDIX E: DAMPIER ECO TEAM


PILBARA PORTS AUTHORITY
Port of Dampier Emergency Control Organisation (ECO)
@ 1 August 2018.
* PPA Radio Call Signs
SECURITY GATE*
Deputy Chief Warden
ECO2
Any Staff
Delegates: HM's and Deputy HM
Chief Warden
ECO1
David Thoms
Delegates: HM & Deputy HM's
Communications Officer
ECO3
Any Staff
Delegate: Any staff member
VTSO
Security Gatehouse
Area Warden
ECO4
Mo Paul
Delegate: Any staff member
PPA Offices
Area Warden
ECO5
Mike Minogue
Delegate: Judith Van Mannen
Landside Services
Area Warden
ECO6
Bruce Young
Delegates: Landside Coordinators
Security Gatehouse
Any Staff Member
Corporate/ECO8
Corey Lucev
VTS
Judith Van Mannen
Admin/ECO7
Ryan McEwan
TIM AMP
Any Staff
Maintenance/ECO9
Dan Fisher
VL Shed
Any Staff
DMSF AMP
Any Landside
BLB AMP
Any Occupant
Delegate: Any Staff member
Delegate: Any Maintenance staff
Delegate: Landside Coordinators
MSS Security will provide first aid in all emergencies on the Dampier site
NOTE: Any PPA first aid Officer can assist in the first instance except during ammonia muster as they may not be in the AMP

APPENDIX F: DRAGER PARAT INDUSTRIAL ESCAPE HOOD USER INFORMATION

Dräger PARAT® 4500
Industrial Escape Hood

Where hazardous substances exist in your workplace, you can never entirely rule out the possibility of these substances leaking out into the air. However, with the correct safety precautions, including the use of the Dräger PARAT® 4500, you can escape safely.

Equipped with a highly efficient combination filter the Dräger PARAT 4500 Industrial Escape Hoods give you a minimum of 15 minutes escape protection against toxic industrial gases, fumes, and particles – helping you to escape to safety.

The Dräger PARAT 4500 hood protects the entire head from toxic gases and dusts and ensures a safe escape also for bearded users and spectacle wearers.

In an escape situation there is no time for blurred vision. The Dräger PARAT 4500's wide, anti-fog coated visor keeps vision clear during an escape.

According to your application you can choose from three different packaging options of the Dräger PARAT 4500: the soft pack easy to carry along, the traveller pack in a well-protected plastic case and the heavy-duty box tried and tested in heavy industry.

Benefits:

- Highly visible hood in a universal size with a flexible neck seal
- Wide, anti-fog coated visor for a clear view during an escape
- Highly efficient ABEK-P15 filter: protects from toxic industrial gases, fumes and particles
- Three different packaging variations – the right option for every environment

Dräger PARAT® 4500:
Industrial escape hood

Dräger PARAT® 4520:
Soft-Pack version

TECHNICAL DATA

Filter performance:	Combination cartridge (gas & particle filter) provides protection against organic and inorganic gases and particles, Filter Type ABEK-P15 approved in accordance to DIN 58647 Part 7
Approved duration:	minimum 15 minutes
Service Life:	12 years total (4 years maintenance free – thereafter filter change every 4 years)
Weight:	approx. 600 grams
Dimensions:	Dräger PARAT 4520 Soft-Pack & Dräger PARAT 4530 Traveller-Pack:
	8 x 19 x 13,5 cm (H x L x W)
	Dräger PARAT 4560 Box:
	18 x 19 x 8 cm (H x L x W)
Approval:	Approved in accordance to DIN 58647 Part 7 (CE mark 0158)
Particle filtration efficiency:	in accordance with EN143:2000 (P2)

Filter capacity according to DIN 58647-7*

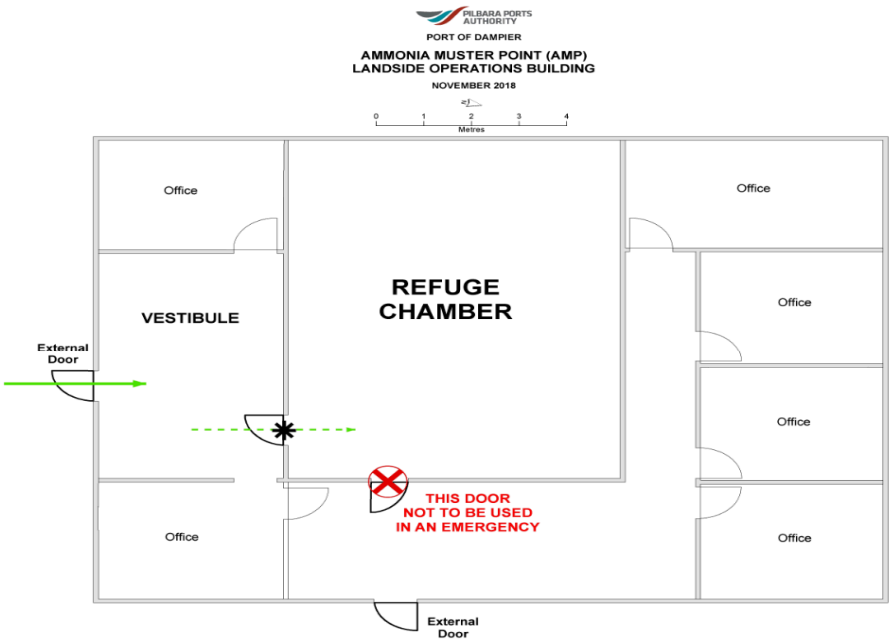
Type	Test gas	Concentration in ml/m³	Breakthrough in ml/m³	Minimum breakthrough time in min
A	Cyclohexane (C_6H_{12})	2,500	10	15
B	Chlorine (Cl_2)	2,500	0.5	15
B	Hydrogen sulphide (H_2S)	2,500	10	15
B	Hydrogen cyanide (HCN)	2,500	10	15
E	Sulphur dioxide (SO_2)	2,500	5	15
K	Ammonia (NH_3)	2,500	25	15
B	Hydrogen sulphide (H_2S)	10,000*)	20	5

* Test conditions according to DIN 58647-7: 30 L/min, 70% relative humidity, 20°C.
*) To determine the breakthrough capacity of the gas filter it is additionally tested with 10,000 ml/m³ hydrogen sulphide.

ORDER INFORMATION

Dräger PARAT 4520 Soft-Pack, in a handy travel case	R 57 977
Dräger PARAT 4530 Traveller-Pack, in a plastic case	R 57 979
Dräger PARAT 4560 Box	R 57 980
Dräger PARAT Training hood	R 54 105
Spare parts kit Dräger PARAT 4500 (includes ABEK-P15 replacement filter and exhalation valve)	R 57 978
Wall holder for Dräger PARAT 4530 Traveller-Pack	R 51 906
Carrying harness for Dräger PARAT 4500 Traveller-Pack and Soft-Pack	R 53 205
Shoulder strap to go with harness (R 53 205)	R 53 783
Waist belt for use with carrying harness (R 53 205)	R 53 026
Hip belt for use with Dräger PARAT 4560 Box	67 33 934

APPENDIX G: FLOOR PLANS FOR TIM AND LANDSIDE AMP'S



✱ NOTE: REFUGE CHAMBER DOORS **MUST NOT BE OPENED** WHILE ANY EXTERNAL DOOR IS OPEN