ADDENDUM TO THE

CONSTRUCTION SAFETY STUDY REPORT FOR

TRANSPACIFIC REFINERS PTY LTD

PROPOSED RESOURCE RECOVERY AND RECYCLING FACILITY

AT 11 KYLE ROAD,

RUTHERFORD, NSW

Date:

12th March 2007

Transpacific Industries Pty Ltd
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ADDENDUM TO THE CONSTRUCTION SAFETY STUDY REPORT FOR TPR RUTHERFORD

Acknowledgement

The audit team would like to thank all staff from Transpacific Industries Group Limited and Transpacific Refiners (TPR) that participated in the review of the existing Construction Safety Study and this addendum to the Construction Safety Study conducted on 12th March 07.

Disclaimer

Transpacific Industries Group's OHSET NSW Team prepared by as part of the Conditions from Project Approval issued by the Minister for Planning NSW on 14 Oct 1997 for the operation of Transpacific Industries Group Limited (operating as Transpacific Refiners) resource recovery and recycling facility at Rutherford, NSW. The content of this report, including the findings and recommendations, are based on the information provided during the review of the construction safety study and to the best of the knowledge of the OHSET team.

This report is an addendum to the Final Construction Safety Study issued in August 2006 and should be read in conjunction with the Final Construction Safety Study.

Rev	Date	Description	Reviewed by	Authorised by
A	12th March 07	Addendum Report	Ken Telfer Malcolm Gilmour	Kevin Middlebrook

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1 OUTLINE OF PROPOSED AND EXISTING OPERATIONS

The facility will be purpose built to store and treat by means of hydrogenation and flash point correction used oil. Used oil that as under gone treatment such as propane de-asphalting and vacuum distillation will be purchased as feedstock.

Site Location

Land to be developed:

Lot 223 DP 1037300

11 Kyle Street

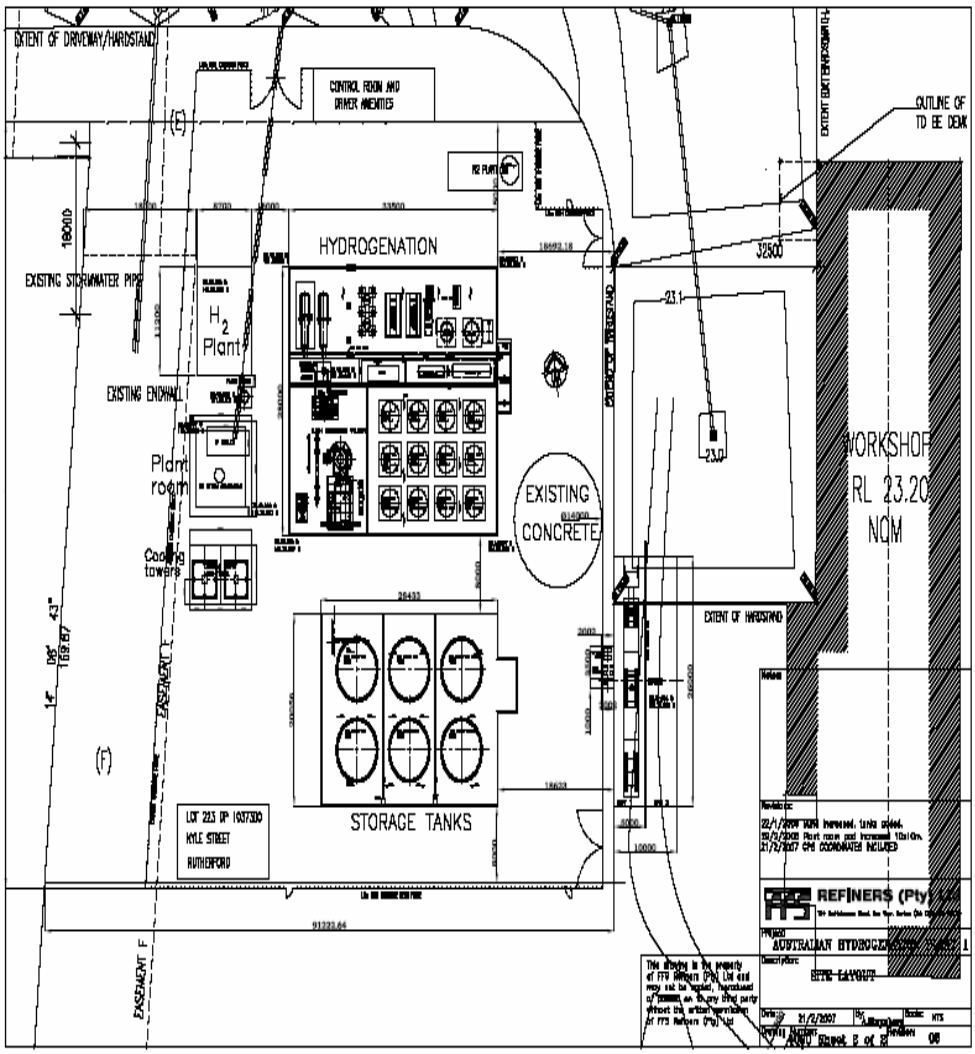
RUTHERFORD NSW 2320

Parish of Gosforth, Maitland Local Government Area

Proposed development construction and operation of a resource recovery and recycling facility including lube oil recycling by hydrogenation and used oil transfer station.

Site Layout

Figure 1 - Foundations and Bunding Civil Plan



Purpose of the Proposed Operations and the Major Steps in the Process

The proposed resource recovery and recycling treatments proposed at the Facility include:

- Oily water treatment and waste oil transfer station to separate the water phase from oils and store lube oils in preparation for the hydrogenation process
- Lube oil hydrogenation process to completely recycle oil to refinery grade lubricant specification
- Flashpoint correction of processed used oil

1.1 Existing Operations

The hazard assessment is based on the following broad characteristics of the plant and the surrounding area.

- The site is generally flat, with a number of existing buildings that will be converted for use in the waste recovery operation. It is proposed to locate the hydrogenation plant and tank farm in the south-west corner of the site. An existing pond and drainage easement on the western and southern sides of the property provide a buffer area between the plant and adjoining properties.
- It is proposed that the hydrogen and hydrogenation plants will be constructed outside without any confining structures and separated from the rest of the facility. This minimises the risk of any accumulation of flammable gases and maximises the opportunities for fire fighting in the event of a fire.
- The area immediately surrounding the site is currently zoned for industrial activities, and the activities proposed are considered to be compatible with neighbouring businesses. To the west of Kyle Street the land is zoned rural. To the north of the New England Highway (at a distance of approximately 300 m) the land is zoned rural, special purpose (airport) and open space/recreation. The closest area zoned for residential use is over 1.5 km to the east.
- Existing activities in surrounding areas include transport depots and waste handling facilities. The occupancy is not expected to be high, and an average of 5 persons per hectare has been assumed for the purpose of the hazard assessment for the surrounding area (including the rural area to the west) within the maximum likely effect radius for the operations (typically not more than 100 m but up to 200 m, see summary in section 4.4).
- There are no sensitive locations or land uses in the vicinity (up to 500m) that would be expected to attract any significant assemblies of people.

1.2 Major Contractors to be used

Hutchinson Builders (J Hutchinson Pty Ltd) – Civil and Project Management

ABN 52 009 778 330
31 Staple St
Seventeen Mile Rocks Q 4073
PO Box 3075
Darra Q 4076
Ph: (07) 3376 4044
Fax: (07) 3376 2454
Project manager:
Peter Holling
Mobile: 0418 755 516

Downer Engineering (Electrical & Instrumentation)

Project Manager
Paul Chircop
Mobile: 0418 273 857
Phone: (02) 4922-9886
paul.chircop@downerengineering.com.au

Project Supervisor
Mick Cummings
mick.cummings@downerengineering.com.au
Mobile: 0400 389 126
Phone: (02) 4922-9800

LMWS (Structural & Piping)

Site Supervisor

Carl Willits

Phone: 02 49752400

Mobile: 04 27 657170

accounts@lmws.com.au

Site Leading Hand

Ben Taylor

Mobile: 0402 1869 23

H&M (Fabrication – Tanks and Walkways and painting)

Site Supervisor

Craig Sills

Mobile: 0427 326 088

Transpacific Industrial Solutions (Painting – H2P)

Site Supervisor

Paul Beagley

Mobile: 0408 056 612

2 STUDY METHODOLOGY

The methodology employed in this addendum to the Construction Safety Study is generally in accordance with AS/NZS 4360:2004 Risk Management, and relevant Department of Planning guidelines:

- Hazardous Industry Planning Advisory Paper: No 4 (HIPAP No 4) Risk Criteria for Land Use Planning (DUAP 1997a)
- Hazardous Industry Planning Advisory Paper: No 6 (HIPAP No 6) Guidelines for Hazard Analysis (DUAP 1997b)

In accordance with HIPAP No 6 (DUAP 1997b), the Construction Safety Study process followed was generally as follows:

- Identify all possible sources and causes of hazardous incidents
- Detail all operational and organisational safety controls
- Identify the likely consequences and frequency of incidents and quantify the risks for the most relevant hazards identified where possible
- Assess risks
- A compare expected risks against risk criteria detailed in HIPAP No 4
- Assess the adequacy of proposed mitigation measures and controls.

However, for the purpose of this addendum to the construction safety study, the level of assessment has been limited in accordance with the AS/NZS 4360:2004 and Handbook HB 436:2004 Risk Management Guidelines.

The study was conducted using a workshop approach, whereby s number of people involved with the construction activities were gathered to identify hazards, assess risks and develop risk reduction measures where appropriate.

During the study, the major safety systems for the construction of the Flash Point Correction Column (FPCC), Thermal Oil Heating System and the Scrubber were reviewed, from which sub safety systems were identified. In the workshop study, the project schedule was first defined and the hazards identified for each activity in the schedule. Each hazard was assessed for consequence and likelihood and proposed safeguards assessed. Where the risk was identified to be excessive, risk reduction measures were developed and recommended for inclusion in the proposed construction plan and operations.

The workshop study was conducted on Monday 12th March 2007. As the construction progress an additional review will need to be conducted to further develop the hazard analysis and control mechanisms. This Study was conducted in conjunction with all the studies required in the development conditions of consent issued by the Minister for Planning.

2.1 The Construction Safety Study Team

The Study team participants consisted of:

Ken Telfer – Environmental Scientist

Kevin Middlebrook – Industrial Chemist

Malcolm Gilmour – Site Compliance Manager

The above team was assisted by:

Stuart Douglas – TIG Project Manager

Anthony Steynberg – FFS Design Engineer

Copies of the Construction Safety Study Team's qualifications have been included in the Appendix Section.

3 HAZARDS IDENTIFIED AND PROPOSED SAFEGUARDS

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
REMOVAL & DEMOLITION OF EXISTING PLANT AND STRUCTURES INCLUDING CONCRETE, UNWANTED STRUCTURES, ROOFING AND CLADDING *The construction of the hydrogenation plant requires the demolition of one tank, pervious use is unknown however and it is assumed that the prime use of the tank was for the storage of water for the processing of textiles.*	No changes to the Original Construction Safety Study conducted in August 2006		
AREA	**HAZARD IDENTIFICATION**	**CONSEQUENCES**	**PROPOSED SAFEGUARDS**
CONTAMINATION FROM REMOVAL & DEMOLITION Due to the fact that the area for the construction of the hydrogenation plant had no known prior use, it is not expected to find contamination.	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
HAZARDOUS MATERIAL FROM DEMOLITION AND CONSTRUCTION	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
EXCAVATION HAZARDS FROM TRENCHES & CONDUITS FOR UTILITIES & PIPES **CIVIL CONSTRUCTION WORKS INCLUDING FOUNDATIONS, FOOTINGS, FLOORS, PITS & BUNDS** Existing operations on the site consist of a workshop and administration. It is not expected that excavation will have any significant impact on the other operations on the site. Excavation is to a maximum depth of 500 mm.	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
CONSTRUCTION OF TILT SLAB WALLS, WHERE REQUIRED	Not applicable. There were no tilt slab walls used in construction.		
INTERACTION WITH OTHER OPERATIONS This is a dedicated demolition and construction site with limited interaction with other operations. Existing operations on the site consist of a workshop and administration. There is no impact on the neighbouring businesses	Impacts on the local traffic flows due to traffic entering and leaving the site and possibility of motor vehicle accidents – No change to the Construction Safety Study conducted in August 2006	• Equipment damage by vehicle collision • Contractors or employees struck by mobile equipment, eg, trucks, mobile cranes, cherry pickers, etc	• Ensure all vehicles entering or leaving the site are clean and the load securely stowed. • All documentation and loads are inspected prior to entry or departure from the site. • All visitors and contractors will be required to report to the office before entering the facility. • All drivers to be appropriately licensed and inducted. • All transportation activities conducted on the site (movements, parking, transfers, loading and unloading) are supervised by site personnel.
STORWATER DRAINAGE The demolition and construction site has no impact on the drainage of the existing operations	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
CONSTRUCTION SITE AFFECTED BY NATURAL EVENTS	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
FOUNDATIONS, ROADWAYS, KERBING & CHANNELLING AROUND THE HYDROGENATION PLANT	No changes to the Original Construction Safety Study conducted in August 2006		
INSTALLATIONS OF TANKS, VESSELS & MAJOR PLANT	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
INSTALLATION OF CLADDING & WALLS	No changes to the Original Construction Safety Study conducted in August 2006		
CONNECTION OF PIPE WORK FOR TANKS & PROCESSES	• No changes to the Original Construction Safety Study conducted in August 2006.		
INSTALLATION OF ELECTRICAL SYSTEMS	• No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
PAINTING	No changes to the Original Construction Safety Study conducted in August 2006		
HAZARDOUS MATERIAL USED DURING COMMISIONING Materials used during the commissioning are the same as the materials used during full plant production.	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
COMMISSIONING ***PLANT & HARDWARE***	No changes to the Original Construction Safety Study conducted in August 2006		
COMMISSIONING ***PLANT FAILURE OF COMPONENTS AND NIL STOCK FOR REPLACEMENTS***	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
COMMISSIONING ***ELECTRICAL SYSTEMS***	No changes to the Original Construction Safety Study conducted in August 2006		
COMMISSIONING ACTIVITIES	No changes to the Original Construction Safety Study conducted in August 2006		

AREA	HAZARD IDENTIFICATION	CONSEQUENCES	PROPOSED SAFEGUARDS
COMMISSIONING OF HYDROGENATION PLANT	Incorrect sequencing of commissioning • Purge air from HP system with Nitrogen. • Introduce Hydrogen. • Nitrogen purge LP system and conduct vacuum leak test. • Commence Cold feed circulation. • Isolate air pump and test.	Emergency plant shutdown, air emissions, human health effects and possible injury or fatality	• Document Job Safety and Environmental Analysis (JSEA) completed prior to the commissioning and start up of plant. • Ensure employees are trained in the start up JSEA/SOP and commissioning procedures • Comprehensive procedures SOP HGP 02
COMMISSIONING OF FLASH POINT CORRECTION COLUMN FPCC	• Undetected overflow of thermal process oil at the expansion tank and/or overflow tank-causing spill of thermal oil at elevated temperature. • Low level of thermal oil potential overheating potential fire/explosion • Leaks of thermal oil • Impact of other processes causing hazardous situation		Sequencing of commissioning to ensure that the HGU and FPCC process paths are individually and adequately tested to ensure there is no impact on each process prior to full operation.

Table 1 – Table of Hazards Identified and Proposed Safeguards

4 HAZARDS IDENTIFIED AND PROPOSED SAFEGUARDS

All operational safeguards necessary for safe construction and commissioning of the resource recovery and recycling facility have been reviewed and are referenced in Hutchinson Builders Construction Workplace Site Plan and Site Specific Environmental Management Plan and have been included in the previous table.

- Work entry permit systems
- Hot work
- Isolation/tagging
- Control on site contractors
- Access arrangements
- Emergency procedures
- MSDS
- Operating procedures
- Demolition
- Construction
- Commissioning
- Adjacent plant
- Fire Safety – Fire Fighting
- Incident/injury reporting systems
- Training/qualifications requirements
- Emergency procedures – emergency plan
- Head count

Responsibility for implementation of the operational safeguards during demolition, construction and relocation activities rests with Hutchinson Builders but will be verified by Transpacific Industries Group. After project completion and handover responsibility will rest with Transpacific Industries Group who will implement a parallel set of safeguards.

The following documentation were reviewed during the hazards identification:

- Transpacific Industries Group Report on Fire Protection Requirements written by Engineered Fire and Safety Solutions.
- Transpacific Industries Construction Environmental Management Plan.

- Statement and Commitment for the Resource Recovery and Recycling Facility written by Parsons Brinckerhoff.
- Environmental Assessment Volume 1 Resource Recovery and Recycling Facility written by Parsons Brinckerhoff and associated appendices (A to O)
- Industry Emergency Planning Guidelines, Written by the Department of Planning. HIPAP No 1.
- Fire Safety Study Guidelines, Written by the Department of Planning. HIPAP No 2.
- Risk Assessment. Environmental Risk Impact Assessment Guidelines. Written by the Department of Planning. HIPAP No 3.
- Risk Criteria for Land Use Safety Planning, Written by the Department of Planning. HIPAP No 4
- Hazard Audit Guidelines, Written by the Department of Planning. HIPAP No 5.
- Guidelines for Hazard Analysis, Written by the Department of Planning. HIPAP No 6.
- Construction Safety Study Guidelines, Written by the Department of Planning. HIPAP No 7.
- HAZOP Guidelines, Written by the Department of Planning. HIPAP No 8.
- Safety Management, Guidelines for the Development for Safety Management Systems, Written by the Department of Planning. HIPAP No 9.
- Hutchinson Builders, Site Safety Rules.
- Hutchinson Builders, Site Specific Environmental Management Plan.
- Hutchinson Builders, Construction Workplace Site Plan.
- Process Flow Diagram 4300.
- Process Flow Diagram G5269-00-001rc
- HAZOP Comprehensive Guide to HAZOP, written by the CSIRO.
- Rutherford Waste Recovery Facility, Preliminary Risk Assessment. Written by Parsons Brinckerhoff.

5 SAFETY ASSURANCE

A Construction Workplace Site Plan and Site Specific Environmental Management Plan prepared by Hutchison Builders and the Construction Environmental Management Plan prepared by Transpacific Industries Group have been evidence as providing a suitable safety assurance program for the following:

- Removal and demolition of concrete, unwanted structures, roofing and cladding
- Installation of trenches and conduits for utilities and pipes
- Civil construction works including foundations, footings, floors, pits and bunds
- Construction of tilt slab walls, where required
- Installation of roofing
- Installation of stormwater drains
- Completion of roadways, kerbing and channelling
- Installations of tanks, vessels and major plant
- Installation of cladding and walls
- Connection of pipe work for tanks and processes
- Installation of electrical systems
- Painting

Upon completion of construction activities and prior to commissioning Transpacific Industries Group will conduct a safety review of the plant to review the fabrication and materials of construction. Following commissioning activities and prior to operation a further review will be conducted to verify plant performance and systems operation. Transpacific Industries Group will implement TIG COR SP 0037 Auditing Procedure for audit and recording of the review results. The nominated auditors should develop a checklist, which may be used to assist the auditors to identify and record assessments results.

The Pre- Start Up Safety Review will follow the protocol defined in the Hazardous Industry Planning Advisory Paper No. 7.

In addition Transpacific Industries Group will review its safety assurance system to include the following items:

- Document Control including technical drawings and changes
- Training / Qualifications
- Routine Maintenance Inspections

5.1 Elements of Safety Assurance System

The Plans address the following issues.

5.1.1 Involvement of all Participants

Both plans have been implemented on site and are being used by Hutchison Builders and major contractors involved in the construction of the resource recovery and recycling facility at Rutherford.

People working on site are inducted and the Hutchison Builders' Project Manager keeps records of these inductions.

5.1.2 Documentation

Hutchison Builders, FFS Refiners and Transpacific Industries Group are carrying out document Control for all processes and procedures including drawings, plans, etc. All documents are kept in the project management office. Copies of applicable procedures are issued to the major contractors.

5.1.3 Materials for Construction

Hutchison Builders and FFS Refiners have specified all the construction materials to be used on site. Inspection of plant and equipment to be installed on site are verified by Hutchison Builders.

Field inspections and material verification have been included in the plan and are carried out periodically.

5.1.4 Fabrication

Hutchison Builders are responsible to verify the fabrication of components that are important for the safe operation of the plant. Fabrication requirements have been specified were part of the selection of contractors (refer to section 1.5 Major Contractors to be Used).

Certificate of Compliance for electrical installations, gas installations, etc will be reviewed and kept by Hutchison Builders. At the end of the construction the Site Manager shall keep these records.

5.1.5 Installation

A detailed Project Management Plan for the Resource Recovery and Recycling Plant Construction has been prepared and are controlled by TIG Project Manager. The project plan includes critical stages and identifies critical inspection points and verifications.

5.1.6 Critical Verifications/Safety Reviews

Critical verifications, which are required before further work has been identified in the Project Management Plan and are carried out by Hutchison Builders.

5.1.7 Training Qualifications

Training qualifications have been specified in both plans. Copies of qualifications are kept by Hutchison Builders. These should include copies of statutory licences from the Regulators.

5.1.8 Definitions of Responsibilities

Roles and responsibilities for the project have been documented in the Plans and these have been communicated to all the stakeholders.

5.2 Scheduling of Safety Assurance

Implementation of the safety assurance system has been carried out by Hutchison Builders in accordance with the above plans.

5.3 Review of Safety Assurance System

Transpacific Industries Group will conduct periodical safety audits during the construction stage. This will ensure that the current safety system is adequate and are properly implemented.

Hutchison Builders will also conduct safety inspection in accordance with the above plans.

Records of these audits shall be kept and actions recommended must be implemented.

6 DEMOLITION/CONSTRUCTION

The Construction Environmental Management Plan, Construction Workplace Site Plan and Site Specific Environmental Management Plan summarised the proposed construction and commission plan/process. The detailed procedures and construction plans have been developed by Hutchinson Builders.

It is noted, however, that Hutchinson Builders is a reputable building company, who have constructed a considerable number of facilities in Australia. An example of the detail, which Hutchinson Builders endeavour to achieve, is demonstrated in the Construction Workplace Site Plan and Site Specific Environmental Management Plan.

7 MANAGEMENT OF CHANGE

Transpacific Industries Group, Hutchison Builders and their contractors will operate a change management system (Hydrogenation Plant Q & A's on Process Design and Operations) to encompass all changes to the plant or project. This system will include reference to safety aspects and requirements for notification to relevant authorities. It will be signed off by both Transpacific Industries Group and Hutchison Builders. Final approval in the changes will be done by FFR.

The proposed change management document that is used during the project has been included at Appendix 5. The document contains hazard assessment and review requirements for the modification of the project program and permanent modifications of hardware/operational safeguards, which are critical components of any change management system.

8 GLOSSARY AND ABBREVIATIONS

AS/NZS	Australian Standards / New Zealand Standards
CFS	Chemical Fixation, Stabilisation and Solidification
DIPNR	Department of Infrastructure and Natural Resources
DUAP	Department of Urban Affairs and Planning
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
FFS	FFS Refiners
FPCC	Flash Point Correction Column
HAZOP	Hazard and Operatibility Study
HIPAP	Hazardous Industry Planning Advisory Paper
MSDS	Material Safety Data Sheet
OHSET	Occupational Health, Safety, Environment & Training
P&ID's	Piping and Instrumentation Drawing
PPE	Personal Protective Equipment
SG	Specific Gravity
TIG	Transpacific Industries Group Ltd
TPR	Transpacific Refiners
UPS	Uninterrupted Power Supply

9 APPENDICES

RESUME SUMMARY	
Name:	*Malcolm Gilmour*
Title:	*Regional OH&S Manager NNSW* *Transpacific Industries Group LTD*

Tertiary Education Details
Graduate Certificate Occupational Health & Safety, University of Newcastle.
Certificate IV Workplace Safety, Newcastle TAFE
Certificate IV in Assessment and Workplace Training. Strategic Training Solutions
Advance Occupational Health & Safety Management Course. NSCA
Occupational Health & Safety Line Supervisor. Internal Training
Rehabilitation Coordinator. NSCA.
Internal Quality Auditor. Quality Australia Services.
Work Cover "Workplace Committees" course. NSCA
Asbestos Removal Certificate, Newcastle TAFE.
Senior First Aid Certificate, St Johns Ambulance.
Confined Space Trained, Combined Safety Services.
Roche "drug of abuse" training course and DS – 190M3 ALCOMASTER (Breath Analysis).
Plant Operators Instructors Course. HPOTS
WorkCover Plant Tickets for, Front end loader, Mobile Crane, Forklift, Excavator, Certificate of competency – crane chaser,
Dangerous Goods Licence Classes 2,3,4,5,6.1,9.
MC Truck licence
Roche "drug of abuse" training course.

Appendix 1 – Malcolm Gilmour – Resume Summary

RESUME SUMMARY	
Name:	*Ken Telfer*
Title:	*Environmental Officer* *NSW, Vic, SA, Tas, New Zealand* *Transpacific Industries Group LTD*

Tertiary Education Details
Batchelor Environmental Science, University of Wollongong. 1989
Principal Environmental Auditor (Cert 022041) RABQSA 2006
Dangerous Good Licence NSW EPA
Return to Work Coordinator Work Cover
"Workplace Committees" course. NSCA

Appendix 2 – Ken Telfer Resume Summary

RESUME SUMMARY	
Name:	*Kevin Middlebrook*
Title:	*NSW OH&S Manager* *Transpacific Industries Group LTD*

Tertiary Education Details
Chemistry Dip – Granville TAFE
Return to Work Coordinator - QBE
Occupational Health & Safety Management Course
Occupational Health & Safety Line Supervisor and Risk Management. - Internal Training
Lead Auditor SAI Global
Work Cover "Workplace Committees" course.

Appendix 3 – Kevin Middlebrook Resume Summary

Hydrogenation Plant Q & A's on Process Design and Operation										
Item No.	Date	Issue / Concern	Raised by	Discussed by (AS / MF / FFS)	Modification required	Proposed Action	HAZOP by	Actioned by	Complete	Notes
1	May-06	Install high point vent & Pressure gauge on LP separator together with specatcle plate to isolate vent line to storage tanks. Required for N2 purging and air-freeing	AS	AS / MF /	Yes	Incorporate into mechanical design and mark up P&ID's		AS		
2	May-06	Possible requirement for "Independent Hi Level" device on flammable storage tanks.	MF	AS / MF	??	Check DG requirement and common practice in industry.		AS		
3	May-06	Thermal Relief Valves on cooling water supply to coolers to protect against inadvertent operation with valves closed.	MF	AS / MF	Yes	Size up, design & install, mark up on P&ID's.		AS		
4	May-06	Check underground tank regs for oil separator	AS	AS / MF						
5	Jun-06	Suction valve required on Vacuum pump for isolation purposes.	MF	AS / MF	Yes	Incorporate into mechanical design and mark up P&ID's		AS		
6	May-06	Join N2 supply to bottom of stripper to better assist removal of air	AS/MF	AS / MF / FFS	No	Not required			complete	Cannot safely break vacuum during operation.
7	May-06	Develop a table showing Instrument trips / interlocks / actuating element / element setpoint / effect of actuation, as per the Hydro-Chem format for H2P plant.	MF	AS / MF				GH / AS		
8	May-06	Install spec plates or removable spools on all storage tanks to facilitate positive isolation for vessel entry requirements as per Australian standards	MF	AS / MF	Yes	Incorporate into mechanical design and mark up P&ID's		AS		
9	May-06	Drains and vents which have only single valve isolation from the main process line or vessel must have their outlet tails plugged, capped or blank flanged to prevent accidental LOC from valve leakage.	MF	AS / MF	Yes	Incorporate into mechanical design and mark up P&ID's		AS		
10	May-06	Provide a H2S profile for Reactor, HP separator, recycle gas, LP circuit, Sour water, in terms of typical ppm levels in each stream.	MF	AS / MF		Provide the information for SOP's to highlight potential hazards.				
11	May-06	The storage (feed) tanks are exposed to high pressure backflow from reactor in case of pump trip. Existing single NRV is not acceptable. A Tight Shut Off (TSO) trip valve is required for reverse flow protection of storage tanks from HP reactor circuit.	MF	AS / MF	Yes	TSO required on discharge side of feed pumps to shut on pump trip or low flow.				
12	May-06	Reposition bypass of LV1142 (HP separator) such that this valve is not bypassed as it is an instrumented protective device for Hi pressure breakthrough to Vac stripper.	MF	AS / MF	Yes	Move NRV12 to HP sep side of TSO LV1142. Bypass then still over NRV12.		AS		
13	May-06	Low level in HP separator is exacerbated by LV1104 (sour water boot) continuing to operate with potential H2 breakthrough to Sour water storage.	MF	AS / MF	Yes	Configure trip initiator LSL713 to trip LV1104 closed		FFS		Is the operating valve LV1104 acceptable protection for pressure containment or is a TSO required?- No
14	Jun-06	Control Loops to be drawn up on P&ID for following loops: LIC1020 (Vacuum stripper level control); HP pressure control via drag control valve; PIC1101 (control on feed pumps);	MF	AS / MF						
15	Jun-06	Reverse flow protection for H2P from HGP HP reactor circuit for a H2P trip	MF	AS / MF	Maybe	Check if H2P has TSO trip valve?				
16	Jun-06	Explain how HGP internal recycle XV1128 is used?	MF	AS / MF	No	recycles "non-reactive" product back to reactor to control temperature excursion on reactor.		AS		Update cause and effect sheet. Include in SOP's
17	Jun-06	How can we detect air ingress into flare header via vac pump seal leaks, circulatoin pump seal, or other leaks on vacuum system?	MF	AS / MF		Can only enter via stripper. "Check for leaks" procedure to be revised and OK'd. LEL measurement (or more effectively O2 measurement) on gas line with alarm? Flash back arrestors.				

Appendix 4 – Hydrogenation Plant Q & A's on Process Design and Operation