



**CONSTRUCTION SAFETY STUDY REPORT,
AMMONIUM NITRATE EMULSION PLANT,
ORICA AUSTRALIA PTY LTD,
KURRI KURRI, NSW**

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**Construction Safety Study for the Ammonium Nitrate
Emulsion Plant, Orica, Kurri Kurri**

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EXECUTIVE SUMMARY

1 INTRODUCTION

Orica Australia Pty Ltd (Orica) currently operates an Ammonium Nitrate Emulsion (ANE) Production Facility at their Liddell site, NSW. Liddell is the ANE manufacturing centre for the South East Region, including the Hunter Valley, NSW and southern Australia. To meet the projected regional demand for ANE to 2020 and beyond, the ANE manufacturing capacity requires expansion. Orica proposes to meet this additional demand by constructing a new ANE manufacturing facility at their existing Technology Centre site at Kurri Kurri, NSW.

A Condition of Consent for the project requires a Construction Safety Study (CSS) to be performed. Pinnacle Risk Management has been engaged by Orica to assist with the study and this report presents the findings.

The Construction Safety Study has been prepared in accordance with the NSW Department of Planning's Hazardous Industry Planning Advisory Paper (HIPAP) No. 7, "Construction Safety Study Guidelines".

2 STUDY OBJECTIVE

The objectives of the study (as stated in HIPAP 7) are:

- To identify potentially hazardous incidents during construction, and to identify appropriate upgrading and revision of programs, safeguards and safety and emergency procedures; and
- To ensure that all measures are in place, so that the selection, checking, fabrication, construction, and commissioning of all the safety critical elements of the facility are in accordance with the design intent and specifications, consistent with requirements and findings arising from other safety studies, and that the design and specifications are appropriate.

To assist in achieving these objectives, potential construction related hazardous events were identified using a construction hazard study involving a number of experienced personnel from the main companies involved.

As per the requirements of HIAP 7, this CSS primarily involves identification and assessment of significant potential hazardous events. These types of events may impact on the results presented in the Preliminary Hazards Analysis. Construction slip, trips and falls events are not included within this study (HIPAP 7 requirement). The construction activities will be individually assessed for hazards and appropriate controls used when addressing these types of events.

3 FINDINGS

This Construction Safety Study has found that there are fully qualified people involved in the project and the use of existing Orica and Transfield (main construction contractor on this project) procedures are likely to achieve a high level of construction safety; particularly with regard to any potential adverse impacts on the workforce, property and the environment.

Provided adequate management supports the stated construction plans made throughout this report, the project will have a comprehensive and robust construction safety system which will reduce the likelihood of hazardous events occurring during construction.

During the construction hazard study, a number of construction issues arose and are currently being assessed. Therefore, no further specific construction recommendations are made in this report. However, it is noted that further detailed planning is required to ensure the construction activities occur in a safe manner.

Propagation of construction and commissioning incidents is limited at this site given the relatively large separation distances to other sensitive land uses (as reported in the project's PHA).

REPORT

1 INTRODUCTION

1.1 PROJECT BACKGROUND

Orica Australia Pty Ltd (Orica) currently operates an Ammonium Nitrate Emulsion (ANE) Production Facility at their Liddell site, NSW. Liddell is the ANE manufacturing centre for the South East Region, including the Hunter Valley, NSW and southern Australia. To meet the projected regional demand for ANE to 2020 and beyond, the ANE manufacturing capacity requires expansion. Orica proposes to meet this additional demand by constructing a new ANE manufacturing facility at their existing Technology Centre site at Kurri Kurri, NSW.

The NSW Department of Planning (DoP) Director General's Requirements (DGRs) issued for the proposed ANE Production Facility as part of the Environmental Assessment (EA) require that a Construction Safety Study (CSS) be prepared in accordance with the DoP Hazardous Industry Planning Advisory Papers No 7 (Ref 1). Orica requested that Dean Shewring from Pinnacle Risk Management lead the study to develop the CSS.

This report details the results of the CSS and is written to meet the requirements of the Department of Planning Guidelines (Ref 1).

The main objectives of a construction safety study are (Ref 1):

- To identify potentially hazardous incidents during demolition, construction and commissioning and to identify appropriate upgrading and revision of programs, safeguards and safety and emergency procedures; and
- To ensure that all measures are in place that the selection, checking, fabrication, construction and commissioning of all the safety critical elements of a facility are in accordance with design intent and specifications, consistent with requirements and findings arising from other safety studies, and that design and specifications are appropriate.

1.2 LOCATION AND SURROUNDING LAND USE

A map of the area showing the location of the Orica site is shown in the Preliminary Hazard Analysis for the project (Ref 2). Relevant site construction drawings are shown in Appendix 1.

From Ref 2, the Orica Technology Centre site is located at George Booth Drive, Richmond Vale NSW. The Technology Centre is located on Lot 2, DP 809377 and is approximately 292 hectares in area. The land is wholly owned by Orica.

The surrounding area encompasses a variety of land use activities including agriculture, bushland, rural residential area, rural industrial activities and transport corridors. There are aboveground power lines in an electrical easement running northwest to south east across the front of the Orica site. An underground gas pipeline is proposed to run within the electricity easement. The land to the south, west and east of the site is predominantly bushland (Crown land). An electrical easement runs east-west through this land around 500m south of the Orica site. There are fire trails throughout the area surrounding the Orica site and it is possible that occasional unauthorised recreational activities such as bushwalking or 4WD activities occur in this area.

The nearest industrial population or industrial infrastructure is Tasman Underground Mine which is located approximately 2.5 kilometres to the south-east of the Technology Centre on George Booth Drive. The Sydney-Newcastle Freeway is around 4.5 km to the south east. The nearest residential area (rural residential rather than suburban) is to the north. The nearest residence is a single house located 250 m north west of the northern site boundary, i.e. around 1.8 km from the proposed ANE Plant location. Various farms (chicken farm, flower farm) are also located in this area. The nearest residential areas are Seahampton, which is around 6 km to the southeast of the site, and Kurri Kurri, which is around 7 km to the northwest. The lots to the west of the Orica site have also been subdivided to large blocks (rural residential) though are not yet occupied.

The existing Technical Centre site is home to Orica's Mining Services Technical Centre and undertakes research and development activities with some commercial manufacturing. The existing facilities include:

- Mixing Laboratory (ML);
- Research Laboratory (including pilot scale manufacturing plant) (RL);
- Research Magazine (RM);
- Quarry Services Depot (QS); and
- Test Cell.

There is also an existing office complex housing around 150 people.

Site Security:

As the site already handles security sensitive materials such as AN and Class 1 explosives, a site security plan is in place in accordance with the relevant regulations. This includes personnel security checks, security fencing, and access control, alarms and security monitoring. These arrangements are unchanged by the proposed ANE Plant. The ANE Plant will also be provided with its own security fence during the construction and operational phases.

The site does not lie under a major flight path to any airport. The main known natural hazard associated with this location is bushfire. To date, this event has not caused any significant hazardous events.

1.3 CONTRACTOR MANAGEMENT

Construction:

The project is being managed by Orica.

An external consultant, ICD Asia Pacific, has been engaged to carry out the Engineering, Procurement and Construction Management (EPCM) components of the project.

ICD has in turn engaged Transfield Services to carry out the construction management function.

The area at the Kurri Kurri site where the ANE Plant is to be constructed is a greenfield site. The project scope consists of the development of the site, the ANE Plant, provision of services to the ANE plant and all associated site infrastructure to support the operation. Given the relatively large separation distances to the existing facilities at the site, the risk of propagation either from construction to the existing facilities or vice versa is low.

Safety on site will be managed by Transfield Services using a combination of Orica's requirements and Transfield's own systems (as discussed throughout this report).

An overall site Construction Management Plan (CMP) has been prepared by Transfield Services (parts of which are included in this report as appropriate and a summary of the contents is shown in Appendix 2).

The construction contractors will provide direct management and supervision of their site crews.

Contractors will be required to prepare JSA's (Job Safety Analyses) which address the CMP objectives and the objective to have zero MTI's and LTI's (Medical Treatment Injuries and Lost Time Injuries, respectively).

As far as practically possible, manufacture and fabrication of items will be completed offsite, to ensure site construction works are minimised. The vast majority of tanks will be fabricated off site and delivered by road.

Whilst Transfield procedures are to be the main procedures used for this project, all workers on the project will still comply with the requirements of the Orica Safety Health and Environmental Management Systems, incorporating safety, quality and environmental management procedures.

Orica has procedures in place to ensure all projects are managed and delivered safely and without detriment to the environment. The management systems for the project will include adherence to the following procedures:

ET-004 Hazard Studies

ET-013 Plant Structures and Pipe Bridges

ET-021 Capital Projects
EP-008 Underground and Secondary Containment
EP-014 Neighbourhood Impact
SF-004 Clearance to Work
SF-007 Work at Heights / Work on Roofs
SF-009 Lifting Equipment
SF-013 Housekeeping
SG-001 SH&E Policies, Standards and Objectives
SG-003 SH&E Management Resources
SG-004 Legal Requirements
SG-011 Onsite Contractor SH&E Management
SG-020 Emergency Plans
SG-026 Incident Management
SG-030 SH&E Risk Management
SG-033 Job Safety and Environment Risk Analysis

Construction hours will typically be a maximum of 10 hours/day, 5 days per week and a 6 hour day on Saturdays. Weekend (Sunday) or night time construction work will only occur if required for specific tasks or to recover lost time.

Commissioning:

The Orica project team will manage commissioning activities.

A Commissioning Manager will be appointed to plan and manage activities and to oversee the plant startup. A detailed plan will be defined before the end of the construction phase.

The plant will be pre-commissioned on the basis of systems, as determined by the Commissioning Manager.

The Commissioning Manager will develop inspection, testing and pre-commissioning plans for each system. These plans will cover equipment inspection, functional testing, calibration, flushing of piping and loop testing and will include witnessing. The Commissioning Manager will set the timing of the Orica Hazard Studies 4 and 5.

The Commissioning Manager and the Project Manager, or their representatives, prior to project handover, will make joint formal inspections of each system. Reservation lists will be prepared by the Commissioning and Construction Managers and agreed with the appropriate site contractor including categorisation and allocation of priorities. The agreed lists will be used to determine when the systems are ready for commissioning (RFC) and ready for operation (RFO).

Responsibility for the plant will be transferred from Transfield to the Commissioning Manager on a system-by-system basis and it will be documented prior to handover.

2 STUDY METHODOLOGY

The methodology used in this study follows the DoP's guidelines (Ref 1) for Construction Safety Studies. The study seeks to answer the following questions:

- What are the potentially hazardous incidents that could occur during the proposed construction and commissioning activities?
- What procedures will be in place to:
 - Minimise the likelihood of construction causing a hazardous incident?
 - Ensure such incidents will not generate a hazardous incident external to the site?
- Are emergency procedures in place to handle construction emergencies?
- What safety assurance system is in place?
- What arrangements are in place for management of change during construction?

As part of the study, reviews were undertaken of the construction plans and the procedures for the management of change during the construction.

The DoP guidelines (Ref 1) call for the Construction Safety Study to be carried out after completion of a Preliminary Hazard Analysis (Ref 2). The required HAZOP study has also been concluded. Should any issues be identified in this Construction Safety Study which are relevant to the other statutory studies then they will be recommended to be included in the assessment process. A review of Ref 2 has been undertaken in this CSS to determine whether any identified events could have an impact on the construction activities. The results of this review are incorporated into the next section of this report.

3 HAZARD IDENTIFICATION AND PROPOSED SAFEGUARDS

3.1 CONSTRUCTION SITE AND ACTIVITIES

Relevant site construction drawings are shown in Appendix 1. This includes a site layout. The laydown area and all other construction areas will be within the cleared area for the ANE Plant.

From Ref 3, the proposed ANE production facility will include:

- Chemical, fuel and product storage tanks;
- An ANE manufacturing plant;
- Truck weighing, loading and unloading facilities;
- Utilities including hot water, cooling water and compressed air systems, electricity distribution cables and transformer;
- Stormwater / spill management structures; and
- An office, control room, switch room, quality control laboratory and mixing laboratory.

The site area is approximately 8 hectares, including a 30m bushfire buffer zone.

The project has been divided into the following construction areas:

- Site clearing;
- Bulk excavation;
- Civil;
- Mechanical (tanks and piping); and
- Electrical and instrumentation.

Site clearing includes clearing approximately two (2) hectares of scrub and trees as identified as being necessary to construct the works, roadways and associated fire-breaks. This task has been completed at the time of this report production.

Bulk excavation, roads and drainage includes bulk excavation and placing of fill to the required levels to allow construction of the works, placing of fill to construct the bunker mound, excavation, placement / construction and back-filling of the drainage system, construction of fire-breaks, construction of permanent and maintainable roadways (including concrete pavement), kerbs and guttering and landscaping.

The civil works for the project are as follows:

- Concrete works for hardstand areas, retaining structures (earth and process), tank foundation and process buildings;
- Pipeline and pump station foundations; and
- Building construction for the amenities, control room / laboratory and office.

The mechanical works for the project are as follows:

- Fabrication and installation of process and effluent piping;
- Installation of tanks fabricated off-site by others;
- Construction of large process tanks;
- Installation of pump stations; and
- Supply and erection of structural steel (buildings and process related).

The electrical and instrumentations works include high voltage supply, switchroom construction, field wiring for all drives and electrical users, and all control system componentry and wiring.

The estimated number of resources, per discipline, that will be utilised on-site are as follows.

Table 1 – Number of Resources

Discipline	Number of Resources
Excavation, Drainage, Roads	17
Civil	20
Mechanical	30
Electrical and Instrumentation	20

3.2 CONSTRUCTION HAZARDOUS MATERIALS

The hazardous materials used for construction of the new ANE facility are:

- Diesel fuel for construction equipment (kept within a contained area and spill kits will be located nearby);
- Paints and thinners;

- Pickling paste; and
- Epoxy sealants.

No asbestos products are to be used.

Pipeline radiography will also be conducted. The specialist procedures are established for this activity and are to be enacted and enforced by the specialist radiography company chosen for this project.

All these materials are planned to be stored and handled in an appropriate fashion for the material and quantity.

Although there will be sources of ignition on the site, there is a low likelihood of a significant incident involving the above hazardous materials as the quantities are expected to be relatively small and the established practices, including hot work permits, are to be followed.

3.3 HAZARD IDENTIFICATION

To identify the hazards associated with the planned construction activities, a construction hazard study was conducted. This is a hazard study similar in nature to a HAZOP study, which is applied to construction activities. A diverse group of people, with the appropriate construction and commissioning experience, brainstorm possible hazardous events given their knowledge of the existing site and equipment and the proposed work activities.

The purpose of a construction hazard study is to review the site equipment and facilities, and the proposed construction techniques with the objective of identifying significant safety, occupational health and environment hazards. Both on-site and off-site hazards are identified.

A construction hazard study provides the opportunity for people to think creatively and examine ways in which hazards might arise. To reduce the chance that something is missed, it is done in a systematic way using guide words to identify hazards.

After the meeting introduction, the site equipment and facilities, and proposed construction activities and techniques were explained and discussed. Following this, potentially significant occupational health and safety and environment hazards were identified by utilising guide words from the construction hazard study book of cards to prompt discussion. A summary of the guide words is shown in Appendix 3.

Any identified hazards or issues were discussed and resolved (if possible within the time constraints). Records were taken for any hazards or issues requiring further discussion, or for an action (such as inclusion of activities into the contractor induction program). Also included in the discussion were the proposed mitigation measures to be used during the construction phase. These include the utilisation of the Orica and Transfield safety management procedures to control all construction activities.

The construction hazard study was conducted at the Orica Kurri Kurri site. Attendees at the meeting are shown in Table 2.

Table 2 – Construction Hazard Study Attendees

Name	Company	Position
Dean Shewring	Pinnacle Risk Management	Study Facilitator
Colin O'Brien	Transfield Services	Construction Manager
Graham Armstrong	Orica	Site Services Manager
Ryan Bremmell	Transfield Services	Health, Safety and Environment Coordinator
Nick Davies	Orica	Project Manager
Greg Beard	PPW Engineering	Safety Coordinator
Michael Maher	PPW Engineering	Project Manager / Quality Assurance

The results from this study are included in the following hazard identification word diagram (Table 3). Regular checks throughout the construction work that the identified hazards are appropriately addressed are to be conducted to ensure the risk of potential safety, health or environmental incidents is minimised. This will be achieved by such activities as auditing, direct supervision, tool box talks and JSAs (job safety assessments).

The recorded prevention and protection safeguards are the most relevant procedures, hardware etc to each of the identified hazardous events. Other prevention and protection measures are embodied in the Orica and Transfield safety management systems (discussed later in this report).

Note: 1. Other than typical construction wastes (e.g. pipe off-cuts), there will be no wastes generated during construction of the new ANE facility that will pose any significant disposal problems.

As per the requirements of HIPAP 7 (Ref 1), typical construction hazardous events involving site based personnel, e.g. due to work at heights, are not included. These occupational health and safety issues will be managed using appropriate procedures during the construction phase.

Table 3 – Hazard Identification Word Diagram

AREA/ACTIVITY	HAZARD	POSSIBLE CONSEQUENCES	SAFEGUARDS
Vehicles striking 132kV power lines over the new access road to the ANE facility	Boom left up on crane while travelling beneath	Electrocution, shutdown of power to customers, potential for a vehicle fire which could propagate to a bushfire	Candy Cross Signage, inductions include the overhead power cables hazard; JSA's require spotters for adjacent activity to the power lines
Collision between construction vehicle and explosives delivery vehicle	Excessive speed, failure to follow road safety rules	Injury due to impact, vehicle fire which could result in an explosion as the ANE is heated whilst confined	Speed limit on roads reduced from 40 kph to 15 kph for this project, operations and construction staff will have established means of communication to allow adequate traffic planning, the new access road is wide with good visibility
Queuing outside the main gate onto George Booth Drive	High traffic volume with delays on site access	Accident on George Booth Drive	Provision of Site Access swipe card to all inducted personnel (including construction personnel) to ease access, Security guard at gate from 6:30am to 10:30am for non-inducted personnel to allow efficient processing for site access
Potential for contaminating the hydrotest water	Debris or residues in the tanks resulting in contaminating the fresh hydrostatic test water	Environmental harm if the water is contaminated and it is released locally	This scenario is currently under review to determine adequate means of disposal
Construction activity initiating a bushfire	Welding or other hotwork, smoking	Bushfire with the potential for destruction of the bush and/or structures and injury to people and /or animals	There is a 30m cleared area around the ANE facility, construction activity will be segregated from the fenceline, fire extinguishers will be kept local to all hot work activities to prevent the fire escalating, designated smoking areas will be provided at the site

AREA/ACTIVITY	HAZARD	POSSIBLE CONSEQUENCES	SAFEGUARDS
Injury to trespasser	Intruder enters property outside working hours and injures/kills themselves or steals heavy equipment, e.g. a dozer and causes damage	Injury to the trespasser, equipment damage	Fencing around the construction site, construction danger and warning signs to be erected, camera's to be installed, patrols by security personnel, security presence on the site
Mixing of combustible materials with ammonium nitrate (AN) during commissioning	Wooden pallets left over from construction, diesel spills	AN is an oxidizer and hence a fire can result from the reaction of AN and combustible material	The Commissioning Plan will include the need to remove from site or segregate all combustible materials from the AN areas
Fire involving AN on the existing Orica facility during the construction / commissioning phases	AN mixed with combustible material, vehicle loss of containment	Fires involving AN emit NOx which has the potential to serious injure or kill personnel	The Construction Induction is to include the hazards of NOx, the construction and existing site's emergency procedures have been made compatible

3.4 HAZARD ANALYSIS

The construction hazardous event identification in Section 3.3 identified no events that require further analysis by quantitative risk techniques as performed in the PHA (Ref 2). For the significant events of interest, the construction hazard study team reviewed the proposed safeguards for these events and determined them to be adequate.

There are no identified incidents where the risk of propagation to neighbouring land users was found to be unacceptable. The proposed construction techniques are typical standard and do not involve excessive amounts of hazardous materials. The relatively large separation distances from the greenfield construction site to nearby landusers reduces the probability of propagation of incidents.

Overall, the identified hazardous events are of a nature that proper planning and control during construction work is sufficient to achieve acceptable levels of risk. It is noted, however, that some of the potential hazardous events can lead to fatality. Therefore, it is important to have a robust and workable safety management plan in place. The Orica and Transfield safety management systems are reviewed in the following two sections of this report.

Orica has an existing emergency response plan (ERP). The construction emergency response plan has been developed to be compatible with the existing Orica ERP. In the event of an incident during construction resulting in propagation to the existing site, the appropriate actions from the emergency response procedures are expected to be enacted.

4 ASSESSMENT OF OPERATIONAL SAFEGUARDS

Given that some of the identified construction hazardous events in Section 3 can involve serious consequences such as fatality, it is important to have appropriate safety management in operation.

For this project, construction activities will be managed as per requirements of the Orica and Transfield safety, health and environment procedures (as discussed in Section 1.3).

As part of the safety, health and environmental management procedures, Orica and Transfield also perform hazardous event identification, risk assessment and control of hazards reviews for various construction activities. This higher level review stage is supplemented with activity reviews such as Job Safety Analysis (JSA) and START Right (Stop, Think, Assess, Review and Talk risk assessments that are performed before the commencement of any task).

Auditing of compliance with the requirements for this project will be performed by senior project personnel.

4.1 SITE SAFETY

4.1.1 General

The safety controls relevant to the work areas include the following:

- Defined safety roles for on-site personnel, e.g. the site health, safety and environment representatives;
- Material Safety Data Sheets for all chemicals are kept on-site if information such as first-aid advice is required;
- The construction emergency response procedures will be complementary with the existing Orica emergency response procedures;
- Security measures as per the existing Orica and Transfield requirements;
- Defined safety procedures exists for all employees and subcontractors to follow, e.g. authority to work, manual handling limitations and safe use of scaffolding;
- Use / installation of safety equipment such as notices and signage, first-aid facilities and mandatory use of protective clothing (minimum of safety glasses, hard hats, long sleeves and pant legs and protective footwear);
- The Construction Supervisor will keep a radio onsite for ease of communication with Orica operational staff (mobile phones can also be used for communication at this site);

- Fire fighting equipment, i.e. additional extinguishers, will be available for use if required; and
- Auditing of activities by both Orica and Transfield personnel.

The construction area will be under the control of the Transfield Construction Manager who has overall responsibility for the safety of the construction operation. Assisting the Construction Manager are the construction supervisors and subcontractor's project managers. Sub-contractors will be required to comply with Construction Management Plan (Ref 3).

4.1.2 Contractor Management and Training

An important part of the safety procedures is the initial safety induction of all construction workers. For Orica projects, all employees and contractors must undertake a site induction. For this project, the induction has been tailored to meet the needs for all personnel entering the construction area.

The site induction includes the following features:

- Introduction to the project management team;
- Project overview;
- Project safety objectives;
- Mandatory safety rules;
- Site management;
- Risk management;
- Emergency procedures;
- Incident management;
- Hazard management; and
- Environmental and quality.

Transfield will identify training needs and provide for the training of all personnel involved in activities impacting on the project.

Personnel shall be selected on the basis of their qualifications, competence and experience. All qualifications will be recorded and updated as required.

Personnel working on the project shall be instructed in their specific responsibilities as described in the health, safety and environment management procedures before commencing work.

Details of all certificates, licences, training and competency assessments will be documented on individual personnel files.

Management of subcontractor safety is achieved via site safety inspections, tool box meetings, work methods, safe work instructions, job safety analyses (JSAs) and specific training as determined by the Construction Manager.

4.1.3 Incident and Accident Procedures

Accidents and incidents occurring during the construction phase of the new ANE facility will be processed using the Transfield and Orica incident reporting systems.

This system of reporting and actioning includes the following occurrences:

- Injury;
- Equipment damage;
- Property damage;
- Environmental damage;
- Public liability exposure; and
- Business interruption;

The contractors will be required to report the number and classifications of all injuries. The Construction Manager will ensure they are appropriately investigated and actions taken to prevent recurrence.

The investigation team will include at least the worker(s) involved in the incident and the Transfield Health, Safety and Environment (HSE) Coordinator. Other personnel will participate as the need arises.

Corrective and preventive actions shall be monitored to ensure their effectiveness and where they require changes to standards, they shall be communicated throughout the organisations.

The HSE Coordinator may consult other personnel as appropriate, in determining the steps needed to deal with actions to prevent potential non-conformances, the initiation of the established preventive action and the monitoring of its effectiveness.

The Project Manager and Construction Manager will review all corrective actions proposed and ensure controls are implemented to prevent a recurrence.

Records of all incidents will be retained by both Orica and Transfield.

4.2 OPERATIONAL SAFETY

4.2.1 Safe Work Practices

The purpose of a safe work practice is to ensure the safe conduct of construction activities that could affect safety to personnel and/or damage equipment. Specifically this includes the opening of equipment or piping, isolation and tagging of electrical and mechanical energy sources, work that involves ignition sources, entry into confined spaces, use of heavy equipment (either fixed or mobile) and pipeline operations.

All work practices must conform to the most current provisions of any applicable Federal, State, local provisions or corporate requirements.

Safe work practice for this project includes the following activities:

- Project induction;
- START Right process;
- HSE Noticeboard where Safety Bulletins and Alerts are shown;
- Authority to work systems and permits (copies of selected pages for these permits are included in Appendix 4);
- Tool box meetings to review such issues as causes / learning from accidents and near misses and to respond to any poor performance at safety audits and inspections;
- Work methods to address particular safety risks / precautions / plans and are reviewed prior to the commencement of the work;
- Preparation of job safety analyses for hazardous activities and review of these documents with all personnel working on the job;
- Plant and equipment safety inspections;
- Use of protective clothing;
- Safe work instructions; and
- Specific training for new employees or if any safety training needs are identified.

4.2.2 Construction Safety Requirements

The project must fulfil the following safety requirements:

- The following personal protective equipment is to be worn, as a minimum, at all times: safety eye protection, high-visibility vest, shirt or jacket, hard hats, protective footwear, long sleeves / trousers and gloves and hearing protection shall be carried at all times in case of a requirement to use these items;
- Inductions are to be carried out for all employees, subcontractors and visitors, explaining all regulations and safety requirements;
- All medical treatment cases and lost time cases due to injury incidents are to be recorded. The target for lost time injuries is zero for this project;
- Personnel are to always verify and tag or lock all energy sources;
- No one is to remove another person's Danger Tag or Personal Lock without written authorization;
- Personnel are to always operate equipment and machinery within the defined safety limits;
- Tasks are not to be performed unless the person has the necessary qualifications;
- Personnel are to always obtain authorization before entering confined spaces;
- Personnel must never disable or override a safety device without written authorization;
- Personnel are to always protect against falling where they can fall more than 2 metres;
- Personnel must never work or travel under a suspended load;
- Personnel must always wear a seat belt when a vehicle is in motion;
- There will be a MSDS on site for all chemicals stored and handled;
- People displaying irresponsible personal behaviour will be given counseling and possibly subjected to disciplinary action; and
- Records of safety and environmental performance will be kept for the project.

4.2.3 Emergency Procedures

Like all existing Orica sites, there is an emergency response plan (ERP) which will continue to operate during the project construction period. The emergency procedures define the designated staff members and appropriate communication systems.

The construction project's emergency response plan has been developed to be complementary to the existing Orica ERP. Items covered in the project's ERP include:

- Responsibilities for emergency response;
- Emergency scenarios and the appropriate responses;
- Emergency equipment required;
- The process for initiating an evacuation;
- Evacuation procedure include evacuation routes;
- Method of accounting for personnel; and
- Emergency facility locations.

The Project Manager is responsible for ensuring that the project's emergency response plan is prepared and that adequate resources are provided for the control and management of emergency situations.

The Project Manager is responsible for ensuring that all necessary resources are available and they are fit for purpose, and that relevant personnel have been trained in their emergency response roles.

5 SAFETY AND QUALITY ASSURANCE

A number of elements are necessary to ensure that the new ANE facility will remain in a sound condition throughout its life. It is essential that the correct materials of construction and proper fabrication and installation techniques are used. A quality assurance system is designed to achieve this. It is also necessary to have committed people with clearly defined responsibilities and the appropriate training. There must also be appropriate safety reviews built into the work schedule and everything must be properly documented.

Together, all of these elements are referred to as the safety and quality assurance system. The systems which will operate during this project are discussed in the following sections below.

5.1 SAFETY AND QUALITY MANAGEMENT SYSTEMS

Overall, the existing Transfield health, safety and environmental procedures will be used as a basis for this project and implemented through the induction sessions. It is a site requirement that all personnel working on the project have a current site induction.

The management systems include requirements in the following areas:

- Management systems and responsibilities;
- Safety inductions;
- Plant, construction materials and equipment inspection, testing and recording procedures;
- Hazard identification, risk assessment and controls implementation;
- Compliance checks against standards, codes and legislation;
- Site emergency response plans;
- Employee and contractor management;
- Site safety committees;
- Accident and incident recording and investigation;
- Management of change;
- Authority to work systems;
- First aid; and
- Safety inspections and audits.

5.1.1 Work Process Control

From Ref 3, work packages are used to define the finite scope and element of work for supervision to initiate, perform and report against. The work packs provides quality standards required to complete the tasks to the satisfaction of the client.

Each Contractor / Sub-contractor is responsible for preparing and managing the work packages for their work area. These work packages will consist of a collection of work method statements and information, including:

- Scope of work for the package;
- References to any applicable standard(s) or specific procedures:
 - Safety;
 - Environment; and
 - Quality
- Any project interface considerations;
- Listing of the equipment and materials required;
- Safety and environmental issues, including Job Safety Analysis;
- Any delivery risks and the contingencies in place to deal with those risks;
- Listing of the applicable Inspection and Test Plans (ITPs) for assuring quality and performance with the constructed works;
- Schematic or graphical staging diagrams which show the key steps in the construction works including isolations and activity / off-line portions of the plant;
- Preparation works to be carried out prior to starting the work activities;
- Step-by-step work instructions to perform the work, including ITPs, task durations;
- Any interim or temporary operating conditions; and
- Listing of the quality assurance / control records required to be kept for this portion of the works (as referenced through the ITP).

The content of each construction work package integrates the HSE and quality requirements for the works being undertaken, including the records to be maintained to verify compliance with the project requirements.

All construction work packages are subject to HAZID (hazard identification) review to identify the required controls to be implemented to manage or mitigate

any identified risk / hazard in the construction method to be used, including any temporary works involved. This will ensure that identified hazards are managed in accordance with the processes and procedures outlined in the HSE Management Plan.

The Project Superintendent is responsible for the approval of work packages. Works will not commence unless the packages have been approved.

When developing and allocating work packages the following are to be considered:

- Work packages shall be defined such that the safety, environment, location, access and operations of each area are considered and understood by all stakeholders;
- Selection of packages or groups of packages that offer the contractor continuity of works and hence eliminate the potential for claims for loss of productivity caused by delays by other contractors' work / deliveries;
- Preferable selection of contractors with multiple work discipline capabilities, thereby minimising the requirement for multiple sub-contractors with horizontal work interfaces; and
- Defining the physical areas of the package to avoid unnecessary congestion.

5.1.2 Inspection, Testing and Audits

HSEQ inspection and test procedures are developed in accordance with statutory and site requirements to ensure all appropriate standards are implemented and maintained.

These may include but are not limited to:

- Inspection and audit checklists;
- Plant and equipment checklists;
- Safe Work Procedure audits;
- Quality audits;
- JSA quality reviews;
- Noise assessments;
- Hazardous substance assessments; and
- Gas testing.

Audits are conducted to verify whether activities comply with planned arrangements and to determine the effectiveness of Health Safety and

Environmental systems. Additional audits shall be conducted where a significant non-conformance has been identified.

The audits include an evaluation of:

- The project Construction Safety Management Plan including specific procedures and work instructions;
- Documentation and records; and
- Whether conformance to planned arrangements for environmental management has been achieved as outline in the environmental plan.

The Project Management Team will carry out system reviews to ensure commitment and compliance with audit schedules and the quality of delivery of daily safety system elements.

These scheduled audits will determine if the safety system, as set out in the Safety Management Plan, fulfils the intended purpose. The Audit Schedule and Plans will be audited regularly during the project with non-conformances logged for immediate corrective action by the Project Management Team or improvement for future projects as is appropriate.

Records of the audits carried out are to be maintained by the Project Management Team.

5.2 DESIGN AND CONSTRUCTION ASSURANCE

Design Assurance

Requirements for consultants and subcontractors to ensure that their design output complies with all applicable safety standards and Codes of Practice are specified in all agreements for any project. All applicable safety standards and Codes of Practice are identified and documented for each part of the consultant's / subcontractor's design.

Design safety reviews are assessed by the consultants and/or subcontractors within their internal design review / verification processes. Constructability and operational safety issues which are influenced by the design are reviewed by project personnel.

The Project Manager is responsible for ensuring that each designer certifies that their design has been verified against all applicable criteria.

Construction Assurance

Each Transfield representative and subcontractor employee and contractor is responsible for assuring all actions taken in construction are as required by the construction issue drawings. This covers materials of construction, components and fittings type, tolerances etc. The project manager has responsibilities that include organising inspections to ensure:

- Correct installation, labelling;
- Installation in accordance with the construction drawings and recording any field changes or errors in drawings. All changes require formal approval and the drawings to be updated;
- Safety of equipment brought on site and in use on site;
- Equipment integrity (welding test results, hydro test results, instrument loop test results etc);
- Correct materials of construction;
- Testing of all instrumented protective systems;
- Construction in accordance with specifications, codes, standards and regulatory requirements; and
- Records are kept in accessible form.

The purchase of material and services is controlled to ensure that Orica's requirements are met. All suppliers are evaluated on their ability to meet the company requirements prior to receiving an order.

Suitable records detailing the evidence of evaluation are retained, e.g. mill certificates for steel. New suppliers undergo an evaluation test prior to any involvement in a project.

A continuing evaluation of goods from suppliers is carried out to determine the controls to be placed over the suppliers. Records are maintained of these evaluations.

All purchases are initiated by raising a Purchase Order, approved and signed by an authorised person. All requirements applicable to the goods / services being ordered are included or referenced in Purchase Orders. This includes details such as the precise identification for the item, relevant technical standards and specifications and full description of services required.

There are occasions where subcontractors are required to submit a detailed plan that addresses applicable contractual and regulatory obligations (as determined by the Project Manager). All subcontractors' activities will be subject to regular surveillance and assessment by project personnel.

All suppliers are evaluated on their ability to meet the company requirements prior to receiving an order.

When required, evaluations may take the form of:

- Audits of subcontractor's organisation;
- Use of third party assessment service; and

➤ Incoming or in-process inspection.

5.3 ORGANISATION, PROCEDURES AND TRAINING

5.3.1 Project Organisation

From Ref 3, Table 4 on the following page provides the roles, responsibilities and accountabilities of key personnel within the ANE construction organisation.

Table 4 – Project Roles

Name and Role	Responsibilities
Max White ICD Project Manager	<ul style="list-style-type: none"> • Overall implementation of the project's management systems • Overall management of the design and construction functions on behalf of the project • Foster good relations with Client • Participate in the review of the effectiveness of the construction management system • Ensure development of the Construction Safety Management Plan • Ensure constructability input in Design Reviews • Chair Management Team Meetings
Col O'Brien Construction Manager	<ul style="list-style-type: none"> • Overall implementation of the project's construction management system • Overall management of the Construction function on behalf of the project • Overall management and compliance with all Plans and Procedures, within designated area of responsibility • Respond to and take the appropriate action where required to maintain project objectives, including timely delivery • Plan, coordinate, control and report upon construction activities • Foster good relations with Client • Provide constructability input in Design Reviews • Maintain the project's construction system, procedures and forms current for the applicable works • Take the required corrective action where deviations from procedures and processes occur • Participate in the review of the effectiveness of the construction management system • Ensure compliance with the Construction Safety & Environmental Management Plans

Name and Role	Responsibilities
	<ul style="list-style-type: none"> • Ensure constructability input in Design Reviews • Provide Construction Input to Management Team Meetings • Develop industrial relations (IR) strategies and manage IR issues that evolve from this strategy
<p>Ross Graham Civil Superintendent Mechanical Superintendent</p>	<ul style="list-style-type: none"> • Manage field construction activities in accordance with the Construction Plan and Project Schedule • Conduct the construction coordination meetings attended by all Supervisors, Field Engineers, Contractors and Subcontractors • Coordinate contractors & subcontractors' activities and monitor performance • Ensure compliance with the Project HS&E Management Plan and Communications Plan • Environmental responsibilities as specified in the HS&E Management Plan • Approve construction work packages and plans
<p>Ryan Bremmell Health Safety & Environmental(HSE) Coordinator</p>	<ul style="list-style-type: none"> • To assist in developing, implementing and monitoring systems and processes that provide for the health, safety and welfare of all Project employees. • To ensure that the outcomes desired from implemented HSE systems align with client requirements. • Ensure the “no injuries and no incidents” objective is shared by all through effectively leading people and encouraging safe behaviours; • Provide support and technical SHE guidance for personnel in the field; • Ensure Contractors / Subcontractors are aligned with the Projects safety requirements; • Ensure all personnel receive the specific Project induction. • Co-ordinate the implementation of the Safety, Health & Environmental Management Plans; • Carry out regular inspections of the work areas with the respective Project team members and verify the effective implementation of the SHE-MP through planned audits (Safety Walks); • Provide advice to supervision on the development of Project Specific Procedures and Job Safety Analysis

Name and Role	Responsibilities
	<p>(JSA);</p> <ul style="list-style-type: none"> • Assist contractor / subcontractors in their rehabilitation activities Ensure all Plant and Equipment is suitable for purpose, and maintained with regular inspections; • Maintain the Training Matrix and ensure photocopies of employee/contractor skills; competencies and licenses are for easy reference and audit purposes;
<p>Employees / Contractors / Subcontractors / Visitors</p>	<ul style="list-style-type: none"> • To provide support to all activities on the Orica ANE Project in a safe, effective and efficient manner. • Follow all reasonable instructions and work in compliance with all ANE Project Construction Safety and Environmental plans and procedures. • Report all incidents and near misses immediately and participate in investigations where required. • Abide by the ICD / Transfield Services & Orica's Wellbeing Policy and present for duties fit for work. • Ensure all plant and equipment is tagged correctly, fit for purpose and in good working condition. • Take responsibility for the safe working practices of others and ensure all personnel involved work in a safe manner. • Actively participate in Toolbox Talks, Workplace Inspections (audits) and other Safety Consultation process where required. • Only operate equipment you have been fully trained, certified and deemed competent in which to operate. • Quarantine defective tools and equipment that require repairs and advise the appropriate persons who will arrange repairs or replacement.

5.3.2 Procedures

The overall project is to be performed as per the requirements of the Orica and Transfield safety management systems. This system covers the management of all documentation in the companies and for project work.

The purpose of these systems is:

- To control all documents and data that relate to the management of the companies;

- To ensure that all documentation is reviewed and approved by authorised personnel prior to its issue; and
- To ensure that all documentation is available at required points of use and is of the latest revision.

Site specific procedures are developed from the Orica safety management system for the required construction activities. These will be used as appropriate during this project (as with all Orica projects), in particular, during the commissioning period.

5.3.3 Training

The following sections discuss training requirements in addition to the induction training discussed in Section 4.1.2.

Specialist Training / Certification

No employee, contractor or subcontractor will be permitted to perform work unless that person holds the required qualifications / licences; competencies and procedures are designed to support this objective.

All contractor / subcontract companies working on the project shall provide training matrix's as well as copies of certificates of competency / licences for all personnel engaged by ICD / Transfield Services prior to commencement. No work shall proceed if records of these certifications / licensing are not provided to the Transfield Services HSE Coordinator. Licences and certificates of individuals' competencies shall be presented at the Induction to copy and retain on file

Minimum Training

As a minimum, all personnel working on the project shall have:

- A General Construction Induction Card or state equivalent (i.e. NSW / National – White, VIC - Red Card, QLD – Blue Card, etc); and
- Attend the ANE project induction and deemed competent through an assessment.

Only after both requirements are satisfied shall personnel be issued an ID card and able to access the Orica Technical Centre Site and ANE Construction area.

A training card will also be issued to identify personnel who have completed specialist training (i.e. working at heights and confined space).

This training card will be marked with each type of training completed. The card must be carried on site at all times and the individual will be required to produce this card if requested. Any tampering or interference with these cards will be viewed as an extremely serious matter with the individual or groups access to site revoked.

Personnel who have licences and/or certifications stated earlier shall carry these cards with them and be able to produce them if asked whilst on the ANE construction site.

These requirements will be adhered to throughout the construction and commissioning phases for this project.

6 CONSTRUCTION PROGRAMS

The construction program is shown in Table 5 below.

Table 5 – Construction Program

Date:	Activity:
17 th February	Construction Management Team establish offices on the project site
21 st February	Asphalting of roads commences
2 nd March	Electrical and Instrumentation contract awarded
14 th March	Mechanical contractor commences work on the site
8 th April	Civil contractor finishes work (other than final asphalt course on roads), demobilises from site
10 th June	Mechanical contractor completes work in Plant Areas 2, 3 and 4 (main manufacturing areas)
4 th July	Electrical and Instrumentation contractor commences work on site
5 th August	Mechanical contractor completes work in Plant Areas 5 and 6 (raw materials storage and site services areas)
12 th September	Mechanical contractor completes work in Plant Area 1 (plant admin and water storage areas)
19 th September	Construction complete and plant is Ready For Commissioning (RFC)
20 th September	Final asphalt course laid in plant areas
5 th October	Introduction of chemicals onto site
5 th December	Commissioning complete and plant is Ready For Operation (RFO)

Given the construction safeguards outlined in Section 3 of this report, the likelihood of credible hazardous events having a significant impact on the construction schedule is low. Whilst some delays may occur, e.g. due to an incident or bad weather, these delays are expected to have negligible impact on the project with respect to safety and the environment. As well, there are no identified incidents that where the risk of propagation to neighbouring land users is considered unacceptable given the proposed control measures and the relatively large separation distances for this greenfield site.

There are events that can potentially occur during commissioning when the raw materials have been brought onto the site and product is being made. From a review of the PHA for this project (Ref 2), there are no new potential hazardous events that require further assessment and/or modelling. Therefore, it is concluded that the consequential impacts as determined by the PHA and its conclusions are valid for the commissioning period for this project.

7 MANAGEMENT OF CHANGE

An Orica procedure for the management of change exists and is used to assess modifications made to plant or equipment, operational practice, project scopes, transport, procedures and organisational structure to ensure that the risk of potential hazardous events from such modifications is acceptable. The procedure requires the approval of various personnel at different stages during implementation of the modification. One significant component is a safety, health and environmental review to determine the extent of any impacts that occur with the modification and to ensure that appropriate control measures are put in place prior to commissioning or operation of the modification. The Orica Project Manager has the main responsibility for ensuring that the procedure is adhered to for all modifications.

Depending on the outcome of the review, a HAZOP might also be required to assess potential risks.

Reviews are also performed at the pre-commissioning, commissioning and post-commissioning stages to ensure the approved change is built to the design and operational intent (i.e. Orica's hazard studies 4 and 5).

A register of all approved modifications is kept by Orica.

The modification form used for detailing and managing modifications on this project is attached in Appendix 5. Any changes after the final design for the new ANE Plant by Orica will be subject to assessment by this procedure.

8 GLOSSARY

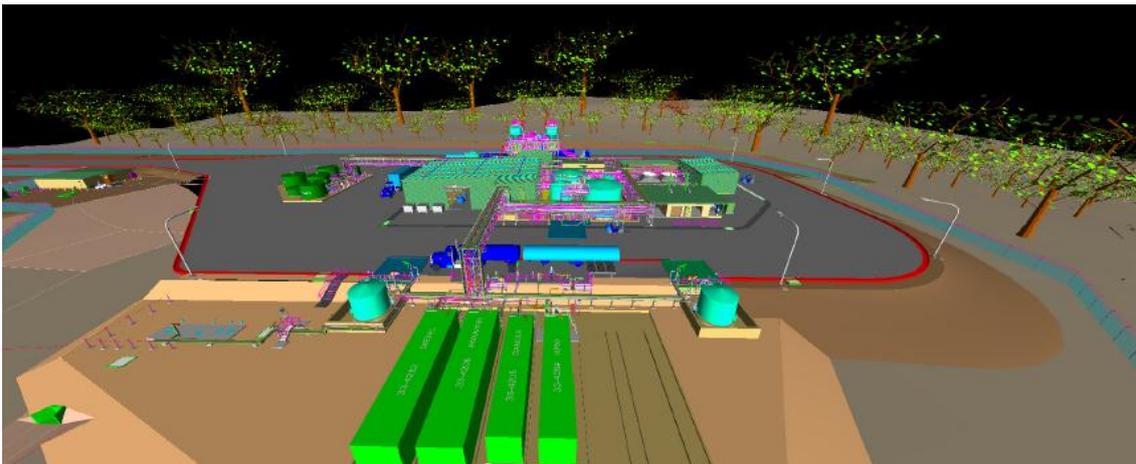
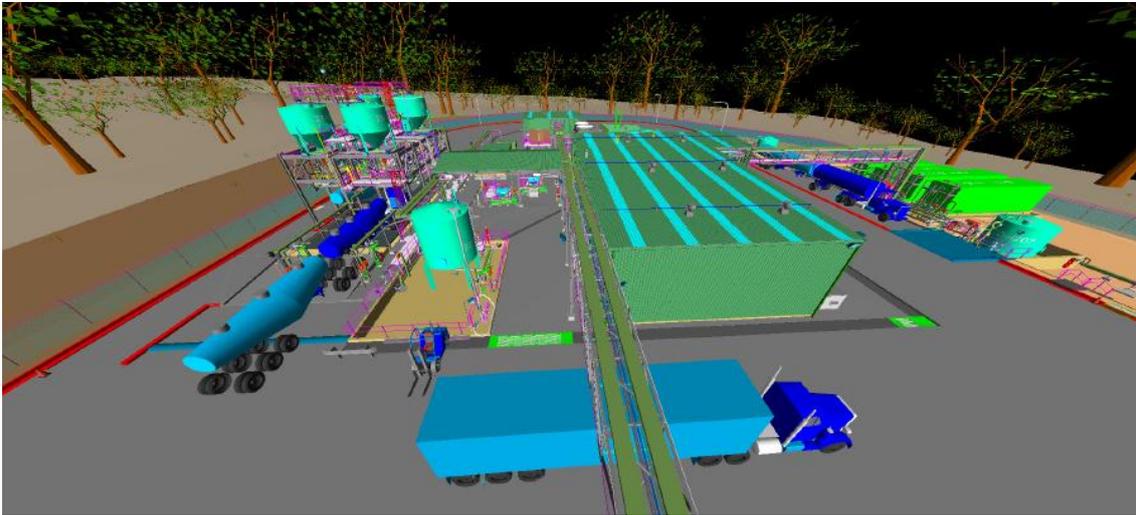
AN	Ammonium Nitrate
ANE	Ammonium Nitrate Emulsion
CMP	Construction Management Plan
CSS	Construction Safety Study
DGR	Director General Requirements
DoP	Department of Planning
EPCM	Engineering, Procurement and Construction Management
ERP	Emergency Response Plan
HAZID	Hazard Identification
HAZOP	Hazard and Operability Study
HIPAP	Hazardous Industry Planning Advisory Paper
HSE	Health, Safety and Environment
IR	Industrial Relations
ITP	Inspection and Test Plan
JSA	Job Safety Analysis
LTI	Lost Time Injury
ML	Mixing Laboratory
MSDS	Material Safety Data Sheet
MTI	Medical Treatment Injury
PHA	Preliminary Hazard Analysis
PPE	Personnel Protective Equipment
RL	Research Laboratory
RM	Research Magazine
QA	Quality Assurance
QS	Quality Service
RFC	Ready for Commissioning
RFO	Ready for Operation
SH&E	Safety, Health and Environment
START	Stop, Think, Assess, Review and Talk

Appendix 1

Relevant Construction Drawings

Construction Safety Study for the Ammonium Nitrate Emulsion Plant, Orica, Kurri Kurri

Appendix 1 – Relevant Construction Drawings.





Appendix 2

Summary of the Construction Safety Management Plan

Construction Safety Study for the Ammonium Nitrate Emulsion Plant, Orica, Kurri Kurri

Appendix 2 – Summary of the Construction Safety Management Plan

**ORICA AMMONIUM NITRATE
EMULSION (ANE) MANUFACTURING
FACILITY, KURRI KURRI**

**CONSTRUCTION SAFETY
MANAGEMENT PLAN**

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Appendix 3

Construction Hazard Study Guide Words

Construction Safety Study for the Ammonium Nitrate Emulsion Plant, Orica, Kurri Kurri

Appendix 3 – Construction Hazard Study Guide Words

Main Headings Only:

Site Constraints

Sequence

Access

Movement of Material and Personnel

Transport and Siting

Demarcation

Airborne / Atmospheric

Liquids

Solids, Slurries, Sludges

Health and Toxicology

Major Risk Factors

Structural Aspects

Lifting

Lighting

Electrical Hazards

Risk to Existing Facilities

Risk from Existing Facilities

Effect on Existing Services

Special Services

Appendix 4

Authority to Work

Construction Safety Study for the Ammonium Nitrate Emulsion Plant, Orica, Kurri Kurri

Appendix 4 – Authority to Work

	<h2 style="margin: 0;">AUTHORITY TO WORK</h2> <p style="margin: 0;">Orica ANE Plant Construction</p>	<h2 style="margin: 0;">AREA 1</h2> <p style="margin: 0;">ATW no: </p>																		
<p>1) Company requesting ATW:.....</p> <p>Job Fronts:.....</p> <p>Work Location(1)..... Description of Work Task(1).....</p> <p>.....</p> <p>Work Location(2)..... Description of Work Task(2).....</p> <p>.....</p> <p>Work Location(3)..... Description of Work Task(3).....</p> <p>.....</p> <p>Work Location(4)..... Description of Work Task(4).....</p> <p>.....</p> <p>ATW Receiver:..... Duration: From, Time:..... am/pm Date:...../...../.....</p> <p>Contact Number:..... To, Time:..... am/pm Date:...../...../.....</p> <p>Equipment / Machinery / Plant Utilised:.....</p> <p>.....</p> <p>.....</p>																				
<p>IF THE WORK INVOLVES OR IS NEAR ORICA TECHNICAL CENTRE SERVICES OR ROADWAYS AN ORICA PERMIT MUST BE OBTAINED FROM GRAHAM ARMSTRONG</p>																				
<p>2) Work Task Hazards: The work tasks performed under this Authority to Work contain the following hazards.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Working at Height</td> <td style="width: 33%; border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Cranes</td> <td style="width: 33%; padding: 5px;"><input type="checkbox"/> Hydrostatic Testing</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Confined space:</td> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Mobile Plant</td> <td style="padding: 5px;"><input type="checkbox"/> Excavation / Penetration</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Radiation</td> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Hot work</td> <td style="padding: 5px;"><input type="checkbox"/> Electrical Equipment</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Hazardous Substances / Dangerous Goods</td> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Hand Tools</td> <td style="padding: 5px;"><input type="checkbox"/> Scaffolding</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Compressed Air</td> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Power Tools</td> <td style="padding: 5px;"><input type="checkbox"/> Manual Handling</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Utility / Services</td> <td style="border-right: 1px solid black; padding: 5px;"><input type="checkbox"/> Noise</td> <td style="padding: 5px;"><input type="checkbox"/> Explosive Power Tools</td> </tr> </table>			<input type="checkbox"/> Working at Height	<input type="checkbox"/> Cranes	<input type="checkbox"/> Hydrostatic Testing	<input type="checkbox"/> Confined space:	<input type="checkbox"/> Mobile Plant	<input type="checkbox"/> Excavation / Penetration	<input type="checkbox"/> Radiation	<input type="checkbox"/> Hot work	<input type="checkbox"/> Electrical Equipment	<input type="checkbox"/> Hazardous Substances / Dangerous Goods	<input type="checkbox"/> Hand Tools	<input type="checkbox"/> Scaffolding	<input type="checkbox"/> Compressed Air	<input type="checkbox"/> Power Tools	<input type="checkbox"/> Manual Handling	<input type="checkbox"/> Utility / Services	<input type="checkbox"/> Noise	<input type="checkbox"/> Explosive Power Tools
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<input type="checkbox"/> Utility / Services	<input type="checkbox"/> Noise	<input type="checkbox"/> Explosive Power Tools																		
<p>3) Control Measure Documentation: The following items must be provided / implemented prior to the tasks commencement.</p> <p>Job Safety Analysis (JSA) no:..... Utility / Services Schematic/Diagram no:.....</p> <p>Confined Space Permit no:..... Isolation no:.....</p> <p>Confined Space Rescue Plan no:..... Lift Study no:.....</p> <p>Working at Heights Rescue Plan no:.....</p>																				
<p>4) Issue of Authority to Work</p> <p>I hereby certify, as an authorised ATW Issuer, this ATW to be implemented in accordance with the approved control measure set out in the documents marked in section 3 and understand my duties and responsibilities as the ATW issuer.</p> <p>ATW Issuer:</p> <p>Name:..... Time:.....am/pm Date:...../...../.....</p> <p>Signature:.....</p>	<p>I, the ATW Receiver of this ATW hereby certify that I understand my responsibilities and duties to ensure that all approved control measures have been implemented and that all personnel involved in the task specified in the ATW are aware of these control measures. I will not allow the task to commence until I have checked that these control measures have been implemented and am satisfied that the task can be carried out safely. In the event that the work scope or methodology of the task changes, or ATW duration expires I shall suspend the work and return this ATW to the ATW Issuer for review.</p> <p>ATW Receiver:</p> <p>Name:..... Time:.....am/pm Date:...../...../.....</p> <p>Signature:.....</p>																			

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5) Transfer of Authority to Work

- I have read & understand the Authority to Work and its requirements
- I am certified to receive Authority to work
- I am receiving this Authority to Work in the presence of the current Authority to Work Receiver
- I shall be responsible as the Authority to Work Receiver and as such accept the roles responsibilities from the time of transfer shown below.

Transferred from	Signature	Transferred to	Signature	Date	Time(hrs)

6) Sign On / Off Work Team Members

- A person signing this Authority to Work has read it and understands it.
- A person who has signed the Authority to Work in "Column A" shall not commence work until the ATW Receiver has notified them that the ATW has been authorised
- A person who has finish work under this ATW shall sign "Column B"

Column A				Column B		
- I am competent and qualified to carry out my work - I understand the contents of this Authority to Work. - I am satisfied that control measure set out in section 3 & 4 documents will allow me to carry out my work safely. - I understand that I cannot commence "The Works" until I have been notified by the ATW holder that the ATW is authorised.				- I have finished all work activities. - I have cleaned my work area and removed all non essential materials & equipment		
Print Name	Signature	Time	Date	Signature	Time	Date

7) Closure of Authority to Work

WORK COMPLETION		ATW HANDBACK	
All work activities under this ATW complete?	YES / NO	ATW Hand-back review carried out	YES / NO
Did any incidents occur whilst carrying out the work?	YES / NO	Area satisfactorily cleaned	YES / NO
		ATW Accepted & closed	YES / NO
ATW receiver:	Signature:	ATW Issuer:	Signature:

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Appendix 5

Modification Form

Construction Safety Study for the Ammonium Nitrate Emulsion Plant, Orica, Kurri Kurri

Appendix 5 – Modification Form

Design Deviation Request

		CHANGE REQUEST		
Project:	KIEG1150	Kurri Kurri ANE Plant		
Number: CR-045	Date Initiated:	Page 1 of 1		
A. TO BE COMPLETED BY PARTY REQUESTING THE CHANGE				
Title:				
Description of Change Requested (define all attachments)				
Proposed Action (define all attachments)				
Requested by Name/Position		Signature		Date
B. TO BE COMPLETED BY ORICA PROJECT MANAGER				
Comments /Recommendations				
Effect on Cost:			Effect on Project Completion Date:	
C. APPROVALS				
Lead Engineer 1	Lead Engineer 2 (if req'd)	EPCM Manager	Project Manager	Project Owner (if req'd)
Date:	Date	Date	Date:	Date

9 REFERENCES

- 1 Department of Planning, *Hazardous Industry Planning Advisory Paper N° 7 – Construction Safety Study Guidelines*, NSW Government, Sydney
- 2 SHERPA Consulting, *Proposed ANE Facility, Kurri Kurri Technology Centre, Preliminary Hazard Analysis*, October 2009
- 3 ICD and Transfield Services, *Orica Ammonium Nitrate Emulsion (ANE) Manufacturing Facility, Kurri Kurri, Construction Safety Management Plan*, October 2010