October 2014

# INTERNATIONAL CYANIDE MANAGEMENT CODE TRANSPORT CERTIFICATION AUDIT

# Orica Australia Pty Ltd - Australian Supply Chain Recertification Audit, Summary Audit Report

**Submitted to:**
International Cyanide Management Institute
1400 I Street, NW, Suite 550
Washington, DC 20005
UNITED STATES OF AMERICA

Orica Australia Pty Ltd
1 Nicholson Street
EAST MELBOURNE VIC 3002
AUSTRALIA

REPORT

**Report Number.** 137648040-004-R-Rev1

**Distribution:**

1 Copy - ICMI (+1 Electronic)
1 Electronic Copy - Orica
1 Electronic Copy - Golder Associates Pty Ltd

Golder Associates

# Table of Contents

# 1.0 INTRODUCTION

## 1.1 Operational Information

| | |
|---|---|
| **Name of Transportation Facility:** | Orica Australian Supply Chain |
| **Name of Facility Owner:** | Not Applicable |
| **Name of Facility Operator:** | Orica Australia Pty Ltd |
| **Name of Responsible Manager:** | David Ellison, Supply Chain Compliance Coordinator |
| **Address:** | Orica Australia Pty Ltd<br>PO Box 375<br>Gladstone 4680 |
| **State/Province:** | Queensland |
| **Country:** | Australia |
| **Telephone:** | +61 7 4976 3517 |
| **Fax:** | +61 7 4976 3410 |
| **Email:** | david.ellison@orica.com |

## 1.2 Description of Operation

## 1.3 Audit Terms of Reference

Golder Associates Pty Ltd (Golder) was retained by Orica Australia Pty Ltd (Orica) through David Ellison (International Cyanide Management Code (ICMC) Compliance Coordinator) in July 2013, to conduct a Recertification Audit of the Orica Australia Supply Chain and a Certification Audit of Toll Customised Solutions (TCS) storage facility against the Code. Orica stores cyanide product at the TCS Laverton Major Hazard Facility in Victoria as part of its Australia Supply Chain. Subsequent to discussions between the ICMI and Orica, the ICMI advised that the Summary Audit Report (SAR) for the Certification Audit of TCS's facility would be included within Orica's Australia Supply Chain SAR and submitted to the ICMI. The Summary Audit Report for the TCS Laverton Facility Production Certification Audit is provided in Appendix A.

The Orica Australia Supply Chain was certified on 5 October 2010.

## 1.4 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 Systems 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 (cyanide), which is manufactured at Orica's Yarwun cyanide production facility (Yarwun Facility) in Queensland, Australia.

### 1.4.1 Yarwun Production Facility

Orica's Yarwun Facility, which is located at Yarwun approximately eight kilometres (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.

Cyanide manufactured at the Yarwun Facility is used in gold mining operations within Australia, Asia, Africa, Papua New Guinea, New Zealand and South America.

The Yarwun Facility was recertified as a production facility on 29 October 2013.

### 1.4.2 TCS Laverton Major Hazard Facility

Orica stores cyanide product at the TCS Laverton Major Hazard Facility in Victoria. This Facility is considered a cyanide production facility under the ICMC. A production ICMC Certification Audit of the TCS Laverton Major Hazard Facility was undertaken between 23 and 25 September 2013. The Summary Audit Report for the TCS Laverton Facility Production Certification Audit is provided in Appendix A.

## 1.5 Cyanide Transportation

The transport of cyanide from the Yarwun Facility to customers is coordinated from the Yarwun Facility. Solid cyanide is packaged in either sparge isotainers, which have a maximum gross weight of 26 tonnes, or IBCs, which are in turn packed into a container. A maximum of 20 IBCs can be packed into a freight container with a maximum gross weight of 28 tonnes. Liquid cyanide is packaged into isotainers with a maximum gross weight of 26 tonnes.

Orica packages and delivers all three products (sparge isotainers, liquid isotainers and IBCs) to gold mining customers in Queensland, and sparge isocontainer and IBC products only to gold mining customers in the Northern Territory, New South Wales and Western Australia.

The cyanide products are packaged and delivered using a combination of road and rail contractors. Orica utilises the TMS Australian Supply Chain to undertake all of its transportation road and the majority of its rail transportation within Australia. Orica contracts Aurizon Rail and Pacific National Rail, outside of TMS and the TMS Australian Supply Chain, to transport product from Mount Miller Rail Head in Queensland to the BMT in Queensland and Melbourne Port in Victoria.

### 1.5.1 Toll Mining Services

TMS, part of Toll Global Resources, provides individual and integrated transport and logistics services where required by the customers in the various segments of the mining logistics chain. TMS provides integrated logistics solutions from supply chain to camp management. TMS is divided into two main operating businesses: Onsite and Inbound/Outbound, both of which are headquartered in Brisbane. Its operations are located around Australia in Newcastle, Gladstone, Central Queensland, Townsville, Cloncurry, Mount Isa and Kalgoorlie.

TMS subcontracts components of TMS Australian Supply Chain to KJP Haulage, Havouc Transport and Skynight.

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

### 1.5.2 Rail Transportation

#### *1.5.2.1 Aurizon*

Aurizon, formally QR National, is Australia's leading bulk freight specialist with an extensive fleet of locomotives and wagons. From Mount Isa, Queensland, Aurizon now provides road transportation for cyanide following the acquisition of Isa Freight Express., who formally provided road transport as part of the Orica Australia Supply Chain. Aurizon operates a national network and includes services from Cairns in the north of Queensland through to Perth in Western Australia. This includes a network of freight terminals, distribution centres and depots located close to transport hubs. Terminals are located in all capital cities from Cairns to Perth and include over 40 distribution centres and depots across five states.

Aurizon provides rail services to Orica ex. Gladstone to northern, southern and western rail heads with subsequent empty return. Domestically, rail services are booked and managed by Orica Mining Chemicals Systems contracted national carrier, TMS. For export services Orica books directly with Aurizon, export services are from Gladstone through to the Port of Brisbane, the key prime port for Orica products.

#### *1.5.2.2 Pacific National Rail*

Pacific National is one of Australia's largest rail freight businesses. The Pacific National Chullora rail terminal facility is a transitory facility for inbound and outbound goods to and from Botany through to Dubbo. All product is in transit only. The rail connection to Chullora from Yarwun ends at Chullora, whereby road transport will transfer the product to the next rail connection.

As well as being contracted as part of the TMS supply chain audit, Orica also contracts Pacific National Rail directly as part of the transportation between Brisbane (Acacia Ridge) to southern and western rail heads.

### 1.5.3 Ports

### 1.5.4 Brisbane Multimodal Transit Facility

The BMT is a multimodal transit facility where containers and isotainers are railed to, or delivered by road to, for interim storage awaiting call onto specific vessels for subsequent loading to these vessels for movement through to destination ports.

The BMT is located within the environs of the Port of Brisbane and is close to the two stevedoring locations (Patricks and DP World) to which containers and isotainers are subsequently moved to, by contracted providers to the BMT, for loading to the allocated vessels.

The BMT is an element of the Port of Brisbane Propriety Limited and is subject to Port of Brisbane management oversight.

### 1.5.5 Port of Melbourne

The Port of Melbourne is intended to be utilised as an export port for current excess stock holdings of product held at the TCS Laverton Major Hazard Facility.

### 1.5.6 Transit Storage

Orica does not operate cyanide trans-shipping depots and interim storage sites within the scope of this Audit. Trans-shipping depots or interim storage sites are located at the TMS West Kalgoorlie Depot, TMS Dubbo Depot in New South Wales and Rail Terminals. These facilities are included within the TMS Australian Supply Chain. Trans-shipping depots or interim storage sites are also located at BMT and the Port of Melbourne and these have been addressed through Orica's due diligence process.

## 1.6 Auditors Findings and Attestation

| | | |
|---|---|---|
| **Orica Australian Supply Chain is:** | ☒ **in full compliance with** | **The International Cyanide Management Code** |
| | ☐ in substantial compliance with | |
| | ☐ not in compliance with | |

**Audit Company:** Golder Associates Pty Ltd

**Audit Team Leader:** Edward Clerk, CEnvP (112), Exemplar Global (020778)

**Email:** eclerk@golder.com.au

## 1.7 Name and Signatures of Other Auditors:

| Name | Position | Signature | Date |
|---|---|---|---|
| Edward Clerk | Lead Auditor and Technical Specialist |  | 3 October 2014 |
| Jaclyn Ennis-John | Auditor |  | 3 October 2014 |

No significant cyanide exposures and releases were noted as occurring during the audit period.

## 1.8 Dates of Audit

The Certification Transport Audit of Orica's Australian Supply Chain was undertaken over ten days concluding 1 October 2013. The audit relied upon the following Due Diligence reports:

- Due Diligence – Aurizon. Conducted by David Ellison, Orica ICMC Compliance Coordinator on 26 June 2013.
- Due Diligence – Pacific National Rail. Conducted by David Ellison, Orica ICMC Compliance Coordinator on 21 June 2013.
- Due Diligence – Port of Melbourne. Conducted by David Ellison, Orica ICMC Compliance Coordinator on 25 September 2013.
- Due Diligence – Brisbane Multi-Modal Terminal, Port of Brisbane. Conducted by David Ellison, Orica ICMC Compliance Coordinator on 22 March 2013.

| Orica Australian Supply Chain |  | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

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 Transportation Operations* and using standard and accepted practices for health, safety and environmental audits.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# 2.0 CONSIGNOR SUMMARY

## 2.1 Principle 1 - Transport

**Transport Cyanide in a manner that minimises the potential for accidents and releases**.

### 2.1.1 Transport Practice 1.1

**Select cyanide transport routes to minimise the potential for accidents and releases.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 1.1** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 1.1 requiring cyanide transport routes to be selected to minimise the potential for accidents and releases.

**Orica**

Orica has demonstrated compliance with Transport Practice 1.1 through the engagement of Code certified transporters, TMS.

Orica, itself, implements a transport route selection procedure (TMP01) that is applicable to both Orica and its contracted transportation agencies. This procedure ensures a route is selected, taking into particular consideration likelihood of an incident occurring and the consequences of such an incident, the location of waterways along routes and the possibility of fog that may inhibit visibility. Orica's *Transport Management Policies* document states the specifics that must be addressed as a minimum in the route assessment process.

The selection of the transportation methods to be utilised on a particular route are based a number of items including minimising road, maximising rail and advice from local transporter.

Orica implements a *Risk Assessment of Cyanide Transportation Routes* (TMP 09) procedure. This procedure details the route risk assessment procedures and is used to identify the areas of risk along a particular route. Risks that are identified as extreme are to be addressed as a priority.

Risk assessments are undertaken for all route alternatives selected for assessment. Additionally, route risk assessments are also undertaken for product loading and departure, product storage, and product unloading and delivery. The risk assessment process is undertaken in accordance with procedures that conform to Orica's *Model Procedure MP-SF-014E Selection and Management of Transport and Storage Contractors.*

Orica's procedure *Transport Routes – Route Conditions and Transportation Agency Feedback* (TMP02) provides for transport agency feedback on routes. This procedure was developed by Orica to ensure that relevant feedback from transportation agencies relating to routes utilised for the movement of cyanide is provided to Orica for assessment and follow up on actions, as appropriate.

Orica seeks input from stakeholders and applicable governmental agencies as necessary in the selection of routes and development of risk management measures. The community is indirectly consulted.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

Where routes present special safety or security concerns, Orica ensures the transport contractor uses convoys, escorts or other additional safety or security measures to address the concern. Through an operational area risk assessment, Orica has determined that the convoy risk in Australasia (Australia and New Zealand) does not warrant the need for cyanide to be transported in convoy. Despite this, security measures implemented by Orica for transportation of cyanide within Australia include the use of locked and sealed containers, and constant monitoring of the progress of the convoy along the route using a GPS tracking system.

Orica has also provided key responders with the latest versions of the Orica Mining Chemicals Emergency Response Guide.

Orica contracts the transportation of its cyanide to TMS. Orica's *Transport Management Policies* covers compliance with legal and code requirements:

As a minimum, Orica requires a Service Level Agreement (SLA) to be in place between the prime contractor and the subcontractor. Orica has a contract with TMS which conforms to this requirement and the contract specifies ICMC compliance.

In addition to contractual requirements Orica has a process in place to actively audit its subcontractors to confirm compliance with its requirements, including ICMC compliance. TMP16 *Carrier Assessment – Assessment Questionnaire* covers the requirements for the assessment of carriers.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

**Due Diligences – Rail Operators**

***Aurizon***

Orica has completed a Due Diligence of Aurizon in June 2013. The due diligence included an assessment of selection of transportation, route selection and assessment, re-evaluating routes and security measures along the route.

The assessment stated that the rail lines are a set path and cannot be changed. However, these lines are monitored and controlled by a rail network control centre that manages the daily movements of more than 100 trains over 2670 km of network. Rail is a preferred transport method.

Security is provided in instances when trains are required to stop for lengthy periods. The use of convoys, escorts or other special security measures are not required in Australia.

The assessment found the facility does meet Orica's operational requirements.

***Pacific National***

Orica has completed a Due Diligence of Pacific National in June 2013. The due diligence included an assessment of selection of transportation, route selection and assessment, re-evaluating routes and security measures along the route.

The assessment stated that the rail lines are a set path and cannot be changed. However, these lines are monitored and controlled by a rail network control centre. Pacific National also has an ongoing maintenance program in effect that includes track inspections and condition modelling.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

Security is provided in instances when trains are required to stop for lengthy periods. The use of convoys, escorts or other special security measures are not required in Australia.

The assessment found the facility does meet Orica's operational requirements.

**Due Diligences – Ports**

***BMT***

Orica completed a Due Diligence of BMT in March 2013.

The due diligence included an assessment of how the products are transported to and from the facility. As part of this, a route assessment between Yarwun and the Port has been detailed as being undertaken by TMS and Orica in 2008 and reviewed in 2012. The process took into account hazards and threats along the route (i.e. through a township, area of potential flooding).

The facility is secured against access from unauthorised persons. The use of convoys, escorts or other special security measures is not relevant to this site.

The assessment found the facility does meet Orica's operational requirements.

***Port of Melbourne***

Orica completed a Due Diligence of the Port of Melbourne in September 2013. The Port of Melbourne is utilised as an export port of the current excess stock holdings of product at the TCS Laverton Major Hazard Facility.

The Port of Melbourne is not a carrier and therefore there was no assessment of route risk.

The use of convoys, escorts or other special security measures is not relevant to this site. However, the site is compliant to the International Port Security Code.

The assessment found the facility met Orica's operational requirements.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.1.2 Transport Practice 1.2

**Ensure that personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 1.2** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 1.2 requiring personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment.

**Orica**

Orica does not employ transport drivers and equipment operators or directly operate transport vehicles and equipment; this is undertaken by its TMS. Orica has demonstrated compliance with Transport Practice 1.2 through the engagement of Code certified transporters, TMS.

Orica's *Sodium Transport Policies* procedure describes the minimum training standards expected by Orica in the transportation of cyanide. The document notes' training is an invaluable tool in assisting in the safe transportation and delivery of product through to customer sites. The document also notes that where subcontractors are utilised by prime contracted agencies, the prime contractor is to have an appropriate procedure to ensure that all relevant subcontractor personnel meet the detailed training requirements.

Orica contracts the transportation of its cyanide to TMS. Orica's *Transport Management Policies* covers compliance with legal and code requirements:

As a minimum, Orica requires a SLA to be in place between the prime contractor and the subcontractor. Orica has a contract with TMS which conforms to this requirement and the contract specifies ICMC compliance.

In addition to contractual requirements Orica has a process in place to actively audit its subcontractors to confirm compliance with its requirements, including ICMC compliance. TMP16 *Carrier Assessment – Assessment Questionnaire* covers the requirements for the assessment of carriers.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.1.3 Transport Practice 1.3

**Ensure that transport equipment is suitable for the cyanide shipment.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 1.3** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 1.3 requiring that transport equipment is suitable for the cyanide shipment.

**Orica**

Orica does not employ transport drivers and equipment operators or directly operate transport vehicles and equipment; this is undertaken by its TMS.

Orica, through its engagement of TMS, has a process in place requiring that only equipment designed and maintained to operate within the loads it will be handling is used.

Orica has developed a *Transport of Sodium Cyanide – Carrier Safety Program* that details the minimum safety requirements and programmes that Orica require its prime contractor and associated subcontractors to implement. These are:

- Vehicle inspections prior to the commencement of each and every departure/shipment of product
- A preventative maintenance programme for all vehicles and trailers used in the transportation of sodium cyanide
- An approved fatigue management programme in accordance with local regulatory requirements
- Procedures in place to prevent shifting of loads in transit
- Procedures, through which transportation can be modified, suspended or cancelled if conditions warrant; e.g. severe weather conditions, civil unrest, etc.
- A drug abuse prevention programme, including over the counter medications
- Retention of records providing documentary evidence that the above activities have and are being conducted.

Orica contracts the transportation of its cyanide to TMS. Orica's *Transport Management Policies* covers compliance with legal and code requirements:

As a minimum, Orica requires a SLA to be in place between the prime contractor and the subcontractor. Orica has a contract with TMS which conforms to this requirement and the contract specifies ICMC compliance.

In addition to contractual requirements Orica has a process in place to actively audit its subcontractors to confirm compliance with its requirements, including ICMC compliance. TMP16 *Carrier Assessment – Assessment Questionnaire* covers the requirements for the assessment of carriers.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.1.4 Transport Practice 1.4

**Develop and implement a safety program for transport of cyanide.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 1.4** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 1.4 requiring the operation develop and implement a safety programme for transport of cyanide.

**Orica**

Orica, through its engagement of TMS, has a process to ensure that cyanide is transported in a manner that maintains the integrity of the producer's packaging.

Additionally, Orica has several procedures that address cyanide packaging, the *Transport of Dangerous and non-dangerous goods* and *Transport Management Policies.* The *Transport Management Policies* detail product packaging and labelling and unloading requirements, Section 77 states:

> *…an inspection program for packaging and packaging materials utilised for sodium cyanide manufactured by Orica Mining Chemicals must be in place.*

*NaCN Warehouse. Section 5.0 Normal Operation*, details the inspection processes. Inspection of returned shipping containers and returned cyanide boxes (IBCs) is covered along with Equipment inspection, testing and maintenance.

Containers and cyanide boxes are handled and inspected in accordance with *Cyanide Warehouse Normal Operations*. Returned freight containers are aired for approximately five minutes prior to empty cyanide IBCs being unloaded. The Warehouse Technician inspects new and returned cyanide IBCs to ascertain whether the IBCs are to be filled, repaired or removed from service. Filled IBCs are only placed in freight containers fit for loading. IBCs are placed in freight containers by forklift two at a time (two high and two wide). The IBC numbers are noted on the *Container Load Sheet* by the Forklift Operator as they are loaded. A visual inspection of strapping is also undertaken as each box is placed in the freight container and any broken strapping is replaced. Once the freight container is full (maximum of 20 IBCs) the doors are closed, locked and a yellow tag is fitted.

Placards or other signage are used to identify the shipment as cyanide, as required by local regulations or international standards.

Orica's *Sodium Cyanide Transport Management Policies*, Section 74-79 provides guidance on product packaging and labelling. Labelling the containers is detailed in *NaCN Warehouse. Section 5.0 Normal Operation*. It details that:

- Dangerous goods stickers must be placed on the shipping containers in the correct places before the container can be dispatched.
- Emergency Information Panel stickers are to be stuck in the left hand section, on all sides of the container
- Toxic stickers are to be stuck on the front and back of each container

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

- Environmentally hazardous substance stickers are to be stuck on the right hand section, on all sides of the container.

Section 32 of Orica's *Sodium Cyanide Transport Management Policies* states that agents, distributors and transportation agencies have a responsibility to ensure that a safe workplace is provided for its personnel and that of the contractors utilised. The plan notes that this includes:

- All transportation assets are placarded in accordance with the applicable legislative and regulatory requirements

Orica does ensure its transport contractors and subcontractors implement safety programmes for cyanide transport.

*Sodium Cyanide Transport Management Policies* states that agents, distributors and transportation agencies have a responsibility to ensure that a safe workplace is provided for its personnel and that of the contractors utilised. The plan notes that this includes:

- Fatigue management is considered in all transportation activities
- Loads are secured in the appropriate and safest manner
- Procedures are in place by which transportation can be suspended or modified if conditions such as severe weather or civil unrest are encountered
- A drug abuse prevention programme (including over the counter medication) is in place
- Vehicle inspections are effected prior to each shipment
- A preventative maintenance programme is in place
- Carrier Safety Programs should be consistent with the requirements of the *Transport of Sodium Cyanide – Carrier Safety Program procedure*

Orica contracts all transport and the loading of cyanide solution to TMS. A national contract is maintained with TMS and is signed off by the Managing Director of Orica. Included in the contract is the requirement for, amongst other regulatory requirements, compliance with the Code.

Where subcontractors are utilised by contracted carriers, the Orica Sodium Cyanide Transport Management Plan notes no subcontractors are to be engaged by any prime contractor without the prior approval of Orica and an appropriate assessment of the proposed subcontractor's capabilities having been performed.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.1.5 Transport Practice 1.5

**Follow international standards for transportation of cyanide by sea and air.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 1.5** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Transport Practice 1.5 requiring the operation follow international standards for transportation of cyanide by sea and air is not applicable to Orica's Australian Supply Chain.

Consignments of cyanide are not transported by sea or air within the scope of this audit.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.1.6 Transport Practice 1.6

**Track cyanide shipments to prevent losses during transport.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 1.6** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 1.6 requiring the operation track cyanide shipments to prevent losses during transport.

**Orica**

Orica does not employ transport drivers and equipment operators or directly operate transport vehicles and equipment; this is undertaken by its TMS.

Orica, through its engagement of TMS, has a process to ensure that the operation tracks cyanide shipments to prevent losses during transport.

Orica's *Transportation of Cyanide – Tracking of Shipments* procedure requires Orica and its contracted transportation agencies to maintain a vehicle tracking system that shall provide:

- Duress notification by the driver
- Visibility to external users to current location of vehicles carrying product
- Download capability relating to each vehicle and each individual trip
- Geo-fencing, if practicable.

Orica, through its engagement of TMS, has a process to ensure that communication equipment is periodically tested to ensure it functions properly. Orica, through its engagement of TMS, has a process to identify communication blackout areas along transport routes and to implement special procedures where required. Orica also has a procedure for remote travel communications throughout Australia. This procedure includes a map showing the areas of communications risk and the actions to take when entering an area of risk and the actions to be taken if communications have not been received by the driver.

Orica, through its engagement of TMS, has a process to track the progress of cyanide shipments within the scope of this audit. Orica also has a procedure for the tracking of shipments. It details the use of an electronic tracking system and the procedure to take if there is no electronic system available.

Orica, through its engagement of TMS, has a process for chain of custody/inventory control to prevent loss of cyanide during shipment.

Orica, through its engagement of TMS, has a process to ensure that shipping records indicating the amount of cyanide in transit and Material Safety Data Sheets available during transport.

Orica contracts all transport and the loading of cyanide solution to TMS. A national contract is maintained with TMS and is signed off by the Managing Director of Orica. Included in the contract is the requirement for, amongst other regulatory requirements, compliance with the Code.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

Where subcontractors are utilised by contracted carriers, the Orica Sodium Cyanide Transport Management Plan notes no subcontractors are to be engaged by any prime contractor without the prior approval of Orica and an appropriate assessment of the proposed subcontractor's capabilities having been performed.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain |  | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

## 2.2 Principle 2 - Interim Storage

**Design, construct and operate cyanide trans-shipping depots and interim storage sites to prevent release and exposures**.

### 2.2.1 Transport Practice 2.1

**Store cyanide in a manner that minimises the potential for accidental releases.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 2.1** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 2.1 that requires transporters design, construct and operate cyanide trans-shipping depots and interim storage sites to prevent release and exposures.

**Orica**

Orica does not operate cyanide trans-shipping depots and interim storage sites within the scope of this Audit. Trans-shipping depots or interim storage sites are located at the TMS West Kalgoorlie Depot, TMS Dubbo Depot in New South Wales and Rail Terminals. These facilities are included within the TMS Australian Supply Chain. Trans-shipping depots or interim storage sites are also located at BMT and the Port of Melbourne and these have been addressed through Orica's due diligence process.

Orica, through its engagement of TMS, ensures there security measures in place to prevent unauthorised access to cyanide, such as lockouts on valves and fenced and locked storage of solids.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

**Due Diligences – Ports**

***BMT***

Orica has completed a Due Diligence of the rail facility in March 2013. The due diligence included an assessment of warning signs and PPE, security measures, product storage including segregation and ventilation and spill response. The assessment found the facility does meet Orica's operational requirements.

***Port of Melbourne***

Orica completed a Due Diligence of the Port of Melbourne in September 2013. The due diligence included an assessment of warning signs, security measures and product storage. The assessment found the facility does meet Orica's operational requirements.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

## 2.3 Principle 3 - Emergency Response

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

### 2.3.1 Transport Practice 3.1

**Prepare detailed Emergency Response Plans for potential cyanide releases.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 3.1** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 3.1 requiring the operation prepare detailed Emergency Response Plans for potential cyanide releases.

**Orica**

Orica, through its engagement of TMS, has ensured that appropriate emergency response plans have been prepared for the transport of its cyanide within the scope of this audit.

Orica has developed an *Emergency Response Guide - Sodium Cyanide* to provide emergency response guidance for specific mine site, storage facilities and transport incidents involving spillage of Orica product.

Orica also has a site specific emergency plan for its Yarwun facility. *Site Emergency Plan (YY167474000)* and capabilities for the containment and combating of a cyanide spill during production, loading or temporary storage.

Orica has developed documents to cover emergency response for potential cyanide releases for cyanide transportation along the supply chain route. The information is contained within an *Emergency Response Guide Sodium Cyanide* and route specific assessments of risks.

The Guide has been developed to be appropriate for the selected transportation routes and in conjunction with the route risk assessments and route assessments they consider relevant aspects of the transport infrastructure. The route evaluation process, route hazard/risk assessment process, and operational experience were used by Orica to identify likely emergency scenarios.

The plans consider the physical and chemical form of cyanide and design of the transport vehicle.

The Yarwun S*ite Emergency Plan* and *Emergency Response Guide Sodium Cyanide* include descriptions of response actions, as appropriate for the anticipated emergency situations.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

**Due Diligences – Rail Operators**

***Aurizon***

Orica has completed a Due Diligence of the rail facility in June 2013. The due diligence included an assessment of emergency response procedures.

The assessment found that in the event of an incident standard is to call the emergency services. Personnel receive training in their responsibilities in regards to an incident; this includes not putting themselves in harm's way.

The assessment found the facility does meet Orica's operational requirements.

***Pacific National***

Orica has completed a Due Diligence of the rail facility in June 2013. The due diligence included an assessment of emergency response procedures.

The assessment found that in the event of an incident standard is to call the emergency services. Personnel receive training in their responsibilities in regards to an incident; this includes not putting themselves in harm's way.

The assessment found the facility does meet Orica's operational requirements.

**Due Diligences – Ports**

***BMT***

Orica completed a Due Diligence of the Port in March 2013. The due diligence included an assessment of emergency response procedures.

The assessment found that BMT has an emergency response plan and that the last exercise was in November 2012.

The assessment found the facility does meet Orica's operational requirements.

***Port of Melbourne***

Orica completed a Due Diligence of the Port of Melbourne in September 2013. The due diligence included an assessment of emergency response procedures.

The assessment found that personnel have appropriate emergency response training.

The assessment found the facility does meet Orica's operational requirements.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.3.2 Transport Practice 3.2

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

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 3.2** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 3.2 requiring they designate appropriate response personnel and commit necessary resources for emergency response.

**Orica**

Orica, through its engagement of TMS, has ensured that emergency response training is provided to appropriate personnel.

Orica retain technical and advisor roles in an emergency and can provide physical resources and personnel to assist emergency services in the response to an incident involving cyanide. To maintain this capacity Senior Orica ERS personnel or their delegates conduct training of new Orica ERS coordinators, with input from other Orica ERS coordinators and other Orica personnel as required. Initial coordinator training is conducted in accordance with training schedules, with each competency/component in the training programme only being signed off by the trainer and trainee once the content is covered thoroughly and adequately to the satisfaction of both parties.

Orica, through its engagement of TMS, has descriptions of the specific emergency response duties and responsibilities of personnel, a list of all emergency response equipment that should be available during transport or along the transportation route**,** necessary emergency response and health and safety equipment, including personal protective equipment, is available during the transport of its cyanide, transport vehicle operators receive initial and periodic refresher training in emergency response procedures including implementation of the ERP, and there are procedures to inspect emergency response equipment and assure its availability when required.

Orica contracts all transport and the loading of cyanide solution to TMS. A national Contract is maintained with TMS and is signed off by the Managing Director of Orica. Included in the contract is the requirement for, amongst other regulatory requirements, compliance with the Code.

Where subcontractors are utilised by contracted carriers, the Orica Sodium Cyanide Transport Management Plan notes no subcontractors are to be engaged by any prime contractor (Toll Global Resources) without the prior approval of Orica and an appropriate assessment of the proposed subcontractor's capabilities having been performed.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.3.3 Transport Practice 3.3

**Develop procedures for internal and external emergency notification and reporting.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 3.3** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 3.3 requiring that they develop procedures for internal and external emergency notification and reporting.

**Orica**

Orica, through its engagement of TMS, has procedures and current contact information for notifying the shipper, the receiver/consignee, regulatory agencies, outside response providers, medical facilities and potentially affected communities of an emergency.

Within the *Emergency Response Guide Sodium Cyanide* the role of Orica ERS is one of communication. ERS operates 24 hours a day providing telephone advice and assistance to the public, emergency services and others on incidents relating to the transport, storage and use of chemical products and raw materials in emergency situations.

Orica, through its engagement of TMS, has ensured there is a system in place to ensure that internal and external emergency notification and reporting procedures are kept current. Orica has procedure for emergency plans. Section 2.9 of this procedure states that

> *Emergency Plans must be maintained under document control and the scope of the emergency response program and arrangements for responding to emergencies must be reviewed and audited annually.*

The *Orica Mining Chemicals Emergency Response Guide – Sodium Cyanide* was Revision 5 and was last reviewed in December 2012.

Lists of emergency contact information for Orica chemical specialist and relevant subcontractors, including transport subcontractors, are detailed in Orica's *Emergency Contact list* which is managed within Orica's document control system. This document was revision 12 and was last reviewed on 8 December 2012.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.3.4 Transport Practice 3.4

**Develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment.**

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 3.4** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 3.4 requiring that they develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment.

**Orica**

Orica has demonstrated compliance with Transport Practice 3.4 through the engagement of the Code certified transporter, TMS. In addition to this, Orica's *Emergency Response Guide Sodium Cyanide* includes procedures for remediation, such as recovery or neutralisation of solutions or solids, decontamination of soils or other contaminated media and management of spill clean-up debris.

The Orica *Emergency Response Guide Sodium Cyanide* provides the following warning in Section 3.6 (Sodium Cyanide Spill in a Waterway):

> *Orica Mining Chemicals subscribes to the recommendations of the International Cyanide Management Code in that no chemicals are to be added to a flowing waterway in the event of a cyanide spill as these may only exacerbate the situation with their own toxicity characteristics.*

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

### 2.3.5 Transport Practice 3.5

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

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The Supply Chain** | ☐ in substantial compliance with | **Transport Practice 3.5** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

Orica's Australian Supply Chain is in FULL COMPLIANCE with Transport Practice 3.5 requiring the operation periodically evaluate response procedures and capabilities and revise them as needed.

**Orica**

Orica has demonstrated compliance with Transport Practice 3.4 through the engagement of the Code certified transporter, TMS.

Orica has developed a procedure for the development of an effective emergency response system at either a site or business level. Section 2.9 of this procedure states that :

> *Emergency Plans must be maintained under document control and the scope of the emergency response program and arrangements for responding to emergencies must be reviewed and audited annually*

The *Yarwun Site Emergency Plan* was revision 20 and was last reviewed on 1 August 2013.

The *Orica Mining Chemicals Emergency Response Guide – Sodium Cyanide* was revision 5 and was last reviewed in December 2012 Orica, through its engagement of TMS, has provisions for periodically conducting mock emergency drills.

Mock emergency drills are conducted periodically as part of the plan evaluation process. They are undertaken by Toll who involves other parties as required, including Orica ERS; Yarwun, Police, Fire and Emergency Services.

Both the *Orica Mining Chemicals Emergency Response Guide – Sodium Cyanide* and the *Yarwun Site Emergency Plan* include a requirement to review the documents as a minimum, on an annual basis and following incidents where the documents are utilised.

**TMS**

A Certification Audit of the TMS Australian Supply Chain was conducted between June 2013 and November 2013. The TMS Australian Supply Chain was certified as being compliant with the ICMC on 30 September 2014.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# 3.0 DUE DILIGENCE

## 3.1 Rail Operators

### 3.1.1 Aurizon

Orica conducted a due diligence of Aurizon on 26 June 2013.

Aurizon operates a national network and includes services from Cairns in the north of Queensland through to Perth in Western Australia. This includes a network of freight terminals, distribution centres and depots located close to transport hubs. Terminals are located in all capital cities from Cairns to Perth and include over 40 distribution centres and depots across five states.

Aurizon operates five weekly services between Melbourne – Sydney – Brisbane and four services between Melbourne – Adelaide – Perth.

Intermodal volume at present is approximately 4 million tonnes including some 320 000 20' equivalent TEUs.

Aurizon provides rail services to Orica ex. Gladstone to northern, southern and western rail heads with subsequent empty return. Domestically, rail services are booked and managed by Orica Mining Chemicals Systems contracted national carrier, TMS. For export services Orica books directly with Aurizon, export services are from Gladstone through to the Port of Brisbane, the key prime port for Orica products. This due diligence is for the section of the supply chain that is not covered under TMS, the export for product from Gladstone through to the Port of Brisbane.

#### *3.1.1.1 Due Diligence Content*

The scope of the assessment covered transport capabilities and procedures. The Due Diligence consists of a questionnaire that is completed with the operator by a methodology of physical visits, interviews and discussions with appropriate personnel and review of applicable documentation. The due diligence covered:

- Background
- What Orica products does this transporter transport?
- What methods of transport does the transporter use?
- Does the transporter have a procedure for selecting routes that minimises the potential for accidents and releases, or the potential impact of incidents?
- Does the transporter have a methodology for assessing the route condition?
- Whilst in transit, are products secured against access from unauthorised personnel?
- Where routes present special safety or security concerns, does the transporter utilise convoys, escorts or other safety/security measures to address the concern?
- Have personnel involved in the transport of the product received appropriate training?
- Have personnel involved in the transport of the product received appropriate emergency response training?
- Are training records maintained for all personnel?
- Does the transporter utilise a process for re-evaluating rotes used for sodium cyanide deliveries?

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

- Does the ship/train transporting the product have a special list or manifest identifying the presence, quantity and location of the product?
- Does the ship/train transporting the product have emergency response information for dealing with cyanide incidents? Is this information located on an easily accessible area, away from the product packaging?
- Does the ship comply with the stowage and separation requirements of Part 7 of the International Maritime Organisation's DG Code? (i.e. stored separate from acids, areas are inspected for contamination, etc.)?
- When the product is transferred as part of a multi load shipment, does the train comply with the stowage and separation requirements of the Australia Dangerous Goods (ADG) Code (Version 7), (i.e. stored separate from acids, areas are inspected for contamination etc.)?

Although each transport practice was not specifically addressed, the questions above did cover the requirements of:

- Transport Practice 1.1
- Transport Practice 1.2
- Transport Practice 1.3
- Transport Practice 1.4
- Transport Practice 1.5.1 g - i
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The Due Diligence was compiled through physical visits, interviews and discussions with appropriate personnel and review of applicable documentation.

#### *3.1.1.2 Due Diligence Conclusion*

Orica concluded that based on the information obtained during the diligence assessment, the transporter, did meet Orica's operational requirements.

### 3.1.2 Pacific National

Orica conducted a due diligence review for Pacific National in 2013.

Pacific National is Australia's largest interstate rail carrier presently carrying around 600 000 TEU per annum. Pacific National operates in all mainland states and territories. As at June 2012 the company operates 596 locomotives and 12 875 wagons. This includes a network of freight terminals located on close proximity to transport hubs. Terminals are located in all Major cities, except Darwin.

Pacific National, effects movements to southern and western rail heads for subsequent collection by road transporters for delivery to end user locations.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

Pacific National provides rail services to Orica ex. Brisbane (Acacia Ridge) to southern and western rail heads with subsequent empty return. Domestically, rail services are booked and managed by Orica Mining Chemicals Systems contracted national carrier, TMS. This due diligence is for the section of the supply chain that is not covered under TMS. The Brisbane (Acacia Ridge) to southern and western rail heads transport route is the focus of this due diligence.

#### 3.1.2.1 Due Diligence Content

The scope of the assessment covered transport capabilities and procedures. The Due Diligence consists of a questionnaire that is completed with the operator by a methodology of physical visits, interviews and discussions with appropriate personnel and review of applicable documentation. The due diligence covered:

- Background
- What Orica products does this transporter transport?
- What methods of transport does the transporter use?
- Does the transporter have a procedure for selecting routes that minimises the potential for accidents and releases, or the potential impact of incidents?
- Does the transporter have a methodology for assessing the route condition?
- Whilst in transit, are products secured against access from unauthorised personnel?
- Where routes present special safety or security concerns, does the transporter utilise convoys, escorts or other safety/security measures to address the concern?
- Have personnel involved in the transport of the product received appropriate training?
- Have personnel involved in the transport of the product received appropriate emergency response training?
- Are training records maintained for all personnel?
- Does the transporter utilise a process for re-evaluating rotes used for sodium cyanide deliveries?
- Does the ship/train transporting the product have a special list or manifest identifying the presence, quantity and location of the product?
- Does the ship/train transporting the product have emergency response information for dealing with cyanide incidents? Is this information located on an easily accessible area, away from the product packaging?
- Does the ship comply with the stowage and separation requirements of Part 7 of the International Maritime Organisation's DG Code? (i.e. stored separate from acids, areas are inspected for contamination, etc.)?
- When the product is transferred as part of a multi load shipment, does the train comply with the stowage and separation requirements of the Australia Dangerous Goods (ADG) Code (Version 7), (i.e. stored separate from acids, areas are inspected for contamination etc.)?

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

Although each transport practice was not specifically addressed, the questions above did cover the requirements of:

- Transport Practice 1.1
- Transport Practice 1.2
- Transport Practice 1.3
- Transport Practice 1.4
- Transport Practice 1.5.1 g - i
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The Due Diligence was compiled through physical visits, interviews and discussions with appropriate personnel and review of applicable documentation.

#### *3.1.2.2 Due Diligence Conclusion*

Orica concluded that based on the information obtained during the diligence assessment, the transporter, did meet Orica's operational requirements.

## 3.2 Ports

### 3.2.1 Brisbane Multimodal Terminal

#### *3.2.1.1 Overview*

Orica conducted a due diligence review for BMT in 2012.

The BMT is a multi-modal transit facility where containers and isotainers are railed to, or delivered by road to, for interim storage awaiting call into specific vessels for subsequent loading to these vessels for movement through to destination ports.

The BMT is located within the environs of the Port of Brisbane and is close to the two stevedoring locations (Patricks and DP World) to which containers and isotainers are subsequently moved to, by contracted providers to the BMT, for loading to the allocated vessels.

The BMT is an element of the Port of Brisbane Propriety Limited and is subject to Port of Brisbane management oversight.

The Due Diligence consists of a questionnaire that is completed with the operator by a methodology of physical visits and inspection, electronic training packages, documentation and interviews and discussions with supervisory staff and other personnel. The due diligence covered both questions and a summary of information addressing Transport Practice 2.1.

The questions addressed included:

- What OMC products are transported through this facility?
- How are the OMC products transported to and from this facility?

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

- Is the facility secured against access from unauthorised persons?
- Does the facility have a separate DG storage area?
- Are there any limitations imposed on the storage of DGs at this facility?
- Does the facility have a current emergency response plan? And when was the last exercise conducted?
- Does the facility have a maintenance program for its lifting equipment?
- Does the facility have a procedure for examining product loads for possible leakage, prior to handling?
- Have personnel involved in the handling of the product received sodium cyanide awareness training?
- Have personnel involved in the handling of the product received appropriate emergency response training?
- Are training records maintained for all personnel?
- Are warning signs posted alerting workers that the product is present and what PPE are required?
- Are warning signs posted alerting workers that smoking, open flames, eating and drinking are not allowed?
- Is the product stored in a manner that it is separated from incompatible materials? (such, as acids, strong oxidisers and explosives)
- Is the product stored in a manner to minimise the potential for contact of solid cyanide with water?
- Is the product stored in an area with adequate ventilation to prevent the build-up of hydrogen cyanide gas?
- Does the facility have a windsock to indicate the wind direction?
- Are there systems in place with the capacity to contain any spilled product and minimise the extent of the release? (bunding etc.)
- Is the area in which the product is stored located at least 80 meters from the nearest public building or thoroughfare.

#### *3.2.1.2 Due Diligence Conclusion*

Orica concluded that based on the information obtained during the diligence assessment, the Port, did meet Orica's operational requirements.

### 3.2.2 Port of Melbourne

#### *3.2.2.1 Overview*

Orica conducted a due diligence review for Port of Melbourne in 2013.

The Port of Melbourne acts as a land load to private operators; e.g. DP World and provide operational guidelines additional to current international regulatory requirements for such operators to adhere to. The Port of Melbourne is the leading port in Victoria and is to be utilised whilst excess production is held at the TCS Laverton Major Hazard Facility. All product is held at the TCS Laverton Major Hazard Facility awaiting call into allocated vessels in accordance with port procedural requirements for hazardous and dangerous goods cargoes.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

The Due Diligence consists of a questionnaire that is completed with the operator by a methodology of physical visits and inspection, documentation review and interviews. The scope of the inspection included port status, storage areas and security. The due diligence covered both questions and a summary of information addressing Transport Practice 1.5, 1.6 and 2.1.

The questions addressed included:

- What OMC products does this company transport?
- What methods of transport does the carrier use?
- Does the transporter have a procedure for selecting routes that minimise the potential for accidents and releases, or the potential impact of incidents?
- Does the transporter have a methodology for assessing the route condition?
- Whilst in transit, are the products secured against access from unauthorised personnel?
- Where routes present special safety or security concerns, does the transporter utilise convoys, escorts, or other safety/security measures, to address the concern?
- Have personnel involved in the transport of the product received sodium cyanide awareness training?
- Have personnel involved in the transport of the product received appropriate emergency response training?
- Are training records maintained for all personnel?
- Does the transporter using the facility utilise a process for re-evaluating routes used for cyanide deliveries?
- Does the ship transporting the product have a special list or manifest identifying the presence, quantity and location of the product?
- Does the ship transporting the product have emergency response information for dealing with cyanide incidents? Is this information located in an easily accessible area, away from the product packaging?
- Does the ship comply with the stowage and separation requirements of Part 7 of the International Maritime Organizations DG Code? (i.e. stored separate from acids, areas are inspected for contamination, etc.)?
- Does the driver transporting the product carry emergency response information for dealing with cyanide incidents? Is this information located in an easily accessible area, away from the product packaging?
- When the product is transferred as part of a multi load shipment, does the train comply with the stowage and separation requirements of the Australian Dangerous Goods Code (Version 7), (i.e. stored separate from acids, areas are inspected for contamination, etc.)?

#### *3.2.2.2 Due Diligence Conclusion*

Orica concluded that based on the information obtained during the diligence assessment, the Port, did meet Orica's operational requirements.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

## 3.3 Auditor Review of Due Diligences

The review of each of the due diligences were found by the Auditor to sufficiently evaluate the rail lines and port operations within the constraints of access and limited influence, and additional management measures by the consigner were not considered necessary.

## 4.0 LIMITATIONS

Your attention is drawn to the document - “Limitations”, which is included as Appendix B to this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

| Orica Australian Supply Chain | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# Report Signature Page

**GOLDER ASSOCIATES PTY LTD**

Jaclyn Ennis-John
Auditor

Ed Clerk
ICMC Lead Auditor and ICMC Transportation Expert

JEJ/EWC/eh

A.B.N. 64 006 107 857



\\pth1-s-file01\jobs\env\2013\137648040 - orica-aust supply chain recer-australia\correspondence out\orica australian supply chain\137648040-004-r-rev1 supply chain sar.docx

# APPENDIX A

## Toll Customised Solutions, Cyanide Production Audit (Laverton Major Hazardous Facility), Laverton Victoria, Summary Audit Report

October 2014

## INTERNATIONAL CYANIDE MANAGEMENT CODE

# Toll Customised Solutions, Cyanide Production Audit (Laverton Major Hazardous Facility), Laverton Victoria, Summary Audit Report

**Submitted to:**

International Cyanide Management Institute
1400 I Street, NW, Suite 550
Washington, DC 20005
UNITED STATES OF AMERICA

Orica Australia Pty Ltd
1 Nicholson Street
EAST MELBOURNE VIC 3002
AUSTRALIA

REPORT

A world of capabilities delivered locally

**Report Number.** 137648040-006-R-Rev1

**Distribution:**

1 Electronic Copy - Orica Limited
1 Copy – ICMI (+1 Electronic)
1 Electronic Copy - Golder Associates Pty Ltd

Golder Associates

# Table of Contents

# 1.0 INTRODUCTION

## 1.1 Operational Information

| | |
|---|---|
| **Name of Facility:** | Laverton Facility<br>180 Fitzgerald Road<br>Laverton North, Victoria<br>Australia |
| **Name of Facility Owner:** | Toll Customised Solutions |
| **Name of Facility Operator:** | Toll Customised Solutions |
| **Name of Responsible Manager:** | C/o David Ellison, ICMC Compliance Coordinator, Orica Australia Pty Ltd |
| **Address:** | Orica Australia Pty Ltd<br>PO Box 375 Gladstone, 4680 |
| **State/Province:** | Queensland |
| **Country:** | Australia |
| **Telephone:** | +61 418 765 343 |
| **Fax:** | +61 7 4976 3410 |
| **E-Mail:** | david.ellison@orica.com |

## 1.2 Orica Australia Pty Ltd

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.

## 1.3 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 International Cyanide Management Institute (ICMI) as being compliant with the International Cyanide Management Code (ICMC or the Code) on 29 October 2013. Cyanide product that exceeds the licensed storage limit at the Yarwun Facility is transferred to Toll Customised Solutions' (TCS) Laverton Major Hazardous Facility (the Facility), Victoria.

## 1.4 TCS Laverton Facility

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

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

The TCS 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 until they are required for end use customers, typically located in West Africa and Tasmania, Australia.

## 1.5 Auditors Findings and Attestation

**Orica is:**

☒ **in full compliance with**

☐ in substantial compliance with

☐ not in compliance with

**The International Cyanide Management Code**

**Audit Company:** Golder Associates

**Audit Team Leader:** Edward Clerk, CEnvP (112), Exemplar Global (020778)

**Email:** eclerk@golder.com.au

**Name and Signatures of Other Auditors**

| Name | Position | Signature | Date |
|---|---|---|---|
| Edward Clerk | Lead Auditor & Technical Specialist |  | 3 October 2014 |
| Mike Woods | Auditor |  | 3 October 2014 |

**Dates of Audit**

The field component of the Certification Production Audit was undertaken over two days (four person days), concluding on 25 September 2013.

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.

| TCS Laverton Facility |  | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# PRINCIPLE 1 – OPERATIONS

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

## Production Practice 1.1

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

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| The operation is | ☐ in substantial compliance with | **Production Practice 1.1** |
| | ☐ 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.

Limited records are available to show that quality control and quality assurance programmes have been implemented during construction of cyanide production and storage facilities due to the change in ownership history. The Facility was built as a dedicated dangerous goods storage facility in the 1980s and was extended in 2000 (Stage 6). TCS purchased the Facility in 2007.

Regulation 6.1.3 of the *Occupational Health and Safety Regulations 2007*, requires operators of major hazardous facilities (MHF) obtain a *Licence to Operate a Major Hazard Facility*.

Schedule 12 of the *Occupational Health and Safety Regulations 2007* details matters to be included in a Safety Case. Such Safety Cases include a description and assessment of the steps taken to ensure safety and reliability are incorporated into the design and construction of all aspects of the MHF. The Victorian Director Workplace Hazards and Hazardous Industries Group issued TCS with a *Licence to Operate a Major Hazard Facility* for the period 24 June 2013 to 23 June 2018. 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.

Materials used for the construction of the Facility are compatible with cyanide. 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 cladded warehouses with concrete floors.

An Improvement Notice was issued to TCS under the *Occupation Health and Safety Act 2004* requesting a review be conducted on the fire suppression system in Warehouse 1 following concerns by the Melbourne Fire Brigade (MFB) Risk Engineer that the system is incapable of extinguishing a fire. Following the review, the foam suppression systems were isolated and replaced with water suppression systems at the direction of the MFB Risk Engineer. Orica discussed their concerns regarding the possible incompatibility of water fire suppression, particularly in regards to the potential evolution of hydrogen cyanide (HCN) gas. However, in order for continued compliance with the MHF compliance requirements, the MFB Risk Engineer directions are required to be implemented.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

The Orica ICMC Compliance Coordinator also advised that the cyanide is packed in an intermediate bulk container (IBC) consisting of a flexible container made of non-reactive poly propylene contained within a polyethylene plastics liner (which is heat sealed during the filling process to prevent moisture ingress) and contained within a wooden outer with an integral pallet base and secured lid strapped horizontally and vertically. The design of the IBC will prevent water ingress, thus in the event of the fire suppression system being activated, water cannot come into contact with the cyanide. Despite the potential incompatibility with cyanide, this was accepted by the Auditor.

Cyanide was observed to be stored on a concrete surface that was likely to minimise seepage to the subsurface. Floors within the warehouses are constructed from concrete that appeared to be in good condition. The floors are bounded by a containment bund, 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. 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.
- The requirement for methods to prevent the overfilling of cyanide process and storage vessels is not applicable.
- The secondary containment requirement for process and storage tanks and containers is not applicable.
- The requirement for spill prevention or containment for cyanide solution pipelines is not applicable.

## Production Practice 1.2

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

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The operation is** | ☐ in substantial compliance with | **Production Practice 1.2** |
| | ☐ not in compliance with | |

**Summarise the basis for this Finding/Deficiencies Identified:**

The operation 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. There are also emergency response and inspection procedures in place. The Facility does not handle raw materials or unpackaged cyanide.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

The Facility has developed formal procedures for contingencies during upsets in its activities that may result in cyanide exposures or releases. 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. At no time is the cyanide product handled or mixed at the site.

The Facility has a procedure to identify when site operating practices have or will be changed from those on which the initial design and operating practices were predicated. 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.*

Three risk assessments have been completed for the introduction of cyanide storage at the Facility.

Preventative maintenance programmes required under this Production Practice 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.

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 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. Warehouses at the Facility are enclosed to prevent stormwater ingress. Each warehouse has concrete floors bounded by a containment bund preventing stormwater ingress and releases from the warehouse. The floors grade to internal concrete sumps that flow to external concrete sumps.

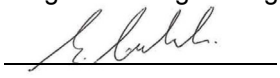
The Facility has environmentally sound procedures for disposal of cyanide or cyanide-contaminated solids. Cyanide waste streams are typically limited to damaged IBC strapping during normal warehousing operations. Damaged packaging, contaminated solids and effluents require disposal during upset conditions and this is described in the *Safety Procedure for Cyanide Products*.

Cyanide is stored with adequate ventilation to prevent the build-up of hydrogen cyanide gas, avoid the potential for exposure to moisture, and in a secure area. The Facility stores cyanide in IBCs within passively ventilated warehouses, with grated gaps at the base of the warehouse walls and whirlybird style roof vents. Ad hoc HCN monitoring has indicated that there is no buildup of gas.

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.

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 Orica ICMC Compliance Coordinator advised that Orica monitors international legislation applicable to its supply of cyanide throughout the world. TCS also has procedures to ensure IBCs are correctly placed into containers and the containers are labelled in accordance with recognised dangerous goods guidelines.

| TCS Laverton Facility |  | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

## 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.

Secondary containments are inspected for their integrity and sumps are check for the presence of fluids.

Racking facilities are inspected on a six monthly basis by an external service provider.

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

The inspections observed were documented. 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.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# PRINCIPLE 2 – WORKER SAFETY

Protect workers' health and safety from exposure to cyanide.

## Production Practice 2.1

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

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The operation 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. 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. There are also emergency response and inspection procedures in place. The Facility does not handle raw materials or unpackaged cyanide.

The Facility has a procedure to identify when site operating practices have or will be changed from those on which the initial design and operating practices were predicated. 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.*

Three risk assessments have been completed for the introduction of cyanide storage at the Facility.

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

The Facility does not produce cyanide or directly handle cyanide product. As such, HCN gas is not produced under normal operating conditions. Therefore, the Facility does not utilise monitoring devices under normal conditions due to the nature of the task and conditions of storage. However, 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 also did not identify the presence of HCN gas.

The HCN monitoring equipment is maintained, tested and calibrated as directed by the manufacturer. The Facility has a Drager X-am 7000 mutligas meter that has been configured to include a HCN sensor. Calibration records are retained for at least one year.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

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. Monitoring has indicated that HCN gas is not produced under normal operating conditions, As such, HCN monitoring equipment is only required when dealing with a spilt product or where it is suspected that the product/packaging maybe wet.

The Facility does require personal protective equipment (PPE) within the Facility. Additional PPE is required for abnormal operating conditions, such as spillage.

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.

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.

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 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 with this approach.

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.

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.

## 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 operation 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.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

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.

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 Warehouse 5. The Facility has six 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. An inspection of the first aid equipment found the equipment listed to be present and in serviceable condition.

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. There are no tanks, pipes or other infrastructure that contains cyanide. The IBCs are labelled in accordance with Australian Dangerous Goods (ADG) and International Maritime Organisation Dangerous Goods (IMDG) standards, which identify and alert workers to the contents of the IBCs.

The Facility provides warehousing services for cyanide packaged in IBCs, accordingly there is not a change policy or formalised decontamination procedure applicable for the site. Notwithstanding, information and instruction is provided on good hygiene practices when working around chemicals.

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.

The Facility has developed a procedure to transport exposed workers to locally qualified, off-site medical facilities. In the event that transport of exposed workers is required to offsite medical facilities the transport would be undertaken by the Victorian Ambulance Service.

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 Facility has a relationship with a clinic, which is located near the Facility. The nearest hospital is the Footscray Hospital, which Orica has supplied a cyanide antidote kit to.

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 2012 (non-cyanide) and October 2013 (cyanide specific).

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.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# PRINCIPLE 3 – MONITORING

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

## 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 operation 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.

The Facility does not have a direct discharge to surface water.

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

Discussions with the TCS Compliance Manager identified that no actual or designated beneficial use exists for groundwater within the vicinity of the Facility and no regulator has identified groundwater pollution as a potential impact and established a point of compliance for groundwater beneath the Facility. Based on this, it has been determined that this question does not apply.

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. TCS and the Environmental Protection Authority have not identified groundwater contamination by cyanide (or other chemicals) as an issue for the site. Consequently, TCS has not implemented a groundwater monitoring plan for the site.

The Auditor considers groundwater impact as a result of cyanide storage at the Facility to be a negligible risk and does not warrant groundwater monitoring.

The Facility does not produce cyanide or directly handle cyanide product. As such, HCN gas is not produced under normal operating conditions. Therefore, the Facility does not utilise monitoring devices under normal conditions due to the nature of the task and conditions of storage. However, 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 also did not identify the presence of HCN gas.

The Auditor considers the above monitoring frequency to adequate for the risk associated with the Facility.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# PRINCIPLE 4 – TRAINING

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

## Production Practice 4.1

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

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The operation is** | ☐ in substantial compliance with | **Production Practice 4.1** |
| | ☐ 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 through the delivery of a sodium cyanide safety awareness presentation that has been developed by the cyanide producer. This presentation is delivered to site personnel every three years.

Site training materials introduce the items of PPE that are used at the Facility, specifically basic PPE and supplementary PPE. Practical training in the correct use of PPE is provided by the Health Safety and Environment (HSE) Advisor on the site.

The Facility trains workers to perform their normal production tasks with minimum risk to worker health and safety and in a manner that prevents unplanned cyanide releases. 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. 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 onsite procedures and cyanide awareness.

Appropriately qualified personnel provide the training. In the opinion of the Auditor, there is a sound base of technical expertise in the team of people involved in providing training, both in general and particular to the cyanide operations.

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.

Employees must undergo the appropriate training before being allowed to work with cyanide at the Facility.

The Facility evaluates the effectiveness of cyanide training through the use of questionnaires. The documentation on which these evaluations have been based is filed in individual staff files.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

## Production Practice 4.2

Train employees to respond to cyanide exposures and releases.

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The operation is** | ☐ in substantial compliance with | **Production Practice 4.2** |
| | ☐ 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 provides training in procedures for response to cyanide releases. This includes training in raising the alarm, emergency response, fire extinguishers, SDS, first aid, PPE and sodium cyanide safety.

The Facility has recently developed pre-incident plans for cyanide that form part of the emergency planning process and have conducted a toolbox talk to inform the responders of the nature of the plans. The Facility has also conducted a cyanide specific exercise to review the content and appropriateness of the plans.

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.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# PRINCIPLE 5 – EMERGENCY RESPONSE

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

## Production Practice 5.1

Prepare detailed emergency response plans for potential cyanide releases.

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The operation is** | ☐ in substantial compliance with | **Production Practice 5.1** |
| | ☐ 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 cyanide related emergencies associated with the storage of 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*.

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 manual includes the following scenarios:

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

The *Emergency Planning Manual*:

- 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.
- Considers the site in context of neighbouring facilities and the process for evacuating the site and notifying regulatory authorities of emergency situations.
- Considers cyanide spills and contains procedure to limit the spread of releases and control the releases at their source.
- Describes specific actions necessary for containment, assessment, mitigation and future prevention of releases.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

## Production Practice 5.2

Involve site personnel and stakeholders in the planning process.

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The operation is** | ☐ in substantial compliance with | **Production Practice 5.2** |
| | ☐ 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. The Facility has undertaken the following to involve internal stakeholders:

- Initial and periodic reviews of the *Emergency Planning Manual*.
- Toolbox discussions on emergency response
- Training exercises

As the Facility is a designated MHF, the Emergency Planning Manual is submitted to the regulator. There is a formalised regulatory emergency response framework established for Victoria and the Facility is part of that framework. Under local legislation, the emergency manifest for the site must be available at the main entrance to the site for reference by the fire brigade and emergency services.

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.

The Facility has not made potentially affected communities aware of the nature of their risks associated with accidental cyanide releases as the scenarios identified at the site are unlikely to affect or require actions by the community. The most credible scenario of an incident at the Facility would involve dropping an IBC during a transfer, resulting in a spillage of solid cyanide. The zone of influence of such a scenario is limited to the Warehouses.

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.

The Facility has engaged in regular consultation and communication with stakeholders to assure that the plan addresses current conditions and risks. The plan has recently been updated including the pre-incident plans for cyanide related emergencies. These updates were communicated to stakeholders through toolbox talks and emergency response drills. Orica were involved in the amendments and response exercise.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

## 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 designates appropriate personnel and commits necessary equipment and resources, as follows:

- Part 4 – Responsibilities and Duties 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 is identified within Part 4 of the Plan.
- The plan stipulates the emergency response training required for the identified positions.
- Call-out procedures and 24-hour contact information for the coordinators and response team members are detailed within the plan.
- Duties and responsibilities of the coordinators and team members are specified.
- Part 5 – Company Premises and Equipment lists all emergency response equipment that should be available.
- Procedures and checklists for the inspection of emergency response equipment are detailed.
- The plan describes the role and interface with outside responders in emergency response procedures (e.g. medical facilities, fire brigade and 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.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

## 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. Details provided include those for: Toll Customised Solutions Emergency Response Centre
- Environmental Protection Agency
- Emergency services
- WorkSafe Victoria
- Orica.

The *Emergency Planning Manual* does not include procedures and contact information for notifying potentially affected communities of incidents and/or response measures. The most likely scenario at the Facility would involve dropping an IBC during a transfer Facility resulting in a spillage of approximately 1.1 tonnes of solid cyanide. As such, communities are unlikely to be impacted and have not been consulted with regard to cyanide Facility specific emergencies.

Responsibilities have been allocated within the Emergency Planning Manual for communicating with the media.

## Production Practice 5.5

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

| | | |
|---|---|---|
| | ☒ **in full compliance with** | |
| **The operation is** | ☐ in substantial compliance with | **Production Practice 5.5** |
| | ☐ 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.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

The manual 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. This includes descriptions on decontamination of soils or other contaminated media.

The manual requires the responder to notify the Orica Emergency Response Service, which 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 manual contains a warning not to use sodium hypochlorite or ferrous sulphate to treat cyanide that has been released into surface waters

The Emergency Planning Manual addresses the need for environmental monitoring (in water and soil) to identify the extent and effects of a release, and includes sampling methods, parameters and locations. The site has been developed to contain spill onsite within dedicated containment systems and the testing regime is focused on assessing levels within these systems prior to release.

## 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* includes provisions for reviewing and evaluating its adequacy on a regular basis. The *Emergency Planning Manual* (Revision 8) was last reviewed on 18 October 2013.

The Facility conducts mock drills and the Facility has a systematic process whereby the lessons learnt from drills are translated into corrective actions. Mock drills are carried out every three years.

| TCS Laverton Facility | | 3 October 2014 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# Report Signature Page

**GOLDER ASSOCIATES PTY LTD**

Ed Clerk
ICMI Lead Auditor & Production Technical Specialist

RJB/EWC/eh

A.B.N. 64 006 107 857



\\pth1-s-file01\jobs\env\2013\137648040 - orica-aust supply chain recer-australia\correspondence out\tcs laverton storage along orica aust supply chain\137648040-006-r-rev1 orica (laverton) production sar.docx

# APPENDIX A

## Limitations

## LIMITATIONS

This Document has been provided by Golder Associates Pty Ltd ("Golder") subject to the following limitations:

This Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

Golder may have retained subconsultants affiliated with Golder to provide Services for the benefit of Golder. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Golder's affiliated companies, and their employees, officers and directors.

This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

At Golder Associates we strive to be the most respected global group of companies specialising in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organisational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.


| | |
|---|---|
| Africa | + 27 11 254 4800 |
| Asia | + 852 2562 3658 |
| Australasia | + 61 3 8862 3500 |
| Europe | + 356 21 42 30 20 |
| North America | + 1 800 275 3281 |
| South America | + 55 21 3095 9500 |

solutions@golder.com
www.golder.com

**Golder Associates Pty Ltd**
**Level 3, 1 Havelock Street**
**West Perth, Western Australia 6005**
**Australia**
**T: +61 8 9213 7600**


Golder Associates

# APPENDIX B

## Limitations

## LIMITATIONS

This Document has been provided by Golder Associates Pty Ltd ("Golder") subject to the following limitations:

This Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

Golder may have retained subconsultants affiliated with Golder to provide Services for the benefit of Golder. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Golder's affiliated companies, and their employees, officers and directors.

This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.


| | |
|---|---|
| Africa | + 27 11 254 4800 |
| Asia | + 86 21 6258 5522 |
| Australasia | + 61 3 8862 3500 |
| Europe | + 356 21 42 30 20 |
| North America | + 1 800 275 3281 |
| South America | + 55 21 3095 9500 |

solutions@golder.com
www.golder.com

**Golder Associates Pty Ltd**
**Level 3, 1 Havelock Street**
**West Perth, Western Australia 6005**
**Australia**
**T: +61 8 9213 7600**


Golder Associates