INTERNATIONAL CYANIDE MANAGEMENT CODE

Orica Australia Pty Ltd,
West Africa
Supply Chain Recertification – Summary Audit Report

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

Seth Ahene
Orica Australia Pty Ltd
Cyanide Operations & Solutions
Specialist - Africa
#5, Fifth Street, Off SENCHI STREET,
Airport Residential Area, Accra, PMB
CT 472, Cantonment, Accra Ghana
seth.ahene@orica.com

Report Number. 1776589-015-R-Rev1
Distribution:
1 Copy – ICMI (+1 Electronic)
1 Copy – Orica Australia Pty Ltd (Electronic)
1 Copy – Golder Associates Pty Ltd (Electronic)
## Table of Contents

1.0 INTRODUCTION .................................................................................................................. 1
  1.1 Operational information ................................................................................................. 1

2.0 CYANIDE TRANSPORTATION .......................................................................................... 1
  2.1 Orica Australia Pty Ltd .................................................................................................. 1
  2.2 Yarwun Production Facility .......................................................................................... 1
  2.3 Orica Australia Supply Chain ....................................................................................... 1
  2.4 West Africa Supply Chain ............................................................................................ 2
    2.4.1 Audit scope ............................................................................................................. 2
    2.4.2 Carriers ................................................................................................................ 2
    2.4.2.1 Mediterranean Shipping Company (MSC) ......................................................... 2
    2.4.3 Ports ..................................................................................................................... 3
    2.4.3.1 Port of Busan, South Korea ............................................................................... 3
    2.4.3.2 Port of Tema, Ghana ....................................................................................... 3
    2.4.3.3 Port of Takoradi, Ghana .................................................................................. 3
    2.4.3.4 Port of Conakry, Guinea ............................................................................... 4
    2.4.3.5 Port of Dakar, Senegal ................................................................................... 4
    2.4.3.6 Port of Abidjan, Côte d'Ivoire ....................................................................... 4
    2.4.3.7 Port of Nouakchott, Mauritania ...................................................................... 4
  2.4.4 Road Transportation ................................................................................................. 5
    2.4.4.1 Stellar Logistics Ltd. ....................................................................................... 5
    2.4.4.2 Alship Logistics Ltd. ....................................................................................... 5
  2.5 Trans-shipping and interim storage .............................................................................. 6
  2.6 Auditors Findings and Attestation .............................................................................. 7
  2.7 Name and Signatures of Other Auditors: .................................................................. 7
  2.8 Dates of audit .............................................................................................................. 7

3.0 CONSIGNOR SUMMARY .................................................................................................. 8
  3.1 Principle 1 – Transport ................................................................................................. 8
    3.1.1 Transport Practice 1.1 ......................................................................................... 8
    3.1.2 Transport Practice 1.2 ......................................................................................... 9
3.1.3 Transport Practice 1.3.................................................................10
3.1.4 Transport Practice 1.4.................................................................11
3.1.5 Transport Practice 1.5.................................................................12
3.1.6 Transport Practice 1.6.................................................................12
3.2 Principle 2 – Interim Storage.........................................................14
3.2.1 Transport Practice 2.1.................................................................14
3.3 Principle 3 – Emergency Response................................................15
3.3.1 Transport Practice 3.1.................................................................15
3.3.2 Transport Practice 3.2.................................................................16
3.3.3 Transport Practice 3.3.................................................................17
3.3.4 Transport Practice 3.4.................................................................18
3.3.5 Transport Practice 3.5.................................................................19
4.0 DUE DILIGENCE..............................................................................20
  4.1 Marine transportation..................................................................20
  4.2 Ports.............................................................................................20
5.0 IMPORTANT INFORMATION..........................................................20

APPENDICES
APPENDIX A
Carrier Due Diligence Assessments

APPENDIX B
Port Due Diligence Assessments

APPENDIX C
Important Information
1.0 INTRODUCTION
1.1 Operational information
Name of Transportation Facility: Orica Australia Pty Ltd – West Africa Supply Chain
Name of Facility Owner: Not Applicable
Name of Facility Operator: Orica Australia Pty Ltd
Name of Responsible Manager: Seth Ahene, Cyanide Operations and Solutions Specialist, Orica Australia
Address: #5, Fifth Street, Off Senchi Street, Airport Residential Area, Accra, PMB CT 472, Cantonment, Accra Ghana
State/Province: Airport Residential Area
Country: Ghana
Telephone: +233 (0)54 444 4343 or +233 (0)30 276 7728
Email: seth.ahene@orica.com

2.0 CYANIDE TRANSPORTATION
2.1 Orica Australia Pty Ltd
Orica is an Australian-owned, publicly listed company with global operations. Orica is managed as discrete business units that produce a wide variety of products and services. The Mining Chemicals unit is based in Australia and exports products to Asia, Africa and the Americas, as well as supplying the local Australian industry. The unit’s main product is 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.

2.2 Yarwun Production Facility
Orica’s Yarwun Facility, which is located 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 cyanide is packaged in either sparge isoliners, which have a maximum gross weight of 26 tonnes, or IBCs, which in turn, are packed into shipping containers – Twenty-foot equivalent units (TEUs). A maximum of 20 Intermediate Bulk Containers (IBCs) can be packed into a single TEU with a maximum gross weight of 28 tonnes. Liquid cyanide is packaged into isoliners with a maximum gross weight of 26 tonnes.

Cyanide manufactured at the Yarwun Facility is used in gold mining operations.

Orica’s Yarwun Facility was re-certified as being in full compliance with the Code on 22 February 2017. Orica’s Yarwun Facility is not part of the scope of this audit.

2.3 Orica Australia Supply Chain
The Australian Supply Chain covers the transportation of solution cyanide and solid cyanide from the manufacturing facility in Yarwun, Australia, by road and rail direct to its end point users within Australia, to the ports of Brisbane and Melbourne and storage within the Toll Customised Solutions production facility.
2.4 West Africa Supply Chain

The West Africa Supply Chain covers the transportation of solid cyanide by ship from the ports of Brisbane (Australia) and Busan (South Korea) via the Mediterranean Shipping Company (MSC) to the ports of Tema and Takoradi (Ghana), Conakry (Guinea), Dakar (Senegal) Abidjan (Cote d’Ivoire) and Nouakchott (Mauritania). Cyanide is then transported by road to various mine sites within West Africa by Code certified transporters.

Within Ghana, some 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- Stellar Logistics Limited (Stellar) and Allships Logistics Limited (Allship).

2.4.1 Audit scope

The scope of Orica’s West Africa Supply Chain covers the following:

Carriers:
- Mediterranean Shipping Company (MSC)

Ports:
- Port of Busan, South Korea
- Port of Tema, Ghana
- Port of Takoradi, Ghana
- Port of Conakry, Guinea
- Port of Dakar, Senegal
- Port of Abidjan, Cote d’Ivoire
- Port of Nouakchott, Mauritania

Road Transporters:
- Stellar Logistics Ltd (Stellar)
- Allship Logistics Ltd (Allship)

2.4.2 Carriers

2.4.2.1 Mediterranean Shipping Company (MSC)

MSC, headquartered in Geneva, Switzerland, is engaged in worldwide container transport via its fleet of 460 vessels, 200 shipping routes and 315 Ports of call. MSC operates in 150 countries with a network of over 480 offices and branches. The fleet has the capacity to handle more than 2.7 million TEUs annually.

MSC has Dangerous Goods Cargo Management Centres that manage the stowage of hazardous cargo worldwide through their computer system. MSC state they operate in accordance with the stringent requirements for stowage and segregation of dangerous goods as per the IMO DG Code.

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.
2.4.3 Ports

The international sales and exports of cyanide, by Orica, take into consideration the ports and their extended infrastructure 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 point of origin to destination. The port is selected on the basis that it is the closest port to the customer and that it meets all reasonable industry standards for safety, security and emergency response.

2.4.3.1 Port of Busan, South Korea

The port of Busan is located at the mouth of the Nakdong River in South Korea. It is the fifth busiest container port in the world and the largest transhipment port in north-east Asia.

The Busan Port Authority (BPA) is responsible for developing, managing, and operating the port of Busan. The BPA’s jurisdiction extends to Gamcheon port, which supplements the port of Busan, and Busan New port on Gado Island.

The port of Busan is a transport gateway for Korea, connecting the country to the Pacific Ocean and Asia. It is Korea’s main port, handling approximately 40% of the country’s overseas cargo and 80% of its container cargo. Approximately 130 international vessels call at the port each day.

Annual figures (obtained for the period 2005 to 2014) show that the port of Busan handled in excess of 13 million TEUs in a 12 month period. This included 3.7 million TEUs of imports, 3.7 million TEUs of exports, 5.8 million TEUs of transhipments and 6200 TEUs of coastal cargoes and almost 365 000 TEUs containing hazardous goods.

There are four dedicated container terminals, these are Gamman, Shinsundae, Singamman and Gamcheon. TEU capacities range from 340 000 to over 1 200 000 per year.

2.4.3.2 Port of Tema, Ghana

The port of Tema is the largest port in Ghana and is situated approximately 30 km from Accra. The port handles 12 million tonnes of cargo annually and receives over 1 650 vessel calls per year, including container vessels, general cargo vessels, tankers, Ro-Ro and cruise.

Tema port is the container port servicing Ghana and its neighbouring landlocked countries. The port area includes a 1 million TEU capacity container terminal and 16 deep-water berths.

Cyanide manufacturers and suppliers currently have the ability to ship product to the port from different parts of the world. The port serves as a key trans-shipment hub for the final transportation to mining operations in Ghana and landlocked countries within the West Africa region.

2.4.3.3 Port of Takoradi, Ghana

The port of Takoradi is located 230 km east of Accra. Takoradi is strategically positioned to service the northern hinterland of Ghana and serve as an alternative port for economic operators in the landlocked countries of Burkina Faso, Niger and Mali. In 2015, the port handled 27% of Ghana’s seaborne traffic, 68% of Ghana’s seaborne exports and 15% of Ghana’s seaborne imports. Major commodities handled through the port are manganese, bauxite, wheat, bulk and bagged cocoa, quicklime, containerised cargoes and equipment for the mining and oil/gas industry.

Cyanide manufacturers and suppliers have the ability to ship product to the port from different parts of the world. The port allows for the unloading of shipments for final road transportation to the mining operations in Ghana as well as Burkina Faso and Eastern Mali.
2.4.3.4 Port of Conakry, Guinea

The port of Conakry is located on the South Coast of Guinea and is the country's main port. The port has a 20 ha yard and container storage capacity of 8 000 TEUs. The theoretical annual capacity of the port of Conakry is 600 000 TEUs. The container terminal is jointly operated by Bollore Ports and the Port Authority of Conakry.

The port operates a continuous loading and unloading service, and is well connected to road and rail systems making it a suitable option for the trans-shipment of goods.

2.4.3.5 Port of Dakar, Senegal

The port of Dakar is situated in the State of Colima, in the Republic of Senegal. Dakar is a deep sea port and is located at the intersection of the sea routes serving the West African coast. The port is situated strategically for the carrier lines linking Europe to South America, and North America to South Africa.

It is an international port of transit and serves as the entry point for goods into Mali, thus enabling the trans-shipment of goods serving Niger and Burkina Faso.

The port is divided into two separate trading zones – the container terminal in the North Zone of the port of Dakar covers a total area of 24 ha. It has a quay length of 700 m with three berths ranging from 12 to 13 m in depth.

The port has separate terminals for bulk goods and hydrocarbons. The operator of the container terminal is DP World and they oversee the annual throughput of approximately 300 000 TEUs.

2.4.3.6 Port of Abidjan, Cote d'Ivoire

The port of Abidjan is the main port of the Cote d’Ivoire (Ivory Coast) in Africa. Lying on the Ebrie Lagoon, it is linked to the Gulf of Guinea and Atlantic Ocean by the Vridi Plage sandbar.

The port of Abidjan is West Africa's largest port. With a central location and a well-developed infrastructure, it is a major point for transhipments into West and Central Africa over the Cote d'Ivoire's network of rail and road systems. Since the opening of the Vridi Canal, the port of Abidjan has handled nearly all commercial trade for the Cote d’Ivoire.

The port of Abidjan has a total quay length of 6 km and there are 34 berths dedicated for timber, cereals, fruits, petroleum products and containers. The port of Abidjan can accommodate vessels up to 260 m long, depth at the harbor's mouth is 10.5 m, and the depth at quay is 12.5 m. The port provides approximately 408 000 m² of open storage and 144 m² of covered warehouses and sheds. Three berths specialize in container-handling, and one berth is devoted to roll-on/roll-off cargoes.


2.4.3.7 Port of Nouakchott, Mauritania

The port of Nouakchott is the main port in Mauritania accounting for approximately 96% of annual port traffic. It is located near the West African Atlantic coast and was developed as the capital of Mauritania after it gained independence in 1960.

Nouakchott port is an import port representing approximately 90% of annual imported goods, approximately 1.5 million tonnes, these goods include wheat, cement, clinker, flour, sugar, semolina, milk and general equipment. Exports include plaster, animal skins and fish.
ORICA AUSTRALIA, WEST AFRICA SUPPLY CHAIN
RECERTIFICATION – SUMMARY AUDIT REPORT

The port of Nouakchott consists of two quays, one for small vessels (Wharf Quay) with draft less than five metres and a second quay for larger vessels with a maximum draft of 10.3 m, this quay stretches 585 m and is split into four berths, three of which are used for cargo handling and the fourth for servicing vessels. The main cargo quay is located four kilometres south of the Quai Wharf and 15 km south-west of the city of Nouakchott.

Nouakchott uses an integrated AS400 computer system developed in cooperation with the Office d’Exploitation des Ports Marocains (ODEP). The Autonomous Port of Nouakchott (PANPA) manages the port.

2.4.4 Road Transportation

Orica contracts road transportation within the West Africa Supply Chain to Stellar and Allship, 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.

2.4.4.1 Stellar Logistics Ltd

Stellar is a division of the greater 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, Ouagadougou, Burkina Faso and Lagos, Nigeria.

The Group of companies provides logistics, hospitality, travel, power, ship broking and property maintenance and retail services. The logistics arm transports bulk dangerous goods and containerised products to the mining industry in Ghana.

Stellar currently transports solid cyanide manufactured by Orica in Twenty-foot Equivalent Units (TEUs) or bulk spare isotainers from the port of Takoradi, or Orica’s Cyanide Transfer facility in Tarkwa, both in Ghana, to end user destinations within Ghana by road.

Stellar was recertified as being fully compliant with the Code on 14 April 2015.

2.4.4.2 Allship Logistics Ltd

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.

Since the establishment of the company it has provided services to companies in the mining, heavy industrialised sectors and both government and private organisations.

Allship has a 1.8 ha truck yard and 3.4 ha warehouse facility at its head office in Tema. It also has 0.8 ha truck yard and 0.5 ha warehouse facility in Takoradi.

Allship transports Orica’s cyanide to customer mine sites using the following routes:

- Port of Takoradi – Agona – Nsuem – Bonsaso – Tarkwa – Samahu – Golden Star Bogoso (Bogoso Mine)
- Port of Takoradi – Apowa – Kejebri – Prestea – Golden Star Wassa Akyempim Mine (Wassa Mine)
- Port of Tema – Winneba – Mankesim – Nyamoransa – Assin Fosu – Adansi Mine

Allship was recertified as being fully compliant with the Code on 2 December 2016.
2.5 Trans-shipping and interim storage

Depending on weather, cargo types, journey length and other operational matters, carriers 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 within Orica's Supply Chain. Orica has no control over when and where this happens, but through its due diligence assessment has satisfied itself that the carrier used (MSC) undertakes the shipping of the product in accordance with the IMO DG Code and in a professional and safe manner.

This satisfaction extends to the selection of port terminals made by the shipping companies and used for trans-shipping and interim storage purposes.

Within the scope of this audit, transit storage may also be associated with port operations where containers of cyanide are removed from the vessels, temporarily stored and then placed on road vehicles for the next part of the journey. These transit storage depots are managed by the relevant port authorities and due consideration of relevant protocol requirements has been made through the due diligence process.

There is no interim storage undertaken during road transportation to the end user.
2.6 Auditors Findings and Attestation

☑ In full compliance with

Orica is: ☐ in substantial compliance with The International Cyanide Management Code

☐ not in compliance with

No significant cyanide exposures or releases were noted to have occurred during Orica's West Africa Supply Chain certification audit.

Audit Company: Golder Associates Pty Ltd
Audit Team Leader: Jaclyn Ennis-John, Exemplar Global (110895)
Email: jennisjohn@golder.com.au

2.7 Name and Signatures of Other Auditors:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaclyn Ennis-John</td>
<td>Lead Auditor and Transport Technical Specialist</td>
<td>[Signature]</td>
<td>23 January 2018</td>
</tr>
</tbody>
</table>

2.8 Dates of audit

The certification audit of Orica's West Africa Supply Chain was undertaken between July and August of 2017, with the Detailed Audit Report being finalised in November.

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 Cyanide Transportation Verification Protocol for the International Cyanide Management Code and using standard and accepted practices for health, safety and environmental audits.
3.0 CONSIGNOR SUMMARY

3.1 Principle 1 – Transport
Transport Cyanide in a manner that minimises the potential for accidents and releases.

3.1.1 Transport Practice 1.1
Select cyanide transport routes to minimise the potential for accidents and releases.

☐ in full compliance with

Orica is
☐ in substantial compliance with
☐ not in compliance with

Transport Practice 1.1

Summarise the basis for this Finding/Deficiencies Identified:

Orica 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 has implemented a process for selecting transport routes that minimises the potential for accidents and releases or the potential impacts of accidents and releases.

Orica has developed and implemented a management system for transportation and there are specific written procedures that detail the process and the parameters to be assessed when identifying, selecting and assessing potential transport routes. These procedures aim to minimise the risk associated with the transportation of cyanide while maintaining a safe, reliable and efficient and cost effective delivery system to customer sites.

Orica undertakes due diligence assessments on carriers, ports and service providers at regular intervals to ensure that standards are being maintained. Due diligence assessments are completed as a part of the initial route selection process; as well as on a triennial basis. The due diligence assessments state that:

The report is not a final acceptance of [the Carrier] OR [the Port] for future work and as with all service providers to Orica, Orica will continue to review and monitor the performance on a triennial basis.

Orica has requirements for the selection and management of contractors for the transport and storage of cyanide. Procedures cover all transport and storage providers and ensure that contractors working for and on behalf of Orica are aligned with the company’s Safety, Health and Environmental standards.

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 origin to the destination.

With regards to carriers, Orica has implemented a carrier assessment procedure. The purpose of this procedure is to assess carriers and their contractors at regular intervals against company standards and requirements. Carriers are assessed at a minimum on a biennial basis with additional assessments conducted following any changes to operational requirements or as a result of newly identified risks.

Orica utilises MSC for the international shipping of cyanide. Containers are placed and secured on vessels at the port of loading by the stevedoring company or service provider, and removed at the destination by the stevedoring company or service provider at that port. As such, MSC provides a marine carrier service and handling of containers (on and off vessels) is undertaken by stevedoring companies at each port.

Orica does not have control of over routes taken by the service providers, but has undertaken a due diligence assessment of MSC to verify that the shipments are transported in accordance with regulatory requirements.
The international sales and exports of cyanide by Orica take into consideration the ports and their extended infrastructure available to service the intended target area. The destination port is selected on the basis that it is the closest port to the customer and that it meets reasonable industry standards for safety, security and emergency response.

Due diligence assessments of the ports used in the Supply Chain concluded that the ports meet the requirements of the ICMC. Where issues were identified, it was established that they would be adequately mitigated by Orica reducing the time that product spends at that port.

Orica has implemented procedures to evaluate, and periodically re-evaluate cyanide routes and their associated risks and take the measures necessary to manage these risks.

Orica documents the measures taken to address risks identified with the selected routes. The route assessment, carrier assessment and due diligence documentation details the measures taken to address the identified risks for transportation components of Orica’s supply chains.

Orica seeks input from stakeholders and applicable governmental agencies as necessary in the selection of routes and development of risk management measures. Orica procedures ensure that relevant feedback from transportation agencies is provided through to Orica for the appropriate assessment and follow on actions.

Orica has assessed its routes for special safety or security concerns. Orica ensures the transport contractor uses convoys, escorts or other additional safety or security measures to address concerns where necessary.

The need for additional safety or security measures is identified during the route assessment and route risk assessment process. The due diligence assessments did not identify the requirement for additional safety or security measures.

Orica, through its transport contractors, has advised external responders, medical facilities and communities as necessary of their roles during an emergency response. Emergency responders identified along specific routes are issued with the applicable emergency response information.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Allship.

3.1.2 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
☐ in substantial compliance with
☐ not in compliance with

Transport Practice 1.2

Summarise the basis for this Finding/Deficiencies Identified:

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

Orica does not directly operate transport vehicles within this Supply Chain. Orica assess the capability of its carriers via the carrier assessment process, assessments are conducted as a minimum on a biennial basis, with additional assessments conducted following any changes to operational requirements or as a result of newly identified risks.
Orica utilises MSC for the international shipping of cyanide. Containers are placed and secured on their vessels at the port of loading by the stevedoring company or service provider, and removed at the destination by the stevedoring company or service provider at that port. As such, MSC provides a marine carrier service and all actual handling of containers (on and off vessels) is predominately undertaken by stevedoring companies at each port.

A due diligence assessment of MSC was undertaken to verify that the shipments are handled in accordance with the IMO DG Code. The due diligence assessment found that there were no issues of concern with regards to the management and shipping of cyanide product by the carrier.

Orica does not operate transport vehicles or equipment at port facilities used within this supply chain, operation is undertaken by the managing port authority or stevedoring service provider at the port.

The due diligence assessments found that the ports used by Orica are performing dangerous goods handling duties in accordance with international and local regulations. Ports selected in the Supply Chain are located in IMO member countries, member nations must ensure that ports comply with the requirements of the IMO DG Code 2014, and in particular the training requirements for shore-side personnel as described in section 1.3.1 of the IMO DG Code.

Orica conducts triennial due diligence assessments of port facilities used in the Supply Chain.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Allship.

3.1.3 Transport Practice 1.3

Ensure that transport equipment is suitable for the cyanide shipment.

✓ in full compliance with

Orica is □ in substantial compliance with

Transport Practice 1.3

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Orica is in FULL COMPLIANCE with Transport Practice 1.3 requiring that transport equipment is suitable for the cyanide shipment.

Orica does not directly operate transport vehicles within this Supply Chain.

Carriers and ports used by Orica have equipment operation and maintenance capabilities and procedures that are not dependent on Orica. The ability of the carriers and port facilities to operate safely, and their capability to handle dangerous goods is assessed during the Carrier Assessment and due diligence process.

Orica conducts triennial due diligence assessments for carriers and ports; and biennial carrier assessments, for service providers used in the Supply Chain.

The completed due diligence assessments found that there were no issues of concern with regards to the management and shipping of cyanide product by MSC; and that the ports used by Orica are performing dangerous goods handling duties in accordance with Orica's requirements and relevant regulations.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Allship.
3.1.4 Transport Practice 1.4

Develop and implement a safety program for transport of cyanide.

☒ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Transport Practice 1.4

Summarise the basis for this Finding/Deficiencies Identified:

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

There are procedures in place to ensure that cyanide is transported in a manner that maintains the integrity of the producer's packaging.

Product packaging is undertaken at the ICMC certified Yarwun Facility and cyanide is packaged and transported in accordance with international regulatory standards, thereby meeting the requirements of the political jurisdictions through which the loads will pass.

There are in-transit procedures that allow for checks of the packaging integrity and the reporting of any damage or spillage. There are single use seals placed on doors of shipping containers and checks are tracked and recorded alongside a package's unique serial number.

MSC require from Orica, evidence that products booked for transport meet the packaging requirements of the IMO DG Code. Some carriers reserve the right to refuse acceptance of cargo that does not meet packaging, container and documentation standards as set out in the Code.

A due diligence assessment of MSC was undertaken to verify that shipments of dangerous goods are handled in accordance with the IMO DG Code. The due diligence assessment found that there were no issues of concern with regards to the shipping of cyanide product by MSC. Cyanide product remains sealed and packaged within locked shipping containers until it reaches the end use destination.

Orica has a process to ensure that placards or other signage are used to identify the shipment as cyanide, as required by local regulations or international standards.

Placards and signage used to identify the shipment as cyanide meet local and international standards. Diamonds placed at the front and rear of the vehicles identify the load as cyanide and the containers also have labelling that identifies the contents. Orica packaged cyanide remains sealed within its initial packaging and container until its arrival at the final destination.

Orica does implement a safety program for cyanide transport.

Orica does not directly operate transport vehicles within the Supply Chain however, the minimum safety requirements/programmes necessary to be in effect for all carriers/transporters effecting transportation of cyanide on behalf of Orica are detailed in Orica procedures.

Orica conducts biennial carrier assessments; and triennial due diligence assessments of carriers and port facilities used in the Supply Chain.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Alship.
3.1.5 Transport Practice 1.5

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

☒ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Orica is

Transport Practice 1.5

Summarise the basis for this Finding/Deficiencies Identified:

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

Shipments of cyanide transported by sea are transported in compliance with the IMO DG Code.

All containers (i.e. freight containers of IBCs and sparge isotainers) are packaged and placarded at the Yarwun Facility in accordance with the requirements of the IMO DG Code with UN numbers, the Class 6 dangerous goods label and the environmentally hazardous substance label.

A container intended for transport has documentation prepared in accordance with the IMO DG code, which is provided to the shipping agent. A copy of the marine documentation is retained at the Yarwun Facility.

MSC transport Orica cyanide by sea to various destination ports. All packaging and transportation is carried out in accordance with the IMO DG Code.

A due diligence assessment of MSC was undertaken on behalf of Orica to verify that the shipments are handled in accordance with the IMO DG Code. The due diligence assessment found that there were no issues of concern with regards to the conduct and shipping of cyanide product by the carrier.

No cyanide is transported by air within the scope of this Supply Chain.

3.1.6 Transport Practice 1.6

Track cyanide shipments to prevent losses during transport.

☒ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Orica is

Transport Practice 1.6

Summarise the basis for this Finding/Deficiencies Identified:

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

Orica does not employ transport drivers or directly operate transport vehicles within this Supply Chain. 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.

The due diligence assessment for MSC found that their vessels have continuous means of tracking and communication during voyages. Additionally, each service provider has systems in place to track individual containers from point of origin through to the destination port.

Orica West Africa Supply Chain

Name of Facility

Signature of Lead Auditor

23 January 2018

Date

January 2018

Report No. 1776589-015-Rev1
Chain of custody documentation is used by shipping companies to prevent the loss of cargo during shipment. This documentation includes the vessel manifest – which identifies the location and content of each container on the vessel along with packing certificates, Multimodal Dangerous Goods Forms and Safety Data Sheets (SDS).

MSC onshore representatives and vessels have the software capability to track individual containers. This service is available from the time they are booked onto a vessel, right through the entirety of the journey, until they are received at the nominated destination port.

For ports of departure in Australia, the Australian Maritime Safety Authority (AMSA) develops and implements policies, statutes and regulations governing the carriage of dangerous goods and other goods by ships in accordance with relevant national and international requirements. This includes supervising the safety of ships carrying dangerous goods and processing declarations made by ships carrying dangerous goods.

Carriers are required to declare dangerous cargo to AMSA before arriving/leaving at the port.

For destination ports the due diligences found that ports in the Supply Chain are IMO members and ISPS Signatories.

As IMO members and to comply with the requirements of the IMO DG Code, vessels are required to declare dangerous cargo before arriving/leaving the port to Authorities or stevedoring service providers.

At each destination port stevedoring service providers or terminal managers operate their own choice of information management and cargo tracking systems. These systems include advanced terminal software programs capable of tracking individual containers that are unloaded from carriers and transferred to laydown areas or placed onto another means of transportation (trans-shipping, ground or rail).

Orica's shipping agent can provide updates on the status of shipments on an as needs basis. In each case this includes an estimate on arrival/departure times, where trans-shipping will occur and the time that discharge from the destination port occurs.

Inventory controls, marine transportation and chain of custody documentation processes are implemented to prevent the loss of cyanide during shipment.

Orica requires that their contractors carry records indicating the amount of cyanide in transit and Safety Data Sheets (SDSs) are available during transport. The amount of cyanide in transit, the packing certificates and the SDS are contained within the marine documentation, this includes the shipper's declaration, container packing certificate and quarantine (fumigation) certificate, which accompany the cargo throughout the journey.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Allship.
3.2 Principle 2 – Interim Storage

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

3.2.1 Transport Practice 2.1

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

☑ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Transport Practice 2.1

Summarise the basis for this Finding/Deficiencies Identified:

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

Orica does not operate trans-shipping or interim storage facilities within this Supply Chain, but circumstances may arise where trans-shipping of cyanide product is required. This involves unloading the cargo at a terminal facility, temporary set down and loading onto another vessel for the continuation of the delivery.

Orica has no control over when and where this happens, but through the completion of due diligence assessments has satisfied itself that the carrier used (MSC) undertakes the trans-shipping of product in accordance with the IMO DG Code and regulations for the handling of dangerous goods pertinent to that port.

Depending on weather, cargo types and other operational matters, carriers may transship their cargo from one vessel to another.

Trans-shipping ports were not assessed as part of the due diligence assessments carried out on behalf of Orica. The due diligence assessments did not identify any issues of concern with regards to the management or transport of cyanide by MSC—this extends to the carrier’s ability to select a suitable port for the purpose of trans-shipping when required.

The due diligence assessments of the ports identified that temporary storage or set down of product is conducted in accordance with the requirements of the IMO DG Code and other relevant international, and where developed, local dangerous goods handling regulations.
3.3 Principle 3 – Emergency Response

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

3.3.1 Transport Practice 3.1

Prepare detailed Emergency Response Plans for potential cyanide releases.

- in full compliance with

Orica is

- in substantial compliance with
- not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

Orica has developed a detailed Emergency Response Guide (ERG) document to provide emergency response guidance for specific mine site, storage facilities and transport incidents involving Orica's product.

The document has been developed by Orica to provide guidance for the management of incidents involving spillage of cyanide product.

Orica requires that transporters involved in the shipment of cyanide have plans that cover spill response procedures outside of the Yarwun gate, up to the end user destination. Orica provide assistance and support in this role.

Whilst Orica’s product is embarked on MSC vessels all emergency response is governed by the vessel’s captain. Orica conducts due diligence and carrier assessments of its carriers to verify that the shipments occur in accordance with the IMO DG Code, thereby meeting emergency response requirements.

Orica require carriers to have appropriate emergency response plans and capabilities for handling any cyanide incident that falls within their contractual responsibility.

The due diligence found that MSC carry out the shipping of dangerous goods in accordance with the requirements of the IMO DG Code.

Each operator implements their own system of safety and emergency response management that extends to emergency situations involving cyanide and other dangerous goods. Emergency responders, as well as dangerous goods technical experts, are available to respond and assist in emergency situations.

The due diligence assessments found that the ports used by Orica are performing dangerous goods handling duties in accordance with international and local regulations. Ports selected in the Supply Chain are located in IMO member countries, member nations must ensure that ports comply with the requirements of the IMO DG Code.

The due diligences also found that the ports are certified under the IMO’s International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 90). States that are party to OPRC 90 protocol are required to establish a national system for responding to oil and hazardous/noxious substances pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises.
The ERG is appropriate for the selected transportation route or interim storage facility within the supply chain. The Guide provides 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 cyanide solid or liquid product and is considered applicable for product spillages at any location along the product supply chain.

The ERG details the hazards and controls of both solid and liquid cyanide. The emergency response actions detailed in the Guide are relevant to solid cyanide and its packaging in IBCs within freight containers. The Guide considers the design of the transport vehicle and method of packaging of the product, it contains procedures for different types of transport containers, freight containers with IBCs and isolators as well as descriptions of response actions for anticipated emergency situations.

Emergency responders identified along specific routes are issued with the applicable emergency response information.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Alship.

3.3.2 Transport Practice 3.2

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

☑ in full compliance with

☐ in substantial compliance with Transport Practice 3.2

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Orica is in FULL COMPLIANCE with Transport Practice 3.2 requiring they designate appropriate response personnel and commit necessary resources for an emergency response.

Whilst Orica’s product is embarked on MSC vessels, all emergency response is governed by the vessel’s captain. Orica conducts due diligence and carrier assessments to verify that the shipments occur in accordance with the IMO DG Code. The due diligence assessment found that there were no issues of concern in regard to the management and shipping of cyanide product by MSC.

Orica retains a technical and advisory role in an emergency and can provide resources and personnel (depending on where an incident takes place) to assist emergency services in the response to an incident involving cyanide.

Orica require carriers to have appropriate emergency response plans and capabilities for handling any cyanide incident that falls within their contractual responsibility. The level of capability is assessed through the due diligence and Carrier Assessment process.

The due diligence assessment found that MSC carry out the shipping of dangerous goods in accordance with the requirements of the IMO DG Code. Each operator implements their own system of safety and emergency response management that extends to emergency situations involving cyanide and other dangerous goods at sea.

The due diligence assessments found that the ports used by Orica have appropriate emergency response capabilities to deal with potential dangerous goods releases.
Orica does not directly operate transport vehicles or storage facilities within this Supply Chain. The responsibilities for personnel following an emergency along the supply chain are covered in specific emergency response plans for Stellar and Allship. Orica’s ERG outlines the response to incidents of which it has been notified.

The ERG provides guidance on the level of PPE outlined by the US Environmental Protection Agency and the Occupational Safety and Health Administration, but does not specify what should be provided during transport. The ERG is intended to be used by contractors and provides a point of reference for Orica’s contractors to develop and align their own emergency management plans.

Orica has developed and provided initial and periodic refresher training covering cyanide awareness and emergency response to its transport contractors. The level of emergency response capability is assessed through the due diligence and Carrier Assessment process.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Allship.

### 3.3.3 Transport Practice 3.3

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

- [ ] in full compliance with
- [ ] in substantial compliance with
- [x] not in compliance with

**Transport Practice 3.3**

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

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

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 Orica’s ERG the role of Orica Emergency Response Services (ERS) is detailed. The ERS operates 24 hours a day 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. Specific contact information for local stakeholders is maintained by the contracted transporters, Stellar and Allship. Both of these entities are Code certified.

Whilst Orica’s product is embarked on MSC vessels all emergency response is governed by the vessel’s captain. Orica conducts due diligence and carrier assessments of carriers used within this supply chain to verify that the shipments occur in accordance with the IMO DG Code, thereby meeting emergency response requirements.

Orica require transport companies to have appropriate emergency response plans, including current contact information, and capabilities for handling any cyanide incident that falls within their contractual responsibility.

The due diligence found that MSC carry out the shipping of dangerous goods in accordance with the requirements of the IMO DG Code. 
3.3.4 Transport Practice 3.4
Develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment.

☒ in full compliance with
☐ in substantial compliance with  Transport Practice 3.4
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

The ERG 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.

These procedures include descriptions on decontamination of soils or other contaminated media and require the responder to notify the relevant parties listed in the Guide. Orica ERS is listed as the prime contact and information concerning the management of spill clean-up debris is initiated through this service.

Whilst Orica's product is embarked on MSC vessels all emergency response is governed by the vessel's captain. Orica conducts due diligence and carrier assessments of carriers used within this supply chain to verify that the shipments occur in accordance with the IMO DG Code, thereby meeting emergency response requirements.

Orica require transport companies to have appropriate emergency response plans and capabilities for handling any cyanide incident that falls within their contractual responsibility.

The due diligence found that MSC carry out the shipping of dangerous goods in accordance with the requirements of the IMO DG Code.

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, this information is contained within the ERG.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Allship.

Orica West Africa Supply Chain
Name of Facility

23 January 2018
Date

January 2018
Report No. 1776589-015-R-Rev1
3.3.5 Transport Practice 3.5

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

☑ in full compliance with
☑ in substantial compliance with
☐ not in compliance with

Transport Practice 3.5

Summarise the basis for this Finding/Deficiencies Identified:

Orica is in FULL COMPLIANCE with Transport Practice 3.5 requiring the operation to periodically evaluate response procedures and capabilities and revise them as needed.

There are provisions for periodically reviewing and evaluating the ERG and its adequacy; they are being implemented. The ERG is a controlled document that is subject to an annual review.

Whilst Orica’s product is embarked on MSC vessels all emergency response is governed by the vessel’s captain. Orica conducts due diligence and carrier assessments of carriers used within this supply chain to verify that the shipments occur in accordance with the IMO DG Code, thereby meeting emergency response requirements.

Orica require transport companies to have appropriate emergency response plans and capabilities for handling any cyanide incident that falls within their contractual responsibility.

The due diligence assessment found that MSC carry out the shipping of dangerous goods in accordance with the requirements of the IMO DG Code.

Road transportation of cyanide is undertaken by ICMC-certified consignors Stellar and Alship.
4.0 DUE DILIGENCE

4.1 Marine transportation
Refer to Appendix A for the due diligence assessments for marine carriers.

4.2 Ports
Refer to Appendix B for the due diligence assessments for port facilities.

5.0 IMPORTANT INFORMATION
Your attention is drawn to the document "Important Information Relating to This Report", which is included as Appendix C to this report. This document is intended to assist you in ensuring that your expectations of this report are realistic, and that you understand the inherent limitations of a report of this nature. If you are uncertain as to whether this report is appropriate for any particular purpose please discuss this issue with us.
Report Signature Page

GOLDER ASSOCIATES PTY LTD


Jaclyn Ennis-John
ICMC Lead Auditor and ICMC Transportation Expert

CC: JEJ/hsl

A.B.N. 64 006 107 857

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation.
APPENDIX A
Carrier Due Diligence Assessments
ICMC DUE DILIGENCE ASSESSMENT OF MEDITERRANEAN SHIPPING COMPANY

Dear Seth

EXECUTIVE SUMMARY

Golder Associates Pty Ltd (Golder) conducted a due diligence of Mediterranean Shipping Company (MSC) during June 2017 on behalf of Orica Australia Pty Ltd (Orica). The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Transport Practice 1.1 (Questions 1-4 and 6)
- Transport Practice 1.5 (Question 1, Items g-i)
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. It was not possible during this due diligence to physically inspect the shipping company operations, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information.

Based on the evidence reviewed, this due diligence did not find issues of concern in regards to MSC’s management of solid sodium cyanide product. This assessment should not be a final acceptance of MSC for future work; rather it is recommended that Orica continue to review and monitor MSC’s performance annually and implement an adaptive management process.
1.0 INTRODUCTION

This letter provides the results of a due diligence assessment against the shipping line MSC, in accordance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (ICMC or the Code).

Golder conducted a desktop due diligence assessment of MSC during June 2017. The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Introduction
- ICMC Transport Verification Protocol Assessment
  - Transport Practice 1.1 (Questions 1-4 and 6)
  - Transport Practice 1.5 (Question 1, Items g-i)
  - Transport Practice 1.6
  - Transport Practice 2.1
  - Transport Practice 3.1.
- Conclusion
- References.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. Due to access restrictions, it was not possible during this due diligence to physically inspect the shipping company operations. The due diligence assessment was completed based on information obtained from previous due diligences, ICMI audit reports and publicly available online information.

1.1 Overview of MSC

MSC is a privately owned global organisation operating a network of over 480 offices in 150 countries, employing over 60,000 individuals.

Headquartered in Geneva, Switzerland, MSC is engaged in worldwide container transport. MSC operates approximately 460 container vessels with the capacity to handle the equivalent capacity of 2.75 million Twenty-foot Equivalent Units (TEUs). MSC has global port coverage, operating on 200 different routes between 315 ports in 150 countries.

MSC has set up dangerous goods cargo management centres that manage the stowage of hazardous cargo worldwide through their MSC Link computer system headquartered in Antwerp. This hazardous cargo system is initiated when hazardous cargo is booked into the container booking MSC Link computer system. Specialist chemists are on-hand to ensure that chemical cargo is stowed and shipped in keeping with the necessary legal and safety requirements.

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.
2.0 ICMC TRANSPORT VERIFICATION PROTOCOL ASSESSMENT

The ICMC's Auditor Guidance for Use of Cyanide Transportation Verification Protocol, General Guidance states:

Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1. The consignor's due diligence investigation must either be conducted or reviewed by an auditor meeting ICMC requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures.

Transport Practice 1.1: Select cyanide transport routes to minimise the potential for accidents and releases

The international sales and exports of sodium cyanide by Orica take into consideration the ports and their extended infrastructure 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 point of origin to destination.

Orica procedure "Selection of Transport Routes – Transportation of Sodium Cyanide to Customer Sites or Stock Points" (Orica ref: UP-GLO-PRO-001-017) aims to minimise the risk associated with the transportation of sodium cyanide while maintaining a safe, reliable, efficient and cost effective delivery system to customer sites and Orica stock points throughout the world. The procedure applies to the selection of delivery routes for Orica sodium cyanide and states that the "selection of route(s) is to be effected by the overall assessment of the risks associated with the utilisation of such route, taking into particular consideration likelihood of an incident occurring and the consequence of such an incident." This procedure is applicable to all routes used for the transportation of Orica sodium cyanide as well as to Orica's contracted transportation agencies.

MSC Shipping is a carrier service providing international shipping of containers on a fleet of their container vessels. Containers containing solid sodium cyanide are placed and secured on their vessels at the loading port by the stevedoring company and removed at the port of destination by the stevedoring company at that port.

Basically, an export or international route will include the following:

- Orica production, packaging and despatch
- Road and rail transportation to port
- International shipping to destination port
- Road transportation to customer (mining operation).

In some instances, sodium cyanide shipments are unloaded at terminals en-route to its final destination. This is known as trans-shipping and involves a temporary set down within a port facility before loading onto another vessel for continuation of the delivery. It is at the discretion of MSC to determine when and where this occurs. MSC conducts itself in accordance with the International Maritime Organisation (IMO) Dangerous Goods (IMDG) Code and in a professional manner, this extends to the selection of terminals used by MSC for trans-shipping.
Transport Practice 1.5: Follow international standards for the transportation of cyanide by sea and air

Orica's manufacturing facility and transfer stations are ICMC certified, sodium cyanide is packaged and transported in accordance with international regulatory standards, such as the United Nations Recommendation on the Transport of Dangerous Goods – Model Regulations, (2005) and National Codes of Practice such as the Australian Code for the Transport of Dangerous Goods by Road or Rail, (2015) thereby meeting the requirements of the political jurisdictions through which the loads will pass.

Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from point of origin to destination. Orica procedure "Carrier Assessment" (Orica ref: SUP-GLO-PRO-016-008) provides the framework for ensuring that carriers and their contractors are assessed at regular intervals to ensure that, amongst others, storage, safety, security, maintenance and emergency response standards are being maintained. Carriers are required to provide manifest documentation, to satisfy local customs regulations and the requirements of the IMDG Code, to the destination port. This documentation contains a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the quantity, unique packaging numbers, stowage reference and emergency response procedures.

g) Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?

MSC transports sodium cyanide by sea to various destination ports. All packaging and transportation is in accordance with the IMDG Code.

Orica prepares a dangerous goods transport document known as the Multimodal Dangerous Goods Form. This form meets the requirements of the SOLAS 74, Chapter VII, Regulation 5 and the MARPOL 73/78, Annex III, Regulation 4. This form also has a container packaging certificate included that meets the requirements of Section 5.4.2 of the IMDG Code, as well as emergency response information. Upon arrival at the Port, the ship's master provides the port with a copy of the Multimodal Dangerous Goods Form.

Documentation provided including Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each container ensure that adequate information is available in order to identify the correct stowage and separation of dangerous goods. This information then determines the placement and segregation of the container on the vessel and handling through trans-shipment ports, if applicable.

MSC operations personnel provide the vessel's Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan), Packaging Certificates and the Multimodal Dangerous Goods Form for each hazardous cargo transport units loaded onto the ship at the port.

MSC has multiple cross checking layers to verify that products arriving at the laydown areas match those provided on the booking and that containers being loaded onto the vessels match those stipulated on the loading (or stowage) plan.

h) Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?

The manifests that are provided to the vessel Master contain emergency response information. The Multimodal Dangerous Goods Form also includes emergency response information.

MSC operations personnel provide the vessel’s Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan), Packaging Certificates and the Multimodal Dangerous Goods Form for each hazardous cargo transport units loaded onto the ship at the port.

Emergency response procedures for ships carrying dangerous goods, including the emergency schedules to be followed in case of incidents involving dangerous substances, materials or articles, or harmful substances (marine pollutants), is regulated under the IMDG Code. In accordance with the Code, all ships, and the companies responsible for their operation, are required to maintain a Safety Management System (SMS). Within the SMS, procedures for responding to potential shipboard emergencies are required.
i) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?

MSC comply with the stowage and separation requirements of Chapter 7 of the IMDG Code through the following:

- The Multimodal Dangerous Goods Form used by Orica and MSC is the document referenced in the IMDG Code (Chapter 5.4) and meets the requirements of SOLAS 74, chapter VII, regulation 4, MARPOL 73/78, Annex III, Regulation 4 and the provisions of the Code.
- A copy of the Form is provided to MSC for assigning the container reference numbers and sending the HAZCHEM bookings for finalisation. From the Form, data is entered into the MSC tracking and monitoring system that allows for the determination of placement and segregation of the containers on the vessel and handling through shipper ports.
- All containers (stipulated by their reference number) must be finalised by the vessel loading cut-off time. This requires the Form to be provided between 48 and 24 hours prior to cut-off.
- Sodium cyanide is designated a “red line” cargo and is only loaded to the vessel when called in.
- Upon approval, the loading plan is passed onto the stevedore for loading of the vessel.

Documentation provided including Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each container ensure that adequate information is available in order to identify the correct stowage and separation of dangerous goods. This information then determines the placement and segregation of the container on the vessel and handling through trans-shipment ports, if applicable.

Transport Practice 1.6: Track cyanide shipments to prevent losses during transport

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 container number and Bill of Lading (BOL) number. Communication equipment is tested through continuous use.

Chain of custody documentation is used by MSC to prevent the loss of cargo during shipment. This documentation includes the vessel manifest and Safety Data Sheets (SDS), which identifies the location and content of each container on the vessel.

MSC has set up dangerous goods cargo management centres that control the proper stowage of hazardous cargo worldwide through their MSC Link computer system headquartered in Antwerp. This hazardous cargo system is initiated when hazardous cargo is booked into the container booking MSC Link computer system.

Vessels are registered by the Lloyd’s Register Group, which provides classification and certification of ships, and inspects and approves important components and accessories.

Transport Practice 2.1: Store cyanide in a manner that minimises the potential for accidental releases

All packaging and transportation of sodium cyanide is required to be in accordance with the IMDG Code.

MSC operations personnel provide the vessel’s Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan), Packaging Certificates and the Multimodal Dangerous Goods Form for each hazardous cargo transport units loaded onto the ship at the port.

Orica’s product is packaged into purpose designed and built and product dedicated bulk sparge isolators or into composite intermediate bulk containers (IBCs) contained within Twenty-foot Equivalent Units (TEUs), a general purpose shipping container. Bulk sparge isolators are rated for sea transportation and inspected by Bureau Veritas under the 2.5 and 5 year inspection regime in accordance with IMDG Code requirements.

Composite IBCs consist of a 1300 kg bulk bag contained within a hermetically sealed plastic liner, placed in a wooden outer with an integral pallet base. As per the IMO DG Code this packaging is referenced as UN11HD2/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 and emergency information panel (EIP) detailing the proper shipping name, dangerous goods class number, UN number, HAZCHEM Code and emergency contact information. Containers are placarded with the environmentally hazardous substance markings. Product labels are provided on the side of the IBC that allows forklift access via the pallet base. IBCs are placed into shipping containers so that the label is facing outwards.

**Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases**

MSC operations personnel provide the vessel's Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan), Packaging Certificates and the Multimodal Dangerous Goods Form for each hazardous cargo transport units loaded onto the ship at the port.

**3.0 CONCLUSION**

Based on the evidence reviewed, this due diligence did not find significant issues of concern in regards to MSC's management of solid sodium cyanide product. This assessment should not be a final acceptance of MSC for future work; rather it is recommended that Orica continue to review and monitor MSC's performance annually and implement an adaptive management process.

**4.0 CLOSING**

We trust this due diligence letter meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

---

**GOLDER ASSOCIATES PTY LTD**

Craig Currie  
Environmental Scientist  
Jaclyn Ennis-John  
ICMC Lead Auditor and Technical Specialist

CC/JE/hsl

l/golder.p0ds/gig/pent/jobs/env2017 - environment/1776589 - orica west and east africa supply chain audits/correspondence out/021-034 east africa dr/003-004 shipping/1776589-003-004 rev0 dmsc shipping.docx
REFERENCES

Golder Associates (2016). ICMC Due Diligence Assessment of Mediterranean Shipping Company. Reference number 1650011-005-L-Rev0


APPENDIX B
Port Due Diligence Assessments
ICMC DUE DILIGENCE ASSESSMENT FOR THE PORT OF BUSAN

Dear Seth

EXECUTIVE SUMMARY

Golder Associates Pty Ltd (Golder) conducted a due diligence of the port of Busan, South Korea during May 2017 on behalf of Orica Australia Pty Ltd (Orica). The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute's (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Transport Practice 1.1 (Questions 1-4 and 6)
- Transport Practice 1.5 (Question 1, Items g-i)
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information.

Golder’s assessment of the port of Busan found no issues of concern in regards to the port’s management of solid sodium cyanide product.

This assessment should not be a final acceptance of the port of Busan for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.
1.0 INTRODUCTION

This letter provides the results of a due diligence assessment against the port of Busan, South Korea, in accordance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (ICMC or the Code).

Golder conducted a desktop due diligence assessment of the port of Busan, South Korea during May 2017. The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Introduction
- ICMC Transport Verification Protocol Assessment
  - Transport Practice 1.1 (Questions 1-4 and 6)
  - Transport Practice 1.5 (Question 1, Items g-i)
  - Transport Practice 1.6
  - Transport Practice 2.1
  - Transport Practice 3.1.
- Conclusion
- References.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. Due to access restrictions, it was not possible during this due diligence to physically inspect the port of Busan. The due diligence assessment was completed based on information obtained from previous due diligences, ICMI audit reports and publicly available online information.

1.1 Overview of Port of Busan, South Korea

The port of Busan is located at the mouth of the Nakdong River in South Korea. It is the fifth busiest container port in the world and the largest transhipment port in north-east Asia.

The Busan Port Authority (BPA) is responsible for developing, managing, and operating the port of Busan. The BPA’s jurisdiction extends to Gamcheon port, which supplements the port of Busan, and Busan New port on Gadan Island.

The port of Busan is a vital gateway for Korea, connecting the country to the Pacific Ocean and Asia. It is Korea’s main port, handling approximately 40% of the country’s overseas cargo and 80% of its container cargo. Approximately 130 international vessels call at the port each day.

Annual figures (obtained for the period 2005 to 2014) show that the port of Busan handled in excess of 13 million Twenty-Foot Equivalent Units (TEUs) in a 12 month period. This included 3.7 million TEUs of imports, 3.7 million TEUs of exports, 5.8 million TEUs of transshipments and 6.2 thousand TEUs of coastal cargoes and almost 365 thousand TEUs containing hazardous goods.

There are four dedicated container terminals, these are Gammari, Shinsundae, Singamman and Gamcheon. TEU capacities range from 340,000 to over 1,200,000 per year.
Overview of port operations:

- Port protocols exist for docking of vessels (e.g. use of Pilots, use of tug boats, management of different weather conditions, tides, currents and safety and general port operations). This sees to the safe docking and turnaround of the vessels in and out of the port.

- Entry into port is controlled by the port’s Pilot who understands the port protocols and any unique issues regarding the approach and docking of a vessel at the port. The Ship’s Captain works in conjunction with the Pilot as he understands his vessel and can implement and assist with the Pilot’s instructions.

- The approach of the vessel to the ports will take into any account any channels, special navigation points and as mentioned above the currents, tides and weather.

- Once a vessel is secure alongside the wharf the shipping activities changeover to port activities. The vessels manifest of what containers are required to be unloaded from the vessel, including the manifest for containers for loading are handed over. This manifest will identify hazardous cargos and their UN number and classification and segregation requirements.

Up to six third party stevedoring companies manage the different onshore terminal operations at the dedicated container terminals.

Stevedoring operations include:

- Handling of the containers whether full or empty on and off the vessels; container storage areas for general cargo, port security, control systems for companies and their vehicles collecting and or delivering containers.

- Software programs that control container placement and movement; these software packages identify each individual container placement area in designated stacks. The input information for the placement of containers comes from the vessel’s manifest.

Containers of cyanide received at the port of Busan are already sealed for transport. 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.

2.0 ICMC TRANSPORT VERIFICATION PROTOCOL ASSESSMENT

The ICMC’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol, General Guidance states:

Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1. The consignor’s due diligence investigation must either be conducted or reviewed by an auditor meeting ICMC requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures.

Transport Practice 1.1: Select cyanide transport routes to minimise the potential for accidents and releases

The international sales and exports of sodium cyanide by Orica take into consideration the ports and their extended infrastructure 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 point of origin to destination.
Orica procedure “Selection of Transport Routes — Transportation of Sodium Cyanide to Customer Sites or Stock Points” (Orica ref: UP-GLO-PRO-001-017) aims to minimise the risk associated with the transportation of sodium cyanide while maintaining a safe, reliable, efficient and cost effective delivery system to customer sites and Orica stock points throughout the world. The procedure applies to the selection of delivery routes for Orica sodium cyanide and states that the “selection of route(s) is to be effected by the overall assessment of the risks associated with the utilisation of such route, taking into particular consideration likelihood of an incident occurring and the consequence of such an incident.” This procedure is applicable to all routes used for the transportation of Orica sodium cyanide as well as to Orica’s contracted transportation agencies.

The port of Busan is located in relative close proximity to cyanide manufacturers, is connected to a well-developed intermodal transportation system consisting of railways, highways, waterways and pipelines, and is serviced by shipping companies that have routes to over 600 ports in 180 countries, including routes through the Asia-Pacific region.

**Transport Practice 1.5: Follow international standards for the transportation of cyanide by sea and air**

Orica’s manufacturing facility and transfer stations are ICMC certified. Sodium cyanide is packaged and transported in accordance with international regulatory standards, such as the United Nations Recommendation on the Transport of Dangerous Goods — Model Regulations, (2005) and National Codes of Practice such as the Australian Code for the Transport of Dangerous Goods by Road or Rail, (2015) thereby meeting the requirements of the political jurisdictions through which the loads will pass.

Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from point of origin to destination. Orica procedure “Carrier Assessment” (Orica ref: SUP-GLO-PRO-016-008) provides the framework for ensuring that carriers and their contractors are assessed at regular intervals to ensure that, amongst others, storage, safety, security, maintenance and emergency response standards are being maintained. Carriers are required to provide manifest documentation, to satisfy local customs regulations and the requirements of the IMDG Code, to the destination port. This documentation contains a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the quantity, unique packaging numbers, stowage reference and emergency response procedures.

South Korea is both an IMO Member State (1986) and SOLAS Signatory Nation (1985), thereby requiring the port of Busan to adhere to the international regulations for the transportation and handling of dangerous goods as set out in the IMDG Code (Parts 4, 5 and 7) and SOLAS Convention (1974) Chapter 7.

g) **Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?**

The BPA implements policies, statutes and regulations governing the carriage of dangerous goods and other goods by ships in accordance with relative national and international requirements. This includes supervising the safety of ships carrying dangerous goods and other goods, processing declarations made by ships carrying dangerous goods, providing accreditation services for personnel involved in the declaration of dangerous goods and inspection of containers, and inspecting containers holding dangerous goods.

As an IMO Member State and to comply with the IMDG Code, vessels are required to declare dangerous cargo before arriving at or leaving the port, to the BPA.

h) **Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?**

Dangerous goods delivered to or from the port are required to be appropriately manifested, packaged, labelled and placarded. Documentation that accompanies the cyanide throughout transportation by sea and delivery at ports includes emergency response information along with the dangerous goods manifest, packing certificates and Multimodal Dangerous Goods Form.

Emergency response procedures for ships carrying dangerous goods, including the emergency schedules to be followed in case of incidents involving dangerous substances, materials or articles, or harmful substances (marine pollutants), is regulated under the IMDG Code. In accordance with the Code, all ships, and the companies responsible for their operation, are required to maintain a Safety Management System (SMS). Within the SMS, procedures for responding to potential shipboard emergencies are required.
Port operations personnel provide the vessel’s Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each hazardous cargo transport units loaded onto the ship at the port of origin.

**i) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?**

As a member of the IMO and to comply with the IMDG Code and National Regulations vessels are required to declare dangerous cargo before arriving at or leaving the port, additionally, all cargo listed on the dangerous cargo manifest must be stowed and handled as prescribed by its UN number and dangerous goods class.

The port of Busan has dedicated terminals and storage areas for specialised products including dangerous goods; cyanide containers are segregated and stacked separately. All sodium cyanide remains sealed within its container at all times.

**Transport Practice 1.6: Track cyanide shipments to prevent losses during transport**

The BPA coordinates the operation of the port of Busan, and must be informed of all ship movements and major operations. The production schedule (ship movement plan) is maintained by the BPA in consultation with the wharf operators. The BPA coordinates ship movements, tracks pilotage operations, and supervises terminal operations via real-time CCTV monitoring. The BPA is responsible for enforcing regulations on behalf of the MOF at the port of Busan including inspecting containers holding dangerous goods.

Vessels arriving at or departing from the port of Busan are required to declare dangerous cargo to the BPA by submitting a *Transport Document for Goods by Sea (Package)* form. This documentation is accompanied by the vessel’s manifest and Material Safety Data Sheets (MSDS), which identifies the location and content of each container on the vessel, including containers with cyanide and other dangerous goods. The relevant port stevedoring company receives the vessels manifest 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 the containers contents.

**Transport Practice 2.1: Store cyanide in a manner that minimises the potential for accidental releases**

The port of Busan has dedicated dangerous goods areas for hazardous goods awaiting loading to arriving vessels. The port is not used for the interim storage of cyanide as it is a transhipping depot used to transfer cyanide containers from trucks to ships.

The port operations for dangerous goods are registered and licensed by the government. Containers departing the port are checked against documentation for matching container numbers and product detail.

The cyanide product is packed initially into 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 located in a secure rail shunting yard, pending shipment. All sodium cyanide remains contained within its sealed containers at all times preventing contact with water and other incompatible materials.

All cargo in and out of the facility is recorded by an electronic recording system managed by Korail.

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. The facility is well demarcated, certified to handle and store all categories of dangerous goods, including Class 6.1, and contains fire-fighting equipment.

Pier 2 at the port of Busan is for the loading of all dangerous goods at the port. Containers from the Korail Interim Storage Facility are transported by truck to Pier 2 of North port where it is loaded directly onto ships.
Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases

In January 2000 the National Maritime Police Agency (MPA) prepared the National Disaster Prevention Master Plan to provide for response to emergencies in the marine environment. The MPA is now called the Korea Coast Guard and is a department of the Ministry of Public Safety and Security (MPSS), since government restructuring in November 2014. The Coast Guard has overall responsibility for marine pollution response in Republic of Korea waters. It has five regional Coast Guard headquarters (Donghae, Busan, Mokpo, Incheon and Jeju).

The Coast Guard, with the support of private contractors, manages the response to and monitoring of any Hazardous and Noxious Substances (HNS) incident and some equipment is readily available (such as PPE, respirators, pumps, power packs and air monitoring equipment).

The port of Busan is certified under the IMO’s International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 90). States which are party to OPRC 90 protocol are required to establish a national system for responding to oil and hazardous/noxious substances pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises.

Additionally, the MPSS is an organisation that provides for the safety of people and disaster management that handles a wide range of disaster scenarios and safety concerns. It was established in an effort to create a prompt, comprehensive system, able to cope with disasters and safety issues by building a systematic disasters and safety management system across major infrastructure areas and industry bodies.

3.0 CONCLUSION

Based on the evidence reviewed, this due diligence did not find significant issues of concern in regards to the port of Busan’s management of solid sodium cyanide product. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information. The Auditor recommends that Orica undertakes annual reviews at the port to monitor the management of dangerous goods.

This assessment should not be a final acceptance of the port of Busan for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.

4.0 CLOSING

We trust this due diligence letter meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES PTY LTD

Craig Currie
Environmental Scientist

Jaclyn Ennis-John
ICMC Lead Auditor and Technical Specialist

CC/JEJ/hsl
REFERENCES

Golder Associates (2016). ICMC Due Diligence Assessment for the Port of Busan. Reference number 1668932-L-Rev0


SeaRates.com (2017). Port of Busan (Korea (South)). Available at: https://www.searates.com/port/pusan_kr.htm Accessed 31 May 2017

ICMC DUE DILIGENCE ASSESSMENT FOR THE PORT OF TEMA, GHANA

Dear Seth

EXECUTIVE SUMMARY

Golder Associates Pty Ltd (Golder) conducted a due diligence of the port of Tema, Ghana during April 2017 on behalf of Orica Australia Pty Ltd (Orica). The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of the Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Transport Practice 1.1 (Questions 1-4 and 6)
- Transport Practice 1.5 (Question 1, Items g-i)
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information.

Golder’s assessment of the port of Tema found no issues of concern in regards to the port’s management of solid sodium cyanide product.

This assessment should not be a final acceptance of the port of Tema for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.
1.0 INTRODUCTION

This letter provides the results of a due diligence assessment against the port of Tema, Ghana, in accordance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (ICMC or the Code).

Golder conducted a due diligence of the port of Tema, Ghana, during April 2017. The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Introduction
- ICMC Transport Verification Protocol Assessment
  - Transport Practice 1.1 (Questions 1-4 and 6)
  - Transport Practice 1.5 (Question 1, Items g-i)
  - Transport Practice 1.6
  - Transport Practice 2.1
  - Transport Practice 3.1.
- Conclusion
- References.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to guide the due diligence assessment.

Due to access restrictions, it was not possible during this due diligence to physically inspect the port of Tema. The due diligence assessment was completed based on information obtained from previous due diligences, ICMI audit reports and publicly available online information.

1.1 Overview of Port of Tema, Ghana

The port of Tema is the largest port in Ghana and located 30 km from Accra. The port handles about 12 million tonnes of cargo annually and receives over 1650 vessel calls per year, including container vessels, general cargo vessels, tankers, Roll-on/Roll-off (Ro-Ro) and cruise vessels.

Tema port is the main container port servicing Ghana and its neighbouring landlocked countries. The port area includes a 1 million twenty-foot equivalent units (TEUs) container terminal, a fishing harbour, a shipyard with the largest dry dock in West Africa and a range of deep-water berths. In 2016 Tema port completed expansion projects, including a new dedicated 840 point reefer terminal and a 450 m long by 50 m wide bulk jetty, which increases the port's berthing capacity from 14 to 16 berths.

Cyanide manufacturers and suppliers have the ability to ship product to the port from different parts of the world. The port allows for the unloading of shipments for final road transportation to the mining operations in Ghana as well as Burkina Faso and Eastern Mali.

The Ghana Ports and Harbour Authority (GPHA) oversees Port operations. This includes:

- Port protocols exist for docking of vessels, e.g. use of Pilots; use of tug boats; different weather conditions, tides, currents; safety; and general Port operations. This sees to the safe docking and turnaround of the vessels in and out of the Port.

- Entry into port is controlled by the port’s harbour master who understands the port protocols and unique issues regarding the approach and docking of a vessel at the port. The harbour master has oversight of nautical operations within the port. This comprises operational tasks related to the safety and efficiency of vessel management within the boundaries of the port. The harbour master’s office allocates berths and coordinates all services necessary to berth and un-berth a vessel. These services include pilotage, towage, mooring and unmooring, and vessel traffic service.
The Ship’s Captain works in conjunction with the harbour master as he understands his vessel and can implement and assist with the harbour master’s instructions.

The approach of the vessel to the port will take into any account any channels, special navigation points and as mentioned above the currents, tides and weather.

The GPHA manages the handling of dangerous goods through the Tema port.

Stevedoring services are provided by the GPHA and ten private stevedoring companies. GPHA controls 25% of all stevedoring. The remaining 75% is performed by private companies.

The dedicated 1 million TEU container terminal is operated by Meridian Port Services (MPS). MPS operations include:

- Handling of the containers whether full or empty on and off the vessels; container storage areas; port security, emergency response, control systems for companies and their vehicles collecting and or delivering containers
- Software programs control container movement through the ports. In the case of the sodium cyanide containers on arrival the ports the containers are stacked separately and segregated from other containers. The software also monitors the restricted time allowed for dangerous goods to be handled through the port and allows the port to charge penalty rates for goods not cleared and taken from the port within a defined time.

Ghana is a member of the International Maritime Organization (IMO) Council and is party to the Abuja Memorandum of Understanding, and as such performs its Port State Obligations, supervises foreign ships that berth at Ghana ports, and promotes compliance with international conventions among Flag States through Port State Control.


2.0 ICMC TRANSPORT VERIFICATION PROTOCOL ASSESSMENT

The ICMC’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol, General Guidance states:

Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1. The consignor’s due diligence investigation must either be conducted or reviewed by an auditor meeting ICMC requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures.

Transport Practice 1.1: Select cyanide transport routes to minimise the potential for accidents and releases.

The international sales and exports of sodium cyanide by Orica take into consideration the ports and their extended infrastructure 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 point of origin to destination.
Orica procedure "Selection of Transport Routes – Transportation of Sodium Cyanide to Customer Sites or Stock Points" (Orica ref: UP-GLO-PRO-001-017) aims to minimise the risk associated with the transportation of sodium cyanide while maintaining a safe, reliable, efficient and cost effective delivery system to customer sites and Orica stock points throughout the world. The procedure applies to the selection of delivery routes for Orica sodium cyanide and states that the "selection of route(s) is to be effected by the overall assessment of the risks associated with the utilisation of such route, taking into particular consideration likelihood of an incident occurring and the consequence of such an incident." This procedure is applicable to all routes used for the transportation of Orica sodium cyanide as well as to Orica's contracted transportation agencies.

The port of Tema is located in relative close proximity to mining operations in Ghana and landlocked countries within the West Africa region.

Transport Practice 1.5: Follow international standards for the transportation of cyanide by sea and air.

Orica’s manufacturing facility and transfer stations are ICMC certified, sodium cyanide is packaged and transported in accordance with international regulatory standards, such as the United Nations Recommendation on the Transport of Dangerous Goods – Model Regulations, (2005) and National Codes of Practice such as the Australian Code for the Transport of Dangerous Goods by Road or Rail, (2015) thereby meeting the requirements of the political jurisdictions through which the loads will pass.

Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from point of origin to destination. Orica procedure "Carrier Assessment" (Orica ref: SUP-GLO-PRO-016-008) provides the framework for ensuring that carriers and their contractors are assessed at regular intervals to ensure that, amongst others, storage, safety, security, maintenance and emergency response standards are being maintained. Carriers are required to provide manifest documentation, to satisfy local customs regulations and the requirements of the IMDG Code, to the destination port. This documentation contains a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the quantity, unique packaging numbers, stowage reference and emergency response procedures.

Ghana is both an IMO Member State (1959) and SOLAS Signatory Nation (1983), thereby requiring the port of Tema to adhere to the international regulations for the transportation and handling of dangerous goods as set out in the IMDG Code (Parts 4, 5 and 7) and SOLAS Convention ((1974) Chapter 7).

g) Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?

The Ghana Maritime Authority (GMA) monitors, regulates and coordinates activities in the maritime industry in Ghana. Functions of the GMA include implementing the provisions of the Ghana Shipping Act 2003 and Ghana Maritime Security Act 2004 (Act 675), ensuring safety and security of ships and port facilities, fulfilling flag state and port state responsibilities and monitoring conformance with standards laid down by international maritime conventions.

As an IMO Member State and to comply with the IMDG Code, vessels are required to declare dangerous cargo before arriving at or leaving the port, to the GMA and or GPHA.

At Tema port the GPHA is responsible for maintenance of safety standards and international maritime codes, including the International Ship and Port Facility Security (ISPS) and IMDG Codes. This includes supervising the safety of ships carrying dangerous goods and other goods, processing declarations made by ships carrying dangerous goods and inspecting containers holding dangerous goods. Vessels are required to declare dangerous cargo to the GPHA by submitting the appropriate form to the GPHA at least 72 hours before arriving at the port of Tema. All dangerous goods delivered to or from the port are required to be appropriately manifested and be packaged, marked, labelled and placarded in accordance with the IMDG Code.

The Ghana Shipping Act (2003), Part Nine, Section 331 Regulations as to Dangerous Goods contains the ministerial requirements for the carriage of dangerous goods on ships and is in accordance with the International Convention for the Safety of Life at Sea (1974) Convention and the IMDG Code.
h) Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?

Dangerous goods delivered to or from the port are required to be appropriately manifested, packaged, marked, labelled and placarded. Documentation that accompanies the cyanide throughout transportation by sea and delivery at ports includes a dangerous goods manifest, packing certificates and Multimodal Dangerous Goods Form.

Emergency response procedures for ships carrying dangerous goods, including the emergency schedules to be followed in case of incidents involving dangerous substances, materials or articles, or harmful substances (marine pollutants), is regulated under the IMDG code. In accordance with the code, all ships, and the companies responsible for their operation, are required to maintain a Safety Management System (SMS). Within the SMS, procedures for responding to potential shipboard emergencies are required.

Port operations personnel provide the vessel's Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each hazardous cargo transport units loaded onto the ship at the port.

i) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?

Vessels are required to declare dangerous goods to the GPHA at least 72 hours before arriving at the port of Tema. All dangerous goods delivered to or from the port are required to be appropriately manifested and be packaged, marked, labelled and placarded in accordance with the IMDG Code. The port requires all packages to be in sound and safe condition without any risk of leakage or spillage.

To comply with requirements of the IMDG Code, the port of Tema has dedicated storage areas for specialised products including dangerous goods; cyanide containers are segregated and stacked separately. All sodium cyanide remains contained within its sealed containers at all times.

Transport Practice 1.6: Track cyanide shipments to prevent losses during transport.

The port requires advance notice of 72 hours prior to the estimated arrival of vessels. The harbour master has oversight of nautical operations within the port, including pilotage, towage, mooring and unmooring, and vessel traffic services. Software programs control container movement through the ports.

Chain of custody documentation is used by shipping companies to prevent the loss of cargo during shipment. This documentation includes the vessel manifest – which identifies the location and content of each container on the vessel along with packing certificates, Multimodal Dangerous Goods Forms and Material Safety Data Sheets (MSDS).

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. MPS utilises a terminal operating system to manage container movement, vessel discharges and yard allocations to minimise delays. Containers are tracked using differential global positioning systems.

The clearance process at Tema port comprises:

- Declaration of cargo data
- Customs Document Verification, System Validation, cargo Classification and Valuation, Risk Assessment and quality assurance, payment of duty, cargo verification
- Release by the Shipping Agent
- Delivery by the port and other receipt delivery service providers
- Customs physical examination or scanning of cargo before cargo is allowed to exit the port.
Transport Practice 2.1: Store cyanide in a manner that minimises the potential for accidental releases.

The port of Tema has restricted access and security processes, including optimal character recognition, biometric identify cards and CCTV. The port has perimeter fencing and terminal entry and exit gates are monitored on 24 hour basis. Software programs control container movement through the ports.

The port of Tema has dedicated storage areas for specialised products including dangerous goods; cyanide containers are segregated and stacked separately. The area into which cyanide containers are placed whilst awaiting clearance is well ventilated to prevent the build-up of hydrogen cyanide gas and is suitable to contain any spillage that may occur.

Whilst cyanide is present at the port, temporary signage is provided to warn of its presence and the safety and personal protective equipment requirements. Whilst the product is being stored or handled, signage prohibiting the consumption of food and beverages and open sources of ignition, including smoking, is displayed.

All sodium cyanide transited through the port of Tema remains sealed inside its container at all times. Seals are individually numbered and tamper evident. Admission 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.

The port of Tema is accredited under the ISPS Code. This is maintained by the GPHA which reports to the appropriate central Ghana government minister. The port has on-site security personnel who are present at all times, this includes a mobile security team and port security personnel stationed at entry points.

Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases.

The GPHA is responsible for the protection of property and emergency preparedness and response.

The port of Tema has emergency response procedures by following the IMDG Code requirements. The port has an internal emergency response and first aid capabilities that is supported by external sources. Training is provided to personnel in dangerous goods awareness and procedures.

The port of Tema is certified under the IMO’s International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 90). States which are party to OPRC 90 protocol are required to establish a national system for responding to oil and hazardous/noxious substances pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises.

The lead agency for dealing with major spills is the Environment Protection Agency of the Ministry of Environment, Science and Technology, which works in conjunction with the Ministry of Transport and Communications. Limited emergency response equipment is available through both Government and private sector sources.

3.0 CONCLUSION

Based on the evidence reviewed, this due diligence did not find significant issues of concern in regards to the port of Tema’s management of solid sodium cyanide product. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMF audit reports and publicly available online information. The Auditor recommends that Orica undertakes annual reviews at the port of Tema to monitor the management of dangerous goods.

This assessment should not be a final acceptance of the port of Tema for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.
4.0 CLOSING

We trust this due diligence letter meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES PTY LTD

Craig Currie
Environmental Scientist

Jaclyn Ennis-John
ICMC Lead Auditor and Technical Specialist

CC: JEJ/hsl

!/golder.gts/gap/perth/jobs/env/2017 - environment/1776589 - orica west and east africa supply chain audits/correspondence ou/dd05-011 west africa dd/1776589-006-L-rev0 dd port lomé, ghana.docx
REFERENCES


ICMC DUE DILIGENCE ASSESSMENT FOR THE PORT OF TAKORADI

Dear Seth

EXECUTIVE SUMMARY

Golder Associates Pty Ltd (Golder) conducted a due diligence of the port of Takoradi, Ghana during May 2017 on behalf of Orica Australia Pty Ltd (Orica). The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Transport Practice 1.1 (Questions 1-4 and 6)
- Transport Practice 1.5 (Question 1, Items g-i)
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information.

Golder’s assessment of the port of Takoradi found no issues of concern in regards to the port’s management of solid sodium cyanide product.

This assessment should not be a final acceptance of the port of Takoradi for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.
1.0 INTRODUCTION

This letter provides the results of a due diligence assessment against the port of Takoradi, Ghana, in accordance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (ICMC or the Code).

Golder conducted a desktop due diligence assessment of the port of Takoradi, Ghana during May 2017. The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Introduction
- ICMC Transport Verification Protocol Assessment
  - Transport Practice 1.1 (Questions 1-4 and 6)
  - Transport Practice 1.5 (Question 1, Items g-i)
  - Transport Practice 1.6
  - Transport Practice 2.1
  - Transport Practice 3.1.
- Conclusion
- References.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. Due to access restrictions, it was not possible during this due diligence to physically inspect the port of Takoradi. The due diligence assessment was completed based on information obtained from previous due diligence, ICMI audit reports and publicly available online information.

1.1 Overview of Port of Takoradi, Ghana

The port of Takoradi is located 230 kilometres east of Accra. Takoradi is strategically positioned to service the northern hinterland of Ghana and serve as an alternative port for economic operators in the landlocked countries of Burkina Faso, Niger and Mali. In 2015, the port handled 27% of Ghana’s seaborne traffic, 68% of Ghana’s seaborne exports and 15% of Ghana’s seaborne imports. Major commodities handled through the port are manganese, bauxite, wheat, bulk and bagged cocoa, quicklime, containerised cargoes, equipment for the mining and oil/gas industry. Traffic through the port is facilitated by leading shipping lines and the port’s wide range of equipment along with stevedoring services provided by the private sector enable it to offer a wide range of services.

Cyanide manufacturers and suppliers have the ability to ship product to the port from different parts of the world. The port allows for the unloading of shipments for final road transportation to the mining operations in Ghana as well as Burkina Faso and Eastern Mali.

The Ghana Ports and Harbour Authority (GPHA) oversees port operations. This includes:

- Port protocols exist for docking of vessels (e.g. use of Pilots, use of tug boats, management of different weather conditions, tides, currents and safety and general port operations). This sees to the safe docking and turnaround of the vessels in and out of the port.

- Entry into port is controlled by the port's Pilot who understands the port protocols and any unique issues regarding the approach and docking of a vessel at the port. The Ship’s Captain works in conjunction with the Pilot as he understands his vessel and can implement and assist with the Pilot's instructions.

- The approach of the vessel to the ports will take into any account any channels, special navigation points and as mentioned above the currents, tides and weather.
Once a vessel is secure alongside the wharf the shipping activities changeover to port activities. The vessels manifest of what containers are required to be unloaded from the vessel, including the manifest for containers for loading are handed over. This manifest will identify hazardous cargos and their UN number and classification and segregation requirements.

Stevedoring services are provided by the GPHA and five private stevedoring companies. GPHA controls 25% of all stevedoring. The remaining 75% is performed by private companies.

Stevedoring operations include:

- Handling of the containers whether full or empty on and off the vessels; container storage areas for general cargo, port security, control systems for companies and their vehicles collecting and or delivering containers.

- Software programs that control container placement and movement; these software packages identify each individual container placement area in designated stacks. The input information for the placement of containers comes from the vessel's manifest.

Ghana is a member of the International Maritime Organization (IMO) Council and is party to the Abuja Memorandum of Understanding, and as such performs its Port State Obligations, supervises foreign ships that berth at Ghana ports, and promotes compliance with international conventions among Flag States through Port State Control.


2.0 ICMC TRANSPORT VERIFICATION PROTOCOL ASSESSMENT

The ICMC's Auditor Guidance for Use of Cyanide Transportation Verification Protocol, General Guidance states:

Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1. The consignor's due diligence investigation must either be conducted or reviewed by an auditor meeting ICMI requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures.

Transport Practice 1.1: Select cyanide transport routes to minimise the potential for accidents and releases

The international sales and exports of sodium cyanide by Orica take into consideration the ports and their extended infrastructure 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 point of origin to destination.

Orica procedure "Selection of Transport Routes — Transportation of Sodium Cyanide to Customer Sites or Stock Points" (Orica ref: UP-GLO-PRO-001-017) aims to minimise the risk associated with the transportation of sodium cyanide while maintaining a safe, reliable, efficient and cost effective delivery system to customer sites and Orica stock points throughout the world. The procedure applies to the selection of delivery routes for Orica sodium cyanide and states that the "selection of route(s) is to be effected by the overall assessment of the risks associated with the utilisation of such route, taking into particular consideration likelihood of an incident occurring and the consequence of such an incident." This procedure is applicable to all routes used for the transportation of Orica sodium cyanide as well as to Orica's contracted transportation agencies.

Takoradi is strategically positioned to service the northern hinterland of Ghana and serve as an alternative port for economic operators in the landlocked countries of Burkina Faso, Niger and Mali. The port allows for the unloading of shipments for final road transportation to the mining operations in Ghana as well as Burkina Faso and Eastern Mali.
Transport Practice 1.5: Follow international standards for the transportation of cyanide by sea and air

Orica's manufacturing facility and transfer stations are ICMC certified, sodium cyanide is packaged and transported in accordance with international regulatory standards, such as the United Nations Recommendation on the Transport of Dangerous Goods — Model Regulations, (2005) and National Codes of Practice such as the Australian Code for the Transport of Dangerous Goods by Road or Rail, (2015) thereby meeting the requirements of the political jurisdictions through which the loads will pass.

Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from point of origin to destination. Orica procedure "Carrier Assessment" (Orica ref: SUP-GLO-PRO-016-008) provides the framework for ensuring that carriers and their contractors are assessed at regular intervals to ensure that, amongst others, storage, safety, security, maintenance and emergency response standards are being maintained. Carriers are required to provide manifest documentation, to satisfy local customs regulations and the requirements of the IMDG Code, to the destination port. This documentation contains a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the quantity, unique packaging numbers, stowage reference and emergency response procedures.

Ghana is both an IMO Member State (1959) and SOLAS Signatory Nation (1983), thereby requiring the port of Takoradi to adhere to the international regulations for the transportation and handling of dangerous goods as set out in the IMDG Code (Parts 4, 5 and 7) and SOLAS Convention ((1974) Chapter 7).

**g) Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?**

The Ghana Maritime Authority (GMA) monitors, regulates and coordinates activities in the maritime industry in Ghana. Functions of the GMA include implementing the provisions of the Ghana Shipping Act 2003 and Ghana Maritime Security Act 2004 (Act 675), ensuring safety and security of ships and port facilities, fulfilling flag state and port state responsibilities and monitoring conformance with standards laid down by international maritime conventions.

As an IMO Member State and to comply with the IMDG Code, vessels are required to declare dangerous cargo before arriving at or leaving the port, to the GMA and or GPHA.

At Takoradi port the GPHA is responsible for maintenance of safety standards and international maritime codes, including the International Ship and Port Facility Security (ISPS) and IMDG Codes. This includes supervising the safety of ships carrying dangerous goods and other goods, processing declarations made by ships carrying dangerous goods and inspecting containers holding dangerous goods. Vessels are required to declare dangerous cargo to the GPHA by submitting the appropriate form to the GPHA at least 72 hours before arriving at the port of Takoradi. All dangerous goods delivered to or from the port are required to be appropriately manifested and be packaged, marked, labelled and placarded in accordance with the IMDG Code.


**h) Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?**

Dangerous goods delivered to or from the port are required to be appropriately manifested, packaged, labelled and placarded. Documentation that accompanies the cyanide throughout transportation by sea and delivery at ports includes emergency response information along with the dangerous goods manifest, packing certificates and Multimodal Dangerous Goods Form.

Emergency response procedures for ships carrying dangerous goods, including the emergency schedules to be followed in case of incidents involving dangerous substances, materials or articles, or harmful substances (marine pollutants), is regulated under the IMDG Code. In accordance with the Code, all ships, and the companies responsible for their operation, are required to maintain a Safety Management System (SMS). Within the SMS, procedures for responding to potential shipboard emergencies are required.
Port operations personnel provide the vessel’s Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each hazardous cargo transport units loaded onto the ship at the port of origin.

1) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?

Vessels are required to declare dangerous goods to the GPHA at least 72 hours before arriving at the port of Takoradi. All dangerous goods delivered to or from the port are required to be appropriately manifested and be packaged, marked, labelled and placarded in accordance with the IMDG Code. The port requires all packages to be in sound and safe condition without any risk of leakage or spillage.

To comply with requirements of the IMDG Code, the port of Takoradi has dedicated storage areas for specialised products including dangerous goods; cyanide containers are segregated and stacked separately. All sodium cyanide remains contained within its sealed containers at all times.

Transport Practice 1.6: Track cyanide shipments to prevent losses during transport

The port requires advance notice of 72 hours prior to the estimated arrival of vessels. The harbour master has oversight of nautical operations within the port, including pilotage, towage, mooring and unmooring, and vessel traffic services. Software programs control container movement through the ports.

Chain of custody documentation is used by shipping companies to prevent the loss of cargo during shipment. This documentation includes the vessel manifest – which identifies the location and content of each container on the vessel along with packing certificates, Multimodal Dangerous Goods Forms and Safety Data Sheets (SDS).

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. MPS utilises a terminal operating system to manage container movement, vessel discharges and yard allocations to minimise delays. Containers are tracked using differential global positioning systems.

The clearance process at Takoradi port comprises:

- Declaration of cargo data
- Customs Document Verification, System Validation, cargo Classification and Valuation, Risk Assessment and quality assurance, payment of duty, cargo verification
- Release by the Shipping Agent
- Delivery by the port and other receipt delivery service providers
- Customs physical examination or scanning of cargo before cargo is allowed to exit the port.

Transport Practice 2.1: Store cyanide in a manner that minimises the potential for accidental releases

The port of Takoradi is accredited under the ISPS Code (since 2004). This is maintained by the GPHA 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.

The Ghana Maritime Security Act (2004), Section 48 Port Security states that a port facility operator shall develop, implement, and maintain a port facility security plan based on a port facility security assessment of that facility. The design of a port facility security plan must suit the purposes of ship-port interface and protect that facility from unauthorised access or disclosure.

All sodium cyanide transited through the port of Takoradi remains sealed inside its container at all times preventing contact with water and other incompatible materials. Seals are individually numbered and tamper evident.
Admission of solid sodium cyanide through the port of Takoradi is limited to a specific customer. Solid sodium cyanide is only held at the port of Takoradi for a short period to enable completion of specific Ghanaian governmental customs and quarantine clearances.

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.

**Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases**

The GPHA is responsible for the protection of property and emergency preparedness and response.

The port of Takoradi is certified under the IMO’s International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 90). States which are party to OPRC 90 protocol are required to establish a national system for responding to oil and hazardous/noxious substances pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises.

The lead agency for dealing with major spills is the Environment Protection Agency of the Ministry of Environment, Science and Technology, which works in conjunction with the Ministry of Transport and Communications. Limited emergency response equipment is available through both Government and private sector sources.

**3.0 CONCLUSION**

Based on the evidence reviewed, this due diligence did not find significant issues of concern in regards to the port of Takoradi’s management of solid sodium cyanide product. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMC audit reports and publicly available online information. The Auditor recommends that Orica undertakes annual reviews at the port to monitor the management of dangerous goods.

This assessment should not be a final acceptance of the port of Takoradi for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.

**4.0 CLOSING**

We trust this due diligence letter meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

---

**GOLDER ASSOCIATES PTY LTD**

Craig Currie  
Environmental Scientist

Jaclyn Ennis-John  
ICMC Lead Auditor and Technical Specialist

CC/JEJ/hsl
REFERENCES


ICMC DUE DILIGENCE ASSESSMENT FOR THE PORT OF CONAKRY

Dear Seth

EXECUTIVE SUMMARY

Golder Associates Pty Ltd (Golder) conducted a due diligence of the port of Conakry, Guinea during April 2017 on behalf of Orica Australia Pty Ltd (Orica). The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Transport Practice 1.1 (Questions 1-4 and 6)
- Transport Practice 1.5 (Question 1, Items g-i)
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment.

Golder’s assessment of the port of Conakry found no issues of concern in regards to the port’s management of solid sodium cyanide product. It was not possible during this due diligence to physically inspect the port of Conakry, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information. As there was limited information available, it is recommended that Orica minimise the time product spends at the port.

This assessment should not be a final acceptance of the port of Conakry for future work; rather it is recommended that Orica continue to review and monitor the port of Conakry’s performance annually and implement an adaptive management process.
1.0 INTRODUCTION

This letter provides the results of a due diligence assessment against the port of Conakry, Guinea, in accordance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (ICMC or the Code).

Golder conducted a desktop due diligence assessment of the port of Conakry, Guinea during April 2017. The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute's (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI's Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Introduction
- ICMC Transport Verification Protocol Assessment
  - Transport Practice 1.1 (Questions 1-4 and 6)
  - Transport Practice 1.5 (Question 1, Items g-i)
  - Transport Practice 1.6
  - Transport Practice 2.1
  - Transport Practice 3.1.
- Conclusion
- References.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. Due to access restrictions, it was not possible during this due diligence to physically inspect the port of Conakry. The due diligence assessment was completed based on information obtained from previous due diligences, ICMI audit reports and publicly available online information.

1.1 Overview of Port of Conakry, Guinea

The port of Conakry is located on the South Coast of Guinea and is the main port of Guinea. The port has a 20 hectare container yard and container storage capacity of 8000 twenty-foot equivalent units (TEUs). The theoretical annual capacity of the port of Conakry is 600 000 TEUs. The container terminal is jointly operated by Bolloré Ports and the Port Authority of Conakry. The port operates a continuous loading and unloading service, and is linked to road and rail systems.

The port of Conakry Harbour Master oversees all port operations, including:

- Management of port protocols for vessel docking
- Entry to port by 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.

Guinea is a member of the International Maritime Organization (IMO) Council and the Abuja Memorandum of Understanding, and as such performs its Port State obligations, supervises foreign ships that berth at Conakry, and promotes compliance with international conventions among Flag States through Port State Control.
2.0 ICMC TRANSPORT VERIFICATION PROTOCOL ASSESSMENT

The ICMC's Auditor Guidance for Use of Cyanide Transportation Verification Protocol, General Guidance states:

Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1. The consignor’s due diligence investigation must either be conducted or reviewed by an auditor meeting ICMC requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures.

Transport Practice 1.1: Select cyanide transport routes to minimise the potential for accidents and releases

The international sales and exports of sodium cyanide by Orica take into consideration the ports and their extended infrastructure 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 point of origin to destination.

Orica procedure “Selection of Transport Routes – Transportation of Sodium Cyanide to Customer Sites or Stock Points” (Orica ref: UP-GLO-PRO-001-017) aims to minimise the risk associated with the transportation of sodium cyanide while maintaining a safe, reliable, efficient and cost effective delivery system to customer sites and Orica stock points throughout the world. The procedure applies to the selection of delivery routes for Orica sodium cyanide and states that the "selection of route(s) is to be effected by the overall assessment of the risks associated with the utilisation of such route, taking into particular consideration likelihood of an incident occurring and the consequence of such an incident." This procedure is applicable to all routes used for the transportation of Orica sodium cyanide as well as to Orica's contracted transportation agencies.

The port of Conakry is located in relative close proximity to end use destinations in Guinea and the West Africa region. The port is connected to transportation networks consisting of railways and highways.

Transport Practice 1.5: Follow international standards for the transportation of cyanide by sea and air

Orica’s manufacturing facility and transfer stations are ICMC certified, sodium cyanide is packaged and transported in accordance with international regulatory standards, such as the United Nations Recommendation on the Transport of Dangerous Goods – Model Regulations, (2005) and National Codes of Practice such as the Australian Code for the Transport of Dangerous Goods by Road or Rail, (2015) thereby meeting the requirements of the political jurisdictions through which the loads will pass.

Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from point of origin to destination. Orica procedure "Carrier Assessment" (Orica ref: SUP-GLO-PRO-016-008) provides the framework for ensuring that carriers and their contractors are assessed at regular intervals to ensure that, amongst others, storage, safety, security, maintenance and emergency response standards are being maintained. Carriers are required to provide manifest documentation, to satisfy local customs regulations and the requirements of the IMDG Code, to the destination port. This documentation contains a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the quantity, unique packaging numbers, stowage reference and emergency response procedures.

Guinea is both an IMO Member State (1975) and SOLAS Signatory Nation (1981), thereby requiring the port of Conakry to adhere to the international regulations for the transportation and handling of dangerous goods as set out in the IMDG Code (Parts 4, 5 and 7) and SOLAS Convention (1974 Chapter 7).
g) Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?

As an IMO Member State and to comply with the IMDG Code, vessels are required to declare dangerous cargo before arriving at or leaving the port to the Port Authority of Conakry.

Previous due diligence assessments identified that operations personnel on the shipping line vessels on arrival at the loading port provide the Harbour 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.

h) Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?

Dangerous goods delivered to or from the port are required to be appropriately manifested, packaged, marked, labelled and placarded. Documentation that accompanies the cyanide throughout transportation by sea and delivery at ports includes a dangerous goods manifest, packing certificates and Multimodal Dangerous Goods Form. The manifests that are provided to the vessel Master contain emergency response information.

Emergency response procedures for ships carrying dangerous goods, including the emergency schedules to be followed in case of incidents involving dangerous substances, materials or articles, or harmful substances (marine pollutants), is regulated under the IMDG code. In accordance with the code, all ships, and the companies responsible for their operation, are required to maintain a Safety Management System (SMS). Within the SMS, procedures for responding to potential shipboard emergencies are required.

Port operations personnel provide the vessel’s Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each hazardous cargo transport units loaded onto the ship at the port.

i) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?

As a member of the IMO and to comply with the IMDG Code, vessels arriving at the port of Conakry are required to declare dangerous cargo to the Port Authority.

Furthermore, prior to arrival an Entry Certificate must be obtained from the Environment Department for hazardous cargo. All classes of hazardous cargo are permitted except Class 7 (Radioactive Material).

The port of Conakry has dedicated storage areas for specialised products including dangerous goods; cyanide containers are segregated and stacked separately. All sodium cyanide product remains sealed within its container at all times.

Transport Practice 1.6: Track cyanide shipments to prevent losses during transport

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.

The Dispatch Centre organises ship movements, tracks pilotage operations, and supervises terminal operations via real-time CCTV monitoring.

Chain of custody documentation is used by shipping companies to prevent the loss of cargo during shipment. This documentation includes the vessel manifest – which identifies the location and content of each container on the vessel along with packing certificates, Multimodal Dangerous Goods Forms and Safety Data Sheets (SDS).
Transport Practice 2.1: Store cyanide in a manner that minimises the potential for accidental releases

All solid sodium cyanide that transits the port of Conakry is collected by the relevant carriers as soon as possible after arrival. Express clearances are initiated where possible to minimise the transit period. During periods of transit, containers of solid sodium cyanide are segregated accordingly and stored in a secured and signed area prohibiting smoking, drinking and eating. 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.

The port of Conakry is a secure area with an on-site security presence. Security watch is compulsory for all ships carrying sodium cyanide. The port’s security are armed and trained to deal with intruders. The port’s security presence is a facet of the port’s ISPS Code protocols.

All cyanide remains within its sealed containers at all times preventing contact with water and other incompatible materials. 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. A previous due diligence assessment indicated that 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.

Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases

Guinea has been a Member State of the IMO Council since 1975, it complies with the requirements of the IMDG Code. Although not specifically addressed in the due diligence the port of Conakry has a basic emergency response by following the IMDG Code requirements.

The port of Conakry is certified under the IMO’s International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 90). States which are party to OPRC 90 protocol are required to establish a national system for responding to oil and hazardous/noxious substances pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises.

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.

3.0 CONCLUSION

Golder’s assessment of the port of Conakry found no issues of concern in regards to the port’s management of solid sodium cyanide product. It was not possible during this due diligence to physically inspect the port of Conakry, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports, discussions with consignors and publicly available online information.

As there was limited information available, it is recommended that Orica minimise the time product spends at the port.

The assessment is not a final acceptance of the port of Conakry for future work; rather it is recommended that Orica continue to review and monitor the port of Conakry’s performance annually and implement an adaptive management process.
4.0 CLOSING

We trust this due diligence letter meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES PTY LTD

Craig Currie
Environmental Scientist

Jaclyn Ennis-John
ICMC Lead Auditor and Technical Specialist

CC:JEJ/hsl
REFERENCES


16 November 2017

Project No. 1776589-009-L-Rev0

Seth Ahene, Cyanide Operations & Solutions Specialist - Africa
Orica
Email: seth.ahene@orica.com

ICMC DUE DILIGENCE ASSESSMENT FOR THE PORT OF DAKAR

Dear Seth

EXECUTIVE SUMMARY

Golder Associates Pty Ltd (Golder) conducted a due diligence of the port of Dakar, Senegal during April 2017 on behalf of Orica Australia Pty Ltd (Orica). The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Transport Practice 1.1 (Questions 1-4 and 6)
- Transport Practice 1.5 (Question 1, Items g-i)
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. Due to access restrictions it was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information.

Golder’s assessment of the port of Dakar found no new issues of concern in regards to the port’s management of solid sodium cyanide product. It does however acknowledge that a previous due diligence (2010) highlighted concerns around handling of cyanide shipments whilst at the DP World Terminal within the port.

This assessment should not be a final acceptance of the port of Dakar for future work; rather it is recommended that Orica continue to review and monitor the port of Dakar’s performance annually and implement an adaptive management process.
1.0 INTRODUCTION

This letter provides the results of a due diligence assessment against the port of Dakar, Senegal, in accordance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (ICMC or the Code).

Golder conducted a desktop due diligence assessment of the port of Dakar, Senegal during April 2017. The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Introduction
- ICMC Transport Verification Protocol Assessment
  - Transport Practice 1.1 (Questions 1-4 and 6)
  - Transport Practice 1.5 (Question 1, Items g-i)
  - Transport Practice 1.6
  - Transport Practice 2.1
  - Transport Practice 3.1.
- Conclusion
- References.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. Due to access restrictions, it was not possible during this due diligence to physically inspect the port of Dakar. The due diligence assessment was completed based on information obtained from previous due diligences, ICMI audit reports and publicly available online information.

1.1 Overview of Port of Dakar, Senegal

The port of Dakar is situated in the State of Colima, in the Republic of Senegal. Dakar is a deep sea port and is located at the intersection of the main sea routes serving the West African coast. The port is strategically well placed, located at the most advanced point of the West African coast, and at the intersection of carrier lines linking Europe to South America, and North America to South Africa.

It is an international port of transit and serves as the gateway for Mali thus offering the possibility of additionally serving Niger and Burkina Faso.

The port is divided into two separate trading zones (North and South) separated by a military zone, ship repair shops and a fishing port. The container terminal in the North Zone of the port of Dakar covers a total area of 24 ha. It has a linear quay of 700 metres in length with three berths ranging from 12 to 13 metres in depth. Modern equipment is used for handling, including four docks (including two post-panamax), four Gottwald cranes on 100-tonne tyres, ten gantry cranes, 15 reach stackers and 400 refrigerator outlets.

The operator of the container terminal is DP World and they oversee the annual traffic of approximately 300 000 twenty-foot equivalent units (TEUs). The port also has separate terminals for bulk goods and hydrocarbons.
2.0 ICMC TRANSPORT VERIFICATION PROTOCOL ASSESSMENT

The ICM's Auditor Guidance for Use of Cyanide Transportation Verification Protocol, General Guidance states:

Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1. The consignor's due diligence investigation must either be conducted or reviewed by an auditor meeting ICM requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures.

Transport Practice 1.1: Select cyanide transport routes to minimise the potential for accidents and releases

The international sales and exports of sodium cyanide by Orica take into consideration the ports and their extended infrastructure 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 point of origin to destination.

Orica procedure "Selection of Transport Routes — Transportation of Sodium Cyanide to Customer Sites or Stock Points" (Orica ref: UP-GLO-PRO-001-017) aims to minimise the risk associated with the transportation of sodium cyanide while maintaining a safe, reliable, efficient and cost effective delivery system to customer sites and Orica stock points throughout the world. The procedure applies to the selection of delivery routes for Orica sodium cyanide and states that the "selection of route(s) is to be effected by the overall assessment of the risks associated with the utilisation of such route, taking into particular consideration likelihood of an incident occurring and the consequence of such an incident." This procedure is applicable to all routes used for the transportation of Orica sodium cyanide as well as to Orica's contracted transportation agencies.

The port is strategically well placed, located at the most advanced point of the West African coast, and at the intersection of carrier lines linking Europe to South America, and North America to South Africa. It is an international port of transit and serves as the gateway for Mali thus offering the possibility of additionally serving Niger and Burkina Faso.

Transport Practice 1.5: Follow international standards for the transportation of cyanide by sea and air

Orica's manufacturing facility and transfer stations are ICMC certified, sodium cyanide is packaged and transported in accordance with international regulatory standards, such as the United Nations Recommendation on the Transport of Dangerous Goods — Model Regulations, (2005) and National Codes of Practice such as the Australian Code for the Transport of Dangerous Goods by Road or Rail, (2015) thereby meeting the requirements of the political jurisdictions through which the loads will pass.

Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from point of origin to destination. Orica procedure "Carrier Assessment" (Orica ref: SUP-GLO-PRO-016-008) provides the framework for ensuring that carriers and their contractors are assessed at regular intervals to ensure that, amongst others, storage, safety, security, maintenance and emergency response standards are being maintained. Carriers are required to provide manifest documentation, to satisfy local customs regulations and the requirements of the IMDG Code, to the destination port. This documentation contains a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the quantity, unique packaging numbers, stowage reference and emergency response procedures.

Senegal is both an IMO Member State (1960) and SOLAS Signatory Nation (1997), thereby requiring the port of Dakar to adhere to the international regulations for the transportation and handling of dangerous goods as set out in the IMDG Code (Parts 4, 5 and 7) and SOLAS Convention ((1974) Chapter 7).
g) Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?

The Senegal Port Authority develops and implements policies, statutes and regulations governing the carriage of dangerous goods and other goods by ships in accordance with relative national and international requirements. This includes supervising the safety of ships carrying dangerous goods and other goods, processing declarations made by ships carrying dangerous goods, providing accreditation services for personnel involved in the declaration of dangerous goods and inspection of containers, and inspecting containers holding dangerous goods.

As an IMO Member State and to comply with the IMDG Code, vessels are required to declare dangerous cargo before arriving at or leaving the Port Authority.

The port of Dakar operates under a suite of National regulations that ensures its compliance with regards to the transportation, handling and storage of dangerous goods.

h) Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?

Dangerous goods delivered to or from the port are required to be appropriately manifested, packaged, marked, labelled and placarded. Documentation that accompanies the cyanide throughout transportation by sea and delivery at ports includes a dangerous goods manifest, packing certificates and Multimodal Dangerous Goods Form. The manifests that are provided to the vessel Master contain emergency response information.

Emergency response procedures for ships carrying dangerous goods, including the emergency schedules to be followed in case of incidents involving dangerous substances, materials or articles, or harmful substances (marine pollutants), is regulated under the IMDG code. In accordance with the code, all ships, and the companies responsible for their operation, are required to maintain a Safety Management System (SMS). Within the SMS, procedures for responding to potential shipboard emergencies are required.

Port operations personnel provide the vessel’s Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each hazardous cargo transport units loaded onto the ship at the port.

i) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?

As a member of the IMO and to comply with the International Maritime Solid Bulk Cargoes Code (IMSB Code), vessels are required to declare dangerous cargo to the Port Authority before arriving at or leaving the port.

To comply with requirements of the IMDG Code, the port of Dakar has dedicated storage areas for specialised products including dangerous goods; cyanide containers are segregated and stacked separately. All sodium cyanide product remains sealed within its container at all times.

Transport Practice 1.6: Track cyanide shipments to prevent losses during transport

The Dispatch Center organises ship movements, tracks pilotage operations, and supervises terminal operations via real-time CCTV monitoring.

Chain of custody documentation is used by shipping companies to prevent the loss of cargo during shipment. This documentation includes the vessel manifest – which identifies the location and content of each container on the vessel along with packing certificates, Multimodal Dangerous Goods Forms and Safety Data Sheets (SDS).
Transport Practice 2.1: Store cyanide in a manner that minimises the potential for accidental releases

The Senegal Port Authority states that the port of Dakar has taken significant steps to align its facilities and operations with the directives of the International Convention for the Safety of Life at Sea (SOLAS) 1974, convention. Therefore, every ship applying for permission to enter, and every port facility operator working in the port of Dakar must ensure compliance with the security and safety requirements for ships and port facilities as issued by the IMO.

With this in mind the port of Dakar has set up:

- A centralised navigation aid at the harbor lookout, equipped with an Automated Identification System (AIS) and functional mark-up structures
- A surveillance system for the harbor and the water plan using radars, remote monitoring systems and nautical patrols
- Security measures for access and the port enclosure with the setting up of a multi-purpose operational centre equipped with high-tech surveillance equipment.

Additionally, 2016 saw the strengthening of security provisions at Dakar with the establishment of a corps of 450 officers trained in ISPS code standards and the reinforcing of perimeter and access point security measures.

Naval assets for maritime and ground surveillance (patrol vehicles and video surveillance) have been put in place. The port of Dakar aims to have ISO 28000 certification by 2023 and has recently contracted a private enterprise to begin putting in place the required equipment, materials and maintenance protocols to achieve certification.

A due diligence conducted in 2010 on the West African supply chain of an established cyanide transporter highlighted concerns relating to the management of cyanide and hazardous substances whilst in storage at the port of Dakar and under the management of DP World.

Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases

Senegal has been a member State of the IMO Council since 1960, it complies with the requirements of the IMDG Code.

The port of Dakar is certified under the IMO’s International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 90). States which are party to OPRC 90 protocol are required to establish a national system for responding to oil and hazardous/noxious substances pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises.

3.0 CONCLUSION

Based on the evidence reviewed, this due diligence did not find any new issues of concern in regards to the port of Dakar’s management of solid sodium cyanide product. It does however acknowledge that a previous due diligence (2010) highlighted concerns around handling of cyanide shipments whilst at the DP World Terminal within the port.

It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information. The Auditor recommends that Orica limits the time product is spent at this port and undertakes annual reviews to monitor the management of dangerous goods.

This assessment should not be a final acceptance of the port of Dakar for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.
4.0 CLOSING

We trust this due diligence letter meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES PTY LTD

Craig Currie  
Environmental Scientist

Jaclyn Ennis-John  
ICMC Lead Auditor and Technical Specialist

CC:JEJ/hsl
REFERENCES


ICMC DUE DILIGENCE ASSESSMENT FOR THE PORT OF ABIDJAN

Dear Seth

EXECUTIVE SUMMARY

Golder Associates Pty Ltd (Golder) conducted a due diligence of the port of Abidjan, Cote d’Ivoire during May 2017 on behalf of Orica Australia Pty Ltd (Orica). The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Transport Practice 1.1 (Questions 1-4 and 6)
- Transport Practice 1.5 (Question 1, Items g-i)
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information.

Golder’s assessment of the port of Abidjan found no issues of concern in regards to the port’s management of solid sodium cyanide product.

This assessment should not be a final acceptance of the port of Abidjan for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.
1.0 INTRODUCTION

This letter provides the results of a due diligence assessment against the port of Abidjan, Cote d'Ivoire, in accordance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (ICMC or the Code).

Golder conducted a desktop due diligence assessment of the port of Abidjan, Cote d'Ivoire during May 2017. The assessment was conducted by Jaclyn Ennis-John who meets the International Cyanide Management Institute's (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI's Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Introduction
- ICMC Transport Verification Protocol Assessment
  - Transport Practice 1.1 (Questions 1-4 and 6)
  - Transport Practice 1.5 (Question 1, Items g-i)
  - Transport Practice 1.6
  - Transport Practice 2.1
  - Transport Practice 3.1.
- Conclusion
- References.

The ICMI's Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. Due to access restrictions, it was not possible during this due diligence to physically inspect the port of Abidjan. The due diligence assessment was completed based on information obtained from previous due diligence, ICMI audit reports and publicly available online information.

1.1 Overview of Port of Abidjan, Cote d'Ivoire

The port of Abidjan is the main port of the Cote d'Ivoire (Ivory Coast) in Africa. Lying on the Ebrie Lagoon, it is linked to the Gulf of Guinea and Atlantic Ocean by the Vridi Plage sandbar.

The port of Abidjan is West Africa's largest, most modern port. With a central location and a well-developed infrastructure, it is a major point for transhipments into West and Central Africa over the Cote d'Ivoire's network of rail and road systems. Since the opening of the Vridi Canal, the port of Abidjan has handled nearly all commercial trade for the Cote d'Ivoire.

The port of Abidjan has a total quay length of six kilometres and there are 34 berths dedicated for timber, cereals, fruits, petroleum products and containers. The port of Abidjan can accommodate vessels up to 260 meters long, depth at the harbor's mouth is 10.5 m, and the depth at quay is 12.5 m. The port provides approximately 408 000 m² of open storage and 144 m² of covered warehouses and sheds. Three berths specialize in container-handling, and one berth is devoted to roll-on/roll-off cargoes.


Overview of port operations:

- Port protocols exist for docking of vessels (e.g. use of Pilots, use of tug boats, management of different weather conditions, tides, currents and safety and general port operations). This sees to the safe docking and turnaround of the vessels in and out of the port.

- Entry into port is controlled by the port's Pilot who understands the port protocols and any unique issues regarding the approach and docking of a vessel at the port. The Ship's Captain works in conjunction with the Pilot as he understands his vessel and can implement and assist with the Pilot's instructions.
The approach of the vessel to the ports will take into any account any channels, special navigation points and as mentioned above the currents, tides and weather.

Once a vessel is secure alongside the wharf the shipping activities changeover to port activities. The vessels manifest of what containers are required to be unloaded from the vessel, including the manifest for containers for loading are handed over. This manifest will identify hazardous cargos and their UN number and classification and segregation requirements.

The stevedoring company, Bolloré Africa Logistics, manage the onshore (wharf) operations at the dedicated container terminal. This is the terminal currently used by other ICMI accredited transporters to facilitate the unloading of their vessels.

Stevedoring operations include:

- Handling of the containers whether full or empty on and off the vessels; container storage areas for general cargo, port security, control systems for companies and their vehicles collecting and or delivering containers.
- Software programs that control container placement and movement; these software packages identify each individual container placement area in designated stacks. The input information for the placement of containers comes from the vessel’s manifest.

Sodium cyanide containers are loaded directly onto trailers via gantry cranes, owned and maintained by Bolloré Africa Logistics Transport Division, for direct delivery out of the port under controlled convoys to the end use destination in Côte d'Ivoire.

2.0 ICMC TRANSPORT VERIFICATION PROTOCOL ASSESSMENT

The ICMI's Auditor Guidance for Use of Cyanide Transportation Verification Protocol, General Guidance states:

*Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1.* The consignor's due diligence investigation must either be conducted or reviewed by an auditor meeting ICMI requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures.

Transport Practice 1.1: Select cyanide transport routes to minimise the potential for accidents and releases

The international sales and exports of sodium cyanide by Orica take into consideration the ports and their extended infrastructure 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 point of origin to destination.

Orica procedure "Selection of Transport Routes – Transportation of Sodium Cyanide to Customer Sites or Stock Points" (Orica ref: UP-GLO-PRO-001-017) aims to minimise the risk associated with the transportation of sodium cyanide while maintaining a safe, reliable, efficient and cost effective delivery system to customer sites and Orica stock points throughout the world. The procedure applies to the selection of delivery routes for Orica sodium cyanide and states that the "selection of route(s) is to be effected by the overall assessment of the risks associated with the utilisation of such route, taking into particular consideration likelihood of an incident occurring and the consequence of such an incident." This procedure is applicable to all routes used for the transportation of Orica sodium cyanide as well as to Orica’s contracted transportation agencies.

The port of Abidjan is West Africa’s largest, most modern port. With a central location and a well-developed infrastructure, it is a major point for transhipments into West and Central Africa over the Côte d’Ivoire’s network of rail and road systems.
Transport Practice 1.5: Follow international standards for the transportation of cyanide by sea and air

Orica’s manufacturing facility and transfer stations are ICMC certified, sodium cyanide is packaged and transported in accordance with international regulatory standards, such as the United Nations Recommendation on the Transport of Dangerous Goods – Model Regulations, (2005) and National Codes of Practice such as the Australian Code for the Transport of Dangerous Goods by Road or Rail, (2015) thereby meeting the requirements of the political jurisdictions through which the loads will pass.

Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from point of origin to destination. Orica procedure “Carrier Assessment” (Orica ref: SUP-GLO-PROC-016-008) provides the framework for ensuring that carriers and their contractors are assessed at regular intervals to ensure that, amongst others, storage, safety, security, maintenance and emergency response standards are being maintained. Carriers are required to provide manifest documentation, to satisfy local customs regulations and the requirements of the IMDG Code, to the destination port. This documentation contains a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the quantity, unique packaging numbers, stowage reference and emergency response procedures.

Cote d’Ivoire is both an IMO Member State (1960) and SOLAS Signatory Nation (1987), thereby requiring the port of Abidjan to adhere to the international regulations for the transportation and handling of dangerous goods as set out in the IMDG Code (Parts 4, 5 and 7) and SOLAS Convention (1974) Chapter 7.

g) Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?

The Abidjan Port Authority (PAA) develops and implements policies, statutes and regulations governing the carriage of dangerous goods and other goods by ships in accordance with relative national and international requirements. This includes supervising the safety of ships carrying dangerous goods and other goods, processing declarations made by ships carrying dangerous goods, providing accreditation services for personnel involved in the declaration of dangerous goods and inspection of containers, and inspecting containers holding dangerous goods.

As an IMO Member State and to comply with the IMDG Code, vessels are required to declare dangerous cargo 48 hours prior to arriving at the port, to the PAA. The notification information required by the PAA includes the exact nature of the substance, its IMDG Code Class, the quantity and its location aboard the vessel. The required Special Port Entry Permit will not be issued unless the dangerous cargo is properly declared.

The port of Abidjan operates under a number of National regulations, enforced by the PAA, which ensures its compliance with regards to the transportation, handling and storage of dangerous goods.

h) Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?

Dangerous goods delivered to or from the port are required to be appropriately manifested, packaged, labelled and placarded. Documentation that accompanies the cyanide throughout transportation by sea and delivery at ports includes emergency response information along with the dangerous goods manifest, packing certificates and Multimodal Dangerous Goods Form.

Emergency response procedures for ships carrying dangerous goods, including the emergency schedules to be followed in case of incidents involving dangerous substances, materials or articles, or harmful substances (marine pollutants), is regulated under the IMDG Code. In accordance with the Code, all ships, and the companies responsible for their operation, are required to maintain a Safety Management System (SMS). Within the SMS, procedures for responding to potential shipboard emergencies are required.

Port operations personnel provide the vessel’s Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each hazardous cargo transport units loaded onto the ship at the port of origin.
i) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?

As a member of the IMO and to comply with the IMDG Code and port regulations, vessels are required to declare dangerous cargo before arriving at or leaving the port, additionally, all cargo listed on the dangerous cargo manifest must be stowed and handled as prescribed by its UN number and dangerous goods class.

The port of Abidjan primarily aims to have dangerous cargo placed directly onto a trailer and removed from the facility under escort of the PAA. However, when this cannot occur, Abidjan has a dedicated Security Park storage area for specialised products including dangerous goods; cyanide containers are segregated and stacked separately according the provisions of the Code. All sodium cyanide remains packaged within its sealed container at all times.

All handling of dangerous goods, on and off of vessels, must have prior authorisation by the Harbour Master who sets the timeframes that such handling may take place. Port Regulation states that the unloading of hazardous goods takes place at the beginning of the unloading process and the loading of hazardous goods takes place at the end of the loading process.

Transport Practice 1.6: Track cyanide shipments to prevent losses during transport

The Harbour Master organises ship movements, tracks pilotage operations, and supervises terminal operations via the Port Control Tower and real-time CCTV monitoring. Container terminal software allows for the controlled tracking and placement of containers when removed from the vessel.

Chain of custody documentation is used by shipping companies to prevent the loss of cargo during shipment. This documentation includes the vessel manifest—which identifies the location and content of each container on the vessel along with packing certificates, Multimodal Dangerous Goods Forms and Safety Data Sheets (SDS).

The port of Abidjan requires documentation such as Request for Removal forms, Original Bill of Lading, cargo manifests and the original handler's voucher in order to allow the removal from vessel of, and subsequently transship, dangerous goods containers.

Transport Practice 2.1: Store cyanide in a manner that minimises the potential for accidental releases

In general, port and vessel security are managed through the International Ship and Port Facility Security Code (ISPS Code), awarded to the port of Abidjan in 2004. The ISPS Code is a comprehensive set of measures aimed to enhance security of ships and port facilities.

The port of Abidjan is also certified under OHSAS 18001:2007 (health and security). There are regular security patrols, restricted points of access, video surveillance and the capability to call upon certain specialised State Defence and Security Forces.

When containers of dangerous goods cannot be placed directly onto onwards transportation, they are sent to a secure holding facility under escort of the PAA. All handling of dangerous goods, on and off of vessels, must have prior authorisation by the Harbour Master who sets the timeframes that such handling may take place.

Cyanide product remains in the containers that were packed at the Production Facility. The packaging has a sealed plastic liner which stops the contact of product with moisture or humidity. The Intermediate Bulk Containers (IBCs) holding cyanide are stored within shipping containers which are transferred from vessel to trailer and moved to a designated dangerous goods storage area within the terminal confines. Containers are placed in an open air environment to prevent the build-up of hydrogen cyanide gas.

There are general dangerous goods warning signs throughout the port.

Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases

Cote d'Ivoire has been a member State of the IMO Council since 1960, it complies with the requirements of the IMDG Code.
The port of Abidjan is certified under the IMO's International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 90). States which are party to OPRC 90 protocol are required to establish a national system for responding to oil and hazardous/noxious substances pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises.

The Ivorian Anti-Pollution Centre (CIAPOL) is the responsible authority for marine pollution in the Ivory Coast.

CIAPOL, with the support of private contractors, manages the response to and monitoring of a Hazardous and Noxious Substances (HNS) incident and some equipment is readily available.

The Stevedoring service provider, Bollore Africa Logistics, has developed an emergency procedure guide specific to sodium cyanide. They also possess emergency response capabilities including a mobile bund for containing spillage from a shipping container. In the event of an emergency, the port of Abidjan has a Port response unit (U.I.P.), composed of officers from the fire service or the navy fire department, who are on-hand and ready to respond 24 hours a day.

3.0 CONCLUSION

Based on the evidence reviewed, this due diligence did not find significant issues of concern in regards to the port of Abidjan's management of solid sodium cyanide product. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information. The Auditor recommends that Orica undertakes annual reviews at the port to monitor the management of dangerous goods.

This assessment should not be a final acceptance of the port of Abidjan for future work; rather it is recommended that Orica continue to review and monitor the port's performance annually and implement an adaptive management process.

4.0 CLOSING

We trust this due diligence letter meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES PTY LTD

Craig Currie
Environmental Scientist

Jaclyn Ennis-John
ICMC Lead Auditor and Technical Specialist

CC:JEJ/hsl
REFERENCES


ICMC DUE DILIGENCE ASSESSMENT FOR THE PORT OF NOUAKCHOTT

Dear Seth

EXECUTIVE SUMMARY

Golder Associates Pty Ltd (Golder) conducted a due diligence of the port of Nouakchott, Mauritania during May 2017 on behalf of Orica Australia Pty Ltd (Orica). The assessment was conducted by Ed Clerk who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Transport Practice 1.1 (Questions 1-4 and 6)
- Transport Practice 1.5 (Question 1, Items g-i)
- Transport Practice 1.6
- Transport Practice 2.1
- Transport Practice 3.1.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMI audit reports and publicly available online information.

Golder’s assessment of the port of Nouakchott found no issues of concern in regards to the port’s management of solid sodium cyanide product.

This assessment should not be a final acceptance of the port of Nouakchott for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.
1.0 INTRODUCTION

This letter provides the results of a due diligence assessment against the port of Nouakchott, Mauritania, in accordance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold (ICMC or the Code).

Golder conducted a desktop due diligence assessment of the port of Nouakchott, Mauritania during May 2017. The assessment was conducted by Ed Clerk who meets the International Cyanide Management Institute’s (ICMI) requirements for a Transport Technical Specialist.

The following items, as detailed in the ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016), were addressed within the due diligence:

- Introduction
- ICMC Transport Verification Protocol Assessment
  - Transport Practice 1.1 (Questions 1-4 and 6)
  - Transport Practice 1.5 (Question 1, Items g-i)
  - Transport Practice 1.6
  - Transport Practice 2.1
  - Transport Practice 3.1.
- Conclusion
- References.

The ICMI’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol (December 2016) was used to conduct the due diligence assessment. Due to access restrictions, it was not possible during this due diligence to physically inspect the port of Nouakchott. The due diligence assessment was completed based on information obtained from previous due diligences, ICMI audit reports and publicly available online information.

1.1 Overview of Port of Nouakchott, Mauritania

The port of Nouakchott is the main port in Mauritania accounting for approximately 96% of all annual port traffic. It is located near the West African Atlantic coast and was developed as the capital of Mauritania after it gained independence in 1960. In the past Mauritania lay on one of the most lucrative trade routes in West Africa.

Nouakchott port is an import port representing approximately 90% of all annual imported goods, approximately 1.5 million tonnes, these goods include wheat, cement, clinker, flour, sugar, semolina, milk and general equipment. Exports include plaster from Samia, Mauritania’s main producer, animal skins and fish.

The port of Nouakchott consists of two quays, one for small vessels (Wharf Quay) with draft less than 5 m and a second quay for larger vessels with a maximum draft of 10.3 m, this quay stretches 585 m and is split into four berths, three of which are used for cargo handling and the fourth for servicing vessels. The main cargo quay is located 4 km south of the Quai Wharf and 15 km south-west of the city of Nouakchott.

Nouakchott uses an integrated AS400 computer system developed in co-operation with the Office d’Exploitation des Ports Marocains (ODEP). This offers management transparency and enhances the quality of service offered to international customers.

The Autonomous Port of Nouakchott, called PANPA for short, manages the port.

Overview of port operations:
- Port protocols exist for docking of vessels (e.g. use of Pilots, use of tug boats, management of different weather conditions, tides, currents and safety and general port operations). This sees to the safe docking and turnaround of the vessels in and out of the port.
Entry into port is controlled by the port’s Pilot who understands the port protocols and any unique issues regarding the approach and docking of a vessel at the port. The Ship’s Captain works in conjunction with the Pilot as he understands his vessel and can implement and assist with the Pilot’s instructions.

The approach of the vessel to the ports will take into any account any channels, special navigation points and as mentioned above the currents, tides and weather.

Once a vessel is secure alongside the wharf the shipping activities changeover to port activities. The vessels manifest what containers are required to be unloaded from the vessel, including the manifest for containers for loading are handed over. This manifest will identify hazardous cargos and their UN number and classification and segregation requirements.

The stevedoring service providers manage the onshore (wharf) operations at the dedicated container terminal.

Stevedoring operations include:

- Handling of the containers whether full or empty on and off the vessels; container storage areas for general cargo, port security, control systems for companies and their vehicles collecting and or delivering containers.

- Software programs that control container placement and movement; these software packages identify each individual container placement area in designated stacks. The input information for the placement of containers comes from the vessel’s manifest.

2.0 ICMC TRANSPORT VERIFICATION PROTOCOL ASSESSMENT

The ICMC’s Auditor Guidance for Use of Cyanide Transportation Verification Protocol, General Guidance states:

*Except as specifically identified in this Guidance document, the Cyanide Transportation Protocol is not to be used to evaluate transport by rail and ship or management of cyanide at rail terminals and port facilities due to security issues, limited access, and the inability of consignors to affect changes in the operating practices of these transport facilities. Rather than conduct Code audits of these facilities, the consignor must conduct and document due diligence investigations of rail carriers, rail terminals, shipping companies and port facilities that are engaged to handle cyanide shipments, as further discussed below under Transport Practice 1.1. The consignor’s due diligence investigation must either be conducted or reviewed by an auditor meeting ICMC requirements for a transport expert, and the auditor must conclude that the due diligence investigation has reasonably evaluated these facilities and that the consignor has, to the extent practical, implemented any necessary management measures.*

Transport Practice 1.1: Select cyanide transport routes to minimise the potential for accidents and releases

The international sales and exports of sodium cyanide by Orica take into consideration the ports and their extended infrastructure 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 point of origin to destination.

Orica procedure “Selection of Transport Routes – Transportation of Sodium Cyanide to Customer Sites or Stock Points” (Orica ref: UP-GLO-PRO-001-017) aims to minimise the risk associated with the transportation of sodium cyanide while maintaining a safe, reliable, efficient and cost effective delivery system to customer sites and Orica stock points throughout the world. The procedure applies to the selection of delivery routes for Orica sodium cyanide and states that the “selection of route(s) is to be effected by the overall assessment of the risks associated with the utilisation of such route, taking into particular consideration likelihood of an incident occurring and the consequence of such an incident.” This procedure is applicable to all routes used for the transportation of Orica sodium cyanide as well as to Orica’s contracted transportation agencies.

The port of Nouakchott is advantageously located at the crossroads of the routes connecting Africa, Europe and America, and is one of the leading public commercial ports in the south Sahara for ships sailing from Europe.
Transport Practice 1.5: Follow international standards for the transportation of cyanide by sea and air

Orica's manufacturing facility and transfer stations are ICMC certified, sodium cyanide is packaged and transported in accordance with international regulatory standards, such as the United Nations Recommendation on the Transport of Dangerous Goods – Model Regulations, (2005) and National Codes of Practice such as the Australian Code for the Transport of Dangerous Goods by Road or Rail, (2015) thereby meeting the requirements of the political jurisdictions through which the loads will pass.

Orica only operates in export markets that are serviced by major international shipping companies with the ability to offer scheduled container services from point of origin to destination. Orica procedure “Carrier Assessment” (Orica ref: SUP-GLO-PRO-016-008) provides the framework for ensuring that carriers and their contractors are assessed at regular intervals to ensure that, amongst others, storage, safety, security, maintenance and emergency response standards are being maintained. Carriers are required to provide manifest documentation, to satisfy local customs regulations and the requirements of the IMDG Code, to the destination port. This documentation contains a list of the cargo types and in the case of sodium cyanide and any other hazardous cargo the quantity, unique packaging numbers, stowage reference and emergency response procedures.

Mauritania is both an IMO Member State (1961) and SOLAS Signatory Nation (1997), thereby requiring the port of Nouakchott to adhere to the international regulations for the transportation and handling of dangerous goods as set out in the IMDG Code (Parts 4, 5 and 7) and SOLAS Convention ((1974) Chapter 7).

* g) Does the ship carrying the cyanide have a list or manifest identifying the presence and location of the cyanide or a detailed stowage plan including this information, as required under Section 5.4.3.1 of the DG Code?*

The Nouakchott Port Authority develops and implements regulations governing the carriage of dangerous goods and other goods by ships in accordance with relative national and international requirements. This includes supervising the safety of ships carrying dangerous goods and other goods, processing declarations made by ships carrying dangerous goods, providing accreditation services for personnel involved in the declaration of dangerous goods and inspection of containers, and inspecting containers holding dangerous goods.

As an IMO Member State and to comply with the IMDG Code, vessels are required to declare dangerous cargo before arriving at or leaving the port, to the port authority. Carrier personnel provide the Harbour Master or Port Authority with copies of the Dangerous Goods manifest (including stowage plan) and Packing Certificates for each of the hazardous cargo units loaded at the port of origin.

* h) Does the ship carrying the cyanide have cyanide emergency response information, as required under Section 5.4.3.2 of the DG Code?*

Dangerous goods delivered to or from the port are required to be appropriately manifested, packaged, labelled and placarded. Documentation that accompanies the cyanide throughout transportation by sea and delivery at ports includes emergency response information along with the dangerous goods manifest, packing certificates and Multimodal Dangerous Goods Form.

Emergency response procedures for ships carrying dangerous goods, including the emergency schedules to be followed in case of incidents involving dangerous substances, materials or articles, or harmful substances (marine pollutants), is regulated under the IMDG Code. In accordance with the Code, all ships, and the companies responsible for their operation, are required to maintain a Safety Management System (SMS). Within the SMS, procedures for responding to potential shipboard emergencies are required.

Port operations personnel provide the vessel's Master with copies of the Emergency Information, Dangerous Goods manifest (including stowage plan) and Packaging Certificates for each hazardous cargo transport units loaded onto the ship at the port of origin.
i) Does the ship comply with the stowage and separation requirements of Part 7 of the DG Code?

As a member of the IMO and to comply with the IMDG Code and National Regulations vessels are required to declare dangerous cargo before arriving at or leaving the port, additionally, all cargo listed on the dangerous cargo manifest must be stowed and handled as prescribed by its UN number and dangerous goods class.

A very limited quantity of cyanide 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’s site. In the event that a delay occurs the area in which containers are located is secured and well segregated from other cargo types.

All sodium cyanide remains sealed within its container at all times.

Transport Practice 1.6: Track cyanide shipments to prevent losses during transport

The Dispatch Centre organises ship movements, tracks pilotage operations, and supervises terminal operations via real-time CCTV monitoring.

Port stevedores receive the vessels manifest on arrival which includes details on the containers for unloading. 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, for Nouakchott this is generally onto onward forms of transportation. Where temporary storage is required transport from the unloading berth to the interim storage facility is controlled by documentary checks which use the container’s tracking details and acknowledge its contents.

Chain of custody documentation is used by shipping companies to prevent the loss of cargo during shipment. This documentation includes the vessel manifest—which identifies the location and content of each container on the vessel along with packing certificates, Multimodal Dangerous Goods Forms and Material Safety Data Sheets (MSDS).

Transport Practice 2.1: Store cyanide in a manner that minimises the potential for accidental releases

A very limited quantity of product is transported via the port of Nouakchott and this is always for a specific customer’s needs. Express clearance is performed by the importer and containers are generally collected on arrival for onward transportation to the customer site. In the event that a delay occurs, the containers are transferred to a holding site and a security presence is provided. Security personnel are provided with equipment suitable to meet minimal personnel protective equipment requirements and the provision of warning signage prohibiting unauthorised personnel in the area.

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

Transport Practice 3.1: Prepare detailed emergency response plans for potential cyanide releases

Mauritania has been a member State of the IMO Council since 1961, it complies with the requirements of the IMDG Code.

The port of Nouakchott is certified under the IMO’s International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 90). States which are party to OPRC 90 protocol are required to establish a national system for responding to oil and hazardous/noxious substances pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises.

The Ministry of Transport (MOT), Direction of Merchant Navy is the competent authority and administers the National Contingency Plan (NCP) for dealing with pollution by oil and other noxious substances in marine and freshwater environments.

The MOT, with the support of private contractors, manages the response to and monitoring of a Hazardous and Noxious Substances (HNS) incident and some equipment is readily available at the port.
3.0 CONCLUSION
Based on the evidence reviewed, this due diligence did not find significant issues of concern in regards to the port of Nouakchott management of solid sodium cyanide product. It was not possible during this due diligence to physically inspect the port, as such the review was based on information obtained from previous due diligence reviews, ICMC audit reports and publicly available online information. The Auditor recommends that Orica undertakes annual reviews at the port to monitor the management of dangerous goods.

This assessment should not be a final acceptance of the port of Nouakchott for future work; rather it is recommended that Orica continue to review and monitor the port’s performance annually and implement an adaptive management process.

4.0 CLOSING
We trust this due diligence letter meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES PTY LTD

Craig Currie
Environmental Scientist

Jaclyn Ennis-John
ICMC Lead Auditor and Technical Specialist

CC/EWC/hsl
REFERENCES


ICMC Due Diligence Review – Port of Nouakchott, Mauritania (2013)


Orica (2013). Due Diligence Review- Port of Nouakchott, Mauritania.


APPENDIX C
Important Information
The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

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

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