

# BIOFUTURES

## Biorefineries Market Capability Analysis 2018

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Prepared by Jatin Patel, Procurement Specialist  
Industry Capability Network (ICN) Queensland

Aug 2018

Version: 2.0



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The purpose of this report is to showcase the capabilities of Engineering Procurement and Construction (EPC) Contractors with bases in Queensland to build Biorefineries in Queensland. The research and analysis performed by the ICN relies wholly on information available from the ICN Gateway database, business websites and capability statements, e-mail and telephone communications (limited in nature). The report also uses information obtained from a survey by ICN of potential Biorefinery EPCs, conducted in June 2018. Detailed and/or independent verification of this data has not been undertaken by the ICN as part of this project.

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When contacting any of the businesses nominated within the report, it would be appreciated if the reader could identify the ICN as the source of information.

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## TERMS OF REFERENCE

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ICN Queensland was contracted by the Queensland Government's Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) to develop a list of companies with the capability to act as Engineering, Procurement and Construction (EPC) contractors for a Biorefinery in Queensland.


A Biorefinery is defined as a facility that integrates biomass conversion processes and equipment to produce fuels, power, and value-added chemicals and products from biomass. A Biorefinery is analogous to a conventional petroleum refinery, which produces multiple fuels and products from petroleum.

The International Energy Agency (IEA) has defined biorefining as the sustainable processing of biomass into a spectrum of bio-based products (food, feed, chemicals, and materials) and bioenergy (biofuels, power, and/or heat).

The scope of the work to be undertaken by ICN included;

- Identifying and verifying Queensland and Australian companies with the capabilities to execute an EPC contract for a Biorefinery in Queensland including:
  - Previous EPC experience in refineries (including Biorefineries)
  - Proven capability in other construction and engineering projects which would highlight their ability to successfully undertake a Biorefinery.
- Information on previous successful work including the type and size of the construction (including any Biorefineries)
- Where the companies are based (operational locations) and key contact information including contact name, address, contact phone number, email and website.
- Agreement from the companies to be included in marketing material put forward by the department to organisations looking to build Biorefineries in Queensland.
- Identification and collation of a list of indicative packages to build a Biorefinery (contestable and non-contestable).

The companies to be considered are limited to those with operating office/s in Queensland.





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# 1 SUMMARY

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## 1.1 ACTIVITY OVERVIEW

As a part of the Advance Queensland program several of Queensland's industry sectors were identified as emerging priority industries to be supported by the government to build their competitive strengths and create the knowledge-based jobs of the future. Biofutures is one of the targeted priority industries. To assist this industry to realise its potential and become a major contributor to jobs and the economy, the Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) intends to showcase the capabilities of Engineering, Procurement and Construction (EPC)<sup>1</sup> contractors with operations in Queensland to build Biorefineries<sup>2</sup> in Queensland.

ICN Queensland was contracted by DSDMIP to develop a list of companies with the capability to execute the EPC role for a Biorefinery.

The scope of the work to be undertaken by ICN included:

- Identifying and verifying Queensland and Australian companies with the capabilities to execute an EPC contract for a Biorefinery in Queensland including:
  - Previous EPC experience in refineries (including Biorefineries)
  - Proven capability in other construction and engineering projects which would highlight their ability to successfully undertake a Biorefinery.
- Information on previous successful work including the type and size of the construction (including any Biorefineries)
- Where the companies are based (operational locations) and key contact information including contact name, address, contact phone number, email and website.
- Agreement from the companies to be included in marketing material put forward by the department to organisations looking to build Biorefineries in Queensland.

Identification and collation of a list of indicative packages to build a Biorefinery (contestable and non-contestable).

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<sup>1</sup> See Appendix G “Definitions”

<sup>2</sup> See Appendix G “Definitions”





## 1.2 RESULTS

15 companies<sup>3</sup> with the potential to execute the EPC role for a Biorefinery in Queensland and who confirmed participation for the survey process were asked to complete a “Biofutures - Biorefinery Building Capabilities” survey<sup>4</sup> eliciting contact, capability, and experience information relating to the construction of Biorefineries or similar. An additional 12 companies were identified as potential EPCs but either declined to receive a survey or were not contacted. Capability data on these 12 companies from ICN Toolbox, is provided at Appendix H<sup>5</sup>.

The responses<sup>6</sup> to the survey were collated and a report developed.

A list of indicative Work Packages<sup>7</sup> for a Biorefinery was also developed based on responses from the survey.

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<sup>3</sup> See Appendix A “List of Companies Surveyed”

<sup>4</sup> See Appendix B “Survey Questions”

<sup>5</sup> See Appendix H “Potential EPC Contractors (Not Contacted)”

<sup>6</sup> See Appendices C “Survey Response Matrix” and D “Complete Record of Company Survey Responses”

<sup>7</sup> See Appendix E “Indicative Work Packages for a Biorefinery”



## 2 OBJECTIVE AND METHODOLOGY

### 2.1 OBJECTIVE

The purpose of this report is to provide DSDMIP with a tool to showcase the capabilities of Engineering Procurement and Construction (EPC) Contractors with operating office/s in Queensland to build Biorefineries in Queensland.

A list of indicative packages to build a Biorefinery is also incorporated to assist in developing the maximum level of local involvement in the construction of such a refinery. To further assist this activity these packages are categorized as Overseas (O), Contestable (C), or Local (L) using the criteria at Appendix F.

### 2.2 PROCEDURE

The following process was followed during the execution of this market analysis and report:

<b>Step 1</b>	<p>Develop a list of EPC-Capable companies with the capability to build a Biorefinery in Queensland. This would include those with previous experience in building refineries (including Biorefineries) as well as those with experience in similar construction and engineering projects.</p> <p>The list was developed using ICN Toolbox data, searches of business websites, DSDMIP provided background information, Qld State Government Media Statements, and information from other Australian States and Territories.</p> <p>25 potential EPC companies or companies with potential to form JV for building refineries with operating office/s in Queensland were identified. The list of Companies included in the process is attached at Appendix-I<sup>8</sup></p>
<b>Step 2</b>	<p>An email communication was sent to all identified companies providing them information about the capability matrix development process, with request for them to confirm participation in the process. Companies were contacted via phone and/or email for follow up to respond to the request for participation in the further process.</p> <p>15 potential EPC companies with operating office/s in Queensland confirmed participation to the process. Other companies didn't respond to emails and/or contact via phone calls.</p>
<b>Step 3</b>	<p>Develop a "Biofutures - Biorefinery building capabilities" survey to gather information from companies including:</p> <ul style="list-style-type: none"><li>• contact information;</li><li>• capabilities and experience relating to Biorefineries;</li><li>• consent to use of this information by DSDMIP for marketing to project proponents;</li><li>• advice on probable Work Packages;</li><li>• advice of likely Supply Chain issues.</li></ul>

<sup>8</sup> See Appendix I "Companies included in the process"



<b>Step 4</b>	Select a Survey Tool to get responses to the survey from potential EPCs. Survey Monkey was chosen because of its ease of use and availability.
<b>Step 5</b>	Follow up with companies to ensure that a maximum number of responses were received.
<b>Step 6</b>	Analyse responses and develop Final report.

## 3 MARKET CAPABILITY ASSESSMENT

### 3.1 OVERVIEW

A list of 15 companies, who confirmed participation in the market capability assessment report, using procedure outlined in section 2 is provided at Appendix A. These companies have operating offices in Queensland.

These companies were asked to complete a “Biofutures - Biorefinery building capabilities” survey about their capabilities and experience as an EPC Contractor for a Biorefinery in Queensland. The survey was delivered via the online tool “Survey Monkey”. A list of the questions asked in the survey is provided at Appendix B.

Included in the survey was a question asking if they had recently updated their profile on ICN Gateway, as this would be used in the development of a capability matrix for this project. Accordingly, the following information has been taken from ICN Gateway as well as the response data from the survey. Of the 15 companies sent the survey, 14 responded. Two companies, Fitzroy Engineering and Lycopodium, responded that they had not updated their profile on ICN Gateway and Thyssenkrupp did not answer this question.

A summary showing whether companies responded to specific questions is provided in table form at Appendix C.

### 3.2 ANALYSIS

#### 3.2.1 SIZE OF THE COMPANY (ANNUAL TURNOVER)

Based on stated turnover the companies rank as follows:

Company	Annual Turnover (\$)	Responded to the Survey
SNC-LAVALIN AUSTRALIA PTY LTD	10,000,000,000	Yes
LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD	7,000,000,000	Yes
CPB CONTRACTORS PTY LIMITED	5,000,000,000	Yes
WORLEYPARSONS SERVICES PTY LIMITED	3,000,000,000	Yes
MONADELPHOUS ENGINEERING ASSOCIATES PTY LIMITED	1,500,000,000	Yes
BMD CONSTRUCTIONS PTY LTD	1,000,000,000	Yes
JACOBS GROUP (AUSTRALIA) PTY LTD	700,000,000	No
CBI CONSTRUCTORS PTY LTD	300,000,000	Yes
WOOD GROUP PSN AUSTRALIA PTY LTD	300,000,000	Yes
THYSSENKRUPP INDUSTRIAL SOLUTIONS (AUSTRALIA) PTY LTD	200,000,000	Yes

Company	Annual Turnover (\$)	Responded to the Survey
FITZROY ENGINEERING GROUP LIMITED	90,000,000	Yes
W.D.T. (ENGINEERS) PTY. LTD.	40,000,000	Yes
LYCOPODIUM PROCESS INDUSTRIES PTY LTD	25,000,000	Yes
ENSCOPE PTY LTD	10,000,000	Yes
TFA Project Group	4,000,000	Yes

### 3.2.2 CAPABILITIES

All companies which responded to the survey indicated that they have experience, either directly in the construction of a Biorefinery or that they have the experience in projects requiring the same level of capability and expertise.

Seven companies provided extensive additional information supporting their claim to significant project experience in Biorefineries or related ventures. A list of this documentation is provided in the Attachments section at the end of this report. This documentation is too large to be included as hard copy but will be forwarded as electronic files.

### 3.2.3 EVIDENCE GIVEN OF PROJECT EXPERIENCE IN REFINERIES

(Extracted from company's survey response)

Company	Refinery Experience	Other Relevant Experience
BMD CONSTRUCTIONS PTY LTD	<ul style="list-style-type: none"> <li>• Condong and Broadwater Biomass Cogeneration Plants</li> <li>• Sydney Malting Facility</li> <li>• Action Buses - Refuelling Infrastructure Upgrade</li> <li>• HMAS Coonawarra Naval Base</li> <li>• QG1 Furnace Cooling Systems Rebuild</li> </ul>	BMD is a national group of companies that work together and engaged in engineering design, construction and land development for clients and partners in the urban development, transport infrastructure and resources and energy sectors.
CBI CONSTRUCTORS PTY LTD	Full EPC of a 165,000 barrel per day refinery expansion at the Cartagena Refinery in Cartagena, Colombia. We have experience in executing work in all oil refineries in Australia. Including large expansion projects. We have built multiple gas turbine generators on the Gorgon and Wheatstone LNG projects.	<ul style="list-style-type: none"> <li>• EPC Longford Gas Conditioning Plant \$800M contract value.</li> <li>• EPC Gas Peak Shaving Facility for AGL. \$250M Contract value</li> </ul>
CPB CONTRACTORS PTY LIMITED	CPB Contractors was awarded the contract to design and construct a biofuels refinery in Dalby, Queensland	CPB Contractors has extensive capability in Structural, Mechanical and Electrical disciplines with the

Company	Refinery Experience	Other Relevant Experience
		delivery of Compressor Stations, Processing Facilities and Material Handling Plants
ENSCOPE PTY LTD	<ul style="list-style-type: none"> <li>• Jemena Northern Gas Pipeline Project</li> <li>• Tallgrass Rockies Express Pipeline (USA) - Zone 3 Waitsia Gas Project Stage 1A</li> <li>• Mondarra Gas Storage Facility</li> <li>• Gas Fired Power Generation, Northern Territory</li> </ul>	In addition to the Projects and experiences described within question 4 (above); Enscope has delivered a variety of construction and engineering projects for a number of oil and gas industry clients in Australia and the United States since 2009.
FITZROY ENGINEERING GROUP LIMITED	Fitzroy completed the engineering, procurement and construction (EPC) for the waste oil re-refinery development for Northern Oil Refineries in Gladstone, Queensland.	<ul style="list-style-type: none"> <li>• Bitumen Import Facility, Brisbane;</li> <li>• Bitumen Export Facility, Brisbane;</li> <li>• Expansion Fuel Terminal, Mackay;</li> <li>• Waste Oil Processing Facility, Brisbane;</li> <li>• Fluids Storage Facility; Dampier; Fluids Storage &amp; Processing Facility, Broome, Biodiesel Facility, Auckland</li> </ul>
LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD	Significant experience in gas processing facilities having been involved in all of the major LNG facilities over the last 7 years.	Significant experience in gas processing facilities having been involved in all of the major LNG facilities over the last 7 years.
JACOBS GROUP (AUSTRALIA) PTY LTD	No Response	
LYCOPODIUM PROCESS INDUSTRIES PTY LTD	<ul style="list-style-type: none"> <li>• Australian Renewable Fuels Tank</li> <li>• Farm Rebuild Biodiesel Producers Barnawartha Vic</li> <li>• Swan Hill Ethanol</li> <li>• Territory Biofuels NT Australia</li> </ul>	<ul style="list-style-type: none"> <li>• Hydrogen Peroxide Plant</li> <li>• Hydrochloric Acid Plant</li> <li>• Replacement Hydrogen Sulphide Plant</li> <li>• Culture Seed Factory</li> </ul>
MONADELPHOUS ENGINEERING ASSOCIATES PTY LIMITED	<ul style="list-style-type: none"> <li>• Inpex LNG</li> <li>• Eni's Blacktip project</li> <li>• BHP's Macedon project</li> </ul>	We have significance experience building mine process plants including the Gove optimization project, the million ounce plant upgrade for Lihir Gold in PNG; the Cannington process plant for BHP; and iron ore process plants for Hope Downs and Yandi.
SNC-LAVALIN AUSTRALIA PTY LTD	We're experienced in a wide range of refining projects, from small process unit revamps to large	Founded in 1911 and with 2017 revenues of \$ 9.3 billion, SNC-Lavalin

Company	Refinery Experience	Other Relevant Experience
	grass-roots facilities. We're helping industry meet the increasing challenges of climate change and regulation, and have been extensively involved in clean fuels initiatives such as low sulphur gasoline and ultra-low sulphur diesel projects. We also have experience in in bio refinery plants such as ethanol plants etc.	is a global fully integrated professional services and project management company and a major player in the ownership of infrastructure.
TFA Project Group	Grain to ethanol Biorefinery at Dalby	Other biofuels clients include the QLD State Government, Primary Energy, Austcane, Eagle Energy, Wilmar / CSR, Neumann Petroleum and Colgate Palmolive. Keith Sharp, TFA's engineering manager, is a member of the Bioenergy Australia Liquid Biofuels Committee.
THYSSENKRUPP INDUSTRIAL SOLUTIONS (AUSTRALIA) PTY LTD	<ul style="list-style-type: none"> <li>• MSF Sugar Green Energy Power Plant</li> <li>• Caltex Diesel Hydro-Treater</li> <li>• Shell Hydro-De-Sulphurisation</li> <li>• Mobil Clean Fuels Venture</li> <li>• (14 Other projects listed)</li> </ul>	Petrochemicals industry, ethylene/propylene/polypropylene, Study & FEED & EPCM projects for Qenos, Altona, VIC, Basell, Geelong, VIC, PTT PE & PTT Chem, Thailand.
W.D.T. (ENGINEERS) PTY. LTD.	Extensive range of projects completed for Mackay Sugar Refinery, Yarraville Refinery and the majority of Sugar Mills in QLD and NSW.	WDT has over 45 years' experience in the design, manufacture, construction and commissioning of the full scope of equipment used in the sugar milling and refining processes from the point of juice extraction to export of the finished product.
WOOD GROUP PSN AUSTRALIA PTY LTD	18 page listing of projects plus 90 page brochure provided.	Not separately answered.
WORLEYPARSONS SERVICES PTY LIMITED	The WorleyParsons group are experienced providers of EPC / EPCM services for petroleum refineries and power facilities. In Australia we support much of the ongoing improve (i.e. Maintenance and upgrade) services.	Not separately answered.

### 3.2.4 SUPPLY CHAIN RISKS

Companies surveyed were asked to identify challenges encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project. The following risks were highlighted with a suggested mitigation in some cases:

Risk	Mitigation
Long-lead-items required to comply certification requirements can have a major impact on schedule.	Such items should potentially be free issued by the client, as these orders can be placed prior to Construction Contract award.
Securing timely delivery of long-lead power generation, compression and/or specialist processing packages.	Develop strong relationships with a number of key process equipment suppliers and utilise these existing relationships to manage challenging procurement timelines for Projects.
Matching of the procurement schedule with the construction schedule particularly if there are long-lead items from OEM suppliers involved in the project.	
The typical supply chain challenges faced in conventional refining projects are those related to schedule and cost control mainly associated with the equipment and associated auxiliaries.	Utilise schedule planning experience and the extensive cost data held in company databases.
The first priority for a Biorefinery should be to secure long-term offtake agreements for products and secure access to utilities for plant viability.	
A lack of locally supplied suitable equipment (e.g. pumps) which must then be imported at a high cost.	<i>ICN suggests that up-front research by ICN can identify this problem early on so that mitigation strategies can be developed.</i>
When importing electrical equipment, it is important to ensure that the equipment meets the certification requirements in Australia.	

### 3.2.5 WORK PACKAGES

Companies surveyed were asked “Please list potential procurement and contracts work packages for building a Biorefinery from your company’s viewpoint”. Not all companies responded but the suggested packages from those that did have been compiled at Appendix E.



## 4 ABRIDGED COMPANY DETAILS

This section contains company profile information of 15 companies, who confirmed participation in the capability assessment report development process. The information in this section is taken from ICN Toolbox except that the contact information has been updated to the response to the survey “Biofutures - Biorefinery Building Capabilities”.

Note: Companies which undertook the survey were asked if their company profile had been updated recently.

### 4.1 BMD CONSTRUCTIONS PTY LTD

Business Details	
ABN	59010126100
Primary Contacts	Glenn Stimson, Pre-Contracts Manager BMD Constructions 1 Sandpiper Ave, Port of Brisbane Qld PO Box 197 Wynnum Qld 4178 Direct: +61 407 155 473 Mobile: +61 0407 155 473 Email: Glenn.Stimson@bmd.com.au
Website	<a href="http://www.bmd.com.au">www.bmd.com.au</a>
Employees	1700
Turnover \$	1,000,000,000
Summary	BMD is a national group of companies engaged in engineering design, construction and land development for clients and partners in the urban development, transport infrastructure and resources and energy sectors. Since 1979, BMD has employed a relationship based business model founded on certainty, collaboration and performance. With more than 1,700 staff throughout Australia, BMD has the resources and experience to deliver projects ranging in size from \$1 million to over \$1 billion.

## 4.2 CBI CONSTRUCTORS PTY LTD

Business Details	
ABN	90000612411
Primary Contacts	Anthony Ross 119 Brownlee St Pinkenba QLD 4008 07 3635 0310 <a href="mailto:aross@mcdermott.com">aross@mcdermott.com</a>
Website	<a href="https://www.mcdermott.com/Markets-Served/Refining">https://www.mcdermott.com/Markets-Served/Refining</a>
Employees	40000
Turnover \$	300,000,000
Summary	<p>CB&amp;I (NYSE: CBI) is a leading provider of technology and infrastructure for the energy industry. With over 125 years of experience and the expertise of more than 40,000 employees, CB&amp;I provides reliable solutions to our customers around the world while maintaining a relentless focus on safety and an uncompromising standard of quality. Our complete, balanced and integrated business model is unmatched in the industry. CB&amp;I can provide any or all of the major services and products our customers require, resulting in streamlined project delivery and better cost and schedule certainty. Our integrated model gives CB&amp;I the industry's most complete supply chain solution, enabling us to serve the largest projects in the world.</p>

## 4.3 CPB CONTRACTORS PTY LTD

Business Details	
ABN	98000893667
Primary Contacts	Joshua Yates Level 6, HQ South Tower 520 Wickham Street Fortitude Valley (07) 3215 4600 joshua.yates@cpbcon.com.au
Website	<a href="http://www.cpbcon.com.au">www.cpbcon.com.au</a>
Employees	18000
Turnover \$	5,000,000,000
Summary	<p>CPB Contractors is a leading international construction contractor, with operations across Australia, New Zealand and Papua New Guinea. CPB has its origins as far back as 1934, as a civil contracting business.</p> <p>CPB Contractors delivers projects spanning all key sectors of the construction industry, including major infrastructure, Defence and building projects.</p>

## 4.4 ENSCOPE PTY LTD

Business Details	
ABN	38136478030
Primary Contacts	Matthew Sawyer Queensland Regional Manager Ph: 61 7 38562447 Mob: 61 403 774467 Email: mds@enscope.com.au
Website	<a href="http://www.enscope.com.au">www.enscope.com.au</a>
Employees	40
Turnover \$	10,000,000
Summary	Project management, engineering and commissioning services for energy infrastructure developments

## 4.5 FITZROY ENGINEERING GROUP LIMITED

Business Details	
ABN	53954366487
Primary Contacts	Nigel Butler 1294 Lytton Rd Hemmant QLD 07 3900 4500 nbutler@fitzroyengineering.com.au
Website	<a href="http://www.fitzroyengineering.com">www.fitzroyengineering.com</a>
Employees	475
Turnover \$	90,000,000
Summary	Fitzroy Engineering is a major multi-disciplined provider of engineering services, delivering full life-cycle solutions to the broad energy sector, particularly the oil and gas and petrochemical industries across Australasia.

Note: Fitzroy Engineering indicated in its survey response that its ICN Gateway profile had not been updated recently.

## 4.6 JACOBS GROUP (AUSTRALIA) PTY LTD

Jacobs group (Australia) Pty Ltd hasn't submitted survey response at the time of writing this report.

Business Details	
ABN	37001024095
Primary Contacts	Fabrizio Benedetti Manager Business Development Ph: 61 2 9032 1312 Mob: 61 412 721 907 Email: Fabrizio.Benedetti@jacobs.com
Website	<a href="http://www.jacobs.com">www.jacobs.com</a>
Employees	3,000
Turnover \$	700,000,000
Summary	Project management, engineering and commissioning services for energy infrastructure developments

## 4.7 LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD

Business Details	
ABN	39112099000
Primary Contacts	David Pfeffer Level 3, 825 Ann St, Fortitude Valley Qld 4006 0408 705 524 dpfeffer@laingorourke.com.au
Website	<a href="http://www.laingorourke.com.au">www.laingorourke.com.au</a>
Employees	5,000
Turnover \$	7,000,000,000
Summary	<p>Laing O'Rourke is a privately owned, multi-disciplinary construction contractor, with access to resources and learnings from its worldwide operations. We strive to be a leader in the Australian construction industry by being an engineering-led contractor committed to technical and performance excellence.</p> <p>Laing O'Rourke is committed to creating extraordinary value for our clients by providing a culture of best-for-project values ensuring relationships are sustainable; certainty of delivery through advanced technology platforms and project controls; a culture of quality preventing adverse impacts on operations; rigorous technical assessment finding a balance between standardisation and innovation; and value for money solutions leveraging our supply chain connections and optimising the balance between capital and whole of life costs.</p>

## 4.8 LYCOPodium PROCESS INDUSTRIES PTY LTD

Business Details	
ABN	52004565137
Primary Contacts	Mr Rick Krzywniak Business Development Manager Lvl2, 60 Leichhardt Street Spring Hill Qld 4000 Tel: (07) 3244 7777 Fax: (07) 3244 7788 E: processind@lycopodium.com.au
Website	<a href="http://www.lycopodium.com.au">www.lycopodium.com.au</a>
Employees	20
Turnover \$	25,000,000
Summary	Lycopodium Process Industries (previously known as Process Design & Fabrication) is a subsidiary within the Lycopodium Group, an Australian based engineering and project management business that provides a diverse range of services to various industry sectors, including mineral processing and the process manufacturing industries. Lycopodium provides a complete engineering service from the initial concept/scoping study phase through feasibility, detailed design, procurement, project and construction management to commissioning, start-up and validation. By developing a fundamental understanding of individual unit operations and the successful integration of process technology, Lycopodium delivers flexible engineering and project management solutions, customised to individual client and project requirements.

Note: Lycopodium indicated in its survey response that its ICN Gateway profile had not been updated recently.



## 4.9 MONADELPHOUS ENGINEERING ASSOCIATES PTY LTD

Business Details	
ABN	52008861836
Primary Contacts	Monadelphous has operational depots in Brisbane, Gladstone and Mackay. The Monadelphous contact is Peter Walker 19 Lang Parade Milton Qld 4064 07 3736 4122 0409 266 078 pjwalker@monadel.com.au
Website	<a href="http://www.monadelphous.com.au">www.monadelphous.com.au</a>
Employees	5632
Turnover \$	1,500,000,000
Summary	Monadelphous is an Australian engineering group headquartered in Perth, Western Australia, providing construction, maintenance and industrial services to the resources, energy and infrastructure sectors.

## 4.10 SNC-LAVALIN AUSTRALIA PTY LTD

Business Details	
ABN	50085951542
Primary Contacts	Ruairi Kerr Regional Business Development Director, Asia Pacific 488 Queen Street, Level 1 Brisbane Tel: +61 7 30021000 Mob: +60 12 275 7708 Email: <a href="mailto:Ruairi.Kerr@snclavalin.com">Ruairi.Kerr@snclavalin.com</a>
Website	Website: <a href="http://www.snclavalin.com">http://www.snclavalin.com</a>
Employees	39000
Turnover \$	10,000,000,000
Summary	Founded in 1911, SNC-Lavalin is one of the leading engineering and construction groups in the world and a major player in the ownership of infrastructure. From offices in over 50 countries, SNC-Lavalins 45,000 employees provide EPC and EPCM services to clients in a variety of industry sectors, including mining and metallurgy, oil and gas, environment and water, infrastructure and clean power.

## 4.11 TFA PROJECT GROUP

Business Details	
ABN	59054486743
Primary Contacts	Keith Sharp 166 Knapp Street Fortitude Valley, QLD, 4006 Ph: 07 3854 2924 Email: keith.sharp@tfa.com.au,
Website	<a href="http://www.tfa.com.au">www.tfa.com.au</a>
Employees	40
Turnover \$	4,000,000
Summary	<p>TfA Project Group is a Design, Engineering &amp; Project Management Consultancy (EPCM) with a broad range of services available from industry experts.</p> <p>The TfA team work with the customer to prepare concept designs &amp; feasibility studies. From here our in house town planner can prepare &amp; submit design applications (DA) for approval.</p> <p>Our Engineering services include; Civil, Structural, Mechanical, Electrical, Chemical, Process, Petroleum &amp; Fire Engineering. Our staff are highly experienced in the petroleum industry from service stations to bulk fuel installations &amp; even bio-refineries.</p> <p>It doesn't stop there, our Architect regularly designs residential / industrial / commercial properties, homes for people with special needs, schools &amp; day care facilities.</p> <p>Our approach to project management is tailored for each specific project to provide support that enables the client to achieve his or her goals.</p> <p>Offices in Brisbane, Sydney &amp; Melbourne</p>

## 4.12 THYSSENKRUPP INDUSTRIAL SOLUTIONS (AUSTRALIA) P/ L

Business Details	
ABN	30005610748
Primary Contacts	Thom Cameron General Manager, Queensland Thyssenkrupp Industrial Solutions (Australia) Pty Ltd Level 19, 1 Eagle Street Brisbane Queensland 4000 T: +61 7 3360 0828 Thom.Cameron@thyssenkrupp.com <a href="http://www.thyssenkrupp.com/">http://www.thyssenkrupp.com/</a>
Website	<a href="http://www.thyssenkrupp.com">http://www.thyssenkrupp.com</a>
Employees	150,000
Turnover \$	200,000,000
Summary	Engineering, construction, machinery, and equipment for mining, quarrying, minerals processing and materials recycling

Note: Thyssenkrupp did not answer in its survey response that its ICN Gateway profile had been updated recently.

## 4.13 W.D.T. (ENGINEERS) PTY. LTD.

Business Details	
ABN	53009804675
Primary Contacts	<p>Andrew Hauff            Divisional Manager            124 Ingram Road            Acacia Ridge, QLD 4110  <a href="mailto:andrew.hauff@wdtengineers.com.au">andrew.hauff@wdtengineers.com.au</a>,            07 3345 4000</p>
Website	<a href="http://www.wdtengineers.com.au">www.wdtengineers.com.au</a>
Employees	85
Turnover \$	40,000,000
Summary	<p>Specialist in the design, manufacture, construction, installation and commissioning of a wide range of plant and equipment for the mining, sugar, oil &amp; gas, materials handling and general process industries.</p> <p>Products including:</p> <ul style="list-style-type: none"> <li>- Stackers &amp; Reclaimers</li> <li>- SCHADE Stockyard machines</li> <li>- Conveyor systems</li> <li>- Sugar Process vessels (Pans, evaporators, heaters, condensers, screens, clarifiers, crystallisers)</li> <li>- Pressure vessels</li> <li>- Bins, silos &amp; hoppers</li> <li>- Chimney stacks</li> <li>- Heavy fabrication &amp; boiler making (Carbon, stainless and allow steels)</li> <li>- Large diameter machining</li> <li>- Pipework including process design</li> <li>- Shop fabricated and large field installed tanks</li> </ul> <p>Operating out of Brisbane and Mackay</p>

## 4.14 WOOD GROUP PSN AUSTRALIA

Business Details	
ABN	79118514444
Primary Contacts	Steve Ciccone Regional Director, Australia East Level 11, 144 Edward Street Telephone: +61 7 3033 5600 Mobile: 0451633632 Email: Steve.Ciccone@woodplc.com
Website	<a href="http://www.woodgroup-psn.com">www.woodgroup-psn.com</a>
Employees	55000
Turnover \$	300,000,000
Summary	Wood is a global leader in the delivery of project, engineering and technical services to energy and industrial markets. We operate in more than 60 countries, employing around 55,000 people, with revenues of over \$11 billion. We provide performance-driven solutions throughout the asset life-cycle, from concept to decommissioning across a broad range of industrial markets including the upstream, midstream and downstream oil & gas, chemicals, environment and infrastructure, power & process, clean energy, mining and general industrial sectors. We strive to be the best technical services company to work with, work for and invest in.

## 4.15 WORLEYPARSONS SERVICES PTY LTD

Business Details	
ABN	61001279812
Primary Contacts	Tasman Graham Level 31, 12 Creek Street Brisbane, QLD, 4000; +61 7 3377 7000 E-mail: <a href="mailto:infoasiapacific@advisian.com">infoasiapacific@advisian.com</a> ;
Website	<a href="http://www.advisian.com">www.advisian.com</a>
Employees	24,500
Turnover \$	3,000,000,000
Summary	<p>WorleyParsons is a leading provider of project delivery and consulting services to the resources &amp; energy sectors and complex process industries.</p> <p>Our services cover the full asset spectrum both in size and lifecycle from the creation of new assets to services that sustain and enhance operating assets.</p> <p>Across our comprehensive global network our four customer sector groups use their extensive expertise to deliver small studies through to mega-projects. They are, Infrastructure and Environment, Power, Minerals, Metals and Chemicals, and Hydrocarbons.</p>

## APPENDIX A – LIST OF COMPANIES SURVEYED

The following 15 companies with bases in Queensland were surveyed on their suitability to act as an EPC Contractor for a Biorefinery in Queensland:

Companies Surveyed
BMD CONSTRUCTIONS PTY LTD
CBI CONSTRUCTORS PTY LTD
CPB CONTRACTORS PTY LIMITED
ENSCOPE PTY LTD
FITZROY ENGINEERING GROUP LIMITED
JACOBS GROUP (AUSTRALIA) PTY LTD
LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD
LYCOPODIUM PROCESS INDUSTRIES PTY LTD
MONADELPHOUS ENGINEERING ASSOCIATES PTY LIMITED
SNC-LAVALIN AUSTRALIA PTY LTD
TfA Project Group
THYSSENKRUPP INDUSTRIAL SOLUTIONS (AUSTRALIA) PTY LTD
W.D.T. (ENGINEERS) PTY. LTD.
WOOD GROUP PSN AUSTRALIA PTY LTD
WORLEYPARSONS SERVICES PTY LIMITED

The following companies, who were contacted to engage them for this process, could be considered as potential EPC contractors or companies with potential to form JV for building refinery. These companies were not surveyed, either because they declined to undertake the survey or could not be contacted in the timeframe of this report. ICN hasn't received consent from these companies to include them into any marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP).

Name of the Companies
AMEC FOSTER WHEELER AUSTRALIA PTY LTD
Ausenco
BECHTEL INFRASTRUCTURE (AUSTRALIA) PTY LTD
BROADSPECTRUM (AUSTRALIA) PTY LTD





Name of the Companies
CONSOLIDATED CONTRACTING COMPANY AUSTRALIA PTY LTD
CPEC (AUS)
ENERAQUE PTY LTD
IOR Energy Pty Ltd
JOHN HOLLAND PTY LTD
RCR TOMLINSON LTD



## APPENDIX B – SURVEY QUESTIONS

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The following questions were approved by DSDMIP for use in the “Biofutures - Biorefinery Building Capabilities” survey delivered to potential Biorefinery EPC Contractors via the online tool “Survey Monkey”.

1. Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland? – Yes/No answer
2. ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently? – Yes/No answer
3. Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.
4. Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.
5. Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.
6. Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.
7. Please list potential procurement and contracts work packages for building a Biorefinery from your company’s viewpoint.

Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?

## APPENDIX C – SURVEY RESPONSE MATRIX

The following table indicates whether a company responded to questions 1 – 8 listed in Appendix B.

Company	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
BMD CONSTRUCTIONS PTY LTD	Y	Y	Y	Y	Y	Y	Y	Y
CBI CONSTRUCTORS PTY LTD	Y	Y	Y	Y	Y	Y	Y	N
CPB CONTRACTORS PTY LIMITED	Y	Y	Y	Y	Y	Y	Y	N
ENSCOPE PTY LTD	Y	Y	Y	Y	Y	Y	Y	Y
FITZROY ENGINEERING GROUP LIMITED	Y	Y	Y	Y	Y	N	N	N
JACOBS GROUP (AUSTRALIA) PTY LTD	N	N	N	N	N	N	N	N
LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD	Y	Y	Y	Y	Y	Y	Y	Y
LYCOPODIUM PROCESS INDUSTRIES PTY LTD	Y	Y	Y	Y	Y	Y	Y	Y
MONADELPHOUS ENGINEERING ASSOCIATES PTY LIMITED	Y	Y	Y	Y	Y	Y	Y	Y
SNC-LAVALIN AUSTRALIA PTY LTD	Y	Y	Y	Y	Y	Y	Y	Y
TFA Project Group	Y	Y	Y	Y	Y	Y	Y	Y
THYSSENKRUPP INDUSTRIAL SOLUTIONS (AUSTRALIA) PTY LTD	Y	N	Y	Y	Y	Y	Y	Y
W.D.T. (ENGINEERS) PTY. LTD.	Y	Y	Y	Y	Y	Y	Y	Y
WOOD GROUP PSN AUSTRALIA PTY LTD	Y	Y	Y	N	N	N	N	N
WORLEYPARSONS SERVICES PTY LIMITED	Y	Y	Y	Y	N	N	N	N


## APPENDIX C – SURVEY RESPONSE MATRIX

The complete response from each company to the questions in Appendix B is given below:

### 4.1 BMD CONSTRUCTIONS

Question	Response
Email Address	<a href="mailto:shane.liddle@bmd.com.au">shane.liddle@bmd.com.au</a>
First Name	Shane
Last Name	Liddle
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Glenn Stimson, Pre-Contracts Manager BMD Constructions 1 Sandpiper Ave, Port of Brisbane Qld PO Box 197 Wynnum Qld 4178 Direct: +61 407 155 473 Mobile: +61 0407 155 473 Email: Glenn.Stimson@bmd.com.au
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	Condong and Broadwater Biomass Cogeneration Plants Sydney Malting Facility Action Buses - Refuelling Infrastructure Upgrade HMAS Coonawarra Naval Base QG1 Furnace Cooling Systems Rebuild
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	BMD is a national group of companies that work together and engaged in engineering design, construction and land development for clients and partners in the urban development, transport infrastructure and resources and energy sectors. Since 1979, BMD has employed a relationship based business model founded on certainty, collaboration and performance. With more than 1,700 staff throughout Australia, BMD has the resources and experience to deliver projects ranging in size

Question	Response
	<p>from \$1 million to over \$1 billion.</p> <p>BMD Constructions – are civil construction services for major infrastructure projects throughout Australia. Expertise, experience and resources are applied across the industry sectors of transport, defence, rail, port, resources, and oil and gas</p> <p>BMD Industrial – a group of highly experienced industry executives who assemble professional project teams to deliver structural, mechanical, piping, electrical, fuel systems, water and wastewater solutions for a diverse range of clients and industries.</p>
<p>Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.</p>	<p>Project sheets attached to email *</p>
<p>Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.</p>	<p>Those listed in Arena and in the QLD Biofutures 10-Year Roadmap Action Plan. The potential opportunities in QLD:</p> <p>North QLD, polyethylene from sugarcane, resins from greenwaste</p> <p>Whitsundays, succinic acid from sugar cane bagasses</p> <p>DD/SW, ethanol from sorghim stover</p> <p>Wide Bay, ethonal from sweet sorghum and levulinic acid from forestry waste</p> <p>The existing facilities in QLD:</p> <p>North QLD, Macroalgal Biofuels and Bioproducts Project (Townsville)</p> <p>Whitsundays, Wilmar BioEthanol (Sarina), Mackay Renewable Biocommodities Pilot Plant</p> <p>Central QLD, Southern Oil Refining's Advanced Biofuels Pilot Plant (Gladstone)</p> <p>Dalby BioRefinery</p> <p>Brisbane, Ecotech Biodiesel and Solar Biofuels Research Centre</p>
<p>Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?</p>	<p>From a Construction view: Longlead items required to comply certification requirements can have a major impact on schedule. Such items should potentially be free issued by the client, as these orders can be paced prior to Construction Contract award.</p>



BMD provided project sheets for the following projects (These will be provided as electronic attachments to this report):

- Sydney Malting Facility
- HMAS Coonawarra Naval Base
- Condong Broadwater Biomass Cogen
- ACTION Buses Refuelling Infrastructure Upgrade
- QGI Furnace Cooling Systems Rebuild

## 4.2 CBI CONSTRUCTORS PTY LTD

Question	Response
Email Address	aross@mcdermott.com
First Name	Anthony
Last Name	Ross
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Anthony Ross, 119 Brownlee St, Pinkenba QLD 4008. 07 3635 0310, aross@mcdermott.com, <a href="https://www.mcdermott.com/Markets-Served/Refining">https://www.mcdermott.com/Markets-Served/Refining</a>
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	Full EPC of a 165,000 barrel per day refinery expansion at the Cartagena Refinery in Cartagena, Colombia. We have experience in executing work in all oil refineries in Australia. Including large expansion projects. We have built multiple gas turbine generators on the Gorgon and Wheatstone LNG projects.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	Proven EPC project delivery experience globally and locally in Australia. Two recent local EPC projects are listed. I will forward through our complete experience list by email. 1. Engineering, procurement, construction of the Longford Gas Conditioning Plant \$800M contract value. 2. Engineering, construction, procurement of Gas Peak Shaving Facility for AGL. \$250M Contract value
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	Will send attachment by email. **
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	Civil Construction, On Site Insulation/ Coatings, Onsite NDE, Offsite Structural Fabrication, Offsite Piping Fabrication,



Question	Response
	Mechanical Equipment Supply. Plus rental construction equipment, temporary construction buildings.
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	

CBI provided a brochure “CBI Project Experience List” which will be provided as an electronic attachment to this report. In addition the company provided the following link to a project page <https://www.mcdermott.com/What-We-Do/Project-Profiles/REFICAR-Refinery-Expansion> highlighting one of their executed refinery projects



### 4.3 CPB CONTRACTORS

Question	Response
Email Address	Joshua.Yates@cpbcon.com.au
First Name	Joshua
Last Name	Yates
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Joshua Yates, Level 6, HQ South Tower, 520 Wickham Street, Fortitude Valley, (07) 3215 4600, joshua.yates@cpbcon.com.au, cpbcon.com.au
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	Dalby Bio-Refinery - This project was the first biofuels plant in Australia to manufacture ethanol from grain. CPB Contractors was awarded the contract to design and construct a biofuels refinery in Dalby, Queensland.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	CPB Contractors has extensive capability in Structural, Mechanical and Electrical disciplines with the delivery of Compressor Stations, Processing Facilities and Material Handling Plants over many years in the resources sector. Working with key clients such as BHP/BMA, Origin Energy, QGC and many more.
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	2008, Dalby Bio-Fuels, Dalby Bio-Refinery Limited, Bio-Fuel Plant (Civils, Process/M&E) to manufacture ethanol from grain. \$85m
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	EPC, D&C, Construct Only
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	

## 4.4 ENSCOPE

Question	Response
Email Address	cau@enscope.com.au
First Name	Chris
Last Name	Austin
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Enscope Brisbane office: S1, Level 2, 22 Cordelia Street, South Brisbane, QLD 4101 Matthew Sawyer – Queensland Regional Manager, 0403 774 467, mds@enscope.com.au www.enscope.com.au
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	Enscope is a specialist engineering services provider in energy infrastructure projects. Our personnel have extensive oil and gas experience, covering all Project phases from Concept Select through FEED, Detailed Design and Procurement, Construction, Commissioning and Handover. We have the capability and proven experience to successfully deliver works under EPC and EPCM models. In addition to delivering Projects in our own right, Enscope's personnel have worked as both delivery engineers embedded directly into the Principal's team as well as in project management services support roles for construction contractors for a range of major gas infrastructure projects within Australia and the United States. Recent projects which involved refining processes (or similar) and which are considered either analogous or relevant to Biorefinery works include the following, ~ Project Name: Northern Gas Pipeline Project o Status: Ongoing o Client: Jemena o Process Summary: Natural Gas Processing Facility (~90TJ/d) o Enscope work scope: Project, Design, Procurement and Construction management via seconded employees working on behalf of Jemena. Commissioning



Question	Response
	<p>management, of the gas processing facility, transmission gas pipeline and associated pipeline facilities and export gas compression facility, led by Ensco's commissioning team. , Project Name: Tallgrass Rockies Express Pipeline (USA) - Zone 3 Enhancement Project o Status: Completed 2017 o Client: QPS Engineering LLC o Process Summary: Multiple Natural Gas Compression Facilities o Ensco work scope: Commissioning management of multiple gas compression facilities including Solar Turbines Mars 100 Gas Turbine Compressor packages. , Project Name: Waitsia Gas Project Stage 1A o Status: Completed 2016 o Client: AWE o Process Summary: Natural Gas Processing Facility (~10TJ/d) o Ensco work scope: EPCM delivery of Project from Pre-feasibility through FEED, Detailed Design, Procurement, Construction Management, Commissioning and Handover. o , Project Name: Mondarra Gas Storage Facility o Status: Completed 2013 o Client: APA Group o Process Summary: Natural Gas Storage Facility (~150TJ/d) o Ensco work scope: Project, Design, Procurement and Construction management via seconded employees working on behalf of APA. Commissioning management of the gas processing facility, led by Ensco's commissioning team. , Project Name: Gas Fired Power Generation " Pre-feasibility o Status: Completed 2014 o Client: Northern Territory Government o Process Summary: Natural Gas Power Generation Facility o Ensco work scope: Developed the technical concept, including: functional and performance requirements; concept layout; site selection for a prospective 80 MW station using GE LM6000 aero-derivative gas turbine generators. Develop the project execution requirements suitable to define a preliminary cost estimate and a project schedule through to commercial operation.</p>
<p>Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.</p>	<p>In addition to the Projects and experiences described within question 4 (above); Ensco has delivered a variety of construction and engineering projects for a number of oil and gas industry clients in Australia and the United States since 2009. Ensco's personnel have proven experience in the delivery of construction and engineering projects on time and on budget, in accordance with industry standard HSEQ expectations and processes. We believe that our experience in</p>



Question	Response
	<p>the delivery of process facilities, coupled with compression projects is particularly analogous to the delivery of a Biorefinery in that the following key aspects apply,~ Definition of Design Basis to guide process design. , Early identification of all regulatory requirements and key stakeholders. , Early identification of specialist plant and equipment to ensure targeted expediting of long-lead procurement items (as driven by design progression). , Development of a detailed Project Schedule and Budget to enable timely financial approvals of the Project. , Efficient integration of various equipment package deliveries and site construction scopes to ensure effective construction. , Detailed commissioning and handover plans to ensure the seamless turnkey delivery to the client.</p>
<p>Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.</p>	<p>Successful projects delivered by Enscope or by Enscope's clients via secondment and embedment of key Enscope personnel into leadership positions include the following,~ Project Name: Northern Gas Pipeline Project o Year: 2016 - Ongoing o Client: Jemena o Project Scope: Natural Gas Processing Facility (~90TJ/d) + Transmission pipeline + Export Compression Facility o Enscope work scope: Project, Design, Procurement and Construction management via seconded employees working on behalf of Jemena. Commissioning management of the gas processing facility, transmission gas pipeline and associated pipeline facilities and export gas compression facility, led by Enscope's commissioning team. o Project Value: ~\$500M+ (confidential) o Enscope Value: ~\$9M  , Project Name: Waitsia Gas Project Stage 1A o Year: 2015-2016 o Client: AWE o Process Summary: Natural Gas Processing Facility (~10TJ/d) o Enscope work scope: EPCM delivery of Project from Pre-feasibility through FEED, Detailed Design, Procurement, Construction Management of local (regional) construction contractors, Commissioning and Handover. o Project Value: \$18M o Enscope Value: \$5M  , Project Name: Mondarra Gas Storage Facility o Year: 2010-2013 o Client: APA Group o Process Summary: Natural Gas Storage Facility (~150TJ/d) o Enscope work scope: Project, Design, Procurement and Construction management via seconded employees working on behalf of Jemena. Commissioning management, of the gas processing facility, led</p>



Question	Response
	by Ensco's commissioning team. o Project Value: ~\$200M+ (confidential) o Ensco Value: ~\$14M
<p>Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.</p>	<p>At a summary level, we have identified the following potential procurement and contract work packages for a Biorefinery project: Procurement Packages, Process pumps, Vessels, Specialty Process Packages (e.g.: Acid, Gas, and Ammonia Targeted Extraction (AGATE) Package or similar specialised package to suit the biorefinery process being developed), Condensers, Tanks, Valves, Bulk Piping and fittings, Power Generation Package (subject to Site location " options may include existing grid connection, Renewable sources, Gas-fired sources / Cogeneration), Transformer(s), SCADA / Control Systems, Instrumentation (e.g.: transmitters, transducers, flow-meters / measurement equipment), Diesel Generator back-up (emergency power supply), Site Buildings / Workshops Contract Works Packages, Bulk Earthworks and Civil Preparation (may include piling), Concrete Footings / Foundations, Offsite Fabrication (process piping / structural steel), SMP Installation / Construction (including coatings / insulation / lagging / pre-commissioning of mechanical equipment), E&amp;I Installation / Construction (including loop testing and pre-commissioning), Control system installation / commissioning Note that where deemed "Best for Project", Ensco seeks to self-perform works either directly or via Quanta Services companies (these being affiliated Quanta sister companies under the wholly owned Quanta parent). Ensco has interaction and sharing of resources and expertise with key sister companies in Australia whose expertise and experience would be suited to the EPC delivery of Biorefinery Projects: 1. Nacap is a Tier 1 construction pipeline and mechanical contractor, specialising in pipeline and facility construction for the oil and gas and water sectors, in addition Nacap undertakes road, wind-turbine footing and buried electrical cable construction works for renewable energy (wind-farm) projects. Nacap has an extensive internal plant fleet and access to a multi-skilled blue collar work-force to deliver high-quality construction projects for clients both in Australia and abroad. For further Nacap information, please visit <a href="http://www.nacap.com.au">www.nacap.com.au</a> 2. Consolidated Power Projects (CPP) is a design and construct specialist working</p>



Question	Response
	<p>predominantly in the renewable energy sector (wind, solar and battery storage projects) including electrical infrastructure from Medium Voltage (MV) through to Extra High Voltage (EHV) installations. CPP specialises in electricity grid connection works and site electrical cabling works. For further CPP information, please visit <a href="http://www.conpower.com.au">www.conpower.com.au</a></p> <p>3. NJ Construction (NJC) specialises in providing design, engineering, construction and maintenance services to the electrical and communications industry. NJC has installed 100's of km's of poles and wires within Australia. For further NJC information, please visit <a href="http://www.njconstruction.com.au">www.njconstruction.com.au</a></p> <p>Each of Enscope, Nacap, CPP and NJ are subsidiaries of Quanta Services Australia, capable of combined project delivery under a model where there is no margin on margin providing a commercial benefit to clients as well as reduced project interfaces (and risk) through a combined Quanta Services Australia delivery.</p>
<p>Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?</p>	<p>Enscope has historically witnessed project development challenges in securing timely delivery of long-lead power generation, compression and/or specialist processing packages. These challenges have been cushioned more recently by the slow-down in oil and gas projects globally. As a cyclical issue the industry is now starting to show signs of recovery and competition in this area and this challenge is anticipated to re-emerge. Enscope has strong existing relationships with a number of key process equipment suppliers (e.g.: Suez Oil &amp; Gas Systems - formerly Process Group) and gas compression / gas to power equipment suppliers (Solar Turbines, Enerflex and Exterran). Enscope has historically been able to utilise these existing relationships to manage challenging procurement timelines for Enscope's Projects.</p>

## 4.5 FITZROY ENGINEERING

Question	Response
Email Address	nbutler@fitzroyengineering.com.au
First Name	Nigel
Last Name	Butler
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	No
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Brisbane 1294 Lytton Rd, Hemmant QLD Nigel Butler 0739004500 nbutler@fitzroyengineering.com.au www.fitzroyengineering.com
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	The Fitzroy Engineering design group has established a reputation for outstanding niche engineering, process and mechanical design for greenfield processing facilities. Fitzroy completed the engineering, procurement and construction (EPC) for the waste oil re-refinery development for Northern Oil Refineries in Gladstone, Queensland.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	Bitumen Import Facility, Brisbane; Bitumen Export Facility, Brisbane; Expansion Fuel Terminal, Mackay; Waste Oil Processing Facility, Brisbane; Fluids Storage Facility; Dampier; Fluids Storage & Processing Facility, Broome, Biodiesel Facility, Auckland
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	



Question	Response
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	



## 4.6 JACOBS GROUP

No Survey Response had been received from Jacobs at the time of writing this report

## 4.7 LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD

Question	Response
Email Address	dpfeffer@laingorourke.com.au
First Name	David
Last Name	Pfeffer
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	David Pfeffer Level 3, 825 Ann St, Fortitude Valley Qld 4006 0408 705 524 dpfeffer@laingorourke.com.au www.laingorourke.com.au
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	Significant experience in gas processing facilities having been involved in all of the major LNG facilities over the last 7 years.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	Significant experience in gas processing facilities having been involved in all of the major LNG facilities over the last 7 years.
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	No limit on complexity or size. Laing O'Rourke is a tier 1 EPCM contractor
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	No limit on complexity or size. Laing O'Rourke is a tier 1 EPCM contractor
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	The significant challenge is the amount of work in the public and private infrastructure sector coming to market.

## 4.8 LYCOPodium PROCESS INDUSTRIES

Question	Response
Email Address	<a href="mailto:rick.krzywniak@lycopodium.com.au">rick.krzywniak@lycopodium.com.au</a> ; <a href="mailto:arthur.stamos@lycopodium.com.au">arthur.stamos@lycopodium.com.au</a>
First Name	Rick
Last Name	Krzywniak
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	No
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Lvl2, 60 Leichhardt Street Spring Hill Qld 4000 Tel: (07) 3244 7777 Fax: (07) 3244 7788 E: <a href="mailto:processind@lycopodium.com.au">processind@lycopodium.com.au</a>
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	Australian Renewable Fuels Tank Farm Rebuild - Hydrocarbon Biofuel Storage Engineering and Project Management Services Biodiesel Producers - Barnawartha Vic Engineering and Project Management Services for plant to produce 50k TPA of Biodiesel (\$50M AUD) Swan Hill Ethanol 100 ML/year of fuel-grade ethanol Detailed Engineering Territory Biofuels NT Australia Engineering services for Preliminary design for plant re-commissioning and expansion. Design involved plant capacity upgrade to 240 ML/year using lower grade feedstock
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	Hydrogen Peroxide Plant Solvay Interlox - Bankmeadows NSW \$20M expansion EPCM from current 17.5k TPA to 24k TPA

Question	Response
	<p>Hydrochloric Acid Plant</p> <p>Orica Aus - Laverton Vic</p> <p>Preliminary and detailed EPCM</p> <p>Double production capacity</p> <p>Replacement Hydrogen Sulphide Plant</p> <p>BHP Billiton - Kwinana WA</p> <p>EPCM for AUD18M - new facility</p> <p>Culture Seed Factory</p> <p>Yakult - Dandenong Vic</p> <p>Expansion of the manufacturing room for the production of fermented milk</p> <p>Preliminary design to Installation EPC</p>
<p>Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.</p>	<p>See previous experience in building BioRefineries</p>
<p>Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.</p>	<p>Lycopodium are happy to consider all models of engagement from EPCM to a Design and Construct EPC</p>
<p>Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?</p>	<p>N/A</p>

Lycopodium provided a document “Lycopodium Capability - Engineers & Project Managers.pdf”. This will be attached electronically to this report.

## 4.9 MONADELPHOUS

Question	Response
Email Address	PJWalker@monadel.com.au
First Name	Peter
Last Name	Walker
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Monadelphous has operational depots in Brisbane, Gladstone and Mackay. The Monadelphous contact is Peter Walker, 19 Lang Parade, Milton Qld 4064, 07 3736 4122, 0409 266 078, pjwalker@monadel.com.au, www.monadelphous.com.au
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	We are currently completing structural, mechanical, piping, electrical and instrumentation works on the Inpex LNG facility in Darwin. This work includes the installation and commissioning of gas turbine generators and the LNG storage tanks. We have had a continual site presence on this project for the last 3 years. We also built the onshore gas plants for Eni's Blacktip project and BHP's Macedon project. We have also undertaken numerous capital projects and maintenance activities for BP's Kwinana refinery. More detailed information is available for these projects, if required.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	We have significance experience building mine process plants including the Gove optimization project, the million ounce plant upgrade for Lihir Gold in PNG; the Cannington process plant for BHP; and iron ore process plants for Hope Downs and Yandi. More detailed information is available for these projects, if required.
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client	Detailing this information here will be difficult.

Question	Response
name, Brief scope and Project value for all such work experience provided.	
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	There will be particular long-lead equipment items like crushers, boilers and reactor vessels. There may well be several different forms of execution strategy used for these types of plants but typically they would include an in loading and storage facility, the process plant, the out loading and storage facility and any cogeneration plant that might be involved. There will also be some sort of water treatment facility required.
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	The most common issue is the matching of the procurement schedule with the construction schedule particularly if there are long-lead items from OEM suppliers involved in the project.

Monadelphous provided a “Biorefinery Project Listing” in pdf format. This will be attached electronically to this report.

## 4.10 SNC LAVALIN

Question	Response
Email Address	ruairi.kerr@snclavalin.com
First Name	Ruairi
Last Name	Kerr
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	488 Queen Street, Level 1, Brisbane Ruairi Kerr Regional Business Development Director, Asia Pacific Tel: +61 7 30021000 Mob: +60 12 275 7708 Email: <a href="mailto:Ruairi.Kerr@snclavalin.com">Ruairi.Kerr@snclavalin.com</a> Website: <a href="http://www.snclavalin.com">http://www.snclavalin.com</a>
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	SNC-Lavalin has the experience and expertise to help clients create and operate refining facilities and deliver full EPC/EPCM services worldwide, specializing in process plants, materials handling and infrastructure. Our track record is characterized by partnership, performance and safety, with a significant percentage of our work being repeat business from satisfied clients. We're experienced in a wide range of refining projects, from small process unit revamps to large grass-roots facilities. We're helping industry meet the increasing challenges of climate change and regulation, and have been extensively involved in clean fuels initiatives such as low sulphur gasoline and ultra-low sulphur diesel projects. We also have experience in in biorefinery plants such as ethanol plants etc.



Question	Response
<p>Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.</p>	<p>Founded in 1911 and with 2017 revenues of \$ 9.3 billion, SNC-Lavalin is a global fully integrated professional services and project management company and a major player in the ownership of infrastructure. From offices around the world, SNC-Lavalin's over 50,000 employees are proud to build what matters. Our teams provide comprehensive end-to-end project solutions – including capital investment, consulting, design, engineering, construction, sustaining capital and operations and maintenance – to clients across oil and gas, mining and metallurgy, infrastructure, clean power, nuclear and EDPM (engineering design and project management). In July 2017, SNC-Lavalin acquired Atkins, one of the world's most respected design, engineering and project management consultancies, which has been integrated into our sectors. In June 2014, SNC-Lavalin acquired Kentz, an engineering and construction business serving clients primarily in the oil and gas, petrochemical and mining and metals sectors. SNC-Lavalin maintains exceptionally high standards for health and safety, ethics and compliance and environmental protection, and is committed to delivering quality projects on budget and on schedule to the complete satisfaction of its clients. For over four decades our Asia Pacific team has played a critical role in developing major projects that have advanced the economies of many countries throughout Asia. Operating from strategic locations in Australia, China, Hong Kong, Indonesia, Malaysia, Papua New Guinea, Singapore, Thailand and Vietnam our clients can access a regional team of more than 5,000 specialists in four key sectors: Infrastructure, Mining &amp; Metallurgy, Oil &amp; Gas, and Power. We recently completed the SMEIP construction of the Gorgon and Ichthys LNG facilities in Western Australia and are currently providing field services solutions to QGC in Queensland.</p>
<p>Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.</p>	<p>As mentioned SNC-Lavalin has been involved in numerous projects globally to clients across oil and gas, mining and metallurgy, infrastructure, clean power, nuclear and EDPM (engineering design and project management). In the refining sector for example, for the past 50 years, we've delivered engineering, procurement, construction management and technical support at ExxonMobil's Baytown complex in Texas. Our services cover life extensions, end-of-life replacements,</p>





Question	Response
	<p>system modifications, risk mitigation, regulatory, environmental and safety compliance. In the last three years alone, SNC-Lavalin has been involved in a number of refining projects ranging from studies through to EPC/EPCM roles. Sample projects include the EPC on the Expansion of Asphalt Production Facilities at Saudi Aramco's Ras Tanura Integrated Refinery which will be completed in Q1 2019, a study/basic engineering for a 10,000 BPD Refinery for Brahms Oil Refineries in Guinea-Bissau which is ongoing and the Cartagena Oil Refinery Expansion - PCS2 Project for Reficar - Refineria de Cartagena which was completed in 2017. In Australia, SNC-Lavalin has been most recently involved in supporting the delivery of the Ichthys LNG Project's onshore processing facilities. In 2012, we were awarded the temporary facilities' telecommunication system and site-wide fibre network by lead onshore contractor, JKC. This was successfully delivered in May 2014, establishing our presence on site at Bladin Point, near Darwin. In 2013 we were awarded the underground electrical and instrumentation package for the onshore LNG facilities by Leighton Contractors, a JKC subcontractor, with the final cable pulled in November 2015. In early 2014, the UGL Kentz Joint Venture was awarded the structural, mechanical and piping (SMP) construction package for the onshore facilities and gas processing plant by lead onshore contractor, JKC. We were also selected to deliver the overall electrical and instrumentation (E&amp;I) construction package for the two process trains and utilities in April 2014. Combined, both these two packages are estimated to have created more than 7,000 jobs. Since 2012, we have executed over 16 million hours across four contracts for the Ichthys Project Onshore LNG Facilities, receiving awards from lead onshore contractor JKC in recognition of our dedication and commitment to health, safety and environment.</p>
<p>Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.</p>	<p>For the procurement scope, SNC-Lavalin will utilize innovative procurement solutions while respecting quality, cost and schedule constraints in an evolving sourcing market. Our portfolio includes extensive logistics and supply market intelligence gathered at a global level using a register of over 40,000 suppliers and serves as the foundation for procurement strategies developed locally for our clients. We optimize our</p>

Question	Response
	<p>purchasing leverage and increase our negotiation power with suppliers through consolidation of our requirements and technical standardization; optimize procurement procedures and best practices; and drive process efficiencies with standardized tools and systems.</p> <p>For contracts work packages, SNC-Lavalin incorporates strategies that take into account the location, the scale and complexity of the project, as well as resource availability, areas for modularization and the overall execution schedule. Our typical approach would be to split the process and non-process areas. SNC-Lavalin prefers well defined contracts work packages and providing close management of the works to ensure the success of the overall project. We also select the most economical commercial structure for each contract.</p>
<p>Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?</p>	<p>The typical supply chain challenges faced in conventional refining projects are those related to schedule and cost control mainly associated with the equipment and associated auxiliaries. We expect similar challenges will be faced with a biorefinery project as well. We have demonstrated our capabilities to overcome these challenges on past projects based on our schedule planning experience and the extensive cost data held in our databases</p>

SNC-Lavalin provided a presentation of their downstream capabilities in PDF format. This will be provided as an electronic attachment to this report

## 4.11 TFA PROJECT GROUP

Question	Response
Email Address	rynhardt.grove@tfa.com.au
First Name	Rynhardt
Last Name	Grove
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	166 Knapp Street, Fortitude Valley, QLD, 4006, Contact: Keith Sharp, Ph: 07 3854 2924, Email: keith.sharp@tfa.com.au, Website: tfa.com.au. Note: A formatted response containing identical information has been sent to ICN via email.
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	TfA are project managers, consulting engineers and town planners with 23 years of experience in the petroleum industry and 17 years on Biorefinery projects. Over 7 years TfA acted as Clients engineer on Australia's first grain to ethanol biorefinery at Dalby from statutory approvals and concept design and project costing, culminating in full 3D detail design for the EPC contractor. Other biofuels clients include the QLD State Government, Primary Energy, Austcane, Eagle Energy, Wilmar / CSR, Neumann Petroleum and Colgate Palmolive. Keith Sharp, TfA's engineering manager, is a member of the Bioenergy Australia Liquid Biofuels Committee.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	TfA has provided a range of services for complex engineering and Biorefinery projects. These include site master planning and town planning, project management, front end engineering, preliminary budget estimates, complete multidisciplinary design, procurement support, contract management, site supervision and commissioning. We are the only consultant to have successfully completed a greenfield Ethanol plant in Australia. We have also performed feasibility studies on over ten proposed ethanol plants and provided biorefinery project

Question	Response
	due diligence to the Queensland government. TFA offers unique experience to undertake biorefinery projects.
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	TfA project managed and designed the \$100 million Dalby Biorefinery with a capacity of 76 ML per annum of fuel grade ethanol. The biorefinery was commissioned in 2008 for Dalby Biorefinery Ltd. TfA's scope included technologist evaluation, feasibility study, site master planning, regulatory approvals, project definition, front-end engineering, project budget, utilities negotiation, Australianisation of imported equipment, detailed design, and procurement support. TfA have project managed and provided complete detailed design documentation for numerous petroleum projects including the Caltex Mackay Fuel Terminal Upgrade (\$25 million), Eagle Farm Terminal Expansion (\$27 million), Shell Pinkenba Bitumen Plant Upgrade (\$10 million), and the Amberley Airforce Base A330 AAR Hydrant Extension (\$7 million). Recently, TfA completed the design for the award-winning Viva Energy Lubricants Import Facility (\$18 million).
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	The deliverables required will be dependent on the stage and specific requirements of the project. In TfA's experience, the major contract work packages have included: Front end engineering design packages, regulatory approval packages, earthworks packages, civil/structural packages, technologist packages, mechanical plant packages, electrical and instrumentation packages, detailed design packages and free issue equipment packages for procurement. The detailed design deliverables included civil design, tank farm design, mechanical/ piping design, structural design, architectural design, firefighting design, and electrical and instrumentation design.
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	The first priority for a biorefinery should be to secure long-term offtake agreements for products and secure access to utilities for plant viability. In some cases, TfA has found a lack of locally supplied suitable equipment (e.g. pumps) which must then be imported at a high cost. When importing electrical equipment, it is also important to ensure that the equipment meets the certification requirements in Australia.

TfA Group provided a document “TfA Biorefinery Building Capabilities” in PDF format. This will be provided as an electronic attachment to this report.

## 4.12 THYSSENKRUPP INDUSTRIAL SOLUTIONS

Question	Response
Email Address	graeme.cox@thyssenkrupp.com
First Name	Graeme
Last Name	Cox
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	No response
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Thom Cameron, General Manager, Queensland, thyssenkrupp Industrial Solutions (Australia) Pty Ltd, Level 19, 1 Eagle Street, Brisbane Queensland 4000, T: +61 7 3360 0828, Thom.Cameron@thyssenkrupp.com <a href="http://www.thyssenkrupp.com/">http://www.thyssenkrupp.com/</a>
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	MSF Sugar Green Energy Power Plant (Tableland Mill cogeneration, Mareeba, EPC, current); Caltex Diesel Hydro-Treater Unit-2 (Lytton Refinery, Brisbane, FEED & EPCM, 2009); Caltex Clean Fuels Project (Lytton, Brisbane & Kurnell, Sydney Refineries, EPCM, 2006); Shell Hydro-De-Sulphurisation-2 (Clyde Refinery, Sydney, FEED & EPCM, 2009); Mobil Clean Fuels Venture (Altona Refinery, Melbourne, FEED & EPCM, 2005); Shell Hydro-De-Sulphurisation-2 (Geelong Refinery, EP+Cs, 2003); plus many other upstream oil & gas, gas processing, refinery, petrochemical, chemical, and bio-fuel project developments in Australia, Thailand, South Africa and Middle East. Further information including project fact sheets can be provided upon request.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	Petrochemicals industry, ethylene/propylene/polypropylene, Study & FEED & EPCM projects for Qenos, Altona, VIC, Basell, Geelong, VIC, PTT PE & PTT Chem, Thailand. Chemicals industry, ammonium nitrate, Study & FEED & EPCM & EPC projects for CSBP, Kwinana, WA, QNP, Moura, QLD and Orica, Kooragang Island, NSW and Bontang, Indonesia. Chemicals

Question	Response
	industry, sodium cyanide, Study & FEED & EPCM projects for AGR, Kwinana, WA and Orica, Yarwun, QLD. Natural Gas processing plant projects for BP, Vietnam, Eastern Star Gas, NSW, Lochard Energy, VIC, Origin Energy, QLD & VIC, QGC, QLD, Santos, QLD & SA, Sasol, South Africa.
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	Please see supplementary response provided via email. *****
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	Please clarify the question. thyssenkrupp Industrial Solutions (Australia) is capable to work across all project phases and we have flexible contracting strategies that can support a variety of project execution models. The specific scope of services and supply could be discussed based on the scope of facilities and the customer needs.
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	Please clarify the question. thyssenkrupp Industrial Solutions (Australia) has experience from a broad range of projects that have generated a diverse range of challenges. We have applied proven project management and procurement methods, devised innovative solutions and have recorded project lessons, which are considered in project execution planning for new projects.

The following supplementary response from Thyssenkrupp was received by email:

#### Question 6.

Industry	Project year	Project name	Client name	Brief scope	Project value
Sugar	current	Green Energy Power Plant	MSF Sugar	Tableland Sugar Mill cogeneration, Mareeba, QLD, 24 MW, EPC	\$75 million
Biofuel	2006	Grain to Ethanol	CSR Ethanol	Moree, NSW, Feasibility Study & Capital Cost Estimate (not implemented)	\$200 million
Biofuel	2007-2008	Grain Fuel Ethanol Plant	Primary Energy Pty Ltd	Kwinana, WA, FEED and +/- 25% Estimate (not implemented)	\$200 million
Biofuel	2006-2008	Biodiesel	Thai Oleochemicals Co., Ltd.	Map Ta Phut, Rayong, Thailand, Methyl Ester (Biodiesel) and Fatty Alcohol, EPCM	THB. 1800 million
Biofuel	2007	Ethanol Plant	Thai Oil Public Co., Ltd. (TOP)	NakornSawan Province, Thailand, FEED	Confidential

Industry	Project year	Project name	Client name	Brief scope	Project value
Oil Refining	2006-2009	Diesel Hydro-treater Unit DHTU-2	Caltex Australia Pty Ltd	Lytton Refinery, Brisbane, QLD, Study & FEED & EPCM	\$350 million
Oil Refining	2003-2006	Clean Fuels Project	Caltex Australia Pty Ltd	Lytton, Brisbane & Kurnell, Sydney Refineries, FEED & EPCM	\$500 million
Oil Refining	2003-2005	Clean Fuels Venture	Mobil	Altona Refinery, Melbourne, FEED & EP+Cs	\$100 million
Oil Refining	2007-2009	Clyde HDS 10 ppm Diesel	Shell Refining Australia Pty Ltd	Clyde Refinery, Sydney, FEED & EPCM	\$60 million
Oil Refining	2001-2003	HDS2 Hydrodesulphurisation	Shell (via CBI)	Geelong Refinery, EP+Cs	\$130 million
Petrochemicals	2001-2003	Polypropylene Expansion	Basell Australia Pty Ltd	Geelong, VIC, EP+Cs	\$70 million
Petrochemicals	2010-2012	Ethylene Plant Revamp	Qenos Pty Ltd	Altona, VIC, FEED & EP Services	\$130 million
Petrochemicals	2006-2010	Ethylene Plant	PTT Polyethylene Co Ltd (PTTPE)	Map Ta Phut, Thailand, Project Management Consultancy	Confidential
Petrochemicals	2005-2007, 2007-2008	Plant I Debottleneck Plant II Debottleneck	PTT Chemical Public Co Ltd (PTTCH)	Map Ta Phut, Thailand, Project Management, Procurement & Construction Management	\$80 million \$70 million

Due to limited response time, a selection of only the most directly relevant projects is provided above. Additionally we can provide if required, further projects in oil refining and other relevant process plant projects from different industries. Those others include:

- Chemicals industry, ammonium nitrate, Study & FEED & EPCM & EPC projects for CSBP, Kwinana, WA, QNP, Moura, QLD and Orica, Kooragang Island, NSW and Bontang, Indonesia.
- Chemicals industry, sodium cyanide, Study & FEED & EPCM projects for AGR, Kwinana, WA and Orica, Yarwun, QLD.
- Natural Gas processing plant projects for BP, Vietnam, Eastern Star Gas, NSW, Lochard Energy, VIC, Origin Energy, QLD & VIC, QGC, QLD, Santos, QLD & SA, Sasol, South Africa.

## 4.13 WDT ENGINEERS

Question	Response
Email Address	andrew.hauff@wdtengineers.com.au
First Name	andrew
Last Name	hauff
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	124 Ingram Road, Acacia Ridge, 4110. Andrew Hauff, Divisional Manager, andrew.hauff@wdtengineers.com.au, 07 3345 4000, wdtengineers.com.au
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	Extensive range of projects completed for Mackay Sugar Refinery, Yarraville Refinery and the majority of Sugar Mills in QLD and NSW. Experience developed over 47 plus year history in the industry. Have completed design and construct projects including process and mechanical plant design.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	WDT has over 45 years' experience in the design, manufacture, construction and commissioning of the full scope of equipment used in the sugar milling and refining processes from the point of juice extraction to export of the finished product. We have completed many design and construct contracts ranging in scope from process design through to completion with clientele including most of the sugar mills in QLD. We have also been involved in delivering equipment for co-generation projects for a number of mills.
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	Recently completed 3500t sugar bin and feed system, \$8M, 2018, Wilmar Sugar, refer wdtengineers.com.au for full range of products and services.






Question	Response
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	Design and construction of process vessels, clarification systems, thickening systems, filtration systems, sumps, hoppers, screw conveyors, belt conveyors, steam and process pipework, material handling
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	Nothing different to other industries

## 4.14 WOOD GROUP PSN AUSTRALIA

Question	Response
Email Address	paul.mccarthy@woodplc.com
First Name	Paul
Last Name	McCarthy
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	Yes
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Steve Ciccone Regional Director, Australia East Level 11, 144 Edward Street, Telephone: +61 7 3033 5600 Mobile: 0451633632 Email: Steve.Ciccone@woodplc.com
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	*****
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	*****
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	*****
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	*****
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	*****

\*\*\*\*\* Wood Group provided 18 pages of information listing projects from 2017 to 2003 demonstrating their major Bio-Derivative experience. In addition the company provided a 90 page



brochure “Wood – Speciality Chemicals, Statement of Qualifications”. These will be provided as electronic copies attached to this report.

## 4.15 WORLEY PARSONS SERVICES

Question	Response
Email Address	rilke.devos@advisian.com
First Name	Rilke
Last Name	Devos
Do you provide consent to include your company details in the marketing material put forward by the Department of State Development, Infrastructure, Manufacturing and Planning (DSDMIP) as an organisation looking to build or having the capability to construct Biorefineries in Queensland?	Yes
ICN Queensland will use information from your company profile on ICN Gateway to create this capability matrix. Has your company profile on ICN Gateway been updated recently?	No
Please provide operational location of the company in Queensland and key contact information including contact name, address, contact phone number, email and website.	Location: Brisbane; Contact name: Tasman Graham; Address: Level 31, 12 Creek Street, Brisbane, QLD, 4000; Contact phone number: +61 7 3377 7000; E-mail: infoasiapacific@advisian.com; Website: www.advisian.com
Please provide previous experience in building refineries or demonstrated capability from experience in the petroleum or sugar industries (including electricity cogeneration) to develop Biorefineries.	The WorleyParsons group are experienced providers of EPC / EPCM services for petroleum refineries and power facilities. In Australia we support much of the ongoing improve (i.e Maintenance and upgrade) services. We have supported a built a few small biorefineries e.g. Dalby Biorefinery, but generally we are known for the engineering and business case analysis that enables these developments to proceed.
Please provide proven capability in other construction and engineering projects which would highlight your ability to build a Biorefinery.	
Information on previous successful work including the type and size of the construction (including any petroleum refineries). Please include Project year, Project name, Client name, Brief scope and Project value for all such work experience provided.	
Please list potential procurement and contracts work packages for building a Biorefinery from your company's viewpoint.	



Question	Response
Please list any challenges your company has encountered in the supply chain while working on a Biorefinery or a conventional petroleum refinery project?	

## APPENDIX C – SURVEY RESPONSE MATRIX

The following packages have been extracted from the company responses to the question “Please list potential procurement and contracts work packages for building a Biorefinery from your company’s viewpoint”. They have been edited to remove duplicates where these are apparent.

Note: O = Overseas, C = Contestable or L= Local supply as defined at Appendix F.

#	Work Package	OCL/C/L
1	ARCHITECTURAL DESIGN	C
2	FRONT END ENGINEERING DESIGN PACKAGES	C
3	REGULATORY APPROVAL PACKAGES	L
4	CIVIL DESIGN	C
5	DETAILED DESIGN PACKAGES	C
6	FREE ISSUE EQUIPMENT PACKAGES FOR PROCUREMENT.	C
7	TANK FARM DESIGN	C
8	MECHANICAL/ PIPING DESIGN	C
9	STRUCTURAL DESIGN	C
10	FIREFIGHTING DESIGN	C
11	ELECTRICAL AND INSTRUMENTATION DESIGN.	C
12	EARTHWORKS PACKAGES	L
13	BULK EARTHWORKS AND CIVIL PREPARATION (MAY INCLUDE PILING)	L
14	CONCRETE FOOTINGS / FOUNDATIONS	L
15	SUMPS	L
16	CIVIL/STRUCTURAL PACKAGES	C
17	CIVIL CONSTRUCTION	C
18	DIESEL GENERATOR BACK-UP (EMERGENCY POWER SUPPLY)	C
19	SITE BUILDINGS / WORKSHOPS CONTRACT WORKS PACKAGES	L
20	POWER GENERATION PACKAGE (SUBJECT TO SITE LOCATION OPTIONS MAY INCLUDE EXISTING GRID CONNECTION, RENEWABLE SOURCES, GAS-FIRED SOURCES / COGENERATION)	C
21	RENTAL CONSTRUCTION EQUIPMENT, TEMPORARY CONSTRUCTION BUILDINGS	L

#	Work Package	OCL/C/L
22	PLANT AIR	C
23	MISCELLANEOUS PLANT SYSTEMS AND EQUIPMENT	C
24	ON SITE INSULATION/ COATINGS	L
25	ONSITE NDE	L
26	OFFSITE STRUCTURAL FABRICATION	C
27	OFFSITE PIPING FABRICATION	C
28	MECHANICAL EQUIPMENT SUPPLY	C
29	MILLING/CRUSHING COMPONENTS (SUGARCANE);	C
30	COOKING TANKS (GRAIN ETHANOL);	C
31	FERMENTATION TANKS;	C
32	DISTILLATION AND EVAPORATION COLUMNS AND PIPING;	C
33	DEHYDRATION (MOLECULAR SIEVE TECHNOLOGY);	C
34	CENTRIFUGES;	C
35	DRYING SYSTEMS (FOR THE DISTILLER GRAINS);	C
36	BOILERS;	C
37	THERMAL OXIDIZERS;	C
38	ETHANOL STORAGE AND LOADOUT OF THE ETHANOL FOR DELIVERY;	C
39	COOLING TOWERS;	L
40	CONDENSERS	C
41	WASTEWATER TREATMENT/DIGESTERS;	C
42	MAKEUP WATER TREATMENT AND STORAGE;	C
43	ELECTRICAL/INSTRUMENTATION/DISTRIBUTED CONTROL SYSTEM;	C
44	SPECIALTY PROCESS PACKAGES (E.G.: ACID, GAS, AND AMMONIA TARGETED EXTRACTION (AGATE) PACKAGE OR SIMILAR SPECIALISED PACKAGE TO SUIT THE BIOREFINERY PROCESS BEING DEVELOPED).	C
45	TRANSFORMER(S)	C
46	TECHNOLOGIST PACKAGES	C
47	MECHANICAL PLANT PACKAGES	C
48	SMP INSTALLATION / CONSTRUCTION (INCLUDING COATINGS / INSULATION / LAGGING / PRE-COMMISSIONING OF MECHANICAL EQUIPMENT)	L

#	Work Package	OCL/C/L
49	STEAM AND PROCESS PIPEWORK	C
50	BOILERS AND REACTOR VESSELS	C
51	PROCESS VESSELS	C
52	BULK PIPING AND FITTINGS	C
53	TANKS	C
54	VALVES	C
55	PROCESS PUMPS	C
56	VESSELS	C
57	ELECTRICAL AND INSTRUMENTATION PACKAGES	C
58	SCADA / CONTROL SYSTEMS	C
59	INSTRUMENTATION (E.G.: TRANSMITTERS, TRANSDUCERS, FLOW-METERS / MEASUREMENT EQUIPMENT)	C
60	E&I INSTALLATION / CONSTRUCTION (INCLUDING LOOP TESTING AND PRE-COMMISSIONING)	C
61	CONTROL SYSTEM INSTALLATION / COMMISSIONING	L
62	INLOADING AND STORAGE FACILITY	L
63	PROCESS PLANT	C
64	CRUSHERS	C
65	OUTLOADING AND STORAGE FACILITY	L
66	COGENERATION PLANT	C
67	CLARIFICATION SYSTEMS	C
68	THICKENING SYSTEMS	C
69	FILTRATION SYSTEMS	C
70	MATERIAL HANDLING	C
71	HOPPERS	C
72	SCREW CONVEYORS	C
73	BELT CONVEYORS	C



## APPENDIX F – CONTESTABILITY ASSESSMENT CRITERIA

Table: Contestability Assessment Criteria

<ul style="list-style-type: none"><li>• <b>Overseas (O)</b></li></ul>	Usually imported, including suppliers that may be a local agent or importer.
<ul style="list-style-type: none"><li>• <b>Contestable (C)</b></li></ul>	<p>The products and/or services included in, or may potentially be included in contracts for a project that can be supplied from a premises in Queensland, the rest of Australia and/or New Zealand from:</p> <ul style="list-style-type: none"><li>- Sources geographically close to the project</li><li>- Queensland</li><li>- Other locations within Australia or New Zealand; or</li><li>- Outside Australia and New Zealand.</li></ul>
<ul style="list-style-type: none"><li>• <b>Local (L)</b></li></ul>	Usually supplied locally and there is a supplier that manufactures the product or provides the service wholly or substantially from a premises located in Queensland.



## APPENDIX G – DEFINITIONS

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### **Biorefinery:**

A Biorefinery is defined as a facility that integrates biomass conversion processes and equipment to produce fuels, power, and value-added chemicals and products from biomass. A Biorefinery is analogous to a conventional petroleum refinery, which produces multiple fuels and products from petroleum.

### **Biorefining:**

The International Energy Agency (IEA) has defined biorefining as the sustainable processing of biomass into a spectrum of bio-based products (food, feed, chemicals, and materials) and bioenergy (biofuels, power, and/or heat).

### **Engineering, Procurement and Construction (EPC):**

Under an EPC contract, the principal or owner enters into a contract with the EPC contractor, who will, in turn, enter into various subcontracts with subcontractors for the performance of specified portions of work. They will be responsible for not only the engineering aspects of the project, but also procurement of equipment and design and construction of the facility, plant or project.

# APPENDIX H – POTENTIAL EPC CONTRACTORS (NOT CONTACTED)

Note: The information in this Appendix is taken from company profiles in ICN Toolbox and has not been recently updated for this report.

## 4.1 AMEC FOSTER WHEELER AUSTRALIA PTY LTD

Company Details	
Name	AMEC FOSTER WHEELER AUSTRALIA PTY LTD
ABN	52008992694
Queensland Contact	Tim Adikari Level 11, 144 Edward Street BRISBANE QLD 4000 Australia GPO Box 1957, BRISBANE QLD 4000 Australia Ph: 61 7 30335600 Fax: 61 7 30335720 Email: tim.adikari@amec.com Web: www.amecfw.com
Website	www.amecfw.com
Employees	35000
Turnover \$	100000000
Summary	Amec Foster Wheeler (now part of Wood Australia) is a focused supplier of high-value consultancy, engineering and project management services to the world's natural resources, nuclear, clean energy, water and environmental sectors.

## 4.2 AUSENCO

Company Details	
Name	AUSENCO SERVICES PTY LTD
ABN	82011057837
Queensland Contact	Jesse Mann, <a href="mailto:jesse.mann@ausenco.com">jesse.mann@ausenco.com</a> P: +61 7 3169 7359 144 Montague Road, SOUTH BRISBANE, QLD- 4101
Website	<a href="https://www.ausenco.com">https://www.ausenco.com</a>
Employees	2800
Turnover \$	500,000,000
Summary	<p>Ausenco is a leading provider of engineering, procurement and construction management (EPCM) services for the global resource and energy sectors. We combine ingenuity with insight to deliver effective end-to-end solutions for our clients.</p> <p>We have a diverse range of services that work together seamlessly, creating a complete end-to-end solution for our clients. Services include:</p> <ul style="list-style-type: none"> <li>- Environmental and social solutions (including geotechnical and civil solutions, to tailings and mine waste management)</li> <li>- Minerals processing (including concentrators, hydrometallurgy, smelting and heap leach facilities)</li> <li>- Oil and gas (including refining, well pads and offshore structures)</li> <li>- Power (including energy generation and transport)</li> <li>- Transportation systems (including bulk materials handling and heavy haul)</li> <li>- Pipeline systems (including slurry, water, oil and gas pipelines, and control systems)</li> <li>- Ports and terminals</li> <li>- Contract operations</li> <li>- Asset management</li> <li>- Infrastructure.</li> </ul>

## 4.3 BECHTEL AUSTRALIA PTY LTD

Company Details	
ABN	42006334505
Queensland Contact	Mr Mark Le Pla Asia-Pacific BD Manager Ph: 61 07 31675133 Fax: 61 07 31675001 Mob: 61 04 18981254 Email: mrlepla@bechtel.com
Website	<a href="http://www.bechtel.com.au">www.bechtel.com.au</a>
Employees	53000
Turnover \$	9,000,000,000
Summary	<p>Bechtel is among the most respected engineering, construction, and project management companies in the world.</p> <p>Since 1898, we've completed more than 25,000 extraordinary projects many first-of-a-kind in 160 countries on all seven continents serving the energy delivery, defence, environmental clean-up, mining &amp; metals, oil, gas &amp; chemicals, infrastructure and transportation, and telecommunications industries.</p>

## 4.4 BROADSPECTRUM (AUSTRALIA) PTY LTD

Company Details	
Name	BROADSPECTRUM (AUSTRALIA) PTY LTD
ABN	11093114553
Queensland Contacts	Stuart Miles +61 7 3248 8722 e-mail: <a href="mailto:stuart.miles@broadpectrum.com">stuart.miles@broadpectrum.com</a> Level 4, 52 Merivale Street, SOUTH BRISBANE, QLD - 4101
Website	<a href="http://www.broadpectrum.com">www.broadpectrum.com</a>
Employees	25000
Turnover \$	4,000,000,000
Summary	Broadpectrum delivers complex project outcomes in a broad range of services that are essential to our clients across multiple industrial sectors including defence, maritime, resources, oil and gas, facilities, infrastructure and business support.

## 4.5 CONSOLIDATED CONTRACTING COMPANY AUSTRALIA PTY LTD

Company Details	
Name	Consolidated Contracting Company Australia Pty Ltd
ABN	49140609052
Primary Contacts	Antoine Hayek, e-mail: <a href="mailto:ayhayek@ccc.grLevel">ayhayek@ccc.grLevel</a> 19 AMP Place, 10 Eagle Street, BRISBANE, QLD - 4000
Website	<a href="http://www.ccc.net/">http://www.ccc.net/</a>
Employees	120000
Turnover \$	5,000,000,000
Summary	<p>Consolidated Contracting Company Australia (CCC Australia) is the established dynamic subsidiary company in Australia of Consolidated Contractors Group (CCC), working successfully on the CSG Projects since 2010.</p> <p>CCC is a global engineering and construction company with operations in 50 countries across five continents. For the past 12 years, CCC has been consistently ranked in the top 25 of ENR international construction contractors. We manage a worldwide turnover of US\$ 5 Billion and employ over 120,000 personnel from 80 different nationalities. Our large investment in construction equipment; includes over 17,000 pieces of equipment valued at 1 Billion USD.</p> <p>CCC Australia has the groups support in all forms, from financing, guarantees, plant and equipment, technical, as well as, administrative and personnel matters.</p>

## 4.6 CPEC (AUS)

Company Details	
Name	CPEC (AUS)
ABN	74159909574
Queensland Contact	<p>Mrs Qing Xu            Business Development Manager            Ph: 61 07 31825526            Mob: 61 04 05232701            Email: qing.xu@cpecc.com.au            Level 28, Eagle One One One            111 Eagle Street            BRISBANE QLD 4000            Australia</p>
Website	<a href="http://cpecc.cnpc.com.cn/cpecc/en/">cpecc.cnpc.com.cn/cpecc/en/</a>
Employees	21460
Turnover \$	4,000,000,000
Summary	<p>China Petroleum Engineering &amp; Construction (Australia) Pty Ltd (CPEC (AUS)) is a wholly-owned-subsiary of China Petroleum Engineering &amp; Construction Corporation (CPECC). CPECC is a large-scale state owned enterprise specialized in contracting petroleum and petrochemical projects, and has been the largest and leading subsidiary of China National Petroleum Corporation (CNPC) in the field of domestic and overseas oil/gas engineering and construction.</p> <p>CPECC is abundant in financial capabilities and technical strength, and boast a large group of technical talents and management professionals who are familiar with international practices, high in technological level and rich in experience. CPECC is furnished with state-of-the-art technologies, superior engineering and construction equipment, and rich resources for oil and gas projects.</p>



## 4.7 ENERAQUE PTY LTD

Company Details	
Name	ENERAQUE PTY LTD
ABN	81605908549
Primary Contacts	Oliver Watt Business Development Manager Ph: 61 7 34343500 Mob: 61 4 48165250 Email: oliver.watt@eneraque.com 1937 Ipswich Road ROCKLEA QLD 4106 QLD-4106 Ph: 61 7 34343500 Fax: 61 7 34343593 Email: sales@eneraque.com
Website	<a href="http://www.eneraque.com">www.eneraque.com</a>
Employees	80
Turnover \$	50,000,000
Summary	Eneraque specialises in power, pumping, lighting solutions and gas flaring for large and small-scale industrial, mining, construction and oil and gas projects in Australia and abroad. They are solution providers for the diesel power and gas handling and environmental industries.

## 4.8 IOR ENERGY PTY LTD

Company Details	
Name	IOR Energy Pty Ltd
ABN	60010504444
Primary Contacts	Mr Stewart Morland Managing Director Ph: 61 7 38954444 Fax: 61 7 33957902 Email: mail@ior.com.au 39 Byron Street BULIMBA QLD 4171 Australia
Website	www.ior.com.au
Employees	40
Turnover \$	Not provided
Summary	Design, manufacture and operation of small scale oil refineries and gas processing plants, well servicing and manufacture oil process equipment.

## 4.9 JOHN HOLLAND PTY LTD

Company Details	
Name	JOHN HOLLAND PTY LTD
ABN	11004282268
Queensland Contact	Juli Forrest Business Development Manager juli.forrest@jhg.com.au – P: +61 7 3867 7004 1000 Ann Street, FORTITUDE VALLEY, QLD- 4006
Website	<a href="http://www.johnholland.com.au">www.johnholland.com.au</a>
Employees	3000
Turnover \$	4,000,000,000
Summary	<p>Operating across Australia, New Zealand and South East Asia, John Holland is a fully integrated infrastructure, building and rail group.</p> <p>We offer our customers a total service solution across the project lifecycle, from feasibility, to design, construction, operations and maintenance.</p> <p>Our infrastructure expertise encompasses a variety of sectors including industrial and resources, non-process infrastructure, intermodal transport networks, rail, roads, marine, tunnelling, water, power and energy.</p>

## 4.10 RCR TOMLINSON LTD

Company Details	
ABN	81008898486
Primary Contacts	Mr Leon Griffiths Proposals Manager Ph: 61 8 93558133 Fax: 61 8 93610724 Mob: 61 4 18928747 Email: leon.griffiths@rcrtom.com.au
Website	<a href="http://www.rcrtom.com.au">www.rcrtom.com.au</a>
Employees	3600
Turnover \$	1,500,000,000
Summary	<p>RCR is an ASX-listed company with a long and proud heritage and a culture of innovation. We use our significant technical intellectual property to provide a comprehensive range of engineering and infrastructure solutions from design to manufacture, construction, installation, maintenance and repair services.</p> <p>From our origins in 1898, RCR has grown to become one of Australia's most diversified engineering and infrastructure companies, using in-house expertise to provide a comprehensive range of solutions for our customers.</p>

## 4.11 AURECON

Company Details	
Name	AURECON AUSTRALASIA PTY LTD <sup>9</sup>
ABN	54005139873
Queensland Contact	Stephen Cutting Digital Practice Leader, Northern Australia, Aurecon T +61 7 49775429 M +61 400798219 <a href="mailto:Stephen.Cutting@aurecongroup.com">Stephen.Cutting@aurecongroup.com</a>
Website	<a href="https://www.aurecongroup.com/">https://www.aurecongroup.com/</a>
Employees	6,700
Turnover \$	700,000,000
Summary	<p>Aurecon brings ideas to life to design a better future. Imagining what is possible, we turn problems into solutions. We provide advisory, design, delivery and asset management services on projects across a range of markets, in locations worldwide. These services include digital advisory and infrastructure advisory, building design, ground engineering design and infrastructure design, programme and project management delivery and asset management and geospatial systems.</p> <p>Understanding the value of expertise, we mobilise our global pool of talent to understand and solve the critical and complex problems you face. We seek to unravel complexity, create clarity and invent new value for you. We use our thinking to provide innovative solutions. We bring ideas to life by partnering with you and using our innovation and expertise, with technology, to solve your complex problems.</p>

<sup>9</sup> Aurecon has been added to the report based on feedback from DSDMIP

## 4.12 PRUDENTIA

Company Details	
Name	PRUDENTIA PROCESS CONSULTING <sup>10</sup>
ABN	86 169 079 627
Queensland Contact	Jason Hepburn 0403 065 106 Michael Aspinall 0407 032 566 John Fry 0422 386 221 Paul Carey 0427 774 975
Website	<a href="http://www.prudentiipc.com.au">http://www.prudentiipc.com.au</a>
Employees	Not available
Turnover \$	Not available
Summary	Prudentia Process Consulting(PPC) is a niche Australian engineering consultancy established to provide exceptional engineering solutions from high calibre, experienced people who have worked together for 20+ years. PPC provides project and engineering management, process design and mechanical engineering services to a wide variety of industries and clients (from junior explorers to the ASX Top 20).

<sup>10</sup> Prudentia has been added to the report based on feedback from DSDMIP

# APPENDIX I – LIST OF COMPANIES INCLUDED IN THE PROCESS

The companies included in this process are listed below. These companies were contacted by e-mail and was followed up for confirmation to participate in the process by either e-mail and/or phone call.

Companies Surveyed
AMEC FOSTER WHEELER AUSTRALIA PTY LTD
Ausenco
BECHTEL INFRASTRUCTURE (AUSTRALIA) PTY LTD
BMD CONSTRUCTIONS PTY LTD
BROADSPECTRUM (AUSTRALIA) PTY LTD
CBI CONSTRUCTORS PTY LTD
Consolidated Contracting Company Australia Pty Ltd
CPB CONTRACTORS PTY LIMITED
CPEC (AUS)
ENERAQUE PTY LTD
Enscope Pty Ltd
FITZROY ENGINEERING GROUP LIMITED
IOR Energy Pty Ltd
JACOBS GROUP (AUSTRALIA) PTY LTD
JOHN HOLLAND PTY LTD
Laing O'Rourke Australia Construction Pty Ltd
Lycopodium Process Industries Pty Ltd
MONADELPHOUS ENGINEERING ASSOCIATES PTY LIMITED
RCR TOMLINSON LTD
SNC-LAVALIN AUSTRALIA PTY LTD
TFA Project group
THYSSENKRUPP INDUSTRIAL SOLUTIONS (AUSTRALIA) PTY LTD
W.D.T. (ENGINEERS) PTY. LTD.
WOOD GROUP PSN AUSTRALIA PTY LTD
WORLEYPARSONS SERVICES PTY LIMITED

# ATTACHMENTS

The following attachments provided additional information forwarded to ICN by companies surveyed during the preparation of this report.

Company	Attachments
BMD CONSTRUCTIONS PTY LTD	<ul style="list-style-type: none"> <li>• Sydney Malting Facility.pdf</li> <li>• HMAS Coonawarra Naval Base.pdf</li> <li>• Condong Broadwater Biomass Cogen.pdf</li> <li>• ACTION Buses Refuelling Infrastructure Upgrade.pdf</li> <li>• QGI Furnace Cooling Systems Rebuild.pdf</li> </ul>
CBI CONSTRUCTORS PTY LTD	CBI Project Experience List.pdf
CPB CONTRACTORS PTY LIMITED	No attachment provided
Enscope Pty Ltd	No attachment provided
FITZROY ENGINEERING GROUP LIMITED	No attachment provided
JACOBS GROUP (AUSTRALIA) PTY LTD	No attachment provided
LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD	No attachment provided
Lycopodium Process Industries Pty Ltd	Lycopodium Capability - Engineers & Project Managers
MONADELPHOUS ENGINEERING ASSOCIATES PTY LIMITED	Biorefinery Project Listing.pdf
SNC-LAVALIN AUSTRALIA PTY LTD	Downstream Capabilities.pdf
TfA Project Group	TfA Biorefinery Building Capabilities.pdf
THYSSENKRUPP INDUSTRIAL SOLUTIONS (AUSTRALIA) PTY LTD	No attachment provided
W.D.T. (ENGINEERS) PTY. LTD.	No attachment provided
WOOD GROUP PSN AUSTRALIA PTY LTD	QLD Biorefinery Experience.docx SOQ-CHEM-SpecialtyChemicals_2018.pdf
WORLEYPARSONS SERVICES PTY LIMITED	No attachment provided

The above attachment will be provided electronically with this report.



**Industry Capability Network (ICN) QLD**

**Ph:** +61 7 3364 0670

**Fax:** +61 7 3364 0786

**Email:** [info@icnqld.org.au](mailto:info@icnqld.org.au)

**Address:** 16 Cinderella Drive  
SPRINGWOOD QLD 4127