



June 2015

**INTERNATIONAL CYANIDE MANAGEMENT  
CODE CYANIDE**

**Orica Australia Limited  
West Africa Supply Chain  
Recertification Audit,  
Summary Audit Report**

**Submitted to:**

International Cyanide Management Institute (ICMI)  
1400 I Street, NW, Suite 550  
WASHINGTON DC 20005  
UNITED STATES OF AMERICA

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REPORT



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## Table of Contents

<b>1.0 INTRODUCTION</b>	<b>1</b>
1.1 Operational Information	1
1.2 Description of Operation	1
1.2.1 West Africa Supply Chain	1
1.2.2 Orica Australia Limited	2
1.2.2.1 Yarwun Facility	2
1.2.3 Tongsuh Petrochemical Corporation, Ltd.	2
1.2.4 Marine Transportation	3
1.2.4.1 Mediterranean Shipping Company	3
1.2.5 Ports	3
1.2.5.1 Port of Abidjan, Côte d'Ivoire	3
1.2.5.2 Port of Conakry, Guinea	4
1.2.5.3 Port of Dakar, Senegal	4
1.2.5.4 Port of Nouakchott, Mauritania	5
1.2.5.5 Port of Takoradi, Ghana	5
1.2.5.6 Port of Tema, Ghana	6
1.2.5.7 Port of Busan, South Korea	6
1.2.6 Road Transportation	7
1.2.6.1 Barbex Technical Services	7
1.2.6.2 Stellar Logistics	7
1.2.6.3 Allship Logistics	8
1.3 Cyanide Storage	8
1.3.1 Transit Storage	8
1.4 Auditors Findings and Attestation	9
1.5 Name and Signatures of Other Auditors:	9
1.6 Dates of Audit	9
<b>2.0 CONSIGNOR SUMMARY</b>	<b>11</b>
2.1 Principle 1 – Transport	11
2.1.1 Transport Practice 1.1	11
2.1.2 Transport Practice 1.2	13
2.1.3 Transport Practice 1.3	14



# ORICA WEST AFRICA SUPPLY CHAIN, SUMMARY AUDIT REPORT

2.1.4	Transport Practice 1.4.....	16
2.1.5	Transport Practice 1.5.....	17
2.1.6	Transport Practice 1.6.....	19
2.2	Principle 2 – Interim Storage.....	20
2.2.1	Transport Practice 2.1.....	20
2.3	Principle 3 – Emergency Response.....	22
2.3.1	Transport Practice 3.1.....	22
2.3.2	Transport Practice 3.2.....	24
2.3.3	Transport Practice 3.3.....	26
2.3.4	Transport Practice 3.4.....	27
2.3.5	Transport Practice 3.5.....	28
<b>3.0</b>	<b>DUE DILIGENCE REVIEWS.....</b>	<b>29</b>
3.1	Marine Transport.....	29
3.1.1	Mediterranean Shipping Company Australia Pty Ltd.....	29
3.1.1.1	Overview.....	29
3.1.1.2	Compliance with ICMC.....	30
3.1.1.2.1	Transport Practice 1.1.....	30
3.1.1.2.2	Transport Practice 1.5.....	30
3.1.1.2.3	Transport Practice 1.6.....	31
3.1.1.3	Australian Shipping Regulatory Framework.....	31
3.1.1.3.1	Australian Maritime Safety Authority.....	31
3.1.1.3.2	Cargoes.....	31
3.1.1.3.3	Port State Control.....	31
3.1.1.3.4	Power of Inspection and Detention.....	32
3.1.1.4	Australian Department of Defence.....	32
3.1.1.5	Conclusion.....	32
3.2	Ports.....	33
3.2.1	Port of Abidjan.....	33
3.2.1.1	Transport Practice 1.1.....	33
3.2.1.2	Transport Practice 1.5.....	34
3.2.1.3	Transport Practice 1.6.....	34
3.2.1.4	Transport Practice 2.1.....	34
3.2.1.5	Transport Practice 3.1.....	34



# ORICA WEST AFRICA SUPPLY CHAIN, SUMMARY AUDIT REPORT

3.2.1.6	Conclusion.....	34
3.2.2	Port of Conakry.....	35
3.2.2.1	Transport Practice 1.1.....	35
3.2.2.2	Transport Practice 1.5.....	35
3.2.2.3	Transport Practice 1.6.....	35
3.2.2.4	Transport Practice 2.1.....	35
3.2.2.5	Transport Practice 3.1.....	36
3.2.2.6	Conclusion.....	36
3.2.3	Port of Dakar.....	36
3.2.3.1	Transport Practice 1.1.....	37
3.2.3.2	Transport Practice 1.5.....	37
3.2.3.3	Transport Practice 1.6.....	37
3.2.3.4	Transport Practice 2.1.....	37
3.2.3.5	Transport Practice 3.1.....	37
3.2.3.6	Conclusion.....	38
3.2.4	Port of Nouakchott.....	38
3.2.4.1	Transport Practice 1.1.....	38
3.2.4.2	Transport Practice 1.5.....	38
3.2.4.3	Transport Practice 1.6.....	38
3.2.4.4	Transport Practice 2.1.....	39
3.2.4.5	Transport Practice 3.1.....	39
3.2.4.6	Conclusion.....	39
3.2.5	Port of Takoradi.....	39
3.2.5.1	Transport Practice 1.1.....	40
3.2.5.2	Transport Practice 1.5.....	40
3.2.5.3	Transport Practice 1.6.....	40
3.2.5.4	Transport Practice 2.1.....	40
3.2.5.5	Transport Practice 3.1.....	41
3.2.5.6	Conclusion.....	41
3.2.6	Port of Tema.....	41
3.2.6.1	Transport Practice 1.1.....	41
3.2.6.2	Transport Practice 1.5.....	42
3.2.6.3	Transport Practice 1.6.....	42



# ORICA WEST AFRICA SUPPLY CHAIN, SUMMARY AUDIT REPORT

3.2.6.4	Transport Practice 2.1 .....	42
3.2.6.5	Transport Practice 2.1 .....	43
3.2.6.6	Conclusion .....	43
3.2.7	Port of Busan .....	43
3.2.7.1	Transport Practice 1.1 .....	43
3.2.7.2	Transport Practice 1.5 .....	43
3.2.7.3	Transport Practice 1.6 .....	44
3.2.7.4	Transport Practice 2.1 .....	44
3.2.7.5	Transport Practice 3.1 .....	44
3.2.7.6	Conclusion .....	44
3.3	Auditor Review of Due Diligence .....	44

## APPENDICES

### APPENDIX A

Limitations



## 1.0 INTRODUCTION

### 1.1 Operational Information

<b>Name of Transportation Facility:</b>	Orica West Africa Supply Chain
<b>Name of Facility Owner:</b>	Not Applicable
<b>Name of Facility Operator:</b>	Orica Australia Pty Ltd
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### 1.2 Description of Operation

#### 1.2.1 West Africa Supply Chain


The West Africa Supply Chain covers the transportation of solid sodium cyanide by ship from the Ports of Brisbane and Melbourne (Australia) (Australian Ports) and Busan (Republic of Korea) (South Korean Port) via the Mediterranean Shipping Company to the Ports of Tema and Takoradi (Ghana), Conakry (Guinea), Dakar (Senegal) and Nouakchott (Mauritania). Cyanide is then transported by road to various mine sites within West Africa by Code certified transporters.

Within Ghana, some solid sodium cyanide is transported from the Port of Takoradi by road to Orica's Tarkwa cyanide transfer facility, with subsequent road transportation to various mine sites within West Africa by Code certified transporters.

Elements of the supply chain during relevant to the recertification period were:

- Orica
- Tongsuh Petrochemical Corporation, Ltd
- Marine transportation of solid sodium cyanide from the Australian and South Korean Ports to the ports in Ghana, Senegal, Guinea, Cote D'Ivoire and Mauritania using:
  - MSC.
- The Ports of:
  - Busan, South Korea
  - Dakar, Senegal
  - Conakry, Guinea

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



- Abidjan, Cote d'Ivoire
  - Nouakchott, Mauritania
  - Takoradi, Ghana
  - Tema, Ghana.
- Road transportation of solid sodium cyanide within freight containers (containing IBCs) and sparge isotainers by:
- Barbex
  - Stellar
  - Allship.

### 1.2.2 Orica Australia Limited

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. The unit's main product is sodium cyanide (cyanide), which is manufactured at Orica's Yarwun cyanide production facility (Yarwun Facility) in Queensland, Australia. Orica Mining Chemicals is the world's second largest producer of cyanide.

#### 1.2.2.1 Yarwun 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.

Solid sodium cyanide is packaged in either sparge isotainers, which have a maximum gross weight of 26 tonnes, or IBCs, which in turn, are 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.

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


Orica's Yarwun Facility was re-certified as being in full compliance with the Code on 29 October 2013.

### 1.2.3 Tongsoh Petrochemical Corporation, Ltd

The Tongsoh Petrochemical Corporation, Ltd (Tongsoh) plant is located in Ulsan, South Korea. The sodium cyanide plant of Tongsoh, since it was established in 1985, has expanded to a current production capacity of approximately 70,000t per annum.

Tongsoh was recertified as being fully compliant with the ICMC on March 3, 2014.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



## **1.2.4 Marine Transportation**

### **1.2.4.1 Mediterranean Shipping Company**

The Mediterranean Shipping Company, headquartered in Geneva, Switzerland, is engaged in the worldwide transport of containers. As 2013, MSC operated 460 container vessels with the capacity to handle the equivalent capacity of 2 240 000, 20 foot containers.

Shipping destinations include ports in Africa, Asia, North America, the Middle East and Oceania. MSC Shipping is a carrier service providing international shipping of containers on a fleet of their container vessels. All of MSC's vessels are registered by the Lloyd's Register Group, which provides classification and certification of ships, and inspects and approves important components and accessories. This registration is a requirement of the Australian *Customs Act 1901*.

## **1.2.5 Ports**

### **1.2.5.1 Port of Abidjan, Côte d'Ivoire**

The Port of Abidjan is the main port and largest city of the Cote d'Ivoire (Ivory Coast) in Africa. Lying on the Ébrié Lagoon, it is linked to the Gulf of Guinea and Atlantic Ocean by the Vridi Plage sandbar. In addition to its seaport, the Port of Abidjan contains an autonomous international airport, making it a communications centre for all of the Cote d'Ivoire.

The Port of Abidjan is a major point for transhipments to West and Central Africa over the Cote d'Ivoire's rail and road systems. With a total of six kilometres of quay, the Port of Abidjan has 34 berths including berths dedicated for timber, cereals, fruits, petroleum products, and containers. Depth at the harbor's mouth is 10.5 m, and the depth is 12.5 meters at the quays. The Port of Abidjan can accommodate vessels up to 260 m long. The port contains 407 600 m<sup>2</sup> of open storage and 143 m<sup>2</sup> of covered warehouses and sheds. Three berths specialise in container-handling, and one berth is devoted to roll-on/roll-off cargoes. All of the port's wharves are connected to the rail network.

Orica uses MSC to transport its shipments to the Port of Abidjan in the Cote d'Ivoire.

The Port of Abidjan Harbour Master oversees all port operations. This includes:


- Management of port protocols for vessel docking.
- Entry to port by Port Pilots.
- Vessel approaches.
- Shipping activities to port activities changeover.

Stevedoring operations include:

- Handling of full/empty containers on and off vessels, container storage areas for general cargo, port security, etc.
- Management programs for container placement and movement including identification of hazardous cargoes.

Orica no longer ships cyanide to the Port of Abidjan.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date





### **1.2.5.2 Port of Conakry, Guinea**

The Port of Conakry is officially the main port in Guinea. The Port of Conakry is located on the south coast of Guinea. The Port of Conakry has three quays:

- No. 1 Quay
- No. 2-4 Quay
- No. 5 Quay.

The port has a total warehousing/storage area of 80 000 m<sup>2</sup>, including storage for 5 000 twenty-foot container equivalent units (TEUs). Annually, the port hands approximately 150 000 TEUs.

Equipment includes five ship-to-shore gantries, two mobile harbour cranes and five rubber tyred gantries.

Orica uses MSC to transport its shipments to the Port of Conakry in Guinea.

The Port of Conakry Harbour Master oversees all port operations. This includes:

- Management of port protocols for vessel docking.
- Entry to port by Port Pilots.
- Vessel approaches.
- Shipping activities to port activities changeover.

Stevedoring operations include:

- Handling of full/empty containers on and off vessels, container storage areas for general cargo, port security, etc.
- Management programs for container placement and movement including identification of hazardous cargoes.

### **1.2.5.3 Port of Dakar, Senegal**

The Port of Dakar is the main port in Senegal. The Port is controlled by the Dakar Port Authority. There are no alternative ports with the facilities to handle containers of Sodium Cyanide in Senegal. The Port of Dakar currently handles approximately 3 million tons of TEU's per annum and there are two zones at the Port of Dakar, Southern and Northern.


The Port of Dakar is a deep water port, with an access channel dredged at -11 m alongside. Protected by the Island of Gorée, the port can be accessed at any time, 24h a day and is not subject to any silting up of its littoral.

Orica uses MSC to transport its shipments to the Port of Dakar in Senegal.

The Port of Dakar Harbour Master oversees all port operations. This includes:

- Management of port protocols for vessel docking.
- Entry to port by Port Pilots.
- Vessel approaches.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



- Shipping activities to port activities changeover.

Stevedoring operations include:

- Handling of full/empty containers on and off vessels, container storage areas for general cargo, port security, etc.
- Management programs for container placement and movement including identification of hazardous cargoes.

#### **1.2.5.4 Port of Nouakchott, Mauritania**

The Port of Nouakchott is the main port in Mauritania, accounting for approximately 94% off all annual port traffic into the country. The Autonomous Port of Nouakchott (PANPA) manages the Port. The Port consists of two quays, one for small vessels and one for larger vessels.

Orica uses MSC to transport its shipments to the Port of Nouakchott in Mauritania.

The Port of Nouakchott Harbour Master oversees all port operations. This includes:

- Management of port protocols for vessel docking.
- Entry to port by Port Pilots.
- Vessel approaches.
- Shipping activities to port activities changeover.

Stevedoring operations include:

- Handling of full/empty containers on and off vessels, container storage areas for general cargo, port security, etc.
- Management programs for container placement and movement including identification of hazardous cargoes.

#### **1.2.5.5 Port of Takoradi, Ghana**

The Port of Takoradi is the main ingress port in Ghana for industrial products entering Ghana. It is also the main transit port for industrial products entering both Mali and Burkina Faso. The Port of Takoradi is located 228 km west of Accra (the capital of Ghana).


The Ghana Ports and Harbour Authority is the controlling entity for all ports within Ghana.

Orica uses MSC to transport its shipments to the Port of Takoradi in Ghana.

The Port of Takoradi Harbour Master oversees all port operations. This includes:

- Management of port protocols for vessel docking.
- Entry to port by Port Pilots.
- Vessel approaches.
- Shipping activities to port activities changeover.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



Stevedoring operations include:

- Handling of full/empty containers on and off vessels, container storage areas for general cargo, port security, etc.
- Management programs for container placement and movement including identification of hazardous cargoes.

### **1.2.5.6 Port of Tema, Ghana**

The Port of Tema is officially the main port in Ghana. However, the majority of industrial cargo now transits the Port of Takoradi due to its proximity to the areas being developed within Ghana.

Tema city and port lies in southeastern Ghana along the Gulf of Guinea (Atlantic Ocean), 18 miles (29 km) east of Accra. Tema Port is the biggest of the two sea ports in Ghana. It has water-enclosed area of 1.7 million square metres and a total land area of 3.9 million square metres. The port's container yard is capable of holding over 8000 TEU's at any given time. There are 290 reefer points available. A separate fishing harbour with cold-storage and marketing facilities is east of the lee breakwater.

The Ghana Ports and Harbour Authority is responsible for developing, managing and operating Port of Tema facilities.

Orica uses MSC to transport its shipments to the Port of Tema in Ghana.

The Port of Tema Harbour Master oversees all port operations. This includes:

- Management of port protocols for vessel docking.
- Entry to port by Port Pilots.
- Vessel approaches.
- Shipping activities to port activities changeover.

Stevedoring operations include:


- Handling of full/empty containers on and off vessels, container storage areas for general cargo, port security, etc.
- Management programs for container placement and movement including identification of hazardous cargoes.

### **1.2.5.7 Port of Busan, South Korea**

The Port of Busan is used by Orica for the export of sodium cyanide from South Korea to Africa. It is located at the mouth of the Naktong River at the southeastern tip of the Korean peninsula, facing the Sea of Japan. It is approximately 50 kilometres southwest of the Port of Ulsan.

The Port of Busan is Korea's main port and is the largest transshipment port in northeast Asia and the fifth busiest container port in the world. The Port of Busan handles approximately 40% of Korea's overseas cargo and 80% of its container cargo. The Port of Busan currently handles approximately 14 million twenty-foot equivalent units (TEUs) of containerised cargo per annum. The Busan Port Authority (BPA) is responsible for developing, managing and operating the Port of Busan.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



The Port of Busan is made up of five components:

- South Port
- North Port
- Central Port
- Gamcheon Port
- Busan New Port.

During periods of transit at the Port of Busan containers of hazardous materials, including solid sodium cyanide, are stored at the Korail Interim Storage Facility in a dedicated dangerous goods area with an on-site security presence, including CCTV system to monitor container movements as well as anyone who may be in the storage facility. All container movements in and out of the transit storage facility are monitored using a bar code system operated from a central control room.

### 1.2.6 Road Transportation

Orica contracts road transportation within the West Africa Supply Chain to Barbex Technical Services (Barbex), Allship Logistics Limited (Allship) and Stellar Logistics Limited (Stellar), where deliveries are affected on behalf of Orica Mining Chemicals.

Road transportation from the Ports of Dakar, Conakry, Nouakchott and Abidjan are effected by end user arranged transportation.

#### 1.2.6.1 Barbex Technical Services

The Barbex Tarkwa Facility, located on the Teberebie Goldfields property near Tarkwa in the Western Region of Ghana, is used to store cyanide (up to 3000 tonnes) and other chemicals for mines in the region.

Barbex was engaged by Orica during the recertification period to transport cyanide from ports in Ghana to the Barbex Tarkwa Facility for repackaging and onward movement to customer mine sites in Ghana. The bulk of the cyanide road transport undertaken as part of the West Africa Supply Chain during the recertification period was undertaken by Barbex.


Barbex was recertified as being fully compliant with the Code on 15 February 2011 and was certified throughout the audit period. Orica requested and facilitated an independent ICMC review of Barbex in relation to transport in June 2013, which was subsequently completed in August 2013 and coincided with other Code reviews occurring at the site. In May 2014, Orica concluded that the deficiencies identified by Orica with Barbex may present barriers to Barbex's Code recertification and consequently Orica has transitioned the supply of cyanide in its West Africa Supply Chain away from Barbex to other Code compliant subcontractors.

#### 1.2.6.2 Stellar Logistics

Stellar is a division of the Stellar Group of Companies. Stellar is a wholly owned Ghanaian entity that was established in 2007 to provide freight forwarding and logistics services. The Company's head office is located in Accra, with branches in Takoradi, Accra, Tema, Ougadougou, Burkina Faso and Lagos, Nigeria.

Stellar was pre-operationally certified as a Code transporter on 6 March 2014.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



Stellar's first cyanide shipment (from the Port of Takoradi to the Barbex Tarkwa Facility) as part of the West Africa Supply Chain was undertaken in January 2014, which was more than four months post the field phase for the pre-operational audit. This shipment was undertaken in accordance with Orica's systems that were certified under the West Africa Supply Chain and occurred under the direct supervision of Orica personnel. The objective of this initial shipment was to assist Stellar in progressing from pre-operational Code certification to full Code certification.

### 1.2.6.3 Allship Logistics

Allship is a wholly owned Ghanaian entity that was established in 1990 to provide freight forwarding and logistics services. Allship's head office is located in Tema, with branches in Accra, Takoradi, Tarkwa, Paga and Burkina Faso.

Allship was certified as a transporter under the Code on 18 March 2010 and recertified on 25 July 2013.

Orica added Allship to its West Africa Supply Chain as a road transporter of sodium cyanide in Ghana in July 2012 and is still used from time to time to transport cyanide along the same routes that the other road transporters in this supply chain use.

## 1.3 Cyanide Storage

### 1.3.1 Transit Storage


Storage in transit does occur at Ports identified in Section 1.2.5 while formalities such as customs clearance, quarantine checks and carrier releases are performed. Once formalities are complete, the cyanide containers are collected by the respective road transporters. At no stage along the West Africa Supply Chain, with the exception of Orica's Tarkwa Transfer Facility, is cyanide removed from the trucks or containers prior to unloading at customer mine sites. Unloading, storage and repackaging at the Tarkwa Transfer Facility was addressed independently as part of the Code Verification audit of that facility.

Depending on weather, cargo types and other operational matters, shipping lines may trans-ship their cargo from one vessel to another. This involves unloading the cargo at a terminal facility, temporary set down and loading onto another vessel for the continuation of the delivery. Such trans-shipping does occur with Orica's solid sodium cyanide. Orica has no control over when and where this happens, but through its due diligence assessments has satisfied itself that the shipping line used (MSC) undertakes the shipping of its product in accordance with the International Dangerous Goods Code (IMO DG Code) and in a professional manner. This extends to the selection of terminals for trans-shipping.

Trans-shipping ports used include:

- MSC
  - Port of Singapore
  - Port of Valencia
  - Port of Le Havre.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



## 1.4 Auditors Findings and Attestation

Orica West Africa Supply Chain is:  in full compliance with **The International Cyanide Management Code**

in substantial compliance with

not in compliance with

**Audit Company:** Golder Associates

**Audit Team Leader:** Ed Clerk, Exemplar Global (113792)

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

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

## 1.5 Name and Signatures of Other Auditors:

Name	Position	Signature
Ed Clerk	Principal/Lead Auditor	
David Rushton	Auditor	

## 1.6 Dates of Audit

The Orica West Africa Supply Chain Certification Audit was undertaken between 28 and 30 April 2014 based on the following due diligence reports:

- MSC Shipping Due Diligence Review, Orica Mining Chemicals. 23 September 2013.
- Port of Abidjan, Cote d'Ivoire, Due Diligence Review, Orica Mining Chemicals. 23 September 2013.
- Port of Conakry, Guinea, Due Diligence Review, Orica Mining Chemicals. 27 September 2013.
- Port of Dakar, Senegal, Due Diligence Review, Orica Mining Chemicals. 18 August 2013.
- Port of Nouakchott, Mauritania, Due Diligence Review, Orica Mining Chemicals. 27 August 2013.
- Port of Takoradi, Ghana, Due Diligence Review, Orica Mining Chemicals. 30 April 2013.
- Port of Tema, Ghana, Due Diligence Review, Orica Mining Chemicals. 4 May 2013.

A desktop assessment of the Port of Busan was undertaken by Golder on behalf of Orica on 18 December 2014

Orica West Africa Supply Chain  
Name of Facility

Signature of Lead Auditor

5 June 2015  
Date



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## ORICA WEST AFRICA SUPPLY CHAIN, SUMMARY AUDIT REPORT

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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 West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
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 operation is

in substantial compliance with

**Transport Practice 1.1**

not in compliance with

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

The Orica West Africa Supply Chain is in FULL COMPLIANCE with Transport Practice 1.1 requiring the transport of cyanide in a manner that minimises the potential for accidents and releases.

**Orica**

Orica has developed procedures to guide the selection of transport routes to minimise the potential for accidents and releases, or the potential impacts of accidents and releases. Routes are selected by Orica’s Supply Chain Compliance Coordinator in consultation with Orica’s transport contractors and customers and with reference to *Sodium Cyanide Transport Management Policies* and the *Selection of Transport Routes – Transportation of Sodium Cyanide (NaCN) to Customer Sites or Stock Points* procedure.


Orica has developed procedures to evaluate the risks of selected cyanide transport routes and take the measures necessary to manage these risks. The evaluation and selection of the route(s) is undertaken through a risk assessment process conducted in accordance with Australian Standard AS 4360: 2004 Risk Management. 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. Mitigation measures used to reduce risks to acceptable levels were detailed in the risk assessment documentation for the specific routes.

Orica has implemented a procedure to periodically re-evaluate routes used for cyanide deliveries. The *Transport Routes – Route Conditions and Transportation Agency Feedback* 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 has documented the measures taken to address risks identified with the selected routes and developed procedures to evaluate the risks of selected cyanide transport routes and take the measures necessary to manage these risks. Mitigation measures are then detailed in the risk assessment documentation of the transport contractor.

Orica, in conjunction with its road transport contractor, seeks input from stakeholders and applicable governmental agencies as necessary in the selection of routes and development of risk management measures.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
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. West Africa is assessed by Orica as having a risk rating of Level II and all containers are transported under escorted convoy conditions. Security measures implemented by Orica for transportation of cyanide within the West Africa Supply Chain include the use of locked and sealed containers, and constant monitoring and reporting of the progress of the convoy by the transport contractors.

Orica, through its transport contractor, has advised external responders, medical facilities and communities as necessary of their roles during an emergency response. Orica's *Sodium Cyanide Transport Management Plan* notes that emergency response responsibility will extend only to aspects of supply to which Orica is contractually responsible, however, Orica will work with all customers and assist where possible in maintaining an emergency response plan and provide specialist advice in the event of any emergency. The *Sodium Cyanide Transport Management Plan* also notes that agents, distributors and transport companies shall have an appropriate emergency response plan for handling any sodium cyanide incident that falls within their contractual responsibility. The emergency response plan shall address the entire delivery route.

Orica's *Management of Contracted Operations* procedure defines the requirements for the management of contractors who conduct product-related operations on behalf of Orica. Such operations include the transport of sodium cyanide. The procedure guides the contractor selection process, preparation of contracts/agreements, monitoring and measurement and management of change of contractors.

Orica's contracts with their road transporters have conditions stating that said contractor is responsible for the implementation of the Code within its business. Orica's *Carrier Assessment Questionnaire* is used to assess the compliance of contracted entities against contract/agreement requirements (including the Code).

The Carrier Assessment process initially identified potential problems with one subcontractor which led to further assessments and corrective actions. In May 2014, Orica concluded that the deficiencies identified by Orica with one subcontractor may present barriers to Code recertification for the subcontractor. Consequently Orica has transitioned the supply of cyanide in its West Africa Supply Chain away from the subcontractor in question to other Code compliant subcontractors.

**Ports of Abidjan, Conakry, Dakar, Nouakchott, Takoradi and Tema**


Due diligences of the Ports, except the Port of Busan, were conducted by Orica between April 2013 and September 2013. An assessment of the Port of Busan was conducted by Golder in December 2014.

Orica takes into consideration the ports available to service the intended target area. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian and South Korean Ports to the selected destination port.

**Port of Busan**

Orica takes into consideration the ports available to service the intended target area. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Port of Busan to the selected destination port. These shipping companies also provide the correct manifest documentation to the destination port which provides them with a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the number and reference of the containers.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



**MSC**

Orica takes into consideration the shipping services available to service the intended target area. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian and South Korean Ports to the destination country or continent. Orica uses MSC for its international shipping to East Africa due to its selection of services available from the Australian and South Korean Ports.

Orica does not have control of the routes taken by the shipping lines contracted to transport sodium cyanide. In selecting a route, shipping lines must take into account factors such as tides, currents, winds, storms and load compatibilities. To account for this variability, Orica has undertaken due diligence reviews of both MSC to ensure that the shipments are in accordance with the IMO DG Code.

**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.

**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

**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 operation is

in substantial compliance with

**Transport Practice 1.2**

not in compliance with

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


The Orica West Africa 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 or directly operate transport vehicles in its West Africa Supply Chain; this is undertaken by its contractors Barbex, Allship and Stellar. Despite this, Orica does ensure its transport contractors and subcontractors use only trained, qualified and licensed operators to operate its transport vehicles.

Orica's *Sodium Cyanide Transport Management Plan* states that agents, distributors, transport companies and other parties contracted to Orica shall be responsible for implementing the Code and contracts between Orica Mining Chemicals and these parties shall incorporate the obligations of each party in meeting the Code's requirements.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



Orica's *Sodium Cyanide Transport Management Plan* clearly describes the minimum training standards expected by Orica in the transportation of cyanide. 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 specified training requirements.

Orica's *Management of Contracted Operations* procedure defines the requirements for the management of contractors who conduct product-related operations on behalf of Orica. Such operations include the transport of sodium cyanide. The procedure guides the contractor selection process, preparation of contracts/agreements, monitoring and measurement and management of change of contractors.

Orica's contracts with their road transporters have conditions stating that said contractor is responsible for the implementation of the Code within its business. Orica's *Carrier Assessment Questionnaire* is used to assess the compliance of contracted entities against contract/agreement requirements (including the Code).

The Carrier Assessment process initially identified potential problems with one subcontractor which led to further assessments and corrective actions. In May 2014, Orica concluded that the deficiencies identified by Orica with one subcontractor may present barriers to Code recertification for the subcontractor. Consequently Orica has transitioned the supply of cyanide in its West Africa Supply Chain away from the subcontractor in question to other Code compliant subcontractors.

**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.

**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

**2.1.3 Transport Practice 1.3**

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

**The operation is**  **in full compliance with** **Transport Practice 1.3**  
 in substantial compliance with  
 not in compliance with


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

The Orica West Africa 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 directly operate transport vehicles in its West Africa Supply Chain; this is undertaken by Barbex, Allship and Stellar.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



## ORICA WEST AFRICA SUPPLY CHAIN, SUMMARY AUDIT REPORT

Orica does ensure that contractors only uses equipment designed and maintained to operate within the loads it will be handling. Orica's *Sodium Cyanide Transport Management Policies* states that:

*All equipment utilised is to fit for purpose and in accordance with the relevant regulatory requirements in place in each area of operation. Transportation agencies must be able to identify the carrying capacities of transportation equipment and equipment combinations and lifting equipment used throughout the supply chain.*

A procedure for *Carrier Maintenance Programs* that details the minimum safety requirements that Orica requires its prime contractor and associated subcontractors to implement.

Orica has developed procedures to verify the adequacy of the equipment for the load it must bear and that his equipment is not overloaded. The *Transport Management Policies* state that agents, distributors and transportation agencies must ensure that:

- *All transportation assets are load capable within the regulatory requirements of the area of operation*
- *Only one container/isotainer/isotank is to ever be transported on transportation assets...*

Orica's *Management of Contracted Operations* procedure defines the requirements for the management of contractors who conduct product-related operations on behalf of Orica. Such operations include the transport of sodium cyanide. The procedure guides the contractor selection process, preparation of contracts/agreements, monitoring and measurement and management of change of contractors.

Orica's contracts with their road transporters have conditions stating that said contractor is responsible for the implementation of the Code within its business. Orica's Carrier Assessment Questionnaire is used to assess the compliance of contracted entities against contract/agreement requirements (including the Code).

The Carrier Assessment process initially identified potential problems with one subcontractor which led to further assessments and corrective actions. In May 2014, Orica concluded that the deficiencies identified by Orica with one subcontractor may present barriers to Code recertification for the subcontractor. Consequently Orica has transitioned the supply of cyanide in its West Africa Supply Chain away from the subcontractor in question to other Code compliant subcontractors.

### **Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.


### **Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

### **Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



**2.1.4 Transport Practice 1.4**

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

in full compliance with

**The operation is**

in substantial compliance with

**Transport Practice 1.4**

not in compliance with

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

The Orica West Africa Supply Chain is in FULL COMPLIANCE with Transport Practice 1.4 requiring the operation develop and implement a safety program for transport of cyanide.

**Orica**

Orica does not directly operate transport vehicles in its West Africa Supply Chain; this is undertaken by Barbex, Allship and Stellar. Despite this, Orica does ensure its transport contractors and subcontractor implement a safety program for the transport of cyanide that ensures that cyanide is transported in a manner that maintains the integrity of the producer's packaging and that the product is placarded to identify the shipment as cyanide, as per local regulations and international standards.


Orica's Yarwun Facility was recertified under the Code on 29 October 2013. As a Code certified cyanide producer, Orica has systems in place to ensure their containers are labelled in accordance with the IMO DG Code.

The Orica Australia Supply Chain Audit addresses items such as cyanide packaging, labelling, container loading and security. The West Africa Supply Chain is a continuation of the Australia Supply Chain and containers are not opened until they arrive at the final destination. This supply chain was certified on 5 October 2010 and underwent a recertification audit in October 2013. The detailed and summary audit reports were submitted in full compliance to the ICMI for completeness review in November 2013.

Orica ensures that its transport contractors and subcontractors implement safety programmes for cyanide transport. The *Transport of Sodium Cyanide – Carrier Safety Program* procedure notes that the minimum safety requirements/programmes required to be in effect for all carriers/transporters effecting transportation of sodium cyanide on behalf of Orica 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 West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



Orica's *Management of Contracted Operations* procedure defines the requirements for the management of contractors who conduct product-related operations on behalf of Orica. Such operations include the transport of sodium cyanide. The procedure guides the contractor selection process, preparation of contracts/agreements, monitoring and measurement and management of change of contractors.

Orica's contracts with their road transporters have conditions stating that said contractor is responsible for the implementation of the Code within its business. Orica's Carrier Assessment Questionnaire is used to assess the compliance of contracted entities against contract/agreement requirements (including the Code).

The Carrier Assessment process initially identified potential problems with one subcontractor which led to further assessments and corrective actions. In May 2014, Orica concluded that the deficiencies identified by Orica with one subcontractor may present barriers to Code recertification for the subcontractor. Consequently Orica has transitioned the supply of cyanide in its West Africa Supply Chain away from the subcontractor in question to other Code compliant subcontractors.

**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.

**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

**2.1.5 Transport Practice 1.5**

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

in full compliance with

**The operation is**  in substantial compliance with **Transport Practice 1.5**

not in compliance with

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


The Orica West Africa Supply Chain is in FULL COMPLIANCE with Transport Practice 1.5 requiring the operation follow international standards for transportation of cyanide by sea and air.

**Orica**

Orica does transport consignments of cyanide by sea within the scope of this audit. As identified during the Orica Australia Supply Chain certification audit, all containers (i.e. freight containers of IBCs, sparge isotainer or liquid isotainer) are placarded at the Yarwun Facility in accordance with the requirements of the IMO DG Code with UN numbers, the Class 6 dangerous goods class label and the environmentally hazardous substance label. This level of placarding is consistent with the requirements of the ADG Code.

A container intended for sea transport has documentation prepared in accordance with the IMO DG code, which is faxed to the shipping agent. The normal road documentation prepared in accordance with the ADG Code accompanies the load on its road/rail voyage to the Australian Ports.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



## ORICA WEST AFRICA SUPPLY CHAIN, SUMMARY AUDIT REPORT

Orica does not transport consignments of cyanide by air within the scope of this audit.

Orica's *Sodium Cyanide Transport Management Policies* notes that no sodium cyanide manufactured by Orica Mining Chemicals or manufactured by third parties on behalf of Orica Mining Chemicals will be permitted to be transported by air without express written permission of Orica Mining Chemicals.

### **Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.

### **Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

### **Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

### **Ports of Abidjan, Conakry, Dakar, Nouakchott, Takoradi and Tema**

Due diligences of the Ports, except Busan, were conducted by Orica in 2013. An assessment of the Port of Busan was conducted by Golder in December 2014.

The due diligences found that the ports were in compliance with the International Maritime Organisation Dangerous Goods (IMO DG) Code. The due diligences specifically referenced provisions of IMO DG Code that are required to be addressed under this question.


### **Port of Busan**

Golder's assessment of the Port of Busan concluded that the port meets the requirements of the ICMC and the IMO DG Code.

### **MSC**

A due diligence of MSC conducted by Orica indicated that the shipping company transported cyanide in compliance with the IMO DG Code. The due diligence specifically referenced provisions of the IMO DG Code that are required to be addressed under this question.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



**2.1.6 Transport Practice 1.6**

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

in full compliance with

**The operation is**

in substantial compliance with

**Transport Practice 1.6**

not in compliance with

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

The Orica West Africa Supply Chain is in FULL COMPLIANCE with Transport Practice 1.6 requiring the tracking of cyanide shipments to prevent losses during transport.

**Orica**

Orica does not employ transport drivers or directly operate transport vehicles; this is undertaken by its contractors Barbex, Allship and Stellar. Despite this, Orica does ensure its transport contractor vehicles have means to communicate with the transport company, the mining operation, the cyanide producer or distributor and/or emergency responders.

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 does ensure contractor communication equipment (GPS, mobile phone, radio, pager, etc.) is periodically tested to ensure it functions properly through the engagement of Code certified transporters, Barbex, Allship and Stellar. Orica has recently transitioned the supply of cyanide in its West Africa Supply Chain away from Barbex to other Code compliant subcontractors.

Orica does ensure communication blackout areas along the West Africa Supply Chain have been identified and ensures special procedures are implemented for the blackout areas. This is achieved through the engagement of Code certified transporters, Barbex, Allship and Stellar. Orica has recently transitioned the supply of cyanide in its West Africa Supply Chain away from Barbex to other Code compliant subcontractors.


Orica does ensure its transport contractor implements systems or procedures to track the progress of cyanide shipments. Orica's *Transportation of Cyanide – Tracking of Shipments* procedure requires Orica and its contracted transportation agencies to maintain a vehicle tracking system.

Orica does implement inventory controls and/or chain of custody documentation to prevent loss of cyanide during shipment. Orica's *Sodium Cyanide Transport Management Policies* requires that agents, distributors and transportation agencies ensure that:

*Chain of responsibility requirements are met.*

Orica does ensure that its transport contractors carry records indicating the amount of cyanide in transit and Material Safety Data Sheets are available during transport. This is achieved through the engagement of Code certified transporters, Barbex, Allship and Stellar.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date





Orica's *Management of Contracted Operations* procedure defines the requirements for the management of contractors who conduct product-related operations on behalf of Orica. Such operations include the transport of sodium cyanide. The procedure guides the contractor selection process, preparation of contracts/agreements, monitoring and measurement and management of change of contractors.

Orica's contracts with their road transporters have conditions stating that said contractor is responsible for the implementation of the Code within its business. Orica's *Carrier Assessment Questionnaire* is used to assess the compliance of contracted entities against contract/agreement requirements (including the Code).

The Carrier Assessment process initially identified potential problems with one subcontractor which led to further assessments and corrective actions. In May 2014, Orica concluded that the deficiencies identified by Orica with one subcontractor may present barriers to Code recertification for the subcontractor. Consequently Orica has transitioned the supply of cyanide in its West Africa Supply Chain away from the subcontractor in question to other Code compliant subcontractors.

**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.

**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

**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 operation is

in substantial compliance with

**Transport Practice 2.1**

not in compliance with

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


The Orica West Africa Supply Chain is in FULL COMPLIANCE with Transport Practice 2.1 requiring transporters design, construct and operate cyanide trans-shipping depots and interim storage sites to prevent release and exposures.

**Orica**

Storage in transit does occur at the ports within this supply chain while formalities such as customs clearance and carrier releases are performed:

Storage in transit also occurs at the transshipping Ports of Singapore and Durban.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



Depending on weather, cargo types and other operational matters, shipping lines may tranship their cargo from one vessel to another. This involves unloading the cargo at a terminal facility, temporary set down and loading onto another vessel for the continuation of the delivery. Such trans-shipping does occur with Orica's sodium cyanide. Orica has no control over when and where this happens, but through its due diligence investigations has satisfied itself that MSC undertake the shipping of the product in accordance with the IMO DG Code and in a professional manner. This extends to the selection of terminals for trans-shipping.

**Ports of Abidjan, Conakry, Dakar, Nouakchott, Takoradi and Tema**

Due diligences of the Ports, except the Port of Busan, were conducted by Orica in 2013.

The due diligences assessed interim storage requirements at these facilities and Orica ascertained that the ports are operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.

**Port of Busan**

The cyanide product manufactured by Tongshuh is packed initially into wooden intermediate bulk containers and then into sealed shipping containers for transport to the Port of Busan's Korail Interim Storage Facility where it is stored in a dedicated Dangerous Goods storage facility pending shipment. The area in which the containers are stored whilst transiting the port is suitable to effectively contain any spillage of solid sodium cyanide that may occur. This facility is certified to handle and store all categories of dangerous goods, including Class 6.1.

Containers from this facility are transported by truck to Pier 2 of North Port where it is loaded directly onto the ship. Pier 2 at the Port of Busan is for the loading of all dangerous goods at the port.

Golder's assessment of the Port of Busan, including interim storage facilities, concluded that the port operates in compliance with requirements of the ICMC and the IMO DG Code.

**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.


**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
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.

The operation is  in full compliance with **Transport Practice 3.1**  
 in substantial compliance with  
 not in compliance with

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


The Orica West Africa 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 has developed detailed emergency response document (*Emergency Response Guide Sodium Cyanide*) to provide emergency response guidance for specific mine site, storage facilities and transport incidents involving spillage of Orica product. The guide covers:

- Incident management objectives and strategies
- Responsibilities
- Decontamination of soil
- Use of hypochlorite for decontamination purposes
- Specific Emergency Response Guides:
  - Dry sodium cyanide spill – inside building/storage facility
  - Dry sodium cyanide spill – outside building/storage facility
  - Dry sodium cyanide spill – inside shipping container
  - Shipping container decontamination
  - Sodium cyanide spill to water way
  - Handling wet sodium cyanide
  - Response to fire in vicinity of stored cyanide
  - Roll over of shipping container.
- Hazard Information – Transport
- Hazard Information – Product Spill Management and Clean Up
- Communications

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



■ Emergency Scenarios and Roles and Responsibilities.

The *Emergency Response Guide Sodium Cyanide* is appropriate for the selected transportation route or interim storage facility within the supply chain. The objective of the *Emergency Response Guide Sodium Cyanide* is to provide information in a suitable format, which can be used to minimise the adverse effects of a cyanide emergency on people, property and the environment. It is applicable to the management of an emergency involving Orica-supplied sodium cyanide solid or liquid product. It is considered applicable for product spillages at any location along the product supply chain from the Yarwun Facility gate to the mine site end user.

The Orica *Emergency Response Guide Sodium Cyanide* details the hazards and controls of both solid and liquid sodium cyanide. The emergency response actions detailed in the *Emergency Response Guide Sodium Cyanide* are relevant to solid cyanide and its packaging in IBCs within freight containers and sparge isotainers, and liquid cyanide in liquid isotainers.

The *Emergency Response Guide Sodium Cyanide* details the hazards and controls for different forms of transport and facilities, which is relevant to road transportation within the West Africa Supply Chain.

Orica does not directly operate transport vehicles or storage facilities along its West Africa Supply Chain. Despite this Orica has developed an *Emergency Response Guide*. The objective of the *Emergency Response Guide Sodium Cyanide* is to provide information in a suitable format, which can be used to minimise the adverse effects

The *Emergency Response Guide Sodium Cyanide* does include descriptions of response actions for anticipated emergency situations. The critical component of the emergency response process is the dedicated Orica ERS based in Melbourne. The *Emergency Response Guide Sodium Cyanide* requires Orica ERS to be contacted in the event of an emergency involving cyanide. Orica ERS operates 24 hours a day, seven days a week 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. Advice and assistance will include the contact and mobilisation of specialist Orica personnel or contractors who have access to relevant information and understand the specific issues presented by a particular transport route, transport practices and/or interim storage facility.

Appendix 6 (Orica Response to a Report of a Cyanide Incident) of the *Emergency Response Guide Sodium Cyanide* details the initial actions to be undertaken, including the interactions with emergency service providers such as police and fire brigade, determining if the leak is cyanide and preventing the spread of contamination. Orica's Supply Chain Compliance Coordinator advised that all emergency responders identified along specific routes, during the route assessment process, are issued with Orica's *Emergency Response Guide* or the contracted transporters emergency response documentation.


**Ports of Abidjan, Conakry, Dakar, Nouakchott, Takoradi and Tema**

Although not specifically addressed in the due diligences each port has a basic emergency response by following the IMO DG requirements as addressed in 1.5.1.

**Port of Busan**

The Busan Port Authority (BPA) is responsible for all port operations including emergency response. Although Golder's desktop assessment did not feature a review of the BPA's specific emergency response plan the BPA has emergency response capabilities in accordance with IMO DG Code requirements as addressed in 1.5.1.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.

**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

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

**2.3.2 Transport Practice 3.2**

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

in full compliance with

The operation is

in substantial compliance with

**Transport Practice 3.2**

not in compliance with

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

The Orica West Africa Supply Chain is in FULL COMPLIANCE with Transport Practice 3.2 requiring the operation designate appropriate response personnel and commit necessary resources for emergency response.

**Orica**


Orica does not directly operate transport vehicles or storage facilities along its West Africa Supply Chain.

Orica provides emergency response training of 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, it has been advised that 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's *Emergency Response Guide* outlines Orica's response to incidents that they have been notified of. The responsibilities for personnel following an emergency along the supply chain are covered in Barbex's, Allship's and Stellar's specific emergency response plans. These entities are Code certified.

The *Emergency Response Guide* does not detail emergency response equipment that may be required during an emergency. Appendix 7 of the Orica *Emergency Response Guide* provides guidance on the level of PPE outline by the US Environmental Protection Agency and the Occupational Safety and Health Administration, but does not specify what should be provided during transport. Section 3.8 of the guide lists the PPE to be provided in the event of a roll-over of a shipping container. The Guide is intended to be used

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



## ORICA WEST AFRICA SUPPLY CHAIN, SUMMARY AUDIT REPORT

by contractors and provides a point of reference for Orica's contractors to develop and align their emergency management plans.

Orica has implemented processes to check that contractors transporting the material have necessary equipment including during transport. Section 10 Emergency Management of the *Carrier Assessment Questionnaire*.

Orica has developed and provided initial and periodic refresher training covering cyanide awareness and emergency response to its transport contractors.

Additionally, Sections 10 and 12 of the *Carrier Assessment Questionnaire* have questions regarding the training of contractor personnel regarding their roles in emergency response.

Orica's *Management of Contracted Operations* procedure defines the requirements for the management of contractors who conduct product-related operations on behalf of Orica. Such operations include the transport of sodium cyanide. The procedure guides the contractor selection process, preparation of contracts/agreements, monitoring and measurement and management of change of contractors.

Orica's contracts with their road transporters have conditions stating that said contractor is responsible for the implementation of the Code within its business. Orica's *Carrier Assessment Questionnaire* is used to assess the compliance of contracted entities against contract/agreement requirements (including the Code).

The Carrier Assessment process initially identified potential problems with one subcontractor which led to further assessments and corrective actions. In May 2014, Orica concluded that the deficiencies identified by Orica with one subcontractor may present barriers to Code recertification for the subcontractor. Consequently Orica has transitioned the supply of cyanide in its West Africa Supply Chain away from the subcontractor in question to other Code compliant subcontractors.

### **Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.


### **Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

### **Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



**2.3.3 Transport Practice 3.3**

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

in full compliance with

**The operation is**

in substantial compliance with

**Transport Practice 3.3**

not in compliance with

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

The Orica West Africa Supply Chain is in FULL COMPLIANCE with Transport Practice 3.3 requiring the operating develop procedures for internal and external emergency notification and reporting.

**Orica**

There are procedures and 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. The emergency contact number for Orica is on the front cover of the Guide.

There are provisions to ensure that internal and external emergency notification and reporting procedures are kept current. 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.

Specific contact information for local stakeholders is maintained by the contracted transporters, Barbex, Stellar and Allship. These entities are Code certified.

**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.


**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
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 operation is**

in substantial compliance with

**Transport Practice 3.4**

not in compliance with

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

The Orica West Africa Supply Chain is in FULL COMPLIANCE with Transport Practice 3.4 requiring the operation develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment.

**Orica**

The *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.

Section 2.4.3 (Decontamination of a Spill of Solid or Liquid Cyanide into Soil) and Section 2.5 (Use of Sodium Hypochlorite for Decontamination Purposes) of the *Emergency Response Guide Sodium Cyanide* provides information on the hazards associated with the recovery and neutralisation.

Section 3.0 (Specific Emergency Response Guides) of the *Emergency Response Guide Sodium Cyanide* details specific response procedures for a variety of scenarios.

Orica has procedures that prohibit the use of chemicals such as sodium hypochlorite, ferrous sulphate and hydrogen peroxide to treat cyanide that has been released into surface water.

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.*

**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.


**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date





**2.3.5 Transport Practice 3.5**

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

**in full compliance with**

**The operation is**

in substantial compliance with

**Transport Practice 3.5**

not in compliance with

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

The Orica West Africa 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 does not directly operate transport vehicles or storage facilities along its West Africa Supply Chain.

There are provisions for periodically reviewing and evaluating the plan's adequacy and they are being implemented. The *Emergency Response Guide Sodium Cyanide* is a controlled document that is subject to an annual review with the last review in November 2013.

Orica does not directly operate transport vehicles or storage facilities along its East Africa Supply Chain. Orica's *Emergency Response Exercise and Drills – Schedule* procedure indicates that domestically (i.e. Australia) Orica is to undertake desktop exercises quarterly and one field exercise annually. With regards to export markets, the procedure indicates that:

*Code signatory transporters have their own exercise programs in place which Orica will review outcomes of.*

There is a procedure to evaluate the Plan's performance after its implementation and revise it as needed. The procedure has been implemented. Orica's *SHEC* [Safety, Health, Environment and Community] *Incident Management* procedure requires that appropriate corrective actions be implemented following an incident investigation and that management relay lessons learnt to relevant personnel within the business.

**Barbex**

Barbex was recertified as being fully compliant with the Code on 15 February 2011. Barbex has undergone a recertification audit in 2014, but the audit outcome is yet to be released.


**Stellar**

Stellar was pre-operationally certified as being fully compliant with the Code on 6 of March 2014. An operational audit was undertaken in August 2014. The results of the operational audit have not yet been released.

**Allship**

Allship was recertified as being compliant with the Code on 25 July 2013.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



### **3.0 DUE DILIGENCE REVIEWS**

#### **3.1 Marine Transport**

##### **3.1.1 Mediterranean Shipping Company Australia Pty Ltd**

Orica conducted a due diligence review of the MSC shipping operation utilised as part of their West Africa Supply Chain on 23 September 2013. The review was conducted by David Ellison, Supply Chain Compliance Coordinator of Orica Australia Pty Ltd.

The due diligence was reviewed by Ed Clerk of Golder. Ed is pre-certified by the ICMI as a Transport Technical Specialist.

The following items were addressed within the due diligence:

- Compliance with ICMC
  - Transport Practice 1.1
  - Transport Practice 1.5
  - Transport Practice 1.6.
- Australian Shipping Regulatory Framework
  - Australian Maritime Safety Authority (AMSA)
  - Cargoes
  - Port State Control
  - Power of Inspection and Detention.
- Australian Department of Defence.
- Conclusion.


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

##### **3.1.1.1 Overview**

MSC is a carrier service providing international shipping of containers on a fleet of their container vessels. MSC is one of the few carriers able to offer worldwide coverage with one MSC bill of lading, allowing the rapid movement of goods through dedicated transshipment hubs. Containers containing solid sodium cyanide are placed and secured on their vessels at the loading port (Australian Ports) by the stevedoring company and removed at the port of destination by the stevedoring company at that port.

The due diligence review was found to sufficiently evaluate the shipping operations (discussed below), and additional management measures by the consigner were not considered necessary.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



**3.1.1.2 Compliance with ICMC**

**3.1.1.2.1 Transport Practice 1.1**

The international sales and export of solid sodium cyanide takes into consideration the shipping services available to service the intended target area. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian Ports to the destination country or continent. Orica mainly uses MSC Shipping for its international shipping to West African ports due to its selection of services available from the Australian Ports.

The route from the Australian Ports to destination ports is not definitive as ships can take varying routes to arrive at the same destination as they take into account tides, currents, wind and storms.

**3.1.1.2.2 Transport Practice 1.5**

Orica's product is packaged to the IMDG Code requirements. The product is packaged into bulk sparge isotainers or composite intermediate bulk containers (IBCs) consisting of a 1300 kg bulk bag contained within a hermetically sealed plastic liner, placed in a wooden outer with an integral pallet base with a wooden lid and strapped. As per the IMDG Code this packaging is referenced as UN/11HD2/X/\*\*\*\*/AUS/Orica-30596/7020/1300 under the approval of the Competent Authority (where \*\*\*\* indicates the date the IBC was filled).

Orica's packaging is labelled as per the IMDG Code. Bulk sparge isotainers and shipping containers containing composite IBCs are placarded with an EIP detailing the proper shipping name, dangerous goods class number, UN number, HAZCHEM Code and emergency contact information. Bulk sparge isotainers and shipping containers are placarded with the environmentally hazardous substance label.

Product class labels are provided on the side of the IBC that allows fork lift access by the pallet base. IBCs are packaged into shipping containers ensuring that the label is facing outwards for ready identification and display.

Orica prepares a document that is referenced as the "Multimodal Dangerous Goods Form". This form meets the requirements of SOLAS 74, Chapter VII, Regulation 5 and MARPOL 73/78, Annex III, Regulation 4; and is commonly known as an MO 41. A container Packing Certificate is integrated into the MO 41.


Operations personnel on the MSC vessels on arrival at the loading port provide the Master with copies of the Dangerous Goods manifest (including stowage plan) and Packing Certificates for each of the hazardous cargo units loaded at that port.

MSC operations personnel provide copies of the Emergency Information together with the Dangerous Goods manifest (including stowage plan) and Packing Certificates for each hazardous cargo unit to be loaded at that port to the ship's Master.

A copy of the MO 41 is provided to MSC for assigning the container reference numbers and sending the HAZCHEM bookings for finalisation. From the MO 41 the container reference number is the MSC tracking and monitoring system now records the UN classification (UN 1689), Dangerous Goods Class (6) and that the product is a marine pollutant/environmentally hazardous product. This information then determines the placement and segregation of the container on the vessel and handling through trans-shipment ports, if applicable.

All containers (stipulated by their reference number) must be finalised by the vessel loading cut-off time. This requires the MO 41 to be provided between 48 and 24 hours prior to cut-off.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



Sodium cyanide solid is designated a “red line” cargo at the Australian Ports and is only loaded to the vessel when called in.

MSC operations are required to provide the Australian Ports a detailed list of all containers with dangerous goods that are loading onto a particular vessel.

On plan approval it is passed onto the vessel operator (stevedore) for loading of the vessel.

### 3.1.1.2.3 Transport Practice 1.6

MSC vessels have continuous means of tracking and communication during their voyages.

MSC has their own in-house tracking systems for tracking freight which is linked by the specific container number and Bill of Lading (BOL) number. Orica has access to this tracking system via its contracted Freight Forwarder.

### 3.1.1.3 Australian Shipping Regulatory Framework

#### 3.1.1.3.1 Australian Maritime Safety Authority

AMSA represents Australia at the International Maritime Organisation (IMO) and other international forums in the development, implementation and enforcement of international standards governing ship safety, navigation, marine environment protection, ship operations, maritime security, crew competence, training and fatigue management.

Australia's maritime regulatory framework is based on policies and guidelines relating to ship construction standards, ship survey and safety, crewing, seafarer's qualifications and welfare, carriage and handling of cargoes, passengers and marine pollution prevention.

#### 3.1.1.3.2 Cargoes

AMSA is responsible for implementing IMO regulations for all safety related aspects of marine carriage of all types including bulk liquid and solid cargoes, dangerous goods, general cargoes, containers, as well as standards and operations concerning cargo lifting gear.

Under provisions of the International Convention for the Safety of Life at Sea (SOLAS), 1974 Chapter 1 and Chapter VII, ships are subject to port state control inspections during which compliance with cargo requirements including stowage, segregation, packaging and documentation is verified.

AMSA represents Australia at the following related IMO sub-committees:


- Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC)
- Sub-Committee on bulk Liquids and Gases (BLG).

#### 3.1.1.3.3 Port State Control

Port State Control (PSC) is one of the governmental strategies in place to ensure the above objectives are achieved; however, responsibility for the safety and operation of the vessel lies with the ship owners and flag states.

PSC inspections are conducted to ensure that foreign ships visiting Australian ports are seaworthy, do not pose a pollution risk, provide healthy and safe work environments and comply with relevant international regulations.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



### **3.1.1.3.4 Power of Inspection and Detention**

AMSA marine surveyors may board a ship at any time to inspect and detail un-seaworthy or sub-standard ships.

For information purposes, these inspections include ensuring all dangerous goods cargoes are correctly documented on the manifest list, correctly stowed, segregated and especially for container vessels, all containers are correctly lashed onto the vessel and all fixtures and lashings are in suitable and working condition.

Cargo ships become eligible for a PSC inspection every six months. Selection of a ship for inspection depends on a number of factors, including risk to the environment, specific complaints and an AMSA targeting scheme. Surveyors are guided by a set of "Instructions to Surveyors" and "Ship Inspection Manual" which is based on resolutions of the IMO.

### **3.1.1.4 Australian Department of Defence**

The Australian Department of Defence manages on behalf of the Government Australia's commitments to the United Nations Chemicals Weapons Convention. All Orica's export customers are required to complete a Permit Application and have its application approved before Orica is permitted to export product. Orica assists with the collection of the Permit from its customers and then together with its own documentation applies for the permit. Each customer's Permit reference number is required on the export documentation. Orica cannot export without this approval.

### **3.1.1.5 Conclusion**

The due diligence review concluded:

*Orica through its dealings with MSC Shipping has found them to be a highly professional shipping organisation. MSC Shipping is one of the few carriers with the ability to provide Orica with a worldwide coverage.*


*The ongoing review as a service provider and this due diligence review has found no issues of concern in regards to MSC Shipping's management and the shipping of solid sodium cyanide product. The review is not a final acceptance of MSC Shipping for future work and as with all service providers to Orica, Orica will continue to review and monitor their performance.*

*Any changes in state, national or international regulations, standards or laws can result in a total review of the international shipping requirements.*

The due diligence also noted that:

*Orica is no able to conduct inspections and checks on shipping vessels readily due to port safety and security issues. The Australian Government through the Australian Maritime Safety Authority (AMSA) and State Government through the Port State Control (PSC) do however inspect and monitor cargo vessels that frequent Australian ports. These inspections ensure vessels are seaworthy, do not pose a pollution risk, provide healthy and safe work environments and comply with relevant international regulations. These inspections are not only carried out at Australian ports but internationally and set the operating standards for the international shipping companies.*

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



### 3.2 Ports

Orica conducted the following due diligence assessments of shipping operations utilised as part of their West Africa Supply Chain:

- Port of Abidjan, Cote d'Ivoire, Due Diligence Review, Orica Mining Chemicals. 23 September 2013.
- Port of Conakry, Guinea, Due Diligence Review, Orica Mining Chemicals. 27 September 2013.
- Port of Dakar, Senegal, Due Diligence Review, Orica Mining Chemicals. 18 August 2013.
- Port of Nouakchott, Mauritania, Due Diligence Review, Orica Mining Chemicals. 27 August 2013.
- Port of Takoradi, Ghana, Due Diligence Review, Orica Mining Chemicals. 30 April 2013.
- Port of Tema, Ghana, Due Diligence Review, Orica Mining Chemicals. 4 May 2013.

A desktop assessment of the Port of Busan was conducted on behalf of Orica by Golder Associates on 18 December 2014

The due diligence review was conducted by David Ellison, ICMC Compliance Coordinator for Orica Australia Pty Ltd and were compiled through physical visits, interviews and discussions with appropriate personnel and review of applicable documentation.

The due diligence reviews and assessment of the Port of Busan were found to sufficiently evaluate the port operations (discussed below), and additional management measures by the consigner were not considered necessary.

The due diligences and assessment of the Port of Busan were reviewed by Ed Clerk of Golder. Ed is pre-certified by the ICMI as a Transport Technical Specialist.

#### 3.2.1 Port of Abidjan


Orica conducted a due diligence review of the Port of Abidjan on 23 September 2013. The following items were specifically addressed within the due diligence:

- Transport Practice 1.1
- Transport Practice 1.5
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

##### 3.2.1.1 Transport Practice 1.1

The international sales and exports of solid sodium cyanide take into consideration the shipping services available to service the intended target market. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian Ports to the destination port for the country or continent. These shipping companies also provide the correct manifest documentation to the destination port which provides them with a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the number and reference of the containers.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



### **3.2.1.2 Transport Practice 1.5**

The international standards for the shipment of cyanide by sea, as described in 1.5, are followed by the port.

### **3.2.1.3 Transport Practice 1.6**

Port stevedores receive the vessels manifest on arrival, which includes the containers for unloading and handling by them. This information is then captured in the stevedore's management systems, which assists with the location where each container from the vessel is to be placed after unloading. Transport from the unloading berth to the interim storage facility is controlled by documentary checks detailing the container details and contents.

### **3.2.1.4 Transport Practice 2.1**

All solid sodium cyanide that transits the Port of Abidjan is collected by the relevant carriers as soon as possible after arrival. Where possible, express clearances are initiated to minimise the transit period. During periods of transit, containers of solid sodium cyanide are segregated from other containers and that the area is signed alerting the presence of the product and prohibiting smoking, drinking and eating outside set areas in the port. All personnel, outside those operating top lift forklifts, are warned to keep away from the containers.

All signage is provided in French, the national language of the country.

The Port of Abidjan is a secure area with an on-site security presence. The port's Gendarmerie are armed and trained to deal with intruders. The port's security presence is a facet of the port's International Ship and Port Security (ISPS) Code protocols.

All cyanide remains within its sealed containers at all times. The area of transit storage is well segregated and in an open area to prevent the build-up of hydrogen cyanide gas.

Only solid sodium cyanide is transited via the Port of Abidjan. All cyanide product is packaged into 1.135 tonne IBCs and contained within sealed shipping containers at all times. The area in which the containers are located whilst transiting the port is suitable to effectively contain any spillage of solid sodium cyanide that may occur.

Emergency response is effected by external response agencies which are located close by to the port. The port itself has a limited emergency response capability than can assist the external agencies. In an emergency situation, the port's security presence initiates a lock down of the port to prevent access to the port except for authorised emergency services responding to the emergency situation.

### **3.2.1.5 Transport Practice 3.1**

Although not specifically addressed in the due diligence the Port of Abidjan has a basic emergency response by following the IMO DG Code requirements.


### **3.2.1.6 Conclusion**

The due diligence review found no issues of concern in regards to the management of solid sodium cyanide product. The review is not a final acceptance of the Port of Abidjan for future work and as with all service providers to Orica, Orica will continue to review and monitor their performance.

The due diligence review determined that:

*The ongoing review as a service provider and this due diligence assessment has found no issues of concern in regards to the Port of Abidjan. Orica via other external sources, will continue to review and monitor the port's performance and this will include ongoing and regular contact to maintain awareness and preparedness.*

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



The due diligence concluded that:

*...the Port of Abidjan ascertained that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.*

### **3.2.2 Port of Conakry**

Orica conducted a due diligence review of the Port of Conakry on 27 September 2013. The following items were specifically addressed within the due diligence:

- Transport Practice 1.1
- Transport Practice 1.5
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

#### **3.2.2.1 Transport Practice 1.1**

The international sales and exports of solid sodium cyanide take into consideration the shipping services available to service the intended target market. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian Ports to the destination port for the country or continent. These shipping companies also provide the correct manifest documentation to the destination port which provides them with a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the number and reference of the containers.

#### **3.2.2.2 Transport Practice 1.5**

The international standards for the shipment of cyanide by sea, as described in 1.5, are followed by the port.

#### **3.2.2.3 Transport Practice 1.6**

Port stevedores receive the vessels manifest on arrival, which includes the containers for unloading and handling by them. This information is then captured in the stevedore's management systems, which assists with the location where each container from the vessel is to be placed after unloading. Transport from the unloading berth to the interim storage facility is controlled by documentary checks detailing the container details and contents.


#### **3.2.2.4 Transport Practice 2.1**

All solid sodium cyanide that transits the Port of Conakry is collected by the relevant carriers as soon as possible after arrival. Where possible, express clearances are initiated to minimise the transit period. During periods of transit, containers of solid sodium cyanide are segregated from other containers and that the area is signed alerting the presence of the product and prohibiting smoking, drinking and eating outside set areas in the port. All personnel, outside those operating top lift forklifts, are warned to keep away from the containers.

All signage is provided in French, the national language of the country.

Guinea requires a pre-shipment inspection for all imports into the country. This is implemented at the point of loading of the container and the inspection agency seals the container with their own specific seal in addition to the manufacturers own seal provisions.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date





The Port of Conakry is a secure area with an on-site security presence. The port's Gendarmerie are armed and trained to deal with intruders. The port's security presence is a facet of the port's International Ship and Port Security (ISPS) Code protocols.

All cyanide remains within its sealed containers at all times. The area of transit storage is well segregated and in an open area to prevent the build-up of hydrogen cyanide gas.

Only solid sodium cyanide is transited via the Port of Conakry. All cyanide product is packaged into 1.135 tonne IBCs and contained within sealed shipping containers at all times. The area in which the containers are located whilst transiting the port is suitable to effectively contain any spillage of solid sodium cyanide that may occur.

Emergency response is effected by external response agencies which are located close by to the port. The port itself has a limited emergency response capability than can assist the external agencies. In an emergency situation, the port's security presence initiates a lock down of the port to prevent access to the port except for authorised emergency services responding to the emergency situation.

### 3.2.2.5 Transport Practice 3.1

Although not specifically addressed in the due diligence the Port of Conakry has a basic emergency response by following the IMO DG Code requirements.

### 3.2.2.6 Conclusion

The due diligence review found no issues of concern in regards to the management of solid sodium cyanide product. The review is not a final acceptance of the Port of Conakry for future work and as with all service providers to Orica, Orica will continue to review and monitor their performance.

The due diligence review determined that:

*The ongoing review as a service provider and this due diligence assessment has found no issues of concern in regards to the Port of Conakry. Orica via other external sources, will continue to review and monitor the port's performance and this will include ongoing and regular contact to maintain awareness and preparedness.*

The due diligence concluded that:


*...the Port of Conakry ascertained that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.*

### 3.2.3 Port of Dakar

Orica conducted a due diligence review of the Port of Dakar on 18 August 2013. The following items were specifically addressed within the due diligence:

- Transport Practice 1.1
- Transport Practice 1.5
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



**3.2.3.1 Transport Practice 1.1**

The international sales and exports of solid sodium cyanide take into consideration the shipping services available to service the intended target market. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian Ports to the destination port for the country or continent. These shipping companies also provide the correct manifest documentation to the destination port which provides them with a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the number and reference of the containers.

**3.2.3.2 Transport Practice 1.5**

The international standards for the shipment of cyanide by sea, as described in 1.5, are followed by the port.

**3.2.3.3 Transport Practice 1.6**

Port stevedores receive the vessels manifest on arrival which includes the containers for unloading and handling by them. This information is then captured in the stevedore's management systems, which assists with the location where each container from the vessel is to be placed after unloading. Transport from the unloading berth to the interim storage facility is controlled by documentary checks detailing the container details and contents.

**3.2.3.4 Transport Practice 2.1**

Minimal volumes of Orica's solid sodium cyanide are transited via the Port of Dakar. Whilst in the port area awaiting collection after internal governmental clearances, the containers are segregated and signage is provided alerting personnel to the presence of Class 6 products.

The port provides safe areas for workers at the port to eat and drink, which are well away from areas where segregated products are transited.

Ignition sources are prohibited around areas where transit dangerous goods are placed.

Only personnel operating lifting equipment are permitted in the area and these personnel are secure within lifting equipment cabins.

Whilst the standard of personnel protective equipment was only of reasonable standard, port procedures specifically prohibit personnel from the area where such containers are transited. The exception is personnel operating lifting equipment, who are only in the area for a short period whilst operating the lifting equipment.


The Port of Dakar has a continual security presence which includes security at the access to the port. Access is controlled by boom gates. Regular security patrols are in place at the port.

All solid sodium cyanide transiting via the Port of Dakar remains contained within its sealed containers at all times. The segregated area is well ventilated to prevent the build-up of hydrogen cyanide gas. All solid sodium cyanide transiting via the Port of Dakar remains contained within its sealed containers at all times. The area in which containers are transited and segregated is suitable to contain any spillage that may occur.

**3.2.3.5 Transport Practice 3.1**

Although not specifically addressed in the due diligence the Port of Dakar has a basic emergency response by following the IMO DG Code requirements.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



### **3.2.3.6 Conclusion**

The due diligence review found no issues of concern in regards to the management of solid sodium cyanide product. The review is not a final acceptance of the Port of Dakar for future work and as with all service providers to Orica. Orica will continue to review and monitor their performance.

The due diligence review determined that:

*The ongoing review as a service provider and this due diligence assessment has found no issues of concern in regards to the Port of Dakar. Orica via other external sources, will continue to review and monitor the port's performance and this will include ongoing and regular contact to maintain awareness and preparedness.*

The due diligence concluded that:

*...the Port of Dakar ascertained that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.*

### **3.2.4 Port of Nouakchott**

Orica conducted a due diligence review of the Port of Nouakchott on 27 August 2013. The following items were specifically addressed within the due diligence:

- Transport Practice 1.1
- Transport Practice 1.5
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

#### **3.2.4.1 Transport Practice 1.1**

The international sales and exports of solid sodium cyanide take into consideration the shipping services available to service the intended target market. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian Ports to the destination port for the country or continent. These shipping companies also provide the correct manifest documentation to the destination port which provides them with a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the number and reference of the containers.


#### **3.2.4.2 Transport Practice 1.5**

The international standards for the shipment of cyanide by sea, as described in 1.5, are followed by the port.

#### **3.2.4.3 Transport Practice 1.6**

Port stevedores receive the vessels manifest on arrival, which includes the containers for unloading and handling by them. This information is then captured in the stevedore's management systems, which assists with the location where each container from the vessel is to be placed after unloading. Transport from the unloading berth to the interim storage facility is controlled by documentary checks detailing the container details and contents.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



### **3.2.4.4 Transport Practice 2.1**

A very limited quantity of product is transited via the Port of Nouakchott for a specific customer. Express clearance is performed by the importer and containers are collected on arrival for transportation to the customer site. In the event that a delay occurs, a security presence is provided where the containers are located. This includes the provision of warning signage prohibiting personnel in the area. Security personnel are provided with equipment suitable to meet minimal personnel protective equipment requirements.

The port provides areas for port personnel to consume food and drink which is well away from areas where containers are located.

The Port of Nouakchott is accredited under the ISPS Code and has a continual security presence. Security is provided at the entrance and exit of the port and also includes armed security patrols. All product remains contained within its sealed containers at all times.

The area in which containers are located, if warranted, is well segregated and ventilated to prevent the build-up of hydrogen cyanide gas.

The port has an internal emergency response capability. Appropriately trained customer representatives are in attendance for the arrival of solid sodium cyanide and provide expertise and advice to the ports internal response capability.

### **3.2.4.5 Transport Practice 3.1**

Although not specifically addressed in the due diligence the Port of Nouakchott has a basic emergency response by following the IMO DG Code requirements.

### **3.2.4.6 Conclusion**

The due diligence review found no issues of concern in regards to the management of solid sodium cyanide product. The review is not a final acceptance of the Port of Nouakchott for future work and as with all service providers to Orica. Orica will continue to review and monitor their performance.

The due diligence review concluded:

*The ongoing review as a service provider and this due diligence assessment has found no issues of concern in regards to the Port of Nouakchott. Orica via other external sources, will continue to review and monitor the port's performance and this will include ongoing and regular contact to maintain awareness and preparedness.*

The due diligence concluded that:


*...the Port of Nouakchott ascertained that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.*

### **3.2.5 Port of Takoradi**

Orica conducted a due diligence review of the Port of Takoradi on 30 April 2013. The following items were specifically addressed within the due diligence:

- Transport Practice 1.1
- Transport Practice 1.5
- Transport Practice 1.6

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



- Transport Practice 2.1
- Transport Practice 3.1.

**3.2.5.1 Transport Practice 1.1**

The international sales and exports of solid sodium cyanide take into consideration the shipping services available to service the intended target market. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian Ports to the destination port for the country or continent. These shipping companies also provide the correct manifest documentation to the destination port which provides them with a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the number and reference of the containers.

**3.2.5.2 Transport Practice 1.5**

The international standards for the shipment of cyanide by sea, as described in 1.5, are followed by the port.

**3.2.5.3 Transport Practice 1.6**

Port stevedores receive the vessels manifest on arrival, which includes the containers for unloading and handling by them. This information is then captured in the stevedore’s management systems, which assists with the location where each container from the vessel is to be placed after unloading. Transport from the unloading berth to the interim storage facility is controlled by documentary checks detailing the container details and contents.

**3.2.5.4 Transport Practice 2.1**

Cyanide on arrival at Takoradi is placed in a segregated area awaiting relevant governmental clearances. This area, when cyanide is present, is clearly signed providing appropriate warning to port personnel that cyanide is present. Additionally, signage is provided prohibiting smoking, consumption of foodstuffs and liquids in the specific area and the prohibition of open sources of ignition.

The port has a minimum standard of personnel protective equipment requirement which includes the wearing of relevant safety footwear, clearly visible clothing and protective headwear in specific areas. This personal protective equipment requirement is suitable for cyanide that remains contained within sealed containers at all times.


On collection from the port, after completion of the appropriate governmental clearances, Orica’s contracted carriers provide personal HCN monitors to drivers collecting the product for movement through to the Tarkwa storage facility or where, applicable, direct to end user destinations.

The Port of Takoradi is accredited under the ISPS Code and is classed as a secure area. The port has a full time security presence which includes armed patrols.

The port induction specifically details the presence of solid sodium cyanide and the requirement for access by authorised personnel only. Port security egress checkpoint checks the driver’s documentation to ensure approval has been granted for the removal of the container, that the container number physically matches with the documentation and that the seal is intact on the shipping container.

Collection from the port of containers is via a representative system. Prior to collection, end user representatives (e.g. a freight forwarder must arrange for timings for collection to occur. Collection is initiated with applicable representative in attendance as a security measure to ensure that only allocated containers are collected.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



All solid sodium cyanide remains at all times within its sealed containers. Containers are in a segregated area which is open to the air to prevent the build-up of hydrogen cyanide gas. The product remains within its sealed containers at all times. The area in which the containers are located is suitable to effectively contain any spillage that may occur. Orica's contracted carriers provide technical advice as to the nature of the product and spill procedures to the ports on-site emergency response capability.

Training is provided to port response personnel as part of the Ghana Ports Authority oversight of the port's operations.

### **3.2.5.5 Transport Practice 3.1**

Although not specifically addressed in the due diligence the Port of Takoradi has a basic emergency response by following the IMO DG Code requirements.

### **3.2.5.6 Conclusion**

The due diligence review found no issues of concern in regards to the management of solid sodium cyanide product. The review is not a final acceptance of the Port of Takoradi for future work and as with all service providers to Orica. Orica will continue to review and monitor their performance.

The due diligence review concluded:

*The ongoing review as a service provider and this due diligence assessment has found no issues of concern in regards to the Port of Takoradi. Orica via other external sources, will continue to review and monitor the port's performance and this will include ongoing and regular contact to maintain awareness and preparedness.*

The due diligence concluded that:

*...the Port of Takoradi ascertained that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide. This suitability is added to by the presence and close working relationship between the port and Orica's contracted carriers...*

## **3.2.6 Port of Tema**


Orica conducted a due diligence review of the Port of Tema on 4 May 2013. The following items were specifically addressed within the due diligence:

- Transport Practice 1.1
- Transport Practice 1.5
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

### **3.2.6.1 Transport Practice 1.1**

The international sales and exports of solid sodium cyanide take into consideration the shipping services available to service the intended target market. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Australian Ports to the destination port for the country or continent. These shipping companies also provide the correct manifest documentation to the destination port which provides them with a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the number and reference of the containers.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



**3.2.6.2 Transport Practice 1.5**

The international standards for the shipment of cyanide by sea, as described in 1.5, are followed by the port.

**3.2.6.3 Transport Practice 1.6**

Port stevedores receive the vessels manifest on arrival, which includes the containers for unloading and handling by them. This information is then captured in the stevedore's management systems, which assists with the location where each container from the vessel is to be placed after unloading. Transport from the unloading berth to the interim storage facility is controlled by documentary checks detailing the container details and contents.

**3.2.6.4 Transport Practice 2.1**

Ingress of solid sodium cyanide through the Port of Tema is limited to a specific customer. Solid sodium cyanide is only held at the Port of Tema for a short period to enable completion of specific Ghanaian governmental customs and quarantine clearances.

Whilst at the port, temporary signage is provided to warn of the presence of solid sodium cyanide and the safety requirements whilst the product is located here, including the a ban on the consumption of food and beverages and open sources of ignition, including smoking, in the specific area and the specific personal protective equipment required in this specific area.

The port has a specialist team in place to ensure that no other containers are located near containers containing sodium cyanide.

Importers are penalised substantial charges should any delay in remove of the product occurs.

The port provides a dedicated area for workers to eat and drink which is well away from the area in which the product is located.

The Port of Tema, like the Port of Takoradi, is accredited under the ISPS Code. This is controlled and maintained by the Ghana Ports and Harbour Authority which reports to the appropriate central Ghana government minister. The port has an on-site security presence which is present at all times and includes a mobile security team. Port security personnel stationed at the access to the port check the authority of drivers accessing the port area.


Product remains within sealed shipping containers at all times. Seals are individually numbered and tamper evident.

Collection from the port of containers is via a representative system. Prior to collection, end user representatives (e.g. a freight forwarder must arrange for timings for collection to occur). Collection is initiated with applicable representative in attendance as a security measure to ensure that only allocated containers are collected.

Cyanide remains sealed within its sealed shipping containers at all times. The area into which the containers are placed awaiting clearance is well ventilated to prevent the build-up of hydrogen cyanide gas. Whilst at the port, cyanide remains within its sealed containers at all times. The area in which the containers are placed awaiting clearance is suitable to contain any spillage that may occur.

The port has an internal emergency response capability that is supported by external sources. Training is provided to personnel in dangerous goods awareness and procedures.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



### **3.2.6.5 Transport Practice 2.1**

Although not specifically addressed in the due diligence the Port of Tema has a basic emergency response by following the IMO DG Code requirements.

### **3.2.6.6 Conclusion**

The due diligence review found no issues of concern in regards to the management of solid sodium cyanide product. The review is not a final acceptance of the Port of Tema for future work and as with all service providers to Orica. Orica will continue to review and monitor their performance.

The due diligence review concluded:

*The ongoing review as a service provider and this due diligence assessment has found no issues of concern in regards to the Port of Tema. Orica via other external sources, will continue to review and monitor the port's performance and this will include ongoing and regular contact to maintain awareness and preparedness.*

The due diligence concluded that:

*...the Port of Tema ascertained that the port is operating in a safe and responsible manner and is suitable for the transit of sodium cyanide.*

### **3.2.7 Port of Busan**

Golder conducted a desktop assessment of the Port of Busan on 18 December 2014. The following items were specifically addressed within the assessment:

- Transport Practice 1.1
- Transport Practice 1.5
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.


#### **3.2.7.1 Transport Practice 1.1**

Orica takes into consideration the ports available to service the intended target area. Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from the Port of Busan to the selected destination port. These shipping companies also provide the correct manifest documentation to the destination port which provides them with a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the number and reference of the containers.

#### **3.2.7.2 Transport Practice 1.5**

The international standards for the shipment of cyanide by sea, as described in 1.5, are followed by the port.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date





**3.2.7.3 Transport Practice 1.6**

Port stevedores receive the vessels manifest on arrival which includes the containers for unloading and handling by them. This information is then captured in the stevedores management systems which assists with the location where each container from the vessel is to be placed after unloading. Transport from the unloading berth to the interim storage facility is controlled by documentary checks detailing the container details and the containers contents.

**3.2.7.4 Transport Practice 2.1**

The cyanide product manufactured by Tongsuh is packed initially into wooden intermediate bulk containers and then into sealed shipping containers for transport to the Port of Busan's Korail Interim Storage Facility where it is stored in a dedicated Dangerous Goods storage facility pending shipment. The area in which the containers are stored whilst transiting the port is suitable to effectively contain any spillage of solid sodium cyanide that may occur. This facility is certified to handle and store all categories of dangerous goods, including Class 6.1.

Containers from this facility are transported by truck to Pier 2 of North Port where it is loaded directly onto the ship. Pier 2 at the Port of Busan is for the loading of all dangerous goods at the port.

Golder's assessment of the Port of Busan, including interim storage facilities, concluded that the port operates in compliance with requirements of the ICMC and the IMO DG Code.

**3.2.7.5 Transport Practice 3.1**

The Busan Port Authority is responsible for all port operations including emergency response. Although Golder's desktop assessment did not feature a review of the BPA's specific emergency response plan the BPA has emergency response capabilities in accordance with IMO DG Code requirements.


**3.2.7.6 Conclusion**

The assessment found no issues of concern in regards to the Port of Busan's management of solid sodium cyanide product. The assessment is not a final acceptance of the Port of Busan for future work and as with all service providers to Orica, Orica will continue to review and monitor their performance.

**3.3 Auditor Review of Due Diligence**

Orica and Golder concluded from the due diligence reviews and Port of Busan assessment that no major issues of concern were identified with respect to the transportation of sodium cyanide throughout the domestic supply chain by the shipping operators, road transportation operators and port utilised. Based on a review of the due diligence reports and Port of Busan assessment the auditor accepts this conclusion.

Orica West Africa Supply Chain  
Name of Facility

  
Signature of Lead Auditor

5 June 2015  
Date



## Report Signature Page

**GOLDER ASSOCIATES PTY LTD**

A handwritten signature in black ink, appearing to read 'E. Clerk'.

Ed Clerk  
Principal/ICMC Lead Auditor

DCR/EWC/eh

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# **APPENDIX A**

## **Limitations**



## LIMITATIONS

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