



REPORT

International Cyanide Management Code Recertification Audit

*Orica Australia Pty Ltd – Laverton Warehouse Facility (Toll Global Logistics) –
Production Facility ICMC Recertification Audit – Summary Audit Report*

Submitted to:

**International Cyanide
Management Institute (ICMI)**
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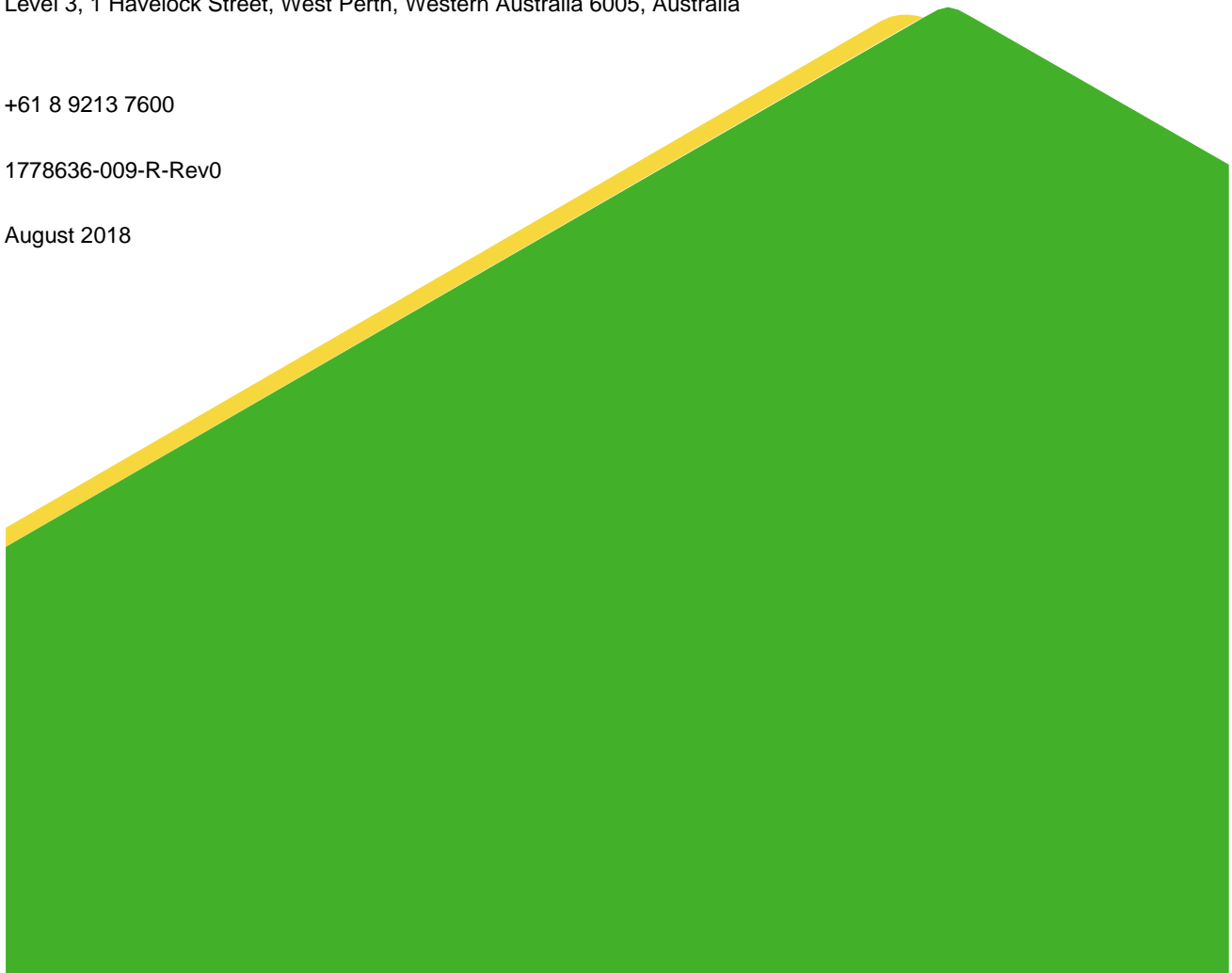
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1778636-009-R-Rev0

August 2018



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APPENDICES

APPENDIX A Important Information

1.0 INTRODUCTION

1.1 Operational Information

Name of Production Facility:	Laverton Warehouse Facility
Name of Facility Owner:	Toll Global Logistics
Name of Facility Operator:	Toll Global Logistics
Name of Responsible Manager:	Joe Quagliata, Orica Australia Cyanide Logistics Lead
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1.2 Description of Operations

1.3 Orica Australia Pty Ltd

Orica is an Australian-owned, publicly listed company with global operations. Orica is managed as discrete business units that produce a wide variety of products and services. The Mining Chemicals unit is based in Australia and exports products to Asia, Africa and the Americas, as well as supplying the local Australian industry. This unit's main product is sodium cyanide, which is manufactured at Orica's Yarwun Production Facility (Yarwun Facility) in Queensland, Australia. Orica Mining Chemicals is the world's second largest producer of cyanide.

1.4 Yarwun Production Facility

Orica's Yarwun Facility, which is located approximately 8 km by road from Gladstone, Queensland, commenced operations in 1989 and is engaged in the manufacture of cyanide (both solid and liquid forms), ammonium nitrate, nitric acid, chlorine, sodium hydroxide, sodium hypochlorite, hydrochloric acid and expanded polystyrene balls. The Yarwun Facility was recertified by the ICMI as being compliant with the Code on 22 February 2017.

1.5 TGL Laverton Facility

TGL is one of Australia's largest suppliers of outsourced logistics services to the chemical and plastics sector. TGL has a network of dangerous goods warehouses, operating in mainland capitals and selected regional centres with specialised warehousing and distribution capabilities.

The TGL Laverton Facility at 180 Fitzgerald Road, Laverton North, is a dangerous goods warehousing and distribution facility. The primary function of the Facility is the storage and handling of packaged and intermediate bulk chemical products in eight on-site warehouses and in a number of external storage locations. A proportion of the products stored and handled on site are dangerous goods, with food grade materials and non-dangerous goods also being stored and handled on the site. Storage of goods on site is controlled by an electronic management system (PWMS).

The Laverton Facility provides interim storage of cyanide under a contract arrangement for Orica. Shipping containers arriving at the Facility from Orica’s Yarwun Facility are destuffed and stored in warehouses (Warehouse 1) until they are required for end use customers, typically located in West Africa and Tasmania, Australia. The warehouse is divided in two (i.e. 1A, 1B). Previously warehouses 5 and 6 were also used for the storage of cyanide but this was ceased early in the audit period.

1.6 Auditors Findings and Attestation

in full compliance with

Laverton Warehouse

**The International
Cyanide Management
Code**

Facility is:

in substantial compliance with

not in compliance with

Audit Company:

Golder Associates Pty Ltd

Audit Team Leader:

Mike Woods Exemplar Global (113792)

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There were no Cyanide exposure incidents noted as occurring during the audit period.

Name and Signatures of Auditors:

Name	Position	Signature	Date
Mike Woods	Lead Auditor and Technical Specialist		7 August 2018

1.7 Dates of Audit

The warehouse (production) audit and reporting was undertaken between February and May 2018. The field component of the audit was undertaken 13-15 February 2018.

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Cyanide Production Operations and using standard and accepted practices for health, safety and environmental audits.

Laverton Warehouse Facility
Name of Facility


Signature of Lead Auditor

7 August 2018
Date

2.0 PRINCIPLES

2.1 Principle 1 – Operations

Design, construct and operate cyanide production facilities to prevent release of cyanide.

2.1.1 Production Practice 1.1

Design and construct cyanide production facilities consistent with sound, accepted engineering practices and quality control/quality assurance procedures.

The operation is in full compliance with **Production Practice 1.1**
 in substantial compliance with
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 1.1 requiring cyanide production facilities to be designed, constructed and operated to prevent releases of cyanide.

The Facility was built as a dedicated dangerous goods storage facility in the 1980s and was extended in 2000 (Stage 6). Toll purchased the Facility in 2007. There was one change to the facility during the audit period which related to external bund for storage of isocontainers. No changes to the warehouse facilities have been undertaken during the audit period. The facility was previously assessed as compliant with the Code and no changes to the warehouse facility have been made with the exception of improvements to the external bund for isocontainer storage.

The facility is regulated under the Victorian Occupational Health and Safety Regulations 2007 as a major hazardous facilities (MHF) and is subject to a Licence to Operate a Major Hazard Facility. The licence application process involves the submission of a Safety Case which was under review for re-submission at the time of the audit as part of the normal licence renewal process. The issuing of a Licence to Operate a Major Hazard Facility by the regulatory authority, which followed an assessment of the safety and reliability aspects of the design and construction of the Facility, implies that the continued operation of the Facility within established parameters will protect against cyanide releases and exposures.

The Facility does not produce cyanide or directly handle cyanide product. The Facility is a warehousing operation that removes IBCs from shipping containers and stores the IBCs within warehouses and then repacks shipping containers for export.

The warehousing facilities are constructed with materials that are compatible with the storage of wooden composite IBCs. Appendix H of the Safety Case Review and Revision noted that Warehouses 1, 5 and 6 were steel framed and steel clad warehouses with concrete floors. The use of warehouses 5 and 6 was ceased early in the audit period.

Warehouse 1 was fitted with a 6% dry foam automated fire suppression system while Warehouse 6 was fitted with 3% wet foam automated fire suppression system which was accepted during the previous audit and there has been no change to foam system for Warehouse 1 during audit period, still running AFFF/AR Foam system. The Facility does not produce cyanide or directly handle cyanide product. The Facility is a warehousing operation that removes IBCs from shipping containers and stores the IBCs within warehouses and then repacks shipping containers for export. As such, the requirement for automatic systems or "interlocks" to shut down production systems and prevent releases due to power outages or equipment failures is not applicable.

Cyanide was observed to be stored on a concrete surface that was likely to minimise seepage to the subsurface. Floors within Warehouses 1, 5 and 6 are constructed from concrete that appeared to be in good condition. The floors are bounded by a containment bund (0.25 m high in Warehouse 1 and 0.15 m high in Warehouses 5 and 6), thus preventing stormwater ingress and releases from the warehouse. The floors grade to internal concrete sumps that flow to external concrete sumps.

The Facility does not produce cyanide or directly handle cyanide product, as such, the requirement for methods to prevent the overfilling of cyanide process and storage vessels is not applicable. And similarly, the secondary containment requirement for process and storage tanks and containers is not applicable

Warehouses 1, 5 and 6 have concrete floors bounded by containment bund (0.25 m high in Warehouse 1 and 0.15 m high in Warehouses 5 and 6) preventing stormwater ingress and releases from the warehouse. Pipe flow back and design storm events are not applicable as cyanide within IBCs is only stored within roofed warehouses.

Solid cyanide within isocontainers or shipping containers can be stored on an external concreted bunded area. The volume of the bund exceeds the volume of an isocontainer or shipping and the product is in solid form and the requirement for spill prevention or containment for cyanide solution pipelines is not applicable.

2.1.2 Production Practice 1.2

Develop and implement plans and procedures to operate cyanide production facilities in a manner that prevents accidental releases.

The operation is **in full compliance with** **Production Practice 1.2**
 in substantial compliance with
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 1.2 requiring the development and implementation of plans and procedures to operate cyanide production facilities in a manner that prevents accidental releases.

The Facility has developed formal procedures that describe the standard practices necessary for its safe and environmentally sound operation.

The Facility is a MHF and there is a Safety Case that provides the basis for the safe operation of the Facility. The Facility has procedures for unpacking and loading of shipping containers, which is the primary function of the Facility. The Facility does not handle raw materials or unpackaged cyanide.

Procedures include:

- Unpacking of containers
- Housekeeping and equipment inspections
- Personal protective equipment requirements
- Emergency response
- Management of change.

The *Emergency Planning Manual* does consider potential failure scenarios appropriate for its site-specific environmental and operating circumstances. The Facility stores cyanide within IBCs within dedicated warehouse buildings or within isocontainers or shipping containers within designated external storage areas. At no time is the cyanide product handled or mixed at the site.

The *Emergency Planning Manual* contains sufficient procedural information to allow these actions to be conducted and details persons responsible to undertake the actions. These actions have been specified for the three scenarios applicable to the activities at the site:

- Catastrophic release of HCN gas
- Releases during loading/unloading
- Releases during fires and explosions

There was an incident on site relating to minor damage of a sparge isocontainer that did not result in exposure or loss of containment but did involve response by TGL and Orica to rectify the situation and enable return transport to Orica's production facility to enable discharge of the product and repair of the isocontainer.

The Facility has a *Management of Change* (MOC) procedure that outlines the assessment of change. The scope of the procedure covers:

...all proposed changes to compliance and process, plant equipment & building, human resources and new customers or products or any proposed change that will or may have impact upon health and safety, the environment, security or compliance to regulatory requirements, policy or procedure.

The flow chart within the procedure requires a risk assessment to be completed for safety and environment issues. Persons knowledgeable in safety and environmental aspects provide input into the risk assessment process.

One MOC relevant to cyanide storage was completed during the audit period relating to upgrades of external concrete storage and bund. A review of the risk assessment confirm that the site's procedure had been followed.

The Facility does not produce cyanide or directly handle cyanide product. The Facility is a warehousing operation that removes IBCs from shipping containers and stores the IBCs within warehouses and then repacks shipping containers for export.

Preventative maintenance programmes required are only relevant for forklift operations and racking systems. Forklift operators are required to conduct pre-operational checks on all lifting equipment each morning prior to use. The daily checks, along with engine hours are recorded on a weekly check sheet. Any deficiencies noted are required to be signed off as completed by the mechanic and the repair date also noted. Forklifts are also serviced by external mechanics as part of a preventative maintenance programme based on engine hours.

TGL engaged Colby For Service to undertake a six monthly preventative inspection programme on racking facilities within its warehouses. The preventative maintenance programme has been in place since 2008.

The Facility does not produce cyanide or directly handle cyanide product. The Facility is a warehousing operation that removes IBCs from shipping containers and stores the IBCs within warehouses and then repacks shipping containers for export.

The requirement for monitoring process parameters with necessary instrumentation is not applicable.

The design of the warehousing drainage system prevents unauthorised/unregulated discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in a secondary containment area. Solid product is stored in IBCs within warehouses.

Solid product is stored in solid form within sparge isocontainers or shipping containers within designated external areas. Release of cyanide into the drainage system could occur in the unlikely event of an incident resulting in loss of containment and this scenario is addressed through the Emergency Planning Manual.

The Facility stores cyanide in IBCs within passively ventilated warehouses (1, and previously 5 and 6). Ventilation is provided via grated gaps at the base of the warehouse walls and whirlybird style roof vents. The storage of cyanide within IBCs within enclosed warehouses minimises the potential for exposure of cyanide to moisture. The Facility is a secured MHF Facility, with strictly controlled public access. The warehouses containing cyanide are also locked. TGL have access to calibrated HCN monitor that can be used to check levels if need and for emergency response.

There are procedural arrangements to ensure that the cyanide produced by Orica is packaged and labelled as required by the political jurisdictions through which loads will pass. The packaging is undertaken at Orica's production facility in Yarwun and is not modified by TGL at the warehouse facility. The Orica production facility was re-certified under the Code on 22 February 2017. The Orica ICMC Compliance Coordinator advised that Orica monitors international legislation applicable to its supply of cyanide throughout the world.

2.1.3 Production Practice 1.3

Inspect cyanide production facilities to ensure their integrity and prevent accidental releases.

in full compliance with

The operation is

in substantial compliance with

Production Practice 1.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 1.3 requiring the inspection of cyanide production facilities to ensure their integrity and prevent accidental releases.

The Facility does not produce cyanide or directly handle cyanide product. The Facility is a warehousing operation that removes IBCs from shipping containers and stores the IBCs within warehouses and then repacks shipping containers for export.

The requirement for routine inspections of tanks holding cyanide solutions and pipelines, pumps and valves for structural integrity and signs of corrosion and leakage is not applicable.

TGL engaged Colby for Service to undertake a six monthly preventative inspection programme on racking facilities within its warehouses. The preventative maintenance programme has been in place since 2008.

Secondary containments are inspected for their integrity and sumps are checked for the presence of fluids. Inspections are recorded.

Inspection frequencies for the racking systems, secondary containments and sump collection systems appear sufficient to assure that equipment is functioning within design parameters.

The documentation identifies specific items to be observed and includes the date of the inspection, the name of the inspector, and observed deficiencies. The nature and date of corrective actions were noted as being documented, and records are retained.

2.2 Principle 2 – Worker Safety

Protect workers' health and safety from exposure to cyanide

2.2.1 Production Practice 2.1

Develop and implement procedures to protect plant personnel from exposure to cyanide.

in full compliance with

The Transfer Facility is

in substantial compliance with

Production Practice 2.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 2.1 requiring the Facility to develop and implement procedures to protect plant personnel from exposure to cyanide.

The Facility has developed formal procedures to minimise worker exposure during:

- a) Normal plant operations from receipt of raw materials through finished product packaging and shipping
- b) Non-routine and emergency operations
- c) Maintenance related activities

The Facility is a MHF and there is a Safety Case that provides the basis for the safe operation of the Facility. The Facility has procedures for unpacking and loading shipping containers, which is the primary function of the Facility. The Facility does not handle raw materials or unpackaged cyanide.

Procedures include:

- Unpacking of containers
- Housekeeping and equipment inspections
- Personal protective equipment requirements
- Emergency response
- Management of change.

As discussed in 1.2.3, the Facility has implemented a formal site change management procedure to review proposed process and operational changes and modifications, or their potential impacts on worker health and safety; including the necessary worker protection measures.

The Facility has a Management of Change procedure that outlines the assessment of change. The scope of the procedure covers:

...all proposed changes to compliance and process, plant equipment & building, human resources and new customers or products or any proposed change that will or may have impact upon health and safety, the environment, security or compliance to regulatory requirements, policy or procedure.

The flow chart within the procedure requires a risk assessment to be completed for safety and environment issues. Persons knowledgeable in safety and environmental aspects provide input into the risk assessment process.

The Facility does solicit and considers worker input in developing and evaluating health and safety procedures.

SOPs are issued to personal who undertake the job on an annual basis and these are recorded on review. This process is facilitated by the Compliance Officer.

The Facility has established a health and safety committee that meets monthly on site and there is a formalised agenda and minutes for this meeting that includes consideration of safety matters. The agenda for the meeting includes Management of Change, Training, Procedures and Audits.

There are also elected health and safety representatives who have a dedicated role under Victoria's work safety legislation and are part of the formalised consultation arrangements at the site. The Facility does not produce cyanide or directly handle cyanide product. The Facility is a warehousing operation that removes IBCs from shipping containers and stores the IBCs within warehouses and then repacks shipping containers for export. The Facility has developed and submitted a Safety Case to the regulator under major hazard legislation.

The Facility does not utilise monitoring devices under normal conditions due to the nature of the task and conditions of storage. The Facility has undertaken initial measurements for HCN within the warehouses by monitoring for HCN four times a day over a period of one month to confirm that under normal operating conditions controls are adequate to limit worker exposure. Additional ad hoc monitoring conducted by Orica's ICMC Compliance Coordinator over a four hour period at that time also did not identify the presence of HCN gas. The Facility does have a HCN gas meter available on site should HCN monitoring or assessment be needed in the event of damaged packaging or emergency situation.

The Facility stores cyanide in IBCs within passively ventilated warehouses. Ventilation is provided via grated gaps at the base of the warehouse walls and "whirlybird" style roof vents. The HCN monitoring equipment is maintained, tested and calibrated as directed by the manufacturer.

The Facility has a Drager X-am 7000 meter that has a HCN sensor. Calibration records are retained for at least one year. The Facility has identified areas and activities where workers may be exposed to HCN gas or sodium cyanide dust and requires the use of personal protective equipment, as necessary, in these areas when these activities are being performed.

The Facility is a warehousing Facility that handles the IBCs that contain cyanide product. HCN monitoring equipment is only required when dealing with a spilt product or where it is suspected that the product/package may be wet.

The Facility has provisions to ensure that a buddy system is used, or workers can otherwise notify or communicate with other personnel for assistance, help or aid where deemed necessary.

The Facility has an intrinsically safe radio communication system in operation. Mobile phones are not allowed within the warehousing area. The Facility does assess the health of employees to determine their fitness to perform their specified tasks. The Facility has a pre-employment medical process to assess worker capability and check that they are medically fit to undertake the inherent requirements of their role.

The Facility also has a drug and alcohol testing procedures for random, for cause on minimum of an annual basis using a third party provider.

The Facility does not require personnel to change clothing for accessing the cyanide storage areas. The warehousing of cyanide contained within IBCs does not present a risk to employees that require managing through a clothing change policy.

As cyanide is contained within IBCs or isocontainers and contact with cyanide would not occur under normal operating circumstances, and given the controls the site has implemented as a MHF, the Auditor is satisfied that a clothes change policy is not applicable.

Warning signs advising workers that cyanide is present and that, if necessary, suitable PPE must be worn, are located around the Facility.

Warning signs are located on the outside of the warehouse buildings at entrance points and within the warehouse on the outside of the IBCs. The site is a designated MHF under Victorian legislation as it is a dangerous goods storage Facility. Personnel are prohibited from smoking, eating and drinking, and having open flames within the site, including the facilities used to warehouse Orica's cyanide product.

Signage is displayed at the main gate and at the access point to the site office to communicate these prohibitions. These messages are reinforced in the Site Induction and in the training materials for the various warehouses.

2.2.2 Production Practice 2.2

Develop and implement plans and procedures for rapid and effective response to cyanide exposure.

in full compliance with

The operation is

in substantial compliance with

Production Practice 2.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 2.2 requiring the development and implementation of plans and procedures for rapid and effective response to cyanide exposure.

The Facility has developed specific written emergency response plans for cyanide exposures at the warehouse Facility.

The *Emergency Planning Manual* for the site outlines the emergency management framework and includes basic instructions on responding to cyanide related incidents.

The *Safety Procedure for Cyanide Products* provides more detailed response actions for the medical treatment. The procedures have been developed in consultation with the cyanide producer Orica.

Section 3 of the *Emergency Planning Manual* specifies the following response actions:

- Call for nearby help (raise the alarm)
- Wear appropriate PPE

- Send for first aid officer:
 - Bring oxy-viva or air-viva
 - Bring cyanide-poisoning kit
 - Refer to relevant Safety Data Sheet (SDS)
- Call ambulance
- Remove casualty and decontaminate them
- Follow first aid procedures, refer to SDS
 - If the casualty is not breathing or has difficulty breathing, a first aid officer qualified in oxygen therapy shall administer oxygen
 - Don't use mouth-to-mouth resuscitation if HCN gas has or may have been inhaled
 - If cardiac arrest (no breathing or pulse) occurs, commence cardiopulmonary resuscitation. Don't cease until medical help arrives.
- Request urgent medical help
- Where skin contamination has occurred, remove clothing and flush skin with large amounts of water
- Take casualty to hospital with cyanide poisoning kit.

Showers, low-pressure eye wash stations and non-acidic fire extinguishers are located at strategic locations throughout the Facility. They are maintained and inspected on a regular basis. The Facility has a six monthly preventative maintenance inspection and servicing programme.

Dry powder fire extinguishers were observed throughout the Facility. No carbon dioxide fire extinguishers were observed.

Active fire suppressions systems are installed in the buildings. The system is controlled by heat detectors and individual sprinkler heads will activate as needed. The system is linked to the fire brigade.

The Facility has oxygen, a resuscitator, antidote and a means of communication or emergency notification readily available for use in the plant.

Emergency showers and eye wash stations are located strategically throughout the Facility and a shower is located at the entrance to Shed 5 is linked to a local audible alarm.

There is a site wide evacuation alarm and where the alarm sounds for longer than 20 seconds, personnel evacuate to one of the three designated muster points at the site. There is a site two way radio system that is used in the event of an emergency.

The Facility has five cyanide antidote kits (dicobalt ededate). An oxygen resuscitator is stored in the First Aid room in the main office. The Facility inspects its first aid equipment regularly to assure that it is available when needed. The first aid and emergency response equipment is stored and tested as directed by their manufacturer and replaced on a schedule that assures they will be effective when used. The Facility has developed a checklist that prompts the inspector to check the contents of kits on a regular basis. An inspection of the first aid equipment found the equipment listed to be present and in serviceable condition.

Safety data sheets (SDS) and first aid procedures on cyanide safety are in the language of the workforce (English) and are available to workers at the site. All the signs and procedures are in English, which is the official language. The IBC external packaging also provides information on cyanide hazards.

Cyanide is only present on site in solid form within IBCs or isocontainers at the site. There are no tanks, pipes or other infrastructure that contains cyanide. Orica IBCs and isocontainers are labelled in accordance with ADG and IMDG standards, which identify and alert workers to the contents of the package.

As noted in previously, the Facility provides warehousing services for cyanide packaged in IBCs, accordingly there is not a clothing change policy or formalised decontamination procedure applicable for the site.

Notwithstanding, information and instruction is provided on good hygiene practices when working around chemicals. Information is provided through the site induction process and includes the following guidance:

- Hands and face must be washed before eating, drinking or smoking and before using toilet facilities
- If you believe you have come in contact with cyanide, raise the alarm

If you have been splashed with solution, get under safety shower and take off all clothing.

The Facility has its own on-site capability to provide first aid, but not higher level medical assistance to workers exposed to cyanide. The site has a number of first aid responders that are based at the Facility. The Facility has first aid equipment located at the main office.

There are first aid officers that are trained to provide first response in the event of an emergency. In the event that medical treatment is required, the casualty would be transported to obtain qualified medical treatment at a nearby hospital or medical centre. In the event that transport of exposed workers is required to off-site medical facilities the transport would be undertaken by the Victorian Ambulance Service. The Victorian Ambulance Service is a dedicated provider that provides services across the community and is linked to Australia's national 000 telephone emergency services phone number.

The Facility has alerted local hospitals, clinics, etc. of the potential need to treat patients for cyanide exposure, and the Facility is confident that the medical provider has adequate, qualified staff, equipment and expertise to respond to cyanide exposures.

The nearest hospital is the Footscray Hospital, which is a major accident and emergency department. There are currently ten specialist emergency physicians and 13 emergency medicine registrars on staff and other emergency registrars on inpatient unit rotations at any one time. The Department of Emergency Medicine holds a two-year accreditation from the Australasian College for Emergency Medicine for Advanced Training. The site would provide the SDS for the chemical the individual.

Mock emergency drills are conducted periodically to test response procedures for various exposure scenarios. The Facility conducts an annual site evacuation drill and has conducted dangerous goods spill response drills in September 2017 (non-cyanide) and responded to an incident involving shunting of an isocontainer stacked upon another in 2016.

There are debrief reports completed following mock emergencies and the debrief process considers the how the response was performed, and the procedures used.

Procedures are in place to investigate and evaluate cyanide exposure incidents to determine if the operations programmes and procedures, to protect worker health and safety and to respond to cyanide exposures, are adequate or need to be revised.

The Facility has a formalised incident reporting procedure. TGL has an Incident Management System, which is a computerised database for collection of incident related data. The Facility uses the “5 Why” incident investigation tool for incidents and ICAM for higher risk/serious incidents.

The Facility has had one cyanide incident involving minor damage to an isocontainer. This incident involved shunting of an isocontainer stacked another by the straddle. No worker exposure or release of cyanide to the environment resulted from the incident. A detailed incident report and investigation was completed involving both Orica and TGL.

2.3 Principle 3 – Monitoring

Conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.

2.3.1 Production Practice 3.1

Conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.

in full compliance with

The operation is

in substantial compliance with

Production Practice 3.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 3.1 requiring environmental monitoring to be conducted to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.

Warehouses at the Facility are enclosed to prevent stormwater ingress. Floors within Warehouses 1, 5 and 6 are constructed from concrete that appeared to be in good condition. The floors are bounded by a containment bund preventing stormwater ingress and releases from the warehouse. The floors grade to internal concrete sumps that flow to blind external concrete sumps.

The Facility does not have an indirect discharge to surface water.

The Facility does not produce cyanide or directly handle cyanide product. The Facility is a warehousing operation that removes IBCs from shipping containers and stores the IBCs within warehouses and then repacks shipping containers for export. The storage of solid cyanide within IBCs on sealed and covered secondary containment areas limits the potential pathway between the contaminant source and groundwater receptor. TGL and the Victorian Environmental Protection Authority have not identified groundwater contamination by cyanide (or other chemicals) as an issue for the site. Accordingly, groundwater monitoring is not applicable to the facility.

The Facility does not produce cyanide or directly handle cyanide product. The Facility is a warehousing operation that removes IBCs from shipping containers and stores the IBCs within warehouses and then repacks shipping containers for export. The Facility has developed and submitted a Safety Case to the regulator under major hazard legislation and HCN generation was assessed in this process and was not considered a risk unless in the event of an incident. The Facility does have a multigas meter available on site should HCN monitoring or assessment be needed in the event of damaged packaging or emergency situation.

The Facility stores cyanide in IBCs within passively ventilated warehouses. Ventilation is provided via grated gaps at the base of the warehouse walls and “whirlybird” style roof vents. The Facility does not utilise monitoring devices under normal conditions due to the nature of the task and conditions of storage.

2.4 Principle 4 – Training

Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

2.4.1 Production Practice 4.1

Train employees to operate the plant in a manner that minimises the potential for cyanide exposures and releases.

The operation is **in full compliance with** **Production Practice 4.1**
 in substantial compliance with
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 4.1 requiring employees to be trained to operate the plant in a manner that minimises the potential for cyanide exposures and releases.

The Facility trains workers to understand the hazards of cyanide and refresher training is periodically conducted.

The training material outlines the following topics:

- What is sodium cyanide?
- Cyanide exposure routes to the body
- Symptoms of cyanide poisoning
- First aid and medical treatment
- Safe handling procedures
- Summary/Discussion/Questions.

The awareness presentation concludes with a knowledge test that is used to assess comprehension of the training. This cyanide awareness course is incorporated into the Facility's training process, which also provides a three yearly refresher schedule for task and induction training.

Site training materials introduce the items of personal protective equipment that are used at the Facility. These include:

- Basic PPE
 - Overalls or trousers and long-sleeved shirt
 - Steel capped safety footwear
 - Safety glasses with side protection
- Supplementary PPE
 - Gloves

- Protective suits
- Respiratory protective equipment
- Additional eye protection
- Self-Contained Breathing Apparatus (SCBA)

Practical training in the correct use of PPE is provided by the Health Safety and Environment (HSE) Advisor on the site.

Recent training records for personnel training were reviewed by the Auditor and training module attendance sheets included aspects on PPE.

Respiratory protection equipment is not normally used by the site other than SCBA for emergency response purposes. SCBA training is conducted by an external provider every three years. To maintain Australian accreditation for the use of SCBA for MSAPMOHS216A – Operate Breathing Apparatus (previous unit of competency code: PMAOHS216B) training is undertaken every three years.

The Facility has a site induction programme that provides the overview of site safety rules and requirements. Workers are then trained through the site passport system, where they are trained up on areas of the Facility. The warehouse numbers are linked to work skills and workers can only work in areas where they have been trained.

To operate a forklift in Australia requires completion of a nationally recognised competency based training programme, which TCS complies with. In addition, the site provides on-site training for the types of forklifts on site and workers need to be passed out on the use of the forklift prior to being allowed to use it. Workers are trained in the procedures for loading and unloading shipping containers and stacking IBCs on racking.

The operation has a site passport system where workers are trained up on areas of the Facility. The warehouse numbers are linked to work skills and workers can only work in areas where they have been trained. The training materials include core skills and duties to be undertaken by the employee to complete the task.

The training elements necessary for the unloading, storage and loading of cyanide IBCs is covered through training for the operation of forklifts, which is part of nationally recognised industry certification, and through on-site procedures and cyanide awareness. Appropriately qualified personnel provide the training. Induction training is provided by the HSE advisor who is familiar with the site operations and associated hazards.

Training on forklift operation and use is provided by nationally recognised training organisations in accordance with the Australian Qualifications framework. Organisations providing certified training meet training qualifications requirements.

Sodium cyanide training is provided through a DVD and questionnaire. This is supplemented by site rules and on the job training, which is provided by the site supervisors.

Employees are trained prior to allowing them to work with cyanide. As noted previously, the Facility has a site induction programme that provides the overview of site safety rules and requirements.

Workers are then trained through the site passport system, where they trained up on areas of the Facility. The warehouse numbers are linked to work skills and workers can only work in areas where they have been trained.

The Facility evaluates the effectiveness of cyanide training by testing. Evaluation questionnaires are used to evaluate the effectiveness of training, for example:

- Sodium Cyanide Safety Guidelines
- Spill Management Training
- Warehouse 5,6,7 Skill Elements

The documentation on which these evaluations have been based is filed in individual staff files. The evaluations are conducted in English, which is the official language.

2.4.2 Production Practice 4.2

Train employees to respond to cyanide exposures and releases.

The operation is **in full compliance with** **Production Practice 4.2**
 in substantial compliance with
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 4.2 requiring employees to be trained to respond to cyanide exposures and releases.

The Facility does train workers in the procedures to be followed if a cyanide release is discovered. Generally, workers are trained to raise the alarm and notify their supervisor. The cyanide awareness training provides guidance on the action to be taken and these are detailed within the *Emergency Planning Manual*. Due to the design of the Facility and unloading areas, cyanide spills would be contained within the shed or on the concrete covered hardstand.

The Emergency Response Team (ERT) consults the SDS and follows instructions for response to the relevant chemical. The ERT receive additional training in response actions and use of equipment and PPE.

The Facility has developed pre-incident plans for cyanide that form part of the emergency planning process and have conducted mock drills in relation to chemical spills and site evacuation. The Facility has a training programme for responders that includes emergency response exercises and skills training. SCBA training is conducted every three years in accordance with industry certification requirements.

There was also a minor incident involving the shunting of a sparge isocontainer that generated a coordinated response from TGL and Orica. Emergency drills are evaluated from a training aspect to determine if personnel have the knowledge and skills required for effective response. Briefing notes are produced at the end of each mock drill. The notes typically detail what happened, what could be done better and actions to be completed.

Training records are retained throughout an individual's employment, documenting the training they have received and including the names of the employee and the trainer, the date of training, the topics covered, and how the employee demonstrated an understanding of the training materials.

Training files for members of the ERT were reviewed and contained evidence of training including course content, assessments and certificates. Where external training is conducted, certificates of attendance or attainment are retained on the individual's file.

2.5 Principle 5 – Emergency Response

Protect communities and the environment through the development of emergency response strategies and capabilities.

2.5.1 Production Practice 5.1

Prepare detailed emergency response plans for potential cyanide releases.

The operation is in full compliance with **Production Practice 5.1**
 in substantial compliance with
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 5.1 requiring a detailed emergency response plan for potential cyanide releases.

The Facility has developed an *Emergency Planning Manual* for the management of emergencies associated with the storage of chemicals including cyanide.

The Facility is a designated MHF under Victorian legislation and is used for the storage and distribution of dangerous goods. The *Emergency Planning Manual* has been developed to manage and mitigate emergencies likely to be encountered by the Major Incident Scenarios under regulations 5.2.9-5.2.11 of the *Occupational Health and Safety Regulations 2007*.

This *Emergency Planning Manual* has been developed to facilitate the effective management of incidents involving:

- Chemicals, general freight and other goods which are in the control
- Possession or ownership of the company and which are being handled, used, transferred, transported or stored
- Company personnel, subcontractors and the public
- Equipment and facilities in the control, possession or ownership of the company

The *Orica Mining Chemicals Emergency Response Guide – Sodium Cyanide* is included in the *Emergency Planning Manual* as Appendix G. The purpose of this Guide is:

...to provide guidance in the development of specific site & transport route emergency response plans for the management of incidents involving cyanide.

The *Emergency Planning Manual* does consider the potential failure scenarios appropriate for its site-specific environmental and operating circumstances. As noted previously the site stores cyanide within IBCs within dedicated warehouse buildings, at no time is cyanide product handled or mixed at the site.

The *Emergency Planning Manual* considers applicable scenarios including:

- Catastrophic release of HCN gas

- Releases during loading
- Releases during fires and explosions

It includes instructions for:

- Emergency procedures for general loss of containment and fire
- Site evacuation
- Special procedures – cyanide fire and spills
- Toxic gas release
- Reporting of incidents and emergencies
- First aid
- Communication, investigation and recovery

The *Emergency Planning Manual* contains sufficient procedural information to allow these actions to be conducted and details persons responsible to undertake the actions. These actions have been specified for three scenarios potentially applicable to the storage of cyanide at the facility:

- Catastrophic release of HCN gas
- Releases during loading/unloading
- Releases during fires and explosions

Additional response procedure information is contained within the *Emergency Response Guide Sodium Cyanide*. Section 3.0 (Specific Emergency Response Guides) details additional specific response procedures for a variety of scenarios involving:

- Dry sodium cyanide spill – inside building/storage facility
- Dry sodium cyanide spill – outside building/storage facility
- Dry sodium cyanide spill – inside shipping container
- Shipping container decontamination
- Handling wet sodium cyanide
- Sodium cyanide spill to waterway
- Response to a fire in the vicinity of stored cyanide.

The *Emergency Planning Manual* does describes specific response actions, as appropriate for the anticipated emergency situations, such as evacuating site personnel and potentially affected communities from the area of exposure.

- The *Responsibilities and Duties* section outlines the actions and responsibilities of the:
 - Incident Coordinator
 - Chief Warden

- ERT
- Compliance Manager

The *Emergency Planning Manual* does consider the site in context of neighbouring facilities and the process for evacuating the site and notifying regulatory authorities of emergency situations.

The *Special Procedures* section provides directions for managing cyanide related spills and emergencies and general first aid response. The Facility has developed pre-incident plans for potential cyanide events that include first aid response.

2.5.2 Production Practice 5.2

Involve site personnel and stakeholders in the planning process.

The operation is **in full compliance with** **Production Practice 5.2**
 in substantial compliance with
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 5.2 requiring the Facility to involving site personnel and stakeholders in the planning process.

The Facility has involved its workforce and stakeholders in the emergency response planning process.

Communities have not been consulted within regard to specific cyanide emergencies as no community or neighbouring business has been identified as likely to be affected (based on a review of potential releases from the Facility and the distances involved). Furthermore, as the Facility is MHF, the Safety Case assessment by the regulator can be considered to satisfy consultation with the community.

Internal stakeholders have been involved in the emergency response planning process through initial document development, training exercises and periodic reviews of the *Emergency Planning Manual*.

The most credible scenario of an incident at the Facility would involve dropping an IBC during a transfer, resulting in a spillage of approximately 1.1 tonnes of solid cyanide. The zone of influence of such a scenario is limited to the Warehouses and would not impact industrial receptors, which are located approximately 200 meters from the storage areas. There is no residential land use in close proximity to the Facility.

The Facility has involved local response agencies such as outside responders and medical facilities in the emergency planning and response process. External responders include Orica, medical facilities, police and fire brigade.

Emergency response planning and response processes are primarily evaluated through the MHF Facility license and approval process. In addition, the regulator undertakes regular inspections of the Facility for compliance with license conditions including emergency response.

Orica provide a technical advisory role in the emergency response process in the event of a cyanide release and would attend site as needed to provide technical guidance as evident with the incident involving shunting of the isocontainer in 2016. Orica's role and approach was confirmed by Orica's Logistics Lead.

The Facility has engaged in regular consultation and communication with stakeholders to assure that the plan addresses current conditions and risks. The facility safety case was under review at the time of the audit and included revision and consultation with stakeholders. Orica are consulted with on response planning and regular consultation with internal stakeholders is undertaken via drills and debriefs.

2.5.3 Production Practice 5.3

Designate appropriate personnel and commit necessary equipment and resources for emergency response.

in full compliance with

The operation is

in substantial compliance with

Production Practice 5.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 5.3 requiring designated appropriate personnel and committed equipment and resources for emergency response.

The *Emergency Planning Manual* does designate appropriate personnel and commit necessary equipment and resources.

The *Responsibilities and Duties* section designates primary and assistant Incident Coordinators with explicit authority to commit the resources necessary to implement the Plan.

Wardens, First Aid Officers and the site ERT are identified within the Plan. The ERT has a team leader and operates under the supervision of the Incident Coordinator. The typical structure consists of:

- One Incident Coordinator
- One ERT Team Leader
- Responders

The plan does require training for personnel including:

- Selection and use of firefighting equipment
- Selection and use of PPE
- Procedures for dealing with chemical spills and fires
- Management of medical emergencies and
- Evacuation procedures.

The *Emergency Planning Manual* includes call-out procedures and 24-hour contact information for the coordinators and response team members. There is a 24 hour contact number and escalation process for contacting members for the incident management and emergency response team.

The Plan specifies the duties and responsibilities of the coordinators and team members. These internal and external stakeholders include:

- Person raising the alarm

- Incident Coordinator
- ERT Team Leader
- Team responders
- Medical Facilities
- Fire Service
- Police

The *Company Premises and Equipment* section lists emergency response equipment that should be available. The Facility does have procedures and checklists to inspect emergency response equipment and assure its availability when required. A review of emergency response equipment during the site inspection found the listed equipment to be present and in serviceable condition.

The plan does describe the role and interface with outside responders in emergency response procedures. These external responders include:

- Medical Facilities
- Fire Service
- Police

As the Facility is a MHF, the role of outside entities is mandated through the emergency response framework implemented by the government of Victoria. There is a formalised licensing and regulatory oversight of the Facility, including for emergency response.

The types of cyanide related emergencies identified are unlikely to require the assistance of outside responders with the exception of large scale fires, where the fire brigade become the lead agency and control the scene. Orica and TGL provide technical advice and support as requested.

2.5.4 Production Practice 5.4

Develop procedures for internal and external emergency notification and reporting.

in full compliance with

The operation is in substantial compliance with **Production Practice 5.4**

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 5.4 requiring development of procedures for internal and external emergency notification and reporting.

The *Emergency Planning Manual* does include procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the emergency, as appropriate.

The *Responsibilities and Duties* section outlines the process for:

- Contacting Toll Customised Solutions Emergency Response Centre

- Reporting emergencies internally
- Reporting to the Environmental Protection Agency
- Notifying the emergency services
- Notifying WorkSafe Victoria

Contact information is contained within the relevant sections of the *Emergency Planning Manual* and the Orica ERS 24 hour contact number is also provided.

The *Emergency Planning Manual* does not include procedures and contact information for notifying potentially affected communities of incidents and/or response measures. As noted previously, cyanide related emergencies have been considered through the safety case process and off-site impacts scenarios have not been identified. As such, contact information and notification procedures have not been developed.

Responsibilities have been allocated within the *Emergency Planning Manual* for communicating with the media. The *Emergency Planning Manual* notes that it is the responsibility of the National Operations Manager to handle information releases, interviews and media visits.

2.5.5 Production Practice 5.5

Incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

The operation is **in full compliance with** **Production Practice 5.5**
 in substantial compliance with
 not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 5.5 requiring the Facility to incorporate monitoring elements that account for the additional hazards of using cyanide treatment chemicals into response plans and remediation measures.

The *Emergency Planning Manual* does describes specific, appropriate remediation measures, such as recovery or neutralisation of solutions or solids, decontamination of soils or other contaminated media and management and/or disposal of spill clean-up debris, and provision of an alternate drinking water supply, as appropriate.

The pre-incident plans outline the response actions including containment and clean-up. These procedures are supported by further detail in the *Orica Mining Chemicals Emergency Response Guide – Sodium Cyanide*, Section 2.4 Decontamination of a Spill of Solid or Liquid Cyanide into Soil and Section 2.5 Use of Sodium Hypochlorite for Decontamination Purposes.

These procedures include descriptions on decontamination of soils or other contaminated media. Given the operation of the facility and location of cyanide on the site, contact of cyanide will soil or water is considered highly unlikely. Notwithstanding, the procedures require the responder to notify the relevant parties listed in the Guide. Orica ERS is listed as the prime contact and information concerning the management of spill clean-up debris is initiated through this service.

Provision of an alternative drinking water supply is not identified as being necessary as spills would be contained within the Facility and the area supplied by a potable water scheme that would not be impacted by a cyanide emergency on site.

The *Emergency Planning Manual* does prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into surface water. Appendix G of the *Emergency Planning Manual (Orica Mining Chemicals Emergency Response Guide – Sodium Cyanide)* specifically states that:

Sodium hypochlorite and ferrous sulphate must never be used to treat cyanide that has been released into natural surface water bodies. Both of these chemicals are toxic to aquatic life. Treatment with sodium hypochlorite can produce cyanogen chloride(CICN), which is hazardous to humans and aquatic life.

The *Emergency Planning Manual* does address the potential need for environmental monitoring to identify the extent and effects of a release. The sampling programme is focused on assessment of contaminants within the on-site containment and stormwater system to prevent off-site release through these systems.

Additionally, Appendix G (*Orica Mining Chemicals Emergency Response Guide – Sodium Cyanide*) of the manual also addresses the potential need for environmental monitoring to identify the extent and effects of a release. Appendix 5 of the Orica Guide contains qualitative tests for environmental monitoring, while Appendix 6 of the Orica Guide details the test methods for cyanide on surfaces, in water and soil.

2.5.6 Production Practice 5.6

Periodically evaluate response procedures and capabilities and revise them as needed.

in full compliance with

The operation is

in substantial compliance with

Production Practice 5.6

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The Facility is in FULL COMPLIANCE with Production Practice 5.6 requiring the Facility to periodically evaluate response procedures and capabilities and revise them as needed.

The *Emergency Planning Manual* does contain provisions for periodically reviewing and evaluating the plan's adequacy and they are being implemented.

The Emergency Planning Manual is at revision 24 and is also part of the formalised review required under the facilities safety case that was in progress at the time of the audit. The operation has also conducted a number of mock drills as part of the review and evaluation process.

Mock emergency drills are conducted and they are used as an effective part of the *Emergency Planning Manual* evaluation process. In addition to mock drills of this nature, the site ERT also receives practical training through maintaining qualifications such as SCBA and fire response.

3.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled – “Important Information Relating to this Report”, which is included in Appendix A of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Signature Page

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APPENDIX A

Important Information

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