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Department of Industry and Science

Deed of Standing Offer for the Provision of Services number
PRI-00003197

Commonwealth of Australia (**Commonwealth**)

BAEconomics Pty Ltd (**Contractor**)

Note to the Contractor:

The Government's *Supplier Pay On-Time or Pay Interest Policy* may apply to an Order under this Deed. Full details of the policy can be found in Resource Management Guide No. 417 on the [Finance website](#).

Details

Date

31 / JULY / 2015
day month year

Parties

Name The Commonwealth of Australia as represented by the Department of Industry and Science

Short form name **Commonwealth**

ABN 74 599 608 295

Name BAEconomics Pty Ltd

Short form name **Contractor**

ABN 71 139 568 899

ACN 139 568 899

Background

- A From time to time, the Commonwealth may require the supply of services in the Categories of Services.
- B The Contractor has agreed that on the issue of an Order by the Commonwealth, it will supply Services to the Commonwealth on the terms and conditions of this Deed.
- C The Contractor acknowledges that there is no guarantee or assurance:
 - (i) of any particular volume of business under this Deed; or
 - (ii) that any Orders will be placed with the Contractor.

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Agreed Terms

Part 1 – Deed

1. Definitions and interpretation

1.1 Definitions

In this Deed and any Contract, except where the contrary intention is expressed, the following definitions are used:

Accounting Standards	the standards of that name maintained by the Australian Accounting Standards Board (created by section 226 of the <i>Australian Securities and Investments Commission Act 2001</i> (Cth)) or other accounting standards which are generally accepted and consistently applied in Australia.
Advisers	(a) the financial or legal advisers of a party; and (b) the respective officers and employees of those financial or legal advisers.
Agreed Terms	clauses 1 to 36 of this Deed which set out terms and conditions agreed by the parties.
Australian Government Protective Security Policy Framework	the <i>Australian Government Protective Security Policy Framework</i> , as amended or replaced from time to time.
Business Day	a day that is not a Saturday, Sunday, public holiday or bank holiday in the place where the act is to be performed or where the Notice is received.
Business Hours	from 9.00am to 5.00pm on a Business Day, unless specified otherwise in the Order.
Categories of Services	the categories of services listed in Schedule 2.
Commencement Date	the date on which this Deed commences, as specified in item 5 of Schedule 1.
Commonwealth	the Commonwealth as specified in item 1 of Schedule 1.
Commonwealth Material	any Material provided to the Contractor by the Commonwealth, including the Material (if any) specified in item 12 of the Order.
Commonwealth Project Officer	the person identified as the Commonwealth's project officer in item 9 of the Order or, if none is specified, the Commonwealth Representative.
Commonwealth Representative	the person identified in item 3 of Schedule 1.
Confidential Contract Provisions	any provisions identified as confidential in the Order.

Confidential Deed Provisions	the provisions identified in item 12 of Schedule 1.
Confidential Information	information that is by its nature confidential and: <ul style="list-style-type: none"> (a) is designated by a party as confidential and is described in item 12 of Schedule 1 or the Order; or (b) a party knows or ought to know is confidential, but does not include: <ul style="list-style-type: none"> (c) information that is or becomes public knowledge otherwise than by breach of this Deed or the Contract or any other confidentiality obligation.
Contract	a contract formed under clause 4.8.
Contract Material	any Material created by the Contractor on or following the Services Start Date, for the purpose of or as a result of performing its obligations under the Contract and includes any modifications that may be required under clause 17.7(b).
Contract Period	the period of time for which the Contract is intended to continue, as specified in item 4 of the Order.
Contractor	the party specified in item 2 of Schedule 1 and includes its subcontractors and Personnel.
Contractor Project Officer	the person identified as the Contractor's project officer in item 9 of the Order or, if none is specified, the Contractor Representative.
Contractor Representative	the person identified in item 4 of Schedule 1.
Corporations Act	the <i>Corporations Act 2001</i> (Cth).
Deed	this deed of standing offer between the Commonwealth and the Contractor, as varied from time to time in accordance with clause 36.2, and includes its schedules and any attachments.
Deed Period	the Initial Deed Period plus any extension in accordance with clause 3.2.
Deliverable	any Contract Material or other item or element of a Service to be provided by the Contractor under the Contract.
Evaluation Criteria	the criteria specified by the Commonwealth in an RFQ to be addressed by the Contractor in the related Quotation.
Initial Deed Period	the period of time for which this Deed is intended to continue, as specified in item 6 of Schedule 1.
Intellectual Property Rights	all intellectual property rights, including: <ul style="list-style-type: none"> (a) copyright, patents, trademarks, designs, trade secrets, know how, and any right to have confidential information kept confidential;

	<p>(b) any application or right to apply for registration of any of the rights referred to in paragraph (a); and</p> <p>(c) all rights of a similar nature to any of the rights in paragraphs (a) and (b) which may subsist in Australia or elsewhere,</p> <p>whether or not such rights are registered or capable of being registered.</p>
Law	any applicable statute, regulation, by-law, ordinance or subordinate legislation in force from time to time in Australia, whether made by a State, Territory, the Commonwealth, or a local government, and includes the common law and rules of equity, as applicable from time to time.
LEADR	the dispute resolution association with that name and the Australian Business Number 69 008 651 232.
Material	includes property, information, documentation or other material in whatever form, including any reports, specifications, business rules or requirements, user manuals, user guides, operations manuals, training materials and instructions, and the subject matter of any category of Intellectual Property Rights.
Milestone Date	any fixed date to be met by the Contractor in performing any of its obligations under the Contract, as specified in the Order.
Moral Rights	the right of integrity of authorship (that is, not to have a work subjected to derogatory treatment), the right of attribution of authorship of a work, and the right not to have authorship of a work falsely attributed, as defined in the Copyright Act 1968 (Cth).
Notice	a notice, demand, consent, approval or communication issued under this Deed or the Contract.
Order	an order for Services placed by the Commonwealth in accordance with clause 4.
Performance Criteria	the requirements set out in item 10 of the Order for each Service and Deliverable or, if none are set out (or it states not applicable or anything to the same effect), the requirements in clauses 11.1(c) and 11.1(e).
Personnel	in relation to a party, any natural person who is an employee, officer, agent, or professional adviser of that party, and in the case of the Contractor, of any subcontractor.
Pre-existing Material	Material owned by a party before the Services Start Date, including the Material specified in item 13 of the Order.
Quotation	the quotation requested by the Commonwealth under clause 4.4 and provided by the Contractor under clause 4.6.
Rates	the rates for Categories of Services set out in or determined in accordance with Schedule 4.

RFQ	a request for quotation issued by the Commonwealth under clause 4.4.
Schedules	the schedules to this Deed.
Service Charges	the charges payable to the Contractor in accordance with item 15 of the Order.
Services	the services provided, or to be provided, under the Contract (including the provision of the Deliverables) as described in the Order.
Services Start Date	the date specified in item 3 of the Order.
Specified Personnel	the Contractor's subcontractors and Personnel specified in item 11 of the Order.
Third Party Material	Material owned by a third party that is: <ul style="list-style-type: none"> (a) included, embodied in or attached to the Contract Material; or (b) used as part of the performance of the Services.

1.2 Interpretation

In this Deed and any Contract, except where the contrary intention is expressed:

- (a) the singular includes the plural and vice versa, and a gender includes other genders;
- (b) another grammatical form of a defined word or expression has a corresponding meaning;
- (c) a reference to a clause, paragraph or schedule is to a clause or paragraph of, or schedule to, this Deed;
- (d) a reference to a document or instrument includes the document or instrument as novated, altered, supplemented or replaced from time to time;
- (e) a reference to **A\$, \$A, dollar** or **\$** is to Australian currency;
- (f) a reference to time is to Canberra, Australia time;
- (g) a reference to a party is to a party to this Deed, and a reference to a party to a document includes the party's executors, administrators, successors and permitted assignees and substitutes;
- (h) a reference to a person includes a natural person, partnership, body corporate, association, governmental or local authority or agency or other entity;
- (i) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;
- (j) a word or expression defined in the Corporations Act has the meaning given to it in the Corporations Act;
- (k) the meaning of general words is not limited by specific examples introduced by **including, for example** or similar expressions;

- (l) any agreement, representation, warranty or indemnity by two or more parties (including where two or more persons are included in the same defined term) binds them jointly and severally;
- (m) any agreement, representation, warranty or indemnity in favour of two or more parties (including where two or more persons are included in the same defined term) is for the benefit of them jointly and severally;
- (n) a rule of construction does not apply to the disadvantage of a party because the party was responsible for the preparation of this Deed or the Order or any part of it;
- (o) if a day on or by which an obligation must be performed or an event must occur is not a Business Day, the obligation must be performed or the event must occur on or by the next Business Day; and
- (p) headings are for ease of reference only and do not affect interpretation.

1.3 Completion of Schedules

To the extent that the parties have not completed items in a Schedule, unless otherwise stated in the Schedule or in this Deed, those items will be taken to be 'not applicable' for the purpose of this Deed.

2. Priority of Deed documents

If there is inconsistency between any of the documents forming part of this Deed, those documents will be interpreted in the following order of priority to the extent of any inconsistency:

- (a) Agreed Terms;
- (b) Schedules;
- (c) any attachments to the Schedules; and
- (d) documents incorporated by reference in this Deed.

3. Duration of Deed

3.1 Initial Deed Period

This Deed begins on the Commencement Date and continues for the duration of the Deed Period unless terminated in accordance with clause 6 or clause 33.3.

3.2 Option to extend Deed Period

- (a) The Deed Period may be extended by the Commonwealth for further period(s), specified in item 7 of Schedule 1 (each an **Option Period**), on the terms and conditions then in effect, by giving notice to the Contractor. Such notice must be given at least:
 - (i) 30 days; or
 - (ii) such other period specified in item 8 of Schedule 1 (**Option Notice Period**), before the end of the current Deed Period.
- (b) Any extension in accordance with this clause 3.2 takes effect from the end of the then current Deed Period.

4. Standing offer

4.1 Standing offer

By this Deed the Contractor makes an irrevocable standing offer to supply the Categories of Services to the Commonwealth at the Rates and on the terms and conditions set out in this Deed.

4.2 Service Charges

The Service Charges payable to the Contractor for performing the Services will be specified in an Order and must be based on the Rates, unless otherwise agreed.

4.3 Placing an Order

- (a) The Contractor acknowledges that when the Commonwealth requires Services, the Commonwealth will issue the Contractor with an Order substantially in the form of Schedule 6.
- (b) Before placing an Order with the Contractor, the Commonwealth will consult with the Contractor about the details to be specified in the Order, whether or not the Commonwealth has issued an RFQ.
- (c) For the avoidance of doubt, the Commonwealth may issue the Contractor with an Order pursuant to clause 4.3(a), without having issued an RFQ.

4.4 Request for Quotation

The Commonwealth may, from time to time, issue an RFQ substantially in the form of Schedule 5.

4.5 Information in RFQ

An RFQ will include:

- (a) the Services required;
- (b) whether the Commonwealth requires the Services (or any part of the Services) to be performed by particular Personnel of the Contractor;
- (c) the timeframe for delivery of the Services;
- (d) subject to clause 4.2, the proposed fee structure for the Contract; and
- (e) any other specific requirements of the Commonwealth in relation to the Contract.

4.6 Quotations

- (a) On receipt of an RFQ, the Contractor must, within the timeframe specified in the RFQ, provide a Quotation to the Commonwealth by:
 - (i) completing the appropriate items in the RFQ and returning it to the Commonwealth;
 - (ii) providing a brief statement that addresses the Evaluation Criteria (if applicable);
 - (iii) if requested by the Commonwealth, providing a curriculum vitae for each of the Personnel proposed to perform the Services; and
 - (iv) if requested by the Commonwealth, providing the contact details for at least two referees.
- (b) The fees proposed in the Quotation must be based on the Rates.

- (c) If the Commonwealth wishes to proceed to obtain the Services referred to in the Quotation, the Commonwealth will issue an Order with the Contractor substantially in the form of Schedule 6.

4.7 Variations to Deed in an Order

The following clauses cannot be varied in an Order without written approval from the *Commonwealth Representative* (or such other position as the Commonwealth may nominate from time to time):

- (a) Clause 21 (Indemnity);
- (b) Clause 25 (Confidentiality and privacy); and
- (c) Clause 26 (Protection of personal information).

4.8 Contract

The Contract is formed between the Commonwealth and the Contractor when the Commonwealth issues an Order to the Contractor.

4.9 Completion of items

To the extent that the parties have not completed items in an Order, unless otherwise stated in the Order or this Deed, those items will be taken to be 'not applicable' for the purpose of this Deed and the Contract.

4.10 Terms and Conditions

The terms and conditions of a Contract are:

- (a) the terms and conditions specified in the signed Order;
- (b) clause 1 and clauses 9 to 24 of this Deed; and
- (c) clauses 25 to 36 of this Deed, except that a reference to **this Deed** in those clauses is taken to be a reference to the Contract and a reference to **Deed Period** in those clauses is taken to be a reference to the Contract Period.

4.11 Priority of documents

Subject to clause 4.7, to the extent of any inconsistency between two or more documents which form part of a Contract, those documents will be interpreted in the following (descending) order of priority:

- (a) the Order;
- (b) this Deed;
- (c) the Attachments to the Order; and
- (d) any other document referred to in the Order.

4.12 No guarantee

- (a) Notwithstanding any other provision of this Deed, the Commonwealth does not guarantee or make any assurance that any services or any particular volume of services will be ordered from the Contractor under this Deed.
- (b) Notwithstanding any other provision of this Deed, the Commonwealth may obtain the Categories of Services from any source it chooses.

5. Monitoring progress

5.1 Progress meetings

The parties will meet at the times and in the manner set out in Schedule 3 (or otherwise as agreed in writing between the parties) to discuss any issues in relation to this Deed or the provision of the Services under any Contracts. The Contractor must ensure that the Contractor Representative and the Commonwealth must ensure the Commonwealth Representative is reasonably available to attend such meetings and answer any queries relating to the provision of the Services raised by either party.

5.2 Reporting

- (a) The Contractor must provide the Commonwealth with reports in accordance with Schedule 3.
- (b) All Intellectual Property Rights in reports provided under clause 5.2(a) vest in the Commonwealth.
- (c) If the Commonwealth needs to use any Material provided by the Contractor that is owned by the Contractor or a third party to receive the full benefit of the reports, the Contractor grants to, or must obtain for, the Commonwealth a perpetual, world-wide, royalty free, non-exclusive licence (including the right to sublicense) to use, reproduce, adapt, modify and communicate the Material.
- (d) The licence granted to the Commonwealth under clause 5.2(c) does not include a right to exploit the Material for the Commonwealth's commercial purposes.

6. Termination of Deed

6.1 Termination for convenience

- (a) The Commonwealth may, at any time, by notice, terminate this Deed, including for or as a result of a machinery of government change.
- (b) On receipt of a notice of termination the Contractor must:
 - (i) stop work as specified in the notice; and
 - (ii) take all available steps to minimise loss resulting from that termination and to protect Commonwealth Material.
- (c) If this Deed is terminated under clause 6.1, the Commonwealth is liable only for reasonable costs actually incurred by the Contractor and directly attributable to the termination.
- (d) The Contractor is not entitled to compensation for loss of prospective profits.

6.2 Termination for default

- (a) Without limiting any other rights or remedies the Commonwealth may have against the Contractor arising out of or in connection with this Deed or any Contract, the Commonwealth may terminate this Deed effective immediately by giving notice to the Contractor if:
 - (i) the Contractor breaches a material provision of this Deed where that breach is not capable of remedy;
 - (ii) the Contractor breaches any provision of this Deed and fails to remedy the breach within 14 days after receiving notice requiring it to do so;

- (iii) in the opinion of the Commonwealth, a conflict of interest exists which would prevent the Contractor from performing its obligations under this Deed; or
 - (iv) an event specified in clause 6.2(c) or 28.4(a) happens to the Contractor.
- (b) Without limitation, for the purposes of clause 6.2(a)(i), each of the following constitutes a breach of a material provision:
 - (i) a failure to comply with clause 25 (Confidentiality and privacy);
 - (ii) a failure to comply with clause 26 (Protection of personal information); or
 - (iii) a failure to notify the Commonwealth of a conflict of interest under clause 27 (Conflict of interest).
- (c) The Contractor must notify the Commonwealth immediately if:
 - (i) the Contractor being a corporation, there is any change in the direct or indirect beneficial ownership or control of the Contractor;
 - (ii) the Contractor disposes of the whole or any part of its assets, operations or business other than in the ordinary course of business;
 - (iii) the Contractor ceases to carry on business;
 - (iv) the Contractor ceases to be able to pay its debts as they become due;
 - (v) the Contractor being a company enters into liquidation or has a controller or managing controller or liquidator or administrator appointed;
 - (vi) the Contractor being a natural person is declared bankrupt or assigns his or her estate for the benefit of creditors; or
 - (vii) where the Contractor is a partnership, any step is taken to dissolve that partnership.

In this clause, **controller**, **managing controller** and **administrator** have the same meanings as in the Corporations Act.

6.3 After termination

On termination of this Deed the Contractor must deal with Commonwealth Material and the Commonwealth's Confidential Information as reasonably directed by the Commonwealth.

6.4 Termination does not affect accrued rights

Termination of this Deed does not affect any accrued rights or remedies of a party.

6.5 Termination does not affect Contracts

Termination of this Deed does not affect the continuance of any Contract formed under this Deed.

7. Transition out

7.1 Transition out obligations

The Contractor must provide the following assistance to the Commonwealth on expiry or termination of this Deed:

- (a) cooperating with and providing all reasonable assistance and making available all required information to the Commonwealth in support of the transition out of the

Contractor and the transition to the Department or any new contractor of the provision of the Categories of Services;

- (b) doing all acts and things and executing all documents as are reasonably necessary or desirable in support of the transition out of the Contractor;
- (c) replying to all and any requests for assistance as expeditiously as possible to ensure that the Contractor does not hinder any procurement process or engagement or commencement of any new contractor;
- (d) ensuring, to the maximum extent possible, seamless continuity of Services during the transition out period; and
- (e) making Personnel available for discussions with the Commonwealth as may be required. The time, length and subject of these discussions will be at the sole discretion of the Commonwealth, provided that any matter discussed is not considered to reveal any 'Commercial-in-Confidence' information of the Contractor.

7.2 Survival

This clause 7 survives the expiry or termination of this Deed.

8. Miscellaneous

8.1 Capacity

The Contractor represents and warrants that it has the right to enter into this Deed.

8.2 Counterparts

This Deed may be executed in counterparts. All executed counterparts constitute one document.

8.3 Entire agreement

This Deed and each Contract constitute the entire agreement between the parties in connection with their subject matter and supersede all previous agreements or understandings between the parties in connection with their subject matter.

Part 2 – Services

9. Duration of Contract

9.1 Contract Period

The Contract begins on the Services Start Date and continues for the duration of the Contract Period unless terminated in accordance with clause 22 or clause 33.3.

10. General obligations of the Contractor

The Contractor will, at all times:

- (a) act reasonably in performing its obligations and exercising its rights under the Contract; and
- (b) diligently perform its obligations under the Contract.

11. Provision of Services

11.1 Service obligations

The Contractor must supply the Services:

- (a) to the reasonable satisfaction of the Commonwealth;
- (b) with due skill and care and to the best of the Contractor's knowledge and expertise;
- (c) to a high standard and in accordance with the professional standards of conduct applying to the relevant industry;
- (d) in accordance with the Performance Criteria;
- (e) in accordance with relevant Australian industry standards, best practice and guidelines or where none apply, relevant international industry standards, best practice and guidelines, including any specified in the Order;
- (f) using the Specified Personnel (if any);
- (g) in accordance with all applicable Laws;
- (h) in accordance with Commonwealth policies and specific requirements set out in the Order;
- (i) in accordance with any directions in relation to the Services given by the Commonwealth from time to time;
- (j) so as to meet the Milestone Dates and other project plan requirements, and where no Milestone Dates or project plan requirements are specified, promptly and without delay;
- (k) in accordance with the same standards and obligations that are imposed on Commonwealth Personnel under the *Work Health and Safety Act 2011* (Cth);
- (l) so as to keep accurate and auditable records relating to the performance of the Services; and
- (m) otherwise in accordance with the provisions of the Contract.

11.2 Contractor warranties

The Contractor represents and warrants that:

- (a) it has the right to enter into the Contract;
- (b) it has all rights, title, licences, interests and property necessary to lawfully perform the Services;
- (c) it and its subcontractors and Personnel, including its Specified Personnel, have the necessary experience, skill, knowledge, expertise and competence to perform the Services and (where appropriate) will hold such licences, permits or registrations as are required under any State, Territory or Commonwealth legislation to perform the Services, and are fit and proper people;
- (d) the Services will be fit for the purpose as set out in Schedule 2 and item 6 of the Order;
- (e) the Services will be complete and accurate;
- (f) any materials that the Contractor incorporates in the Services are free from defects in design, performance and workmanship;
- (g) all work performed under the Contract will be carried out and completed in a proper and workmanlike manner and in the most cost-effective manner, and using materials suitable for the purpose;
- (h) all insurance policies required to be held by the Contractor under the Contract:
 - (i) will remain in effect as provided for in the Contract; and
 - (ii) will not be varied by the Contractor without the Commonwealth's written consent; and

11.3 Access to Commonwealth's premises

The Commonwealth must cooperate with the Contractor by providing access to its premises and facilities as reasonably necessary to enable the Contractor to provide the Services.

11.4 Conduct at Commonwealth's premises

Without limiting clause 28, the Contractor must, if using or accessing the Commonwealth's premises or facilities, comply with all reasonable directions and procedures relating to occupational health and safety and security in operation at those premises or facilities, whether specifically drawn to the attention of the Contractor or as might reasonably be inferred from the circumstances.

11.5 Cultural Diversity

The Contractor should be aware of the Charter of Public Service in a Culturally Diverse Society. The Contractor must be sensitive to cultural diversity and, where the Services involve the provision of services to the public, must have regard to the principles set out in that charter.

11.6 Subcontracting

- (a) The Contractor must:
 - (i) not subcontract any aspect of the provision of the Services other than to those entities set out in item 7 of the Order without the prior written approval of the Commonwealth, which will not be unreasonably withheld;
 - (ii) not, in any event, enter into a subcontract under this Contract with a subcontractor named by the Director of Workplace Gender Equality in a report

to the responsible Minister as an employer currently not complying with the reporting requirements of the WGE Act; and

- (iii) ensure that any subcontractor approved under the Contract complies with:
 - (A) Clause 25 (Confidentiality and privacy);
 - (B) Clause 26 (Protection of personal information);
 - (C) Clause 27 (Conflict of interest);
 - (D) Clause 28 (Security);
 - (E) Clause 30 (Audit and access);
 - (F) Clause 31 (Access to documents); and
 - (G) Clause 32 (Insurance).
 - (iv) ensure that any subcontract entered into for the purpose of a Contract contains a provision requiring the subcontractor to comply with all applicable Laws in the performance of the subcontract.
- (b) The Contractor is fully responsible for the performance of the Services even if the Contractor subcontracts any aspect of the provision of the Services.
 - (c) The Contractor agrees that the Commonwealth may publicly disclose the names, Australian Business Numbers and addresses of the subcontractors approved under a Contract and their role in fulfilling the Contract.
 - (d) The Contractor must ensure that any subcontract entered into for the purpose of a Contract contains an equivalent provision to clause 11.6(c) permitting the Commonwealth to disclose the information specified in that clause.

12. Co-operation with Personnel and contractors

The Contractor must in the performance of the Services:

- (a) fully co-operate with the Commonwealth's Personnel and other contractors;
- (b) use its best efforts to coordinate its activities so as to support and facilitate, in the Commonwealth's best interests, the timely and efficient completion of all work and other activities to be performed for the Commonwealth by any person;
- (c) consult, co-operate and co-ordinate activities with Commonwealth Personnel and other contractors to address overlapping work health and safety duties and ensure, so far as is reasonable practicable, the health and safety of workers and workplaces.

13. Monitoring progress

13.1 Progress meetings under the Contract

The parties will meet at the times and in the manner set out in item 8 of the Order (otherwise as agreed in writing between the parties) to discuss any issues in relation to the provision of the Services. The Contractor must ensure that the Contractor Project Officer and the Commonwealth must ensure the Commonwealth Project Officer is reasonably available to attend such meetings and answer any queries relating to the provision of the Services raised by either party.

13.2 Reporting under the Contract

The Contractor must provide the Commonwealth with reports in accordance with item 8 of the Order.

14. Performance assessment

14.1 Assessment of Services

Without limiting any other obligation of the Contractor, each element of the Services is subject to assessment by the Commonwealth against the relevant Performance Criteria.

14.2 Notice of non-compliant Services

If the Commonwealth considers that all or part of the Services do not meet the Performance Criteria, the Commonwealth must provide the Contractor with notice of that fact and include reasons for the Services not meeting the Performance Criteria.

14.3 Rectification of non-compliant Services

If the Commonwealth notifies the Contractor that all or part of the Services do not meet the Performance Criteria, the Contractor must:

- (a) take all necessary steps to ensure that the Services are promptly corrected;
- (b) give notice to the Commonwealth when the Services have been corrected; and
- (c) allow the Commonwealth to repeat the assessment of all or part of the Services against the Performance Criteria,

within five Business Days after the date of the notice or such other time as agreed between the parties in writing.

14.4 Right to terminate

If all or any part of the Services do not meet the Performance Criteria on two or more occasions, the Commonwealth may terminate the Contract immediately under clause 22.2 by giving the Contractor notice.

14.5 Other Rights

Clauses 14.2, 14.3 and 14.4 do not limit in any way any other right, remedy or recourse of the Commonwealth.

15. Personnel

15.1 Use of Specified Personnel

The Contractor must:

- (a) provide the Services or any part of the Services to which their particular expertise relates, with the active involvement of, and using the expertise of, the Specified Personnel; and
- (b) ensure that each of the Specified Personnel is aware of and complies with the Contractor's obligations in providing the Services.

15.2 If the Specified Personnel are not available

Where one or more of the Specified Personnel is or will become unable or unwilling to be involved in providing the Services, the Contractor must notify the Commonwealth immediately. The Contractor must:

- (a) if requested by the Commonwealth, provide a replacement person of suitable ability and qualifications at no additional charge and at the earliest opportunity; and
- (b) obtain the Commonwealth's written consent prior to appointing any such replacement person. The Commonwealth's consent will not be unreasonably withheld.

15.3 Commonwealth may request replacement of Personnel

The Commonwealth may at any time request the Contractor to remove from work in respect of the Contract any of the Specified Personnel or any of the Contractor's subcontractors or Personnel. The Contractor must promptly arrange for the removal of such subcontractors or Personnel and their replacement in accordance with the process outlined in clause 15.2.

16. Commonwealth Material

The Commonwealth will provide to the Contractor the Commonwealth Material and the Contractor must ensure that the Commonwealth Material is used strictly in accordance with any conditions or restrictions specified in item 12 of the Order and any direction by the Commonwealth.

17. Intellectual Property Rights

17.1 Pre-existing Material and Third Party Material

This clause 17 does not affect the ownership of the Intellectual Property Rights in any Pre-existing Material or Third Party Material.

17.2 Third Party Material

The Contractor must obtain all necessary copyright and other Intellectual Property Rights permissions before including any Third Party Material in the Contract Material or using Third Party Material as part of the Services.

17.3 Selecting an ownership model for Intellectual Property Rights in Contract Material

- (a) This clause 17 sets out a framework for the parties to select between the following ownership models for Intellectual Property Rights in Contract Material:
 - (i) **first model:** Intellectual Property Rights in Contract Material vest in the Commonwealth, who provides a licence to the Contractor as set out in clause 17.4; or
 - (ii) **second model:** Intellectual Property Rights in Contract Material vest in the Contractor, who provides a licence to the Commonwealth as set out in clause 17.5.
- (b) The ownership model for Intellectual Property Rights in Contract Material is the model set out in item 9 of Schedule 1, varied as specified in item 14 of the Order.
- (c) If no ownership model is, or both ownership models are, selected in item 9 of Schedule 1, clause 17.4 applies (varied as specified in item 14 of the Order) and clause 17.5, in its entirety, does not apply to the Contract.
- (d) Each party must, at its own cost, do all things and execute all documents necessary or convenient to give effect to the ownership model.

17.4 First model: Commonwealth ownership of Intellectual Property Rights in Contract Material

- (a) All Intellectual Property Rights in the Contract Material vest in the Commonwealth on creation.
- (b) To the extent that:
 - (i) the Commonwealth needs to use any of the Pre-existing Material or Third Party Material provided by the Contractor to receive the full benefit of the Services (including the Contract Material), the Contractor grants to, or must obtain for, the Commonwealth for the period specified in item 10 of Schedule 1, a world-wide, royalty free, non-exclusive licence (including the right to sublicense) to use, reproduce, adapt, modify and communicate that Pre-existing Material or Third Party Material;
 - (ii) the Contractor needs to use any of the:
 - (A) Commonwealth Material; or
 - (B) Contract Material,for the purpose of performing its obligations under the Contract, the Commonwealth grants to the Contractor, subject to any conditions or restrictions specified in item 10 of Schedule 1 and any direction by the Commonwealth, a world-wide, royalty-free, non-exclusive, non-transferable licence (including the right to sublicense) to use, reproduce, adapt, modify, distribute and communicate such Material solely for the purpose of providing the Services.
- (c) The licence granted to the Commonwealth under clause 17.4(b)(i) does not include a right to exploit the Pre-existing Material or Third Party Material for the Commonwealth's commercial purposes.

17.5 Second model: Contractor ownership of Intellectual Property Rights in Contract Material

- (a) All Intellectual Property Rights in the Contract Material vest in the Contractor on creation.
- (b) To the extent that:
 - (i) the Commonwealth needs to use any of the:
 - (A) Pre-existing Material or Third Party Material provided by the Contractor; or
 - (B) Contract Material,to receive the full benefit of the Services, the Contractor grants to, or must obtain for, the Commonwealth for the period specified in item 11 of Schedule 1, a world-wide, royalty free, non-exclusive licence (including the right to sublicense) to use, reproduce, adapt, modify, distribute and communicate that Material; or
 - (ii) the Contractor needs to use any of the Commonwealth Material for the purpose of performing its obligations under the Contract, the Commonwealth grants to the Contractor, subject to any conditions or restrictions specified in item 11 of Schedule 1 and any direction by the Commonwealth, a world-wide, royalty-free, non-exclusive, non-transferable licence (including the right to sublicense)

to use, reproduce, adapt, modify and communicate such Material solely for the purpose of providing the Services.

- (c) The licence granted to the Commonwealth under clause 17.5(b)(i) does not include a right to exploit the Pre-existing Material, Third Party Material or the Contract Material for the Commonwealth's commercial purposes.

17.6 Warranty

The Contractor warrants that:

- (a) the Pre-existing Material, Third Party Material, the Deliverables and the Contract Material (**Warranted Materials**) and the Commonwealth's use of the Warranted Materials will not infringe the Intellectual Property Rights of any person; and
- (b) it has the necessary rights to vest the Intellectual Property Rights and grant the licences as provided for in this clause 17.

17.7 Remedy for breach of warranty

If someone claims, or the Commonwealth reasonably believes that someone is likely to claim, that all or part of the Warranted Materials infringe their Intellectual Property Rights, the Contractor must, in addition to the indemnity under clause 21 and to any other rights that the Commonwealth may have against it, promptly, at the Contractor's expense:

- (a) use its best efforts to secure the rights for the Commonwealth to continue to use the affected Warranted Materials free of any claim or liability for infringement; or
- (b) replace or modify the affected Warranted Materials so that the Warranted Materials or the use of them does not infringe the Intellectual Property Rights of any other person, without any degradation of the performance or quality of the affected Warranted Materials.

17.8 Delivery of Contract Material

On the expiry or termination of the Contract or on such earlier date as may be specified by the Commonwealth, the Contractor must deliver to the Commonwealth Representative all Contract Material.

18. Moral Rights

18.1 Obtaining consents

To the extent permitted by applicable Laws and for the benefit of the Commonwealth, the Contractor must:

- (a) give, where the Contractor is an individual, in a form acceptable to the Commonwealth;
- (b) use its best endeavours to ensure that each of the Personnel used by the Contractor in the production or creation of the Contract Material gives, in a form acceptable to the Commonwealth; and
- (c) use its best endeavours to ensure that any holder of Moral Rights in Third Party Material included in the Contract Material gives,

genuine consent in writing to the use of the Contract Material for the Specified Acts, even if such use would otherwise be an infringement of its or their Moral Rights.

18.2 Specified Acts

- (a) In this clause 18, unless otherwise specified in the Order, **Specified Acts** means:

- (i) falsely attributing the authorship of any Contract Material, or any content in the Contract Material (including without limitation literary, dramatic, artistic works and cinematograph films within the meaning of the *Copyright Act 1968* (Cth));
 - (ii) materially altering the style, format, colours, content or layout of the Contract Material and dealing in any way with the altered Contract Material;
 - (iii) reproducing, communicating, adapting, publishing or exhibiting any Contract Material; and
 - (iv) adding any additional content or information to the Contract Material.
- (b) For the purposes of clause 18.2(a), **Contract Material** includes any Pre-existing Material and Third Party Material to the extent that it is included in, forms part of or is attached to the Contract Material.

19. Payment

19.1 Obligation to pay charges

Subject to this clause 19 and the Services meeting the requirements of the Contract including the Performance Criteria, the Commonwealth must pay to the Contractor the Service Charges as set out in item 15 of the Order.

19.2 Contractor to provide invoice

The Contractor must provide a correctly rendered invoice to the Commonwealth for the Service Charges in accordance with the requirements specified in Schedule 4.

19.3 Due date for payment

Unless otherwise specified in the Order, the Commonwealth must make payment of a correctly rendered invoice within 30 days after receiving the invoice. If this period ends on a day which is not a Business Day, payment is due on the next Business Day.

19.4 Incorrect invoices, under/over payment

If an invoice is found to have been rendered incorrectly after payment, any underpayment or overpayment will be recoverable by or from the Contractor, as the case may be, and, without limiting recourse to other available means, may be offset against any amount subsequently due by the Commonwealth to the Contractor under the Contract.

19.5 Expenses

Unless specified otherwise in item 16 of the Order, the Contractor must not charge the Commonwealth for any fees, charges or expenses (including travel and accommodation, document reproduction, transportation and courier charges, and telecommunications charges) in addition to the Service Charges. The Commonwealth is under no obligation to pay any amount in excess of the Service Charges.

19.6 Taxes

The Contractor must pay all:

- (a) stamp duty (including penalties and interest) assessed or payable in respect of the Contract and the undertaking of the Services; and
- (b) subject to clause 20, all taxes, duties and government charges imposed or levied in Australia or overseas in connection with the performance of the Contract.

19.7 Interest

Interest is payable by the Commonwealth to the Contractor in the circumstances set out in Schedule 4.

20. GST

20.1 Interpretation

In this clause 20, a word or expression defined in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth) has the meaning given to it in that Act.

20.2 GST gross up

If a party (**Supplier**) makes a supply under or in connection with the Contract in respect of which GST is payable, the recipient of the supply (**Recipient**) must pay to the Supplier an additional amount equal to the GST payable on the supply (**GST Amount**).

20.3 Reimbursements

If a party must reimburse or indemnify another party for a loss, cost or expense, the amount to be reimbursed or indemnified is first reduced by any input tax credit the other party is entitled to for the loss, cost or expense, and then increased in accordance with clause 20.2.

20.4 Exclusion of GST from calculations

If a payment is calculated by reference to or as a specified percentage of another amount or revenue stream, that payment will be calculated by reference to or as a specified percentage of the amount or revenue stream exclusive of GST.

20.5 Adjustments

- (a) If the GST payable by a Supplier on any supply made under or in connection with the Contract varies from the GST Amount paid or payable by the Recipient under clause 20.2 such that a further amount of GST is payable in relation to the supply or a refund or credit of GST is obtained in relation to the supply, then the Supplier will provide a corresponding refund or credit to, or will be entitled to receive the amount of that variation from, the Recipient.
- (b) Any payment, credit or refund under this clause is deemed to be a payment, credit or refund of the GST Amount payable under clause 20.2.
- (c) If an adjustment event occurs in relation to a supply, the Supplier must issue an adjustment note to the Recipient in relation to that supply within 14 days after becoming aware of the adjustment.

20.6 Tax invoice

A party need not make a payment for a taxable supply made under or in connection with the Contract until it receives a tax invoice for the supply to which the payment relates.

21. Indemnity

21.1 Indemnity

- (a) The Contractor will at all times indemnify, hold harmless and defend the Commonwealth, its officers and employees (referred to in this clause 21.1 as those indemnified) from and against any loss or liability, including:
 - (i) loss of, or damage to, property of the Commonwealth;
 - (ii) claims by any person in respect of personal injury or death;

- (iii) claims by any person in respect of loss of, or damage to, any property; and
 - (iv) costs and expenses including the costs of defending or settling any claim referred to in clause 21.1(a)(ii) or clause 21.1(a)(iii),
- arising out of or as a consequence of:
- (v) an infringement, or an alleged infringement, of the Intellectual Property Rights of any person, which occurred by reason of an act done by the Commonwealth in relation to any part of the Services;
 - (vi) any actual, likely or threatened breach of the Contractor's or subcontractor's obligations relating to Confidential Information or personal information; or
 - (vii) without limiting the preceding paragraphs, any breach of the Contract by the Contractor, or negligence on the part of the Contractor, its Personnel or subcontractors or wrongful or unlawful act or omission on the part of the Contractor, its Personnel or subcontractors.
- (b) The Contractor's liability to indemnify those indemnified under clause 21.1(a) will be reduced proportionally to the extent that any negligent act or omission of those indemnified contributed to the loss.
 - (c) The Contractor will at all times indemnify, hold harmless and defend the Commonwealth against any compensation, remuneration or other amount payable to a third party for the use or exploitation of the Contract Material (or any of it), or exercise of any Intellectual Property Right of a third party embodied in the Contract Material, by the Commonwealth (or any person authorised by the Commonwealth) in circumstances where that use, exploitation or exercise is permitted under legislation without infringing the third party's Intellectual Property Right, and against all loss, liability, cost and expense arising out of or in connection with a claim for payment of any such compensation, remuneration or other amount.

22. Termination of the Contract

22.1 Termination and reduction for convenience

- (a) The Commonwealth may, at any time, by notice, terminate the Contract or reduce the scope of the Services, including for or as a result of a machinery of government change.
- (b) On receipt of a notice of termination or reduction the Contractor must:
 - (i) stop work as specified in the notice;
 - (ii) take all available steps to minimise loss resulting from that termination and to protect Commonwealth Material and Contract Material; and
 - (iii) continue work on any part of the Services not affected by the notice.
- (c) If the Contract is terminated under clause 22.1, the Commonwealth is liable only for:
 - (i) payments under clause 19 for Services rendered in accordance with the Contract before the effective date of termination; and
 - (ii) reasonable costs actually incurred by the Contractor and directly attributable to the termination.
- (d) If the scope of the Services is reduced, the Commonwealth's liability to pay the Service Charges or to provide Commonwealth Material abates in accordance with the reduction in the Services.

- (e) The Commonwealth is not liable to pay compensation under clause 22.1(c)(ii) for an amount which would, in addition to any amounts paid or due, or becoming due, to the Contractor under the Contract, exceed the total Service Charges payable under the Contract.
- (f) The Contractor is not entitled to compensation for loss of prospective profits.

22.2 Termination for default

- (a) Without limiting any other rights or remedies the Commonwealth may have against the Contractor arising out of or in connection with the Contract, the Commonwealth may terminate the Contract effective immediately by giving notice to the Contractor if:
 - (i) the Contractor breaches a material provision of the Contract where that breach is not capable of remedy;
 - (ii) the Contractor breaches any provision of the Contract and fails to remedy the breach within 14 days after receiving notice requiring it to do so;
 - (iii) in the opinion of the Commonwealth, a conflict of interest exists which would prevent the Contractor from performing its obligations under the Contract; or
 - (iv) an event specified in clause 22.2(c) or 28.4(a) happens to the Contractor.
- (b) Without limitation, for the purposes of clause 22.2(a)(i), each of the following constitutes a breach of a material provision:
 - (i) breach of warranty under clause 11.2 (Contractor warranties);
 - (ii) a failure to comply with clause 15 (Personnel);
 - (iii) a failure to comply with clause 17 (Intellectual Property Rights);
 - (iv) a failure to comply with clause 25 (Confidentiality and privacy);
 - (v) a failure to comply with clause 26 (Protection of personal information);
 - (vi) a failure to notify the Commonwealth of a conflict of interest under clause 27 (Conflict of interest); or
 - (vii) a failure to comply with clause 32 (Insurance).
- (c) The Contractor must notify the Commonwealth immediately if:
 - (i) the Contractor being a corporation, there is any change in the direct or indirect beneficial ownership or control of the Contractor;
 - (ii) the Contractor disposes of the whole or any part of its assets, operations or business other than in the ordinary course of business;
 - (iii) the Contractor ceases to carry on business;
 - (iv) the Contractor ceases to be able to pay its debts as they become due;
 - (v) the Contractor being a company enters into liquidation or has a controller or managing controller or liquidator or administrator appointed;
 - (vi) the Contractor being a natural person is declared bankrupt or assigns his or her estate for the benefit of creditors; or
 - (vii) where the Contractor is a partnership, any step is taken to dissolve that partnership.

In this clause, **controller**, **managing controller** and **administrator** have the same meanings as in the Corporations Act.

22.3 After termination

On termination of the Contract the Contractor must:

- (a) stop work on the Services;
- (b) deal with Contract Material in accordance with clause 17.8; and
- (c) deal with Commonwealth Material and the Commonwealth's Confidential Information as reasonably directed by the Commonwealth.

22.4 Termination does not affect accrued rights

Termination of the Contract does not affect any accrued rights or remedies of a party.

23. Survival

The following clauses survive the expiry or termination of the Contract:

- (a) Clause 17 (Intellectual Property Rights);
- (b) Clause 18 (Moral Rights);
- (c) Clause 20 (GST); and
- (d) Clause 21 (Indemnity).

24. Entire agreement

The Deed and the Contract constitute the entire agreement between the parties in connection with their subject matter and supersede all previous agreements or understandings between the parties in connection with their subject matter.

Part 3 – General requirements

25. Confidentiality and privacy

25.1 Prohibition on disclosure

- (a) Subject to clause 25.4, the Contractor must not, without the prior written consent of the Commonwealth, disclose any Commonwealth Confidential Information to a third party.
- (b) Subject to clause 25.4, the Commonwealth must not, without the prior written consent of the Contractor, disclose any Contractor Confidential Information to a third party.

25.2 Conditions of approval

In giving written consent to use or disclose Commonwealth Confidential Information, the Commonwealth may impose such conditions as it thinks fit. The Contractor must comply with any term or condition imposed by the Commonwealth under this clause 25.2.

25.3 Advisers and third parties

The Commonwealth may at any time require the Contractor to arrange for:

- (a) its Advisers;
- (b) its Personnel and other employees and subcontractors engaged in the performance of the Services; or
- (c) any other third party, to whom Commonwealth Confidential Information may be disclosed pursuant to clause 25.4(a) or clause 25.4(b),

to give a written undertaking relating to the use and non-disclosure of the Commonwealth's Confidential Information substantially in the form set out in Schedule 7.

25.4 Exceptions to obligations

The obligations on each party under clause 25.1 will not be taken to have been breached to the extent that Confidential Information of the other party:

- (a) is disclosed by a party to its Advisers or employees solely in order to comply with obligations, or to exercise rights, under this Deed;
- (b) is disclosed to a party's internal management personnel, solely to enable effective management or auditing of activities related to this Deed;
- (c) is disclosed by the Commonwealth to the responsible Minister;
- (d) is disclosed by the Commonwealth, in response to a request by a House or a Committee of the Parliament of the Commonwealth of Australia;
- (e) is shared by the Commonwealth within Department of Industry and Science, or with another agency, where this serves the Commonwealth's legitimate interests;
- (f) is disclosed by the Commonwealth to the Auditor General, Ombudsman or Privacy Commissioner;
- (g) is required by Law to be disclosed; or
- (h) is in the public domain otherwise than due to a breach of this Deed.

25.5 Obligation on disclosure

Where a party discloses Confidential Information of the other party to another person:

- (a) pursuant to clauses 25.4(a), (b) or (e), the disclosing party must:

- (i) notify the receiving person that the information is Confidential Information; and
 - (ii) not provide the information unless the receiving person agrees to keep the information confidential, including in the case of Commonwealth Confidential Information, the receiving person giving the Commonwealth a legally binding undertaking to that effect substantially in the form set out in Schedule 7; or
- (b) pursuant to clauses 25.4(c) or (d), the disclosing party must notify the receiving party that the information is Confidential Information of the other party.

25.6 Additional confidential information

- (a) The parties may agree in writing after the date of this Deed that certain additional information is to constitute Confidential Information for the purposes of this Deed.
- (b) Where the parties agree in writing after the date of this Deed that certain additional information is to constitute Confidential Information for the purposes of this Deed, this documentation is incorporated into, and becomes part of this Deed, on the date by which both parties have signed this documentation.

25.7 Period of confidentiality

The obligations under this clause 25 continue, notwithstanding the expiry or termination of this Deed:

- (a) in relation to an item of information described in Schedule 1 or the Order, for the period set out in Schedule 1 or the Order in respect of that item; and
- (b) in relation to any information which the parties agree in writing after the date of this Deed is to constitute Confidential Information for the purposes of this Deed, for the period agreed by the parties in writing in respect of that information.

25.8 No reduction in privacy obligations

Nothing in this Deed derogates from any obligation which either party may have under the *Privacy Act 1988* (Cth) as amended from time to time, in relation to the protection of personal information as defined in that Act or information that is protected by the *Census and Statistics Act 1905* (Cth), or any other Act, regulation or other legislative instrument requiring secrecy or confidentiality in dealing with information.

25.9 Return of information

At the Commonwealth's request or on the expiry or termination of this Deed, the Contractor must promptly return all of the Commonwealth's physical and written records containing Commonwealth Confidential Information, and all documentation relating to that Commonwealth Confidential Information (including copies), to the Commonwealth in a form reasonably requested by the Commonwealth. Alternatively, if requested by the Commonwealth, the Contractor must destroy such items in the manner specified by the Commonwealth and promptly certify to the Commonwealth in writing that it has done so.

25.10 Confidential provisions

Notwithstanding any other provision of this Deed, the Commonwealth may disclose the provisions of this Deed except the Confidential Deed Provisions and the Confidential Contract Provisions.

26. Protection of personal information

26.1 Definitions

In this clause **Error! Reference source not found.**, the terms 'agency', 'Australian Privacy Principle' (APPs), 'APP privacy policy', 'Australian Privacy Principle Code' (APP code) and 'contracted service provider' have the same meaning as they have in section 6 of the Privacy Act, and 'personal information', which also has the meaning it has in section 6 of the Privacy Act, means:

'information or an opinion about an identified individual, or an individual who is reasonably identifiable whether the information or opinion is true or not and whether the information or opinion is recorded in a material form or not'.

26.2 Application of this clause

This clause 26 applies only where the Contractor deals with personal information when, and for the purposes of, providing Services under this Deed.

26.3 Obligations

The Contractor acknowledges that it is a 'contracted service provider' and agrees in respect of the provision of Services under this Deed to take all necessary measures to ensure that personal information in its possession or control in connection with this Contract is protected against loss and unauthorised access, use, disclosure or modification:

The Contractor must, on request from the Commonwealth, provide to the Commonwealth:

- (a) The Contractor must, on request from the Commonwealth, provide to the Commonwealth:
 - (i) a copy of the Contractor's and any subcontractor's APP privacy policy which is compliant with APP 1;
 - (ii) copies of the Contractor's and any subcontractor's security and data protection policies upon request by the Commonwealth; or
 - (iii) details of the Contractor's and any subcontractor's processes and procedures implemented to ensure compliance with the Privacy Act.
- (b) The Contractor agrees in respect of the provision of Services under this Contract:
 - (i) not to collect personal information unless the information is necessary, directly or indirectly, to discharge an obligation of this Contract;
- (c) to use or disclose personal information obtained during the course of providing Services under this Deed, only for the purposes of this Deed;
- (d) not to do any act or engage in any practice that would breach an APP contained in Schedule 1 of the Privacy Act, which if done or engaged in by an agency, would be a breach of that APP;
- (e) to carry out and discharge the obligations contained in the APPs as if it were an agency under the Schedule 1 of the Privacy Act;
- (f) to notify individuals whose personal information the Contractor holds, that complaints about acts or practices of the Contractor may be investigated by the Privacy Commissioner who has power to award compensation against the Contractor in appropriate circumstances;

- (g) not to use or disclose personal information or engage in an act or practice that would breach APP 7 (direct marketing) or a registered APP Code which is applicable to the Contractor, unless the use or disclosure is necessary, directly or indirectly, to discharge an obligation of this Contract;
- (h) to follow any reasonable directions given by the Commonwealth to ensure compliance with the Privacy Act;
- (i) must not transfer or transmit personal information outside of Australia except with the prior written approval of the Commonwealth, which will not be unreasonably withheld. In giving its approval the Commonwealth may impose such conditions as it thinks fit. The Contractor must comply with any term or condition imposed by the Commonwealth under this clause 19.3(b)(vii);
- (j) to disclose in writing to any person who asks, the content of the provisions of this Deed (if any) that are inconsistent with an APP or a registered APP code which is binding on a party to this Deed;
- (k) to immediately notify the Commonwealth if the Contractor becomes aware of a breach or possible breach of any of the obligations contained in, or referred to in, this clause 26, whether by the Contractor or any subcontractor (including any complaints made about acts or practices of the Contractor in connection with personal information);
- (l) to notify the Commonwealth of any subpoena, warrant, order, demand or request made by a foreign court or other authority for the disclosure of personal information to which the Privacy Act applies and to not disclose such information without the prior written approval of the Commonwealth, which will not be unreasonably withheld. In giving its approval the Commonwealth may impose such conditions as it thinks fit. The Contractor must comply with any term or condition imposed by the Commonwealth under this clause 19.3(b)(xi);
- (m) to comply with any directions, guidelines, determinations or recommendations of the Privacy Commissioner, notified to the Contractor by the Commonwealth to the extent that they are not inconsistent with the requirements of this clause 26; and
- (n) to ensure that any employee of the Contractor who is required to deal with personal information for the purposes of this Deed is made aware of the obligations of the Contractor set out in this clause 26.

26.4 Subcontracts

The Contractor must ensure that any subcontract entered into for the purpose of fulfilling its obligations under this Deed contains provisions to ensure that the subcontractor has the same awareness and obligations as the Contractor has under this clause 26, including the requirement in relation to subcontracts.

26.5 Indemnity

The Contractor agrees to indemnify the Commonwealth in respect of any loss or liability suffered or incurred by the Commonwealth which arises directly or indirectly from a breach of any of the obligations of the Contractor under this clause 26, or a subcontractor under the subcontract provisions referred to in clause 26.4.

26.6 Survival

This clause 26 survives the expiry or termination of this Deed.

27. Conflict of interest

27.1 Warranty

The Contractor warrants that, to the best of its knowledge after making diligent inquiry, at the date of signing this Deed and at the formation of each Contract, no conflict of interest exists or is likely to arise in the performance of its obligations under this Deed.

27.2 Notification of a conflict of interest

If, during the performance of the Services a conflict of interest arises, or appears likely to arise, the Contractor must:

- (a) notify the Commonwealth immediately in writing;
- (b) make full disclosure of all relevant information relating to the conflict; and
- (c) take such steps as the Commonwealth requires to resolve or otherwise deal with the conflict.

28. Security

28.1 Australian Government Protective Security Policy Framework

The Contractor must comply with the security requirements detailed in the Australian Government Protective Security Policy Framework as minimum standards (to the extent applicable to the Services), any security requirements specified in item 13 of Schedule 1 or the Order and any additional requirements advised by the Commonwealth from time to time.

28.2 Security clearances

- (a) If required by the Commonwealth, each of the Personnel engaged by or on behalf of the Contractor must hold an Australian Government security clearance to the level required by the Commonwealth.
- (b) The Commonwealth will facilitate the obtaining of security clearances.
- (c) The cost of security clearances will be borne by the Contractor.

28.3 Security checks

The Commonwealth may undertake any security checks it considers appropriate of the Contractor, its employees, agents and subcontractors.

28.4 Security breaches

- (a) The Contractor acknowledges that if any Personnel loses their security clearance or causes a security breach, the Commonwealth may:
 - (i) after consultation with the Contractor, require the replacement of that person; or
 - (ii) immediately terminate this Deed for breach.
- (b) The Contractor must notify the Commonwealth immediately on becoming aware of any security incident or security breach. The Contractor agrees that if a security incident or a security breach occurs, the Contractor will immediately comply with all directions of the Commonwealth in order to address the incident or breach, and ensure it does not occur again.

28.5 Survival

This clause 28 survives the expiry or termination of this Deed.

29. Books and records

29.1 Contractor to keep books and records

The Contractor must:

- (a) keep and require its subcontractors to keep adequate books and records in accordance with Accounting Standards, in sufficient detail to enable the amounts payable by the Commonwealth under this Deed to be determined; and
- (b) retain and require its subcontractors to retain for a period of seven years after the expiry or termination of this Deed, all books and records relating to the Services.

29.2 Costs

The Contractor must bear its own costs of complying with this clause 29.

29.3 Survival

This clause 29 applies for the Deed Period and for a period of seven years from the expiry or termination of this Deed.

30. Audit and access

30.1 Right to conduct audits

The Commonwealth or a representative may conduct audits relevant to the performance of the Contractor's obligations under this Deed. Audits may be conducted of:

- (a) the Contractor's operational practices and procedures as they relate to this Deed, including security procedures;
- (b) the accuracy of the Contractor's invoices and reports in relation to the provision of the Services under this Deed;
- (c) the Contractor's compliance with its confidentiality, privacy and security obligations under this Deed;
- (d) Material (including books and records) in the possession of the Contractor relevant to the Services or this Deed; and
- (e) any other matters determined by the Commonwealth to be relevant to the Services or this Deed.

30.2 Access by the Commonwealth

- (a) The Commonwealth may, at reasonable times and on giving reasonable notice to the Contractor:
 - (i) access the premises of the Contractor to the extent relevant to the performance of this Deed;
 - (ii) require the provision by the Contractor, its employees, agents or subcontractors of records and information in a data format and storage medium accessible by the Commonwealth by use of the Commonwealth's existing computer hardware and software;
 - (iii) inspect and copy documentation, books and records, however stored, in the custody or under the control of the Contractor, its employees, agents or subcontractors; and

- (iv) require assistance in respect of any inquiry into or concerning the Services or this Deed. For these purposes an inquiry includes any administrative or statutory review, audit or inquiry (whether within or external to the Department of Industry and Science), any request for information directed to the Commonwealth, and any inquiry conducted by Parliament or any Parliamentary committee.
- (b) The Contractor must provide access to its computer hardware and software to the extent necessary for the Commonwealth to exercise its rights under this clause 30, and provide the Commonwealth with any reasonable assistance requested by the Commonwealth to use that hardware and software.

30.3 Conduct of audit and access

The Commonwealth must use reasonable endeavours to ensure that:

- (a) audits performed pursuant to clause 30.1; and
- (b) the exercise of the general rights granted by clause 30.2 by the Commonwealth, do not unreasonably delay or disrupt in any material respect the Contractor's performance of its obligations under this Deed or its business.

30.4 Costs

Unless otherwise agreed in writing, each party must bear its own costs of any reviews and/or audits.

30.5 Auditor-General and Privacy Commissioner

The rights of the Commonwealth under clause 30.2(a)(i) to 30.2(a)(iii) apply equally to the Auditor-General or a delegate of the Auditor-General, or the Privacy Commissioner or a delegate of the Privacy Commissioner, for the purpose of performing the Auditor-General's or Privacy Commissioner's statutory functions or powers.

30.6 Contractor to comply with Auditor-General's requirements

The Contractor must do all things necessary to comply with the Auditor-General's or his or her delegate's or the Privacy Commissioner's or his or her delegate's requirements, notified under clause 30.2, provided such requirements are legally enforceable and within the power of the Auditor-General, the Privacy Commissioner, or his or her respective delegate.

30.7 No reduction in responsibility

The requirement for, and participation in, audits does not in any way reduce the Contractor's responsibility to perform its obligations in accordance with this Deed.

30.8 Subcontractor requirements

The Contractor must ensure that any subcontract entered into for the purpose of this Deed contains an equivalent clause granting the rights specified in this clause 30.

30.9 No restriction

Nothing in this Deed reduces, limits or restricts in any way any function, power, right or entitlement of the Auditor-General or a delegate of the Auditor-General or the Privacy Commissioner or a delegate of the Privacy Commissioner. The rights of the Commonwealth under this Deed are in addition to any other power, right or entitlement of the Auditor-General or a delegate of the Auditor-General or the Privacy Commissioner or a delegate of the Privacy Commissioner.

30.10 Survival

This clause 30 applies for the Deed Period and for a period of seven years from the expiry or termination of this Deed.

31. Access to documents

31.1 Definitions

In this clause, 'document' and 'Commonwealth contract' have the same meaning as in the *Freedom of Information Act 1982* (Cth).

31.2 Application of this clause

This clause 31 *only* applies where the Deed or Contract is a Commonwealth contract.

31.3 Obligations

The Contractor agrees that where the Commonwealth has received a request for access to a document created by, or in the possession of, the Contractor or any subcontractor that relates to the performance of this Deed or Contract (and not to the entry into the Deed or Contract), the Commonwealth may at any time by written notice require the Contractor to provide the document to the Commonwealth, and the Contractor must, at no additional cost to the Commonwealth, promptly comply with the notice.

31.4 Subcontractor requirements

The Contractor must include in any subcontract relating to the performance of this Deed or Contract provisions that will enable the Contractor to comply with its obligations under clause 31.

32. Insurance

32.1 Obligation to maintain insurance

In connection with the provision of the Services, the Contractor must have and maintain:

- (a) for the Deed Period, valid and enforceable insurance policies for:
 - (i) public liability;
 - (ii) either professional indemnity or errors or omissions;
 - (iii) workers' compensation as required by Law; and
 - (iv) any additional types of insurance policy specified in item 14 of Schedule 1 or the Order; and
- (b) for seven years following the expiry or termination of this Deed, valid and enforceable insurance policies for either professional indemnity or errors or omissions, unless otherwise specified in item 14 of Schedule 1 or the Order, in the amounts specified in item 14 of Schedule 1, or as otherwise specified in the Order.

32.2 Certificates of currency

The Contractor must, on request by the Commonwealth, provide current relevant confirmation of insurance documentation from its insurers or insurance brokers certifying that it has insurance as required by clause 32.1.

32.3 Survival

This clause 32 survives the expiry or termination of this Deed.

33. Unforeseen events

33.1 Occurrence of unforeseen event

Subject to clause 33.2, a party (**Affected Party**) is excused from performing its obligations under this Deed to the extent it is prevented by circumstances beyond its reasonable control (other than lack of funds for any reason or any strike, lockout and labour disputes in respect of the Contractor only), including acts of God, natural disasters, acts of war, riots and strikes outside the Affected Party's organisation.

33.2 Notice of unforeseen event

When the circumstances described in clause 33.1 arise or are reasonably perceived by the Affected Party as an imminent possibility, the Affected Party must give notice of those circumstances to the other party as soon as possible, identifying the effect they will have on its performance. An Affected Party must make all reasonable efforts to minimise the effects of such circumstances on the performance of this Deed.

33.3 Termination

If non-performance or diminished performance by the Affected Party due to the circumstances under clause 33.1 continues for a period of more than 30 consecutive days or other period as specified in item 15 of Schedule 1, the other party may terminate this Deed immediately by giving the Affected Party written notice.

33.4 Consequences of termination

If this Deed is terminated under clause 33.3:

- (a) each party will bear its own costs and neither party will incur further liability to the other; and
- (b) where the Contractor is the Affected Party, it will be entitled to payment for Services rendered in accordance with this Deed prior to the date of intervention of the circumstances described in clause 33.1.

34. Dispute resolution

34.1 No arbitration or court proceedings

If a dispute arises in relation to the conduct of this Deed (**Dispute**), a party must comply with this clause 34 before starting arbitration or court proceedings (except proceedings for urgent interlocutory relief). After a party has sought or obtained any urgent interlocutory relief, that party must follow this clause 34.

34.2 Notification

A party claiming a Dispute has arisen must give the other parties to the Dispute notice setting out details of the Dispute.

34.3 Parties to resolve Dispute

During the 14 days after a notice is given under clause 34.2 (or longer period if the parties to the Dispute agree in writing), each party to the Dispute must use its reasonable efforts through a meeting of CEOs (or their nominees) to resolve the Dispute. If the parties cannot resolve the Dispute within that period, they must refer the Dispute to a mediator if one of them requests.

34.4 Appointment of mediator

If the parties to the Dispute cannot agree on a mediator within seven days after a request under clause 34.3, the chairperson of LEADR or the chairperson's nominee will appoint a mediator.

34.5 Role of mediator and obligations of parties

The role of a mediator is to assist in negotiating a resolution of the Dispute. A mediator may not make a binding decision on a party to the Dispute except if the party agrees in writing. Unless agreed by the mediator and parties, the mediation must be held within 21 days of the request for mediation in clause 34.3. The parties must attend the mediation and act in good faith to genuinely attempt to resolve the Dispute.

34.6 Confidentiality

Any information or documents disclosed by a party under this clause 34:

- (a) must be kept confidential; and
- (b) may only be used to attempt to resolve the Dispute.

34.7 Costs

Each party to a Dispute must pay its own costs of complying with this clause 34. The parties to the Dispute must equally pay the costs of any mediator.

34.8 Termination of process

A party to a Dispute may terminate the dispute resolution process by giving notice to each other party after it has complied with clauses 34.1 to 34.5. Clauses 34.6 and 34.7 survive termination of the dispute resolution process.

34.9 Breach of this clause

If a party to a Dispute breaches clauses 34.1 to 34.8, the other party does not have to comply with those clauses in relation to the Dispute.

35. Notices and other communications

35.1 Service of Notices

A Notice must be:

- (a) in writing, in English and signed by a person duly authorised by the sender; and
- (b) hand delivered or sent by prepaid post or facsimile to the recipient's address for Notices specified in item 16 of Schedule 1, as varied by any Notice given by the recipient to the sender.

35.2 Effective on receipt

A Notice given in accordance with clause 35.1 takes effect when it is taken to be received (or at a later time specified in it), and is taken to be received:

- (a) if hand delivered, on delivery;
- (b) if sent by prepaid post, on the second Business Day after the date of posting (or on the seventh Business Day after the date of posting if posted to or from a place outside Australia); or
- (c) if sent by facsimile, when the sender's facsimile system generates a message confirming successful transmission of the entire Notice unless, within eight Business Hours after the transmission, the recipient informs the sender that it has not received the entire Notice,

but if the delivery, receipt or transmission is not on a Business Day or is after 5.00pm on a Business Day, the Notice is taken to be received at 9.00am on the next Business Day.

36. Miscellaneous

36.1 Ownership

All copyright and other Intellectual Property Rights contained in this Deed remain the property of the Commonwealth.

36.2 Variation

No agreement or understanding varying or extending this Deed is legally binding upon either party unless the agreement or understanding is in writing and signed by both parties.

36.3 Trustee

The Contractor represents and warrants that if the Contractor is a trustee, it enters into this Deed personally and in its capacity as trustee and has the power to perform its obligations under this Deed.

36.4 Approvals and consents

Except where this Deed expressly states otherwise, a party may, in its discretion, give conditionally or unconditionally or withhold any approval or consent under this Deed.

36.5 Assignment and novation

A party may only assign its rights or novate its rights and obligations under this Deed with the prior written consent of the other party.

36.6 Costs

Each party must pay its own costs of negotiating, preparing and executing this Deed.

36.7 No merger

The rights and obligations of the parties under this Deed do not merge on completion of any transaction contemplated by this Deed.

36.8 Further action

Each party must do, at its own expense, everything reasonably necessary (including executing documents) to give full effect to this Deed and any transaction contemplated by it.

36.9 Severability

A term or part of a term of this Deed that is illegal or unenforceable may be severed from this Deed and the remaining terms or parts of the terms of this Deed continue in force.

36.10 Waiver

Waiver of any provision of or right under this Deed:

- (a) must be in writing signed by the party entitled to the benefit of that provision or right; and
- (b) is effective only to the extent set out in any written waiver.

36.11 Relationship

- (a) The parties must not represent themselves, and must ensure that their officers, employees, agents and subcontractors do not represent themselves, as being an officer, employee, partner or agent of the other party, or as otherwise able to bind or represent the other party.
- (b) This Deed does not create a relationship of employment, agency or partnership between the parties.

36.12 Announcements

- (a) The Contractor must, before making a public announcement in connection with this Deed or any transaction contemplated by it, obtain the Commonwealth's written agreement to the announcement, except if required by Law or a regulatory body (including a relevant stock exchange).
- (b) If the Contractor is required by Law or a regulatory body to make a public announcement in connection with this Deed or any transaction contemplated by this Deed, the Contractor must, to the extent practicable, first consult with and take into account the reasonable requirements of the Commonwealth.

36.13 Governing law and jurisdiction

This Deed is governed by the law of the Australian Capital Territory and each party irrevocably and unconditionally submits to the non-exclusive jurisdiction of the courts of the Australian Capital Territory.

Schedule 1 – Deed Details

Item	Description	Clause	Details
1.	Commonwealth	1.1	Commonwealth of Australia as represented by the Department of Industry and Science Address: Industry House, 10 Binara Street CANBERRA ACT 2600 ABN 74 599 608 295
2.	Contractor	1.1	Name of Contractor: BAEconomics Pty Ltd Address: PO Box 5447 KINGSTON ACT 2604 ABN: 71 139 568 899 ACN: 139 568 899
3.	Commonwealth Representative	1.1	Contract Manager COAG Energy Council Secretariat Phone: 02 6243 7788 Email: EnergyCouncilConsultancyPanel@industry.gov.au
4.	Contractor Representative	1.1	Dr Brian Fisher Phone: s47F Fax: s47F Email: bfisher@baeconomics.com.au
5.	Commencement Date	1.1 and 3.1	31 July 2015
6.	Initial Deed Period	1.1 and 3.1	Three (3) years.
7.	Option Period	3.2	One option to extend being two (2) years in duration.
8.	Option Notice Period	3.2	No change.
9.	Intellectual Property Rights – ownership of Contract Material	1.1 and 17	clause 17.4 (First model: Commonwealth ownership of and licence to Intellectual Property Rights in Contract Material) is to apply
10.	Intellectual Property Rights – licences	1.1 and 17	Where clause 17.4 (First model: Commonwealth ownership of and licence to Intellectual Property Rights in Contract Material) is to apply: 1. Period of Commonwealth's licence is: perpetual.

Item	Description	Clause	Details
11.	Intellectual Property Rights – licences	1.1 and 17	Not applicable.
12.	Confidential Information	1.1 and 25	No additional requirements.
13.	Security	28	No additional requirements.
14.	Insurance	31	\$10 million of public liability insurance. \$10 million of professional indemnity or errors and omissions insurance. Workers compensation as required by Law
15.	Unforeseen events termination period	33.3	No change.
16.	Address for Notices	35	<p>Commonwealth: s22 [REDACTED] s22 [REDACTED] COAG Energy Council Secretariat GPO Box 9839 CANBERRA ACT 2601 Industry House, 10 Binara Street CANBERRA ACT 2600 Fax: s22 [REDACTED]</p> <p>Contractor: Dr Brian Fisher s47F [REDACTED] Phone: s47F [REDACTED] Fax: s47F [REDACTED] Email: bfisher@baeconomics.com.au</p>

Schedule 2 – Categories of Services

1. Categories of Services

The Contractor must throughout the Deed Period be capable of providing the following:

Category of Service	Description	Highly Desirable Experience, Expertise and Technical Capabilities
Technical and Strategic Advice	Advice relating to Australian Government energy and/or resources initiatives and/or security	<ul style="list-style-type: none"> • Experience and/or expertise in the domestic and international energy, energy efficiency sectors and/or resources policy and research. • Experience with one or more of the COAG Energy Council's national policy areas (see Table Note below). • Experience and/or expertise on government initiatives on residential, commercial or industrial products and markets. • Experience and/or expertise on capability mapping for the energy sector.
	Advice on energy and/or resources sector regulation and leading industry practice	<ul style="list-style-type: none"> • Experience and/or expertise in domestic and international energy, energy efficiency and/or resource industry regulation, including compliance monitoring, verification and enforcement. • Experience in Australian and/or international energy, energy efficiency and/or resources sector standards. • Experience in Australia and/or internationally on energy, energy efficiency and/or resources in leading industry practices. • Experience in Australia and/or internationally on market access to the energy, energy efficiency and/or resources markets. • Experience and/or expertise in preparation of Regulatory Impact Statements. • Experience and/or expertise in designing legislative and other instruments.
	Strategic advice on future directions for energy and resources policy	<ul style="list-style-type: none"> • Experience and/or expertise in domestic and international energy, energy efficiency and/or resources policy and research. • Experience and/or expertise in domestic and international energy, energy efficiency and/or resource industry regulation. • Experience and/or expertise in market development and reform in domestic and international energy, energy efficiency and/or resources sectors. • Experience and/or expertise in strategic fore

Category of Service	Description	Highly Desirable Experience, Expertise and Technical Capabilities
		sighting, horizon scanning and scenario planning.
	Impact analysis	<ul style="list-style-type: none"> • Experience and/or expertise in impact analysis in relation to the impact of the energy and resources sectors on other sectors, particularly with respect to the five growth sectors: agribusiness, gas, tourism, international education and wealth management.
	Advice on program and project management	<ul style="list-style-type: none"> • Expertise in preparing, reviewing and analysing data and information.
	Project and program evaluation	<ul style="list-style-type: none"> • Experience and/or expertise in assessment of project/program need; design and logic; implementation; outcome or impact; cost and efficiency.
Research	Advice on energy and/or resources sector markets	<ul style="list-style-type: none"> • Experience and/or expertise in energy, energy efficiency and/or resources supply and demand issues. • Expertise on energy, energy efficiency and/or resources sector market barriers. • Expertise on energy, energy efficiency and/or resources policy, regulation and market frameworks. • Expertise in preparing, reviewing and analysing data and information. • Expertise in social and economic market research.
	Modelling services	<ul style="list-style-type: none"> • Experience and/or expertise in modelling and scenario development to predict outcomes and projections in the context of the energy and/or resources sectors. • Experience with one or more of the COAG Energy Council's national policy areas (see Table Note below).
	Data collection, compilation and analysis	<ul style="list-style-type: none"> • Expertise in developing methodology, preparing, reviewing and analysing data and information. • Experience and/or expertise in research and analysis of domestic and international cross-jurisdictional cooperation in energy, energy efficiency and/or resources sector regulatory and non-regulatory schemes.
	Advice on program and	<ul style="list-style-type: none"> • Expertise in preparing, reviewing and

Category of Service	Description	Highly Desirable Experience, Expertise and Technical Capabilities
	project management	analysing data and information.
Expert Industry and Consumer/Community Advice and Liaison	Engagement with government, industry stakeholder and consumer and community groups	<ul style="list-style-type: none"> • Understanding of domestic and international energy and/or resources policy. • Experience in, or capacity to develop experience in, liaison with Australian state and territory government agencies, international organisations and agencies, industry stakeholders, consumer groups and the public. • Experience in facilitating public consultations and meetings, including delivering presentations, conducting workshops and convening forums. • Capacity to research and provide advice on industry stakeholder and consumer group issues. • Experience in facilitation of multi-party meetings, workshops and think tanks involving internal and external stakeholders. • Experience in the development and delivery of communication and marketing plans, and consumer engagement activities.
	Industry stakeholder and consumer group research	<ul style="list-style-type: none"> • Ability to develop case studies, including research on consumer behaviour and demand side participation.

NOTE: The COAG Energy Council's National Policy Areas include, but are not limited to the following:

- Energy Security
- Liquid fuel market
- Emergency response management – energy and resources sectors
- Mineral exploration investment and development
- Energy market investment and development
- Financial market resilience
- Multiple land use
- Low emissions technologies (including renewables and carbon capture and storage)Energy productivity
- Gas market development
- Energy consumer advocacy
- Energy market governance
- Electricity distribution and transmission reliability
- Demand side participation including demand response mechanism and smart meters
- Offshore petroleum
- Conventional and unconventional petroleum reserves/resources, exploration, production and reporting
- Network regulation
- Retail energy markets – competition and pricing
- Consumer engagement

- Data management
-

Schedule 3 – Management of the Deed

1. Progress meetings (clause 5.1)

On a case by case basis:

- The Contractor may be required to attend progress meetings at the request of the Commonwealth.
- Progress meetings for individual projects will be outlined in the Order.

2. Reporting (clause 5.2)

Reporting for individual projects will be outlined in the Order.

Schedule 4 – Rates for Categories of Services

1. Rates (clause 4)

1.1 Hourly rates

Personnel	Hourly Rate (exclusive of GST)	GST Component
s47F		s47G(1)(a)

1.2 Daily rates

Personnel	Daily Rate (exclusive of GST)	GST Component
s47F		s47G(1)(a)

1.3 GST exclusive

All Rates are GST exclusive.

1.4 Variation

- (a) The Contractor may apply to vary the Rates on the anniversary of the Commencement Date. Any request for a variation will be capped at the equivalent of the percentage increase in annual 'Average Weekly Earnings' (published by the Australian Bureau of Statistics as Average Weekly Earnings, Seasonally Adjusted Estimates, Public Sector, Full-time adult ordinary time earnings).
- (b) The Commonwealth may, acting reasonably, approve or deny any variation to the Rates applied for under paragraph (a).

2. Alternative pricing structure

There may be occasions when the Commonwealth requires the application of different pricing structures. Each Order will specify the applicable pricing principles, including payment against achievement of specific Milestones Dates. Regardless of whether an Order is to be based on milestone payments or monthly payments, the Contractor must not issue a Quotation based on rates higher than Rates.

3. Invoicing requirements

The invoice must meet the requirements of a tax invoice as set out in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth) and in a form approved by the Commonwealth which sets out:

- (a) the details of the amount of time spent by each of the person including Specified Personnel on the Services for the period to which the invoice relates and a record detailing how the relevant Milestone Dates have been met;
- (b) the contract or project number;
- (c) the amount of any allowances and costs to be paid by the Commonwealth together with any substantiating material required;
- (d) the name of the Commonwealth Representative; and
- (e) such other information as the Commonwealth requires.

Invoices must be submitted to the *Project Officer*:

Department of Industry and Science
GPO Box 9839
CANBERRA ACT 2601

4. Payment of Interest

- (a) Interest

This Item 4 only applies where:

- (i) the value of the Order is not more than A\$1 million (GST inclusive); and
- (ii) the amount of the interest payable exceeds A\$10.

The Commonwealth will pay interest on late payments to the Contractor for payments made by the Commonwealth more than 30 days after the amount became due and payable, the Commonwealth will make a self-generated interest payment to the Contractor.

Interest payable under this Item 4 will be simple interest on the unpaid amount at the General Interest Charge Rate, calculated in respect of each day from the day after the amount was due and payable, up to and including the day that the Commonwealth effects payment as represented by the following formula:

$$SI = UA \times GIC \times D$$

Where:

SI = simple interest amount;

UA = the unpaid amount;

GIC = General Interest Charge Rate daily rate; and

D = the number of days from the day after payment was due up to and including the day that payment is made.

In this Item 4 “General Interest Charge Rate” means the general interest charge rate determined under section 8AAD of the *Taxation Administration Act 1953* (Cth) on the day payment is due, expressed as a decimal rate per day.

(b) Correct rendering of invoices

For the purposes of this Item 4, an invoice is correctly rendered if it:

- (i) meets the requirements specified in Item 3 of this Schedule 4 for a correctly rendered invoice; and
- (ii) is due for payment in accordance with clause 19 (Payment) of this Deed and the provisions of the relevant Contract.

Schedule 5 – Request for Quotation

RFQ/Quotation Number – [insert]			
<p>The Commonwealth issues this RFQ to the Contractor and requests the Contractor to provide a quotation by [insert date] by completing the appropriate items and returning it to the Commonwealth.</p>			
Item	Description	Clause	Details
1.	Deed No. and description	N/A	[Department of Industry and Science to insert deed number, date and description]
2.	Names of Parties to the Deed	N/A	[Department of Industry and Science to insert parties]
3.	Services Start Date	1.1 and 9.1	[Department of Industry and Science to insert date e.g. dd/mm/yy]
4.	Contract Period	1.1 and 9.1	[Department of Industry and Science to insert the period of time for which the Contract will continue e.g. 2 years]
5.	Category of Services	4.1	[Department of Industry and Science to insert title/type/category of Services required]
6.	Services	11	<p>[Department of Industry and Science to insert details and attach additional pages if required]</p> <p>[Department of Industry and Science to include details of any Deliverables]</p> <p>[Department of Industry and Science to insert details of any Milestone Dates]</p> <p>[Department of Industry and Science to include details of any service levels]</p>
7.	Contractor response to Service requirement specified in item 6	N/A	[Contractor to insert either 'agree' or provide a separate document outlining offer]
8.	Evaluation Criteria	1.1, 4.6(a)	[Department of Industry and Science to insert criteria for Contractor to address]
9.	Contractor response to Evaluation Criteria	4.6(a)	[Contractor to provide statement addressing the Evaluation Criteria]
10.	Referees	4.6(a)	[Department of Industry and Science to specify if Contractor is required to provide contact details for at least two referees]

11.	Subcontractors	11.6	[Contractor to insert names and ABNs of any subcontractors. Otherwise insert 'not applicable'.]
12.	Progress meetings and reports	13.1 and 13.2	[Department of Industry and Science to insert details of progress meetings and reports. Otherwise insert 'not applicable'.]
13.	Project Officers	13.1	Commonwealth [Department of Industry and Science to insert details of Commonwealth Project Officer. Otherwise insert 'not applicable'.] Contractor [Contractor to insert details of Contractor Project Officer. Otherwise insert 'not applicable'.]
14.	Performance Criteria	1.1 and 14	[Department of Industry and Science to insert details of Performance Criteria against which the Services and Deliverables will be assessed, and the date of assessment. The definition of Performance Criteria applies the requirements in clauses 11.1(c) and 11.1(e) if no requirements are specified.]
15.	Specified Personnel	1.1 and 15	[Department of Industry and Science to insert particular Personnel the Commonwealth requires perform the Services, if any.] [Contractor to insert names and positions of Specified Personnel. Otherwise insert 'not applicable'. Contractor to attach a curriculum vitae for each of the Personnel proposed to perform the Services.]
16.	Commonwealth Material	1.1 and 16	[Department of Industry and Science to insert specific Material to be provided to the Contractor by the Commonwealth (if any) and any restrictions on the use of the Material. Otherwise insert 'not applicable'.]
17.	Pre-existing Material	1.1 and 17	Commonwealth [Department of Industry and Science to insert the Commonwealth's Pre-existing Material or 'not applicable'] Contractor [Contractor to insert the Contractor's Pre-existing Material or 'not applicable']
18.	Intellectual Property Rights	1.1 and 17	[Department of Industry and Science to specify if intellectual property position is to be different from clause 17]
19.	Payment – Service Charges	19.1	[Department of Industry and Science to insert proposed fee structure] [Contractor to insert Service Charges based on the Rates in Schedule 4 of the Deed]
20.	Expenses	19.5	[Note: If the contract is for a fixed fee, Department of Industry and Science to insert 'The Commonwealth will not pay any travel accommodation or other fees, charges or expenses'. If

			<p>the Commonwealth will pay expenses in addition to the fee insert details of reimbursable expenses, for example:</p> <p>(a) Subject to (b) below, the Commonwealth will not pay any travel, accommodation or other fees, charges or expenses unless they have been pre-approved in writing by the Commonwealth and do not exceed \$[insert] (exclusive of GST) in total.</p> <p>(b) The Contractor will be reimbursed for the travel and related accommodation at non-SES rates where they are pre-approved in writing by the Commonwealth. The Contractor must submit an invoice for those expenses and the Commonwealth will reimburse the Contractor in accordance with the invoicing procedures set out in this Order.</p> <p>[Contractor to insert quote for expenses – if applicable]</p>
21.	Other		<p>[An assessment will need to be made by the parties on a case-by-case basis about what is to be included in this item. Department of Industry and Science to insert any other proposed changes to the terms of the Contract from those set out in the Deed. For example, specify:</p> <ul style="list-style-type: none"> • Business Hours, if different from clause 1.1 • relevant industry standards, best practice and guidelines, if any (clause 11.1(e)). • any particular requirements with which the Contractor must comply, for example, Commonwealth specific legislative requirements (including in relation to secrecy and confidentiality), specific Commonwealth policies and/or procedures and specific Commonwealth government policies (clause 11.1(h)) • any additional acts the Commonwealth wants to perform with the Contract Material other than those listed in clause 18.2 • an alternative payment period if the 30 day period contemplated in clause 19.3 is not suitable • any security requirements additional to those specified in clause 28 • any changes to the insurance requirements for the Contract (clause 32)] <p>[Contractor to insert proposed confidential information (if any) and justify with reference to the Confidentiality Test on DoFD's Buying for the Australian Government web-based guidance (noting that the decision to accept that the proposed information is in fact confidential will be made by Department</p>

			of Industry and Science)]
	Other - Confidential Information		<ul style="list-style-type: none"> any Confidential Information of Department of Industry and Science (decided by reference Guidance on Confidentiality in Procurement, July 2007, including any Contract provisions or Schedules that are to be kept confidential (clauses 1.1 and 25). The period of confidentiality should be specified for each item. If the parties agree that different items of information are to be confidential for different periods of time, the different periods should be recorded next to each item. Note that the Department must report the Confidential Contract provisions or Schedules in accordance with the Senate Order on Departmental and Agency Contracts, including providing a statement of reasons for the confidentiality. Users can contact ProcurementInbox for further information. <p>[Contractor to insert proposed confidential information (if any) and justify noting that the decision to accept that the proposed information is in fact confidential will be made by Department of Industry and Science]</p>

Schedule 6 – Order

[Department of Industry and Science to complete using the information in the RFQ and Quotation if provided and requested]

Order Number – [insert]

The Contractor has offered under clause 4.1 of the Deed specified at item 1 below to provide the Services. The Commonwealth accepts this offer on the terms and conditions set out in the Deed and in this Order and issues this Order in accordance with clause 4 of the Deed. Subject to clause 4.7 of the Deed, if there is an inconsistency between this Order and any other provisions of the Deed, the terms and conditions in this Order will prevail to the extent of any inconsistency.

Item	Description	Clause	Details
1.	Deed No. and description	N/A	[insert deed number, date and description]
2.	Names of Parties to the Deed	N/A	[insert parties]
3.	Services Start Date	1.1 and 9.1	[insert date e.g. dd/mm/yy]
4.	Contract Period	1.1 and 9.1	[insert the period of time for which the Contract will continue e.g. 2 years]
5.	Category of Services	4.1	[insert title/type/category of Services required]
6.	Services	11	[insert details and attach additional pages if required] [include details of any Deliverables] [insert details of any Milestone Dates] [include details of any service levels]
7.	Subcontractors	11.6	[insert names and ABNs of any subcontractors. Otherwise insert 'not applicable'.]
8.	Progress meetings and reports	13.1 and 13.2	[insert details of progress meetings and reports. Otherwise insert 'not applicable'.]
9.	Project Officers	13.1	Commonwealth [insert details of Commonwealth Project Officer. Otherwise insert 'not applicable'.] Contractor [insert details of Contractor Project Officer. Otherwise insert 'not applicable'.]
10.	Performance Criteria	1.1 and 14	[insert details of Performance Criteria against which the Services and Deliverables will be assessed, and the date of

			assessment. The definition of Performance Criteria applies the requirements in clause 11.1(c) and 11.1(e) if no requirements are specified.]
11.	Specified Personnel	1.1 and 15	[insert names and positions of Specified Personnel. Otherwise insert 'not applicable'.]
12.	Commonwealth Material	1.1 and 16	[insert specific Material to be provided to the Contractor by the Commonwealth (if any) and any restrictions on the use of the Material. Otherwise insert 'not applicable'.]
13.	Pre-existing Material	1.1 and 17	<p>Commonwealth</p> <p>[insert the Commonwealth's Pre-existing Material. Otherwise insert 'not applicable']</p> <p>Contractor</p> <p>[insert the Contractor's Pre-existing Material. Otherwise insert 'not applicable']</p>
14.	Intellectual Property Rights	1.1 and 17	[specify if intellectual property position is to be different from clause 17. Contact ProcurementInbox for assistance. Otherwise, insert 'no change']
15.	Payment – Service Charges	19.1	[insert Service Charges based on the Rates in Schedule 4]
16.	Expenses	19.5	<p>[Note: If the contract is for a fixed fee, insert 'The Commonwealth will not pay any travel accommodation or other fees, charges or expenses'. If the Commonwealth will pay expenses in addition to the fee insert details of reimbursable expenses, for example</p> <p>(a) Subject to (b) below, the Commonwealth will not pay any travel, accommodation or other fees, charges or expenses unless they have been pre-approved in writing by the Commonwealth and do not exceed \$[Insert]exclusive of GST in total.</p> <p>(b) The Contractor will be reimbursed for the travel and related accommodation at non-SES rates where they are pre-approved in writing by the Commonwealth. The Contractor must submit an invoice for those expenses and the Commonwealth will reimburse the Contractor in accordance with the invoicing procedures set out in this Order</p>
17.	Other		<p>Insert any other changes to the terms of the Contract from those set out in the Deed. Note that approval is required for changes to certain provisions (see clause 4.7). For example, specify:</p> <ul style="list-style-type: none"> • Business Hours, if different from clause 1.1 • relevant industry standards, best practice and guidelines, if any (clause 11.1(e)). • any particular requirements with which the Contractor

			<p>must comply, for example, Commonwealth specific legislative requirements (including in relation to secrecy and confidentiality), specific Commonwealth policies and/or procedures and specific Commonwealth government policies (clause 11.1(h))</p> <ul style="list-style-type: none"> • any additional acts the Commonwealth wants to perform with the Contract Material other than those listed in clause 18.2 • an alternative payment period if the 30 day period contemplated in clause 19.3 is not suitable • any security requirements additional to those specified in clause 28 • any changes to the insurance requirements for the Contract (clause 32)]
	Other- Confidential Information		<ul style="list-style-type: none"> • each party's Confidential Information (if any), including any Contract provisions or Schedules that are to be kept confidential (clauses 1.1 and 25). The period of confidentiality should be specified for each item. If the parties agree that different items of information are to be confidential for different periods of time, the different periods should be recorded next to each item. Note that the Department must report the Confidential Contract provisions or Schedules in accordance with the Senate Order on Departmental and Agency Contracts, including providing a statement of reasons for the confidentiality. Users can contact ProcurementInbox for further information.

Signed for and on behalf of the
Commonwealth of Australia as
represented by the Department of
Industry and Science by its duly authorised
delegate in the presence of

Signature of witness

Name of witness (print)



Signature of delegate

Name of delegate (print)

Position of delegate (print)



Executed by BAEconomics Pty Limited in accordance with Section 127 of the Corporations Act 2001 in the presence of

Signature of director



Signature of director/company secretary/sole director and sole company secretary
(Please delete as applicable)



Name of director (print)

Name of director/company secretary/ sole director and sole company secretary (print)

Schedule 7 – Confidentiality and privacy undertaking

Date _____ / _____ / _____
day month year

Parties

Name The Commonwealth of Australia as represented by the Department of Industry and Science
ABN 74 599 608 295
Short form name **Commonwealth**
Notice details [insert]

Name [insert name of Confidant and ABN, where applicable]
Short form name **Confidant, I, me and my**
Notice details [insert]

Background

- A The Commonwealth requires the provision of certain services.
- B [Insert name of Contractor] (**Contractor**) has agreed to provide services to the Commonwealth under a deed of standing offer dated [insert date] (**Deed**).
- C The Confidant provides the undertakings set out below in respect of work to be performed, and information to be acquired, directly or indirectly in connection with the Deed.

Agreed terms

1. Definitions

Confidential Information means information that is by its nature confidential and:

- (a) is designated by the Commonwealth as confidential and is described in item 12 of Schedule 1 to the Deed or an Order issued under the Deed; or
- (b) the Confidant knows or ought to know is confidential,
but does not include information that:
- (c) is or becomes public knowledge otherwise than by breach of the Deed or any Contract formed under the Deed or any other confidentiality obligation.

Personal Information has the meaning it has in section 6 of the *Privacy Act 1988* (Cth).

2. Access

I understand that in the course of performing duties under the Deed or a Contract formed under the Deed, I may have access to Personal Information and Confidential Information.

3. Non-disclosure

- (a) I will treat as secret and confidential all Personal Information and Confidential Information to which I have access or which is disclosed to me.
- (b) If the Commonwealth grants its consent for me to disclose Personal Information or Confidential Information, it may impose conditions on that consent. In particular, the Commonwealth may require that I obtain the execution of a deed in these terms by the person to whom I propose to disclose the Personal Information or Confidential Information.
- (c) My obligations under this deed will not be taken to have been breached where I am required by law to disclose the Personal Information or Confidential Information.

4. Restriction on use

- (a) I will use the Personal Information or Confidential Information only for the purpose of my dealings with the Commonwealth (whether directly or indirectly).
- (b) I will not copy or reproduce the Personal Information or Confidential Information without the approval of the Commonwealth, will not allow any other person outside the Commonwealth access to the Personal Information or Confidential Information and will take all necessary precautions to prevent unauthorised access to or copying of the Personal Information or Confidential Information in my control.

5. Powers of the Commonwealth

- (a) Immediately on request by the Commonwealth, I must deliver to the Commonwealth all documents in my possession or control containing Personal Information or Confidential Information.
- (b) If at the time of such a request I am aware that documents containing Personal Information or Confidential Information are beyond my possession or control, then I must provide full details of where the documents containing the Personal Information or Confidential Information are, and the identity of the person who has control of them.

6. Privacy Act obligations

I agree to abide by the provisions of the *Privacy Act 1988* (Cth), including the Information Privacy Principles and National Privacy Principles set out in that Act, in respect of both Personal Information and Confidential Information, whether or not I am legally bound to comply with that Act and as if the definition of personal information in that Act includes Confidential Information.

7. Survival

This deed will survive the expiry or termination of any contract between the Contractor and me providing for the performance of services or the provision of goods by me (whether directly or indirectly).

8. Applicable law

This deed will be governed by, and construed in all respects in accordance with, the law of the Australian Capital Territory and I agree to submit to the applicable jurisdiction of the Courts of that Territory in respect of all matters arising under, or in relation to, this deed.

EXECUTED as a deed

Signed sealed and delivered for and behalf of the **Commonwealth of Australia as represented by the Department of Industry and Science** by its duly authorised delegate in the presence of

Signature of witness



Signature of delegate



Name of witness (print)

Name of delegate (print)

Position of delegate (print)

Signed sealed and delivered by [insert name of signatory] in the presence of

Signature of witness



Signature



Name of witness (print)

Signing page

EXECUTED as a deed

Signed for and on behalf of the Commonwealth of Australia as represented by the Department of Industry and Science by its duly authorised delegate in the presence of

s22

Signature of witness

s22

Name of witness (print)

s22

Signature of delegate

s22

Name of delegate (print)

Manager COAG Energy Council Secretariat

Position of delegate (print)

Executed by BAEconomics Pty Limited in accordance with Section 127 of the Corporations Act 2001 in the presence of

s47F

Signature of director

Brian S. Fisher

Name of director (print)

s47F

Signature of director/~~company secretary/sole director and sole company secretary~~
(Please delete as applicable)

s47F

Name of director/company secretary/ sole director and sole company secretary (print)

Schedule 6– Order

Order Number – 4000001474			
<p>The Contractor has offered under clause 4.1 of the Deed specified at item 1 below to provide the Services. The Commonwealth accepts this offer on the terms and conditions set out in the Deed and in this Order and issues this Order in accordance with clause 4 of the Deed. Subject to clause 4.7 of the Deed, if there is an inconsistency between this Order and any other provisions of the Deed, the terms and conditions in this Order will prevail to the extent of any inconsistency.</p>			
Item	Description	Clause	Details
1.	Deed No. and description	N/A	1718-008 Liquid Fuel Supply Chain (4000001474) Deed PRI-00003197 signed 31/07/2015
2.	Names of Parties to the Deed	N/A	Commonwealth of Australia (as represented by the Department of the Environment and Energy (ABN 34 190 894 983) and BAEconomics Pty Ltd ABN 71 139 568 899
3.	Services Start Date	1.1 and 9.1	27/07/2018
4.	Contract Period	1.1 and 9.1	1 year ending on 27/07/2019
5.	Category of Services	4.1	Technical and strategic advice, Research and Expert industry and consumer/community advice and liaison
6.	Services	11	<p>Refer to Attachment A Description of Services for further detail.</p> <p><u>Deliverables</u></p> <p>The Contractor will give regular progress updates (as agreed at inception meeting) throughout the project.</p> <p>The Contractor will attend an inception meeting with the Commonwealth either face-to-face or via video-conference to discuss the project requirements and scope. This will occur the week of 3 August 2018.</p> <ol style="list-style-type: none"> 1. The Contractor will deliver a written document (provided electronically in word format) containing a finalised project scope to the Commonwealth for its approval within a week of engagement. 2. The Contractor will provide an outline of the proposed format for the liquid fuel supply chain model, detailing

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			<p>how it will meet the requirements of Task 1a of the Requirement. This proposed format must be approved by the Commonwealth.</p> <ol style="list-style-type: none"> 3. The Contractor will deliver the draft ‘alpha’ model (Task 1ai specified in the Requirement in Attachment A) and early modelling findings, including training to relevant staff to the Commonwealth by 14 September 2018. 4. The Contractor will present the results of Task 1b specified in the Requirement in Attachment A (in person or via video-conference) to the Commonwealth by 14 September 2018. 5. The Contractor will deliver the draft ‘beta’ model (Task 1aii specified in the Requirement in Attachment A) and modelling findings, including training to relevant staff to the Commonwealth by 19 October 2018. 6. The Contractor will present the results of Task 2 specified in the Requirement in Attachment A (in person or via video-conference) to the Commonwealth by 17 December 2018. 7. The Contractor will deliver the draft ‘theta’ model (Task 1aiii specified in the Requirement in Attachment A) and modelling findings to the Commonwealth, including training to relevant staff, by 17 December 2018. 8. The Contractor will deliver the final supply chain model and modelling findings for Task 1, including a presentation to the Commonwealth and key stakeholders (in person or via teleconference) and all training to relevant staff, by 28 February 2019. <table border="1" data-bbox="715 1458 1469 1910"> <thead> <tr> <th colspan="2" data-bbox="715 1458 1469 1541">Project milestones</th> </tr> </thead> <tbody> <tr> <td data-bbox="715 1541 1198 1653">Contract execution and inception meeting between Contractor and the Commonwealth.</td> <td data-bbox="1198 1541 1469 1653">By 3 August 2018</td> </tr> <tr> <td data-bbox="715 1653 1198 1765">Milestone 1 – Finalised project scope for the Commonwealth’s approval</td> <td data-bbox="1198 1653 1469 1765">10 August 2018</td> </tr> <tr> <td data-bbox="715 1765 1198 1910">Milestone 2 – Proposed format for the liquid fuel supply chain model agreed with the Commonwealth</td> <td data-bbox="1198 1765 1469 1910">24 August 2018</td> </tr> </tbody> </table>	Project milestones		Contract execution and inception meeting between Contractor and the Commonwealth.	By 3 August 2018	Milestone 1 – Finalised project scope for the Commonwealth’s approval	10 August 2018	Milestone 2 – Proposed format for the liquid fuel supply chain model agreed with the Commonwealth	24 August 2018
Project milestones											
Contract execution and inception meeting between Contractor and the Commonwealth.	By 3 August 2018										
Milestone 1 – Finalised project scope for the Commonwealth’s approval	10 August 2018										
Milestone 2 – Proposed format for the liquid fuel supply chain model agreed with the Commonwealth	24 August 2018										

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			<p>Milestone 3 – Delivery of ‘alpha’ model and modelling findings (Task 1ai specified in the Requirement in Attachment A) to the Commonwealth</p> <p>Milestone 4 – Presentation of results of Task 1b specified in the Requirement in Attachment A</p> <p>Milestone 5 – Delivery of ‘beta’ model and modelling findings (Task 1aii specified in the Requirement in Attachment A) to the Commonwealth</p> <p>Milestone 6 – Presentation of the results of Task 2 specified in the Requirement in Attachment A</p> <p>Milestone 7 – Delivery of ‘theta’ model and modelling findings (Task 1aiii specified in the Requirement in Attachment A) to the Commonwealth</p> <p>Milestone 8 – Delivery of final model and modelling to meet all of Task 1 specified in the Requirement in Attachment A, including presentation of findings to the Commonwealth and key stakeholders, and staff training</p>	<p>14 September 2018</p> <p>14 September 2018</p> <p>19 October 2018</p> <p>17 December 2018</p> <p>17 December 2018</p> <p>28 February 2019</p>
7.	Subcontractors	11.6	<ul style="list-style-type: none"> • Marsden Jacob Associates Pty Ltd ABN 66 663 324 657 • Cadence Economics Pty Ltd ABN 89 169 925 222 • Hale & Twomey Limited ABN 95 743 845 322 	
8.	Progress meetings and reports	13.1 and 13.2	<p>The Contractor will:</p> <ul style="list-style-type: none"> • Attend (in person or via video-conference) an inception meeting with the Commonwealth. • Attend progress meetings (in person or via telephone) with the Commonwealth as required. • Provide a written project scope (provided electronically in word format) to the Commonwealth for approval. • Provide an outline of the proposed format for the liquid fuel supply chain model to the Commonwealth for approval. • Provide a short summary and presentation (in person or via video conference) to the Commonwealth detailing the draft high level model and modelling findings (alpha model) and 	

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			<p>detailing the key findings of Task 1b specified in the Requirement in Attachment A. Delivery format to be agreed with the Commonwealth.</p> <ul style="list-style-type: none"> • Provide a short summary and presentation (in person or via video conference) to the Commonwealth detailing the key findings of Task 2 specified in the Requirement in Attachment A. Delivery format to be agreed with the Commonwealth. • Provide progress updates on the detailed model development and findings. • Provide a presentation to the Commonwealth and key stakeholders (in person or via teleconference) on the final model and key modelling findings. • Provide training and a formal handover of the final, detailed model to relevant Commonwealth staff.
9.	Project Officers	13.1	<p>Commonwealth s22 Australian Energy Security Section Ph: s22 s22 @environment.gov.au</p> <p>Contractor s47F Cadence Economics Ph: s47F s47F @cadenceeconomics.com.au</p> <p>Further contacts are listed in Section 6.6 of the quote.</p>
10.	Performance Criteria	1.1 and 14	<p>Reports, presentations, model, modelling findings and training to be delivered on time and reflect the detail and scope set out in Item 6, as well as reflect the Contractor’s RFQ response and any other requirements as per the Deed.</p> <p>The required services are to be delivered to a high standard. Ongoing performance will continue to be monitored and discussed as part of any regularly scheduled meetings that may be proposed during the engagement. All deliverables must meet Performance Criteria as per clause 11 of the Deed.</p> <p>Additional Performance Criteria for each milestone are detailed in the table below.</p>

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Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Contract execution and inception meeting between Contractor and the Commonwealth.	By 3 August 2018	NA	NA
Milestone 1 – Finalised project scope for the Commonwealth’s approval	10 August 2018	<p>The project scope:</p> <ul style="list-style-type: none"> a) meets all requirements of the service delivery as specified in the Description of Services in Attachment A and as discussed in the inception meeting. b) details how the Contractor will ensure all IT products meet the Commonwealth’s IT requirements as discussed at the inception meeting 	NA
Milestone 2 – Proposed format for the liquid fuel supply chain model agreed with the Commonwealth	24 August 2018	<p>The proposed format for the supply chain model:</p> <ul style="list-style-type: none"> a) meets all requirements of the service delivery as specified in the Description of Services in Attachment A and as discussed in the inception meeting b) is compatible with the Commonwealth’s IT requirements as agreed in the inception meeting and outlined in the finalised project scope (Milestone 1). 	NA

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			<p>Milestone 3 – Delivery of ‘alpha’ model and modelling findings (Task 1ai specified in the Requirement in Attachment A) to the Commonwealth</p>	<p>14 September 2018</p>	<p>The alpha model:</p> <ul style="list-style-type: none"> a) covers the liquid fuel supply chain from liquid fuel production through to consumption of petroleum products as specified in the Requirement in Attachment A b) is in the format agreed as per Milestone 2 c) meets the requirements of the service delivery as specified in the Description of Services in Attachment A at the level of detail agreed at the inception meeting and outlined in the finalised project scope (Milestone 1) d) is compatible with the Commonwealth’s IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) e) is at a high standard as set out in the Deed 	<p>\$51,324</p>
			<p>Milestone 4 – Presentation of results of Task 1b specified in the Requirement in Attachment A</p>	<p>14 September 2018</p>	<p>Three separate reports with the data collected on the identified information gaps listed below:</p> <p>Transport of liquid fuels from storage terminals to wholesale/retail sites and some major consumers (e.g. trucking capacity, driver availability,</p>	<p>\$51,324</p>

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					<p>diversity of ownership of trucking fleets).</p> <p>Liquid fuel port infrastructure (e.g. berths including potential congestion, discharge rates, storage capacity).</p> <p>Domestic jet fuel infrastructure assets (updating existing information on domestic fuel infrastructure).</p> <p>The information is at a level of detail sufficient to support the development of the supply chain model as outlined in the Requirement in Attachment A and to meet the needs of the Commonwealth as agreed at the inception meeting and reflected in the project scope (Milestone 1).</p>	
			<p>Milestone 5 – Delivery of ‘beta’ model and modelling findings (Task 1a) specified in the Requirement in Attachment A) to the Commonwealth</p>	<p>19 October 2018</p>	<p>The beta model:</p> <ul style="list-style-type: none"> a) reflects feedback provided by the Commonwealth on the alpha model b) functions and is able to be tested as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth’s IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) 	<p>\$51,324</p>

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					d) is at a high standard as set out in the Deed	
			Milestone 6 – Presentation of the results of Task 2 specified in the Requirement in Attachment A	17 December 2018	<p><i>Modelling and report</i> meets all requirements of the service delivery of Task 2 as specified in the Description of Services in Attachment A and as discussed in the inception and subsequent meeting.</p> <p>Task 2: Mapping and projections modelling of Australian production and demand for liquid fuels:</p> <p>Mapping of current Australian demand for liquid fuel by fuel type.</p> <p>This information will be included in the liquid fuel supply chain model (Task 1).</p> <p>Modelling of Australian demand for liquid fuel (by fuel type) and associated transport fuels and technologies (e.g. electric vehicles, hydrogen).</p> <p>Projections modelling of future (to 2035) for the same.</p> <p>This includes mid, high and low demand scenarios.</p> <p>Detailed assumptions in terms of policy settings, macro and micro economic drivers etc. of demand by sector (e.g. road transport, passenger and freight; air transport; mining; manufacturing; agriculture; rail</p>	\$51,324

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					<p>transport) will be clearly explained for the three scenarios including explanations of any limitations of the modelling.</p> <p>Projections modelling of oil, condensate, LPG, natural gas liquids and biofuel production in Australia through to 2035 by type and in aggregate having regard to available reserves and resources.</p> <p>This includes sensitivity analysis for oil price variation impacts and other macro and micro economic drivers influencing indigenous production.</p> <p>This also includes detailed discussion of modelling assumptions as well as explanations of any limitations of the modelling.</p> <p>The information is delivered at a level of detail sufficient to support the development of the supply chain model as outlined in the Requirement in Attachment A and to meet the needs of the Commonwealth as agreed at the inception meeting and reflected in the project scope (Milestone 1).</p>	
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			<p>Milestone 7 – Delivery of ‘theta’ model and modelling findings (Task 1aiii specified in the Requirement in Attachment A) to the Commonwealth</p>	<p>17 December 2018</p>	<p>The theta model:</p> <ul style="list-style-type: none"> a) reflects feedback provided by the Commonwealth on the beta model b) functions and is able to be tested as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth’s IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) d) includes all of the information required e) is at a high standard as set out in the Deed 	<p>\$51,324</p>
			<p>Milestone 8 – Delivery of final model and modelling to meet all of Task 1 specified in the Requirement in Attachment A, including presentation of findings to the Commonwealth and key stakeholders, and staff training</p>	<p>28 February 2019</p>	<p>The final model:</p> <ul style="list-style-type: none"> a) reflects feedback provided by the Commonwealth on the theta model b) functions as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth’s IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) 	<p>\$51,325</p>

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				<p>d) is at a high standard as set out in the Deed</p> <p>e) is user friendly</p> <p>Training of Commonwealth staff is to a high standard and allows the Commonwealth to use and further develop the model into the future.</p> <p>Documentation is delivered at a high standard, is appropriate to meet the Commonwealth's needs and easy to understand.</p>
11.	Specified Personnel	1.1 and 15	<p>s47F (MJA)</p> <p>s47F (MJA)</p> <p>s47F (MJA)</p> <p>s47F (MJA)</p> <p>s47F (MJA)</p> <p>s47F (Cadence Economics)</p> <p>s47F (Cadence Economics)</p> <p>s47F (Cadence Economics)</p> <p>s47F (BAEconomics)</p> <p>s47F (Hale & Twomey)</p> <p>s47F (Hale & Twomey)</p> <p>s47F (Hale & Twomey)</p>	

12.	Commonwealth Material	1.1 and 16	<p>The publications and datasets provided by the Commonwealth to the Contractor to assist in the development of the model including confidential publications and publicly available commissioned studies which have been published at https://www.energy.gov.au/government-priorities/energy-security/energy-security-assessments.</p>
13.	Pre-existing Material	1.1 and 17	<p>Commonwealth</p> <p>As above.</p> <p>Contractor</p> <p>Not applicable</p>
14.	Intellectual Property Rights	1.1 and 17	<p>Intellectual property position is to be the first model identified in clause 17.4 of the Deed.</p>

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15.	Payment – Service Charges	19.1	<p>Payment schedule</p> <p>Early delivery of milestones will result in early payment, providing the milestones satisfy the Performance Criteria as per clause 19 of the Deed and Item 17 of this Order.</p> <table border="1" data-bbox="715 376 1468 1462"> <thead> <tr> <th colspan="3">Payment Schedule</th> </tr> <tr> <th>Milestone</th> <th>Delivery date</th> <th>Amount (excl GST)</th> </tr> </thead> <tbody> <tr> <td>Milestone 3 – Delivery of ‘alpha’ model and modelling findings (Task 1ai specified in the Requirement in Attachment A) to the Commonwealth</td> <td>14 September 2018</td> <td>\$51,324.00</td> </tr> <tr> <td>Milestone 4 – Presentation of results of Task 1b specified in the Requirement in Attachment A</td> <td>14 September 2018</td> <td>\$51,324.00</td> </tr> <tr> <td>Milestone 5 – Delivery of ‘beta’ model and modelling findings (Task 1aii specified in the Requirement in Attachment A) to the Commonwealth</td> <td>19 October 2018</td> <td>\$51,324.00</td> </tr> <tr> <td>Milestone 6 – Presentation of the results of Task 2 specified in the Requirement in Attachment A</td> <td>17 December 2018</td> <td>\$51,324.00</td> </tr> <tr> <td>Milestone 7 – Delivery of ‘theta’ model and modelling findings (Task 1aiii specified in the Requirement in Attachment A) to the Commonwealth</td> <td>17 December 2018</td> <td>\$51,324.00</td> </tr> <tr> <td>Milestone 8 – Delivery of final model and modelling to meet all of Task 1 specified in the Requirement in Attachment A, including presentation of findings to the Commonwealth and key stakeholders, and staff training</td> <td>28 February 2019</td> <td>\$51,325.00</td> </tr> <tr> <td colspan="2">Total</td> <td>\$307,945.00</td> </tr> </tbody> </table> <p>The total contract value including all taxes and charges will not exceed \$338,739.50 including GST.</p>	Payment Schedule			Milestone	Delivery date	Amount (excl GST)	Milestone 3 – Delivery of ‘alpha’ model and modelling findings (Task 1ai specified in the Requirement in Attachment A) to the Commonwealth	14 September 2018	\$51,324.00	Milestone 4 – Presentation of results of Task 1b specified in the Requirement in Attachment A	14 September 2018	\$51,324.00	Milestone 5 – Delivery of ‘beta’ model and modelling findings (Task 1aii specified in the Requirement in Attachment A) to the Commonwealth	19 October 2018	\$51,324.00	Milestone 6 – Presentation of the results of Task 2 specified in the Requirement in Attachment A	17 December 2018	\$51,324.00	Milestone 7 – Delivery of ‘theta’ model and modelling findings (Task 1aiii specified in the Requirement in Attachment A) to the Commonwealth	17 December 2018	\$51,324.00	Milestone 8 – Delivery of final model and modelling to meet all of Task 1 specified in the Requirement in Attachment A, including presentation of findings to the Commonwealth and key stakeholders, and staff training	28 February 2019	\$51,325.00	Total		\$307,945.00
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Total		\$307,945.00																												
16.	Expenses	19.5	The Commonwealth will not pay any additional travel accommodation or other fees, charges or expenses																											
17.	Other		<p>1. Assessment of Services and Milestones against the Performance Criteria</p> <p>(a) Satisfaction of the Performance Criteria</p> <p>(i) Each milestone, which forms part of the Services provided by the Contractor, is subject to assessment by the Commonwealth against the Performance Criteria specified for that milestone</p>																											

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			<p>in Item 10. This assessment must take place within 10 Business days of delivery of the milestone.</p> <p>(ii) If a milestone is assessed by the Commonwealth to meet the relevant Performance Criteria specified, the Commonwealth will pay the Service Charges specified for that milestone in the Payment Schedule in Item 15.</p> <p>(b) Notification of non-compliant milestone</p> <p>(i) If a milestone is assessed by the Commonwealth to fail one or more of the Performance Criteria specified for it Item 10, the Commonwealth may, within 10 Business Days of delivery of that milestone, reject the milestone.</p> <p>(ii) If the Commonwealth rejects a milestone in accordance with (b)(i) above, the Commonwealth must at the time of the rejection provide a written notice to the Contractor identifying which Performance Criteria the milestone has failed.</p> <p>(iii) The Commonwealth does not have to pay any of the Service Charges specified in Item 15 in respect of a milestone that is the subject of a notice provided under (b)(ii) above until the Contractor has rectified the milestone in accordance with (c) below.</p> <p>(c) Rectification of non-compliant milestones</p> <p>If the Commonwealth notifies the Contractor that it has rejected a milestone, the Contractor must, at no additional cost to the Commonwealth:</p> <p>(i) take all necessary the steps to ensure that the milestone is promptly corrected;</p> <p>(ii) give notice to the Commonwealth when the milestone has been corrected; and</p> <p>(iii) allow the Commonwealth to repeat the assessment of the milestone against the Performance Criteria specified for it in the Item 10, within five Business Days after the date of the notice or such other time as agreed between the parties in writing.</p> <p>(d) Right to terminate</p> <p>If any Service or Deliverable fails to meet the one or more of the Performance Criteria specified for that Service or Deliverable in Item 10 on two or more occasions, the Customer may, (in addition to its other remedies) terminate the Order immediately under clause 22.2 of the Deed of Standing Offer by giving the Contractor written notice.</p>
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			<p>2. 90 day Contractor Warranty</p> <p>(a) If the Commonwealth identifies any defect with the Final Model, the Commonwealth may notify the Contractor about that defect in writing.</p> <p>(b) Where the Contractor receives a notification under item 17(a) within 90 days following the delivery of the Final Model, the Contractor agrees that it will rectify, at no cost to the Commonwealth, the defect identified in the notice within 5 Business Days, or within a longer period notified to the Contractor in writing by the Commonwealth.</p>
	Other-Confidential Information		NA

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Signed for and on behalf of the
Commonwealth of Australia as
represented by the Department of
Environment and Energy by its duly
authorised delegate in the presence of

s22

Signature of witness

s22

Name of witness (print)

s22

Signature of delegate

Helen Bennett

Name of delegate (print)

Assistant Secretary, Energy Security Branch

Position of delegate (print)

Executed by BAEconomics Pty Ltd in
accordance with Section 127 of the
Corporations Act 2001 in the presence of

s47F

Signature of director

Brian Fisher
Name of director (print)

Signature of director/company secretary/sole director
and sole company secretary
(Please delete as applicable)

Name of director/company secretary/ sole director and
sole company secretary (print)

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DESCRIPTION OF SERVICES

The Contractor will deliver services as described in this document.

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PART A: SERVICES REQUIRED

Overview

The Contractor will undertake the following tasks relating to Australia's liquid fuel supply:

- Task 1: Develop a liquid fuel supply chain model for Australia, encompassing both international and domestic elements of the supply chain. This task will comprise the following:
 - a. Developing of the model, and
 - b. Addressing information gaps identified by the Commonwealth.
- Task 2: Mapping and projections modelling of Australian production and demand for liquid fuels.

Further work may be commissioned at agreed rates (Task 3).

Throughout the project, independent validation of information will be undertaken where possible.

The models developed will be owned by the Commonwealth to update and use in the future. The Contractor will train Department of the Environment and Energy staff in the use of the models.

Diagram A: Conceptual diagram of the complexities of the physical flow of liquid fuel to Australia.

Why is the Commonwealth procuring this modelling?

The Commonwealth is undertaking this project to:

- Understand Australia's liquid fuel supply chain from both a physical and market perspective, including how companies manage their risk.
- Quantify the relative level of risk of different parts of the supply chain to:
 - identify pressure points and potential weaknesses in the supply chain
 - help the Commonwealth to understand options for improving the adequacy, reliability and affordability of liquid fuel in Australia.
- Test the resilience of the system under various scenarios
 - For example, given an upstream supply disruption scenario, what would be the impacts on downstream supply?
 - Alternately, given a downstream supply disruption scenario, the model will help to identify potential upstream causes of the disruption.
 - Also identifying the impact of possible mitigating treatments/policy measures such as increased stockholdings or demand response measures.

- Identify potential structural changes in the upstream and downstream industries occurring now and into the future, and what impact these changes will have on liquid fuel supply and demand in Australia including the overall impact on net oil imports.
- Obtain a credible forecast of upstream oil production and petroleum product demand to 2035 to enable the Australian Government to undertake modelling to better understand its future International Energy Agency obligations, particularly as this relates to net oil imports.

This work will support the Commonwealth deliver a review of Australia's liquid fuel security to Government by the end of 2018, and contribute to the delivery of a broader consideration of energy security across liquid fuel, electricity and gas supplies in the National Energy Security Assessment in mid-2019.

The Requirement

Task 1: The Supply Chain Model

The work to be undertaken on the supply chain model will include the following:

- Task 1a: Development of the model, to be delivered in four stages:
 - : Part i: A draft 'alpha' model for testing with the Commonwealth
 - : Part ii: An updated 'beta' model reflecting feedback from the Commonwealth on the draft 'alpha' model produced as *Part i*
 - : Part iii: A draft 'theta' model of the complete supply chain
 - : Part iv: The final model, reflecting feedback from the Commonwealth on the draft 'theta' model produced as *Part iii*
- Task 1b: Address information gaps identified by the Commonwealth.

The supply chain model will provide a framework for understanding the liquid fuel supply chain, identifying potential vulnerabilities and providing a basis for scenario testing. It will follow crude oil from production to refining then have separate supply chains for petrol, diesel and jet fuel.

The Contractor will consolidate material from existing sources wherever possible to populate the model. The Contractor will undertake desktop literature research and engage with key stakeholders and other government departments which may be a source of information on the liquid fuel supply chain.

- The Commonwealth will support the Contractor through the provision of materials and introductions to other government agencies as outlined in the 'material provided' section.
- The Contractor will use its networks in the petroleum and related industries to gather information.

Task 1a: Development of the model

The model will cover supply from liquid fuel production through to consumption of petroleum products. It will include information about the physical supply chain, market operation and risk (including how risk is managed).

- The Contractor will conceptualise the format for the model.
- The model will cater for use as described in the above section ‘why is the Commonwealth procuring this modelling?’
- The diagram at **Diagram A** is a conceptual representation describing the complex interconnections of the physical liquid fuel supply chain that the model will capture.
- For each stage of the supply chain the model will capture:
 - Physical location
 - Production volume or transport capacity
 - Stocks
 - Timeframes
 - Ownership
 - Spare capacity and response timeframes
 - How does the price signal work (for example is the price set at a global/regional level)
 - : When does the price signal stop working in each part of the supply chain (when price is no longer determining where liquid fuel will flow, and other factors become more dominant).
- The model will capture different levels of detail for the international and domestic parts of the supply chain:
 - International: Describe how the international supply chain impacts on price and availability of fuel for Australia. This should be high level, for example looking at countries/regions/globe as a whole.
 - Domestic: Describe how the distribution of liquid fuel within Australia operates, in particular how it relates to price, supply/demand balance and risk. This will require a greater level of granularity and depth than the international component of the supply chain model, and should include regional analysis to capture the unique challenges Australia faces with distributing fuel over large distances.
- Recognising that the supply chain is dynamic, the model will recognise uncertainties and be capable of adjustment as required into the future.
- The Contractor will consult with the Commonwealth throughout the development of the model.
 - The Contractor will consult with the Commonwealth about information gaps.

- The Contractor will provide training in the use and development of the model to allow the Commonwealth to use and further develop the model into the future.
- Further details on the approach to be undertaken by the Contractor are outlined in Parts B, C and D.

Task 1b: Addressing information gaps identified by the Commonwealth

The Commonwealth has identified data information gaps relating to:

- Transport of liquid fuels from storage terminals to wholesale/retail sites and some major consumers (e.g. trucking capacity, driver availability, diversity of ownership of trucking fleets).
- Liquid fuel port infrastructure (e.g. berths including potential congestion, discharge rates, storage capacity).
- Domestic jet fuel infrastructure assets (updating existing information on domestic fuel infrastructure).

The Contractor will provide this information in a timely and efficient manner. Separate reports with the data collected will be provided and the information incorporated into the liquid fuel supply chain model.

Task 2: Mapping and projections modelling of Australian production and demand for liquid fuels

- Mapping of current Australian demand for liquid fuel by fuel type.
 - This information will be included in the liquid fuel supply chain model (Task 1).
- Modelling of Australian demand for liquid fuel (by fuel type) and associated transport fuels and technologies (e.g. electric vehicles, hydrogen). Projections modelling of future (to 2035) for the same.
 - This includes mid, high and low demand scenarios.
 - Detailed assumptions in terms of policy settings, macro and micro economic drivers etc. of demand by sector (e.g. road transport, passenger and freight; air transport; mining; manufacturing; agriculture; rail transport) will be clearly explained for the three scenarios including explanations of any limitations of the modelling.
- Projections modelling of oil, condensate, LPG, natural gas liquids and biofuel production in Australia through to 2035 by type and in aggregate having regard to available reserves and resources.
 - This includes sensitivity analysis for oil price variation impacts and other macro and micro economic drivers influencing indigenous production.
 - This also includes detailed discussion of modelling assumptions as well as explanations of any limitations of the modelling.

- Further details on the approach to be undertaken by the Contractor are outlined in Parts B, C and D.

Task 3: Indication of capacity to undertake further work

The Commonwealth reserves the right to request that the Contractor undertake further work commissioned by the Commonwealth at the agreed rates below. This project may include evidence gathering on any identified vulnerabilities in the supply chain where the Commonwealth believes a more rigorous evidence base is required. It may also include gathering data on additional information gaps identified during the development of the supply chain model.

Further works will be agreed upon between the Parties through a written Variation to this Contract.

The agreed rates are:

Personnel	Charge out rate per day (excluding GST)
s47F (MJA)	s47G(1)(a)
s47F (MJA)	
s47F (MJA)	
s47F (MJA)	
s47F (MJA)	
s47F (Cadence Economics)	
s47F (Cadence Economics)	
s47F (Cadence Economics)	
s47F (BAEconomics)	
s47F (Hale & Twomey)	
s47F (Hale & Twomey)	
s47F (Hale & Twomey)	

Materials Provided

Publicly available resources

The Contractor will conduct their own research for publicly available information, including those provided by the Commonwealth such as the Australian Petroleum Statistics.

Commonwealth (Department of the Environment and Energy)

The Commonwealth will provide the successful Contractor with a number of publications and datasets to assist in the development of the model including confidential publications and publicly available commissioned studies which have been published at <https://www.energy.gov.au/government-priorities/energy-security/energy-security-assessments>.

Other government Departments/agencies

The Contractor will engage with other government departments and agencies to gather information about the supply chain and leverage existing material to support the development of the supply chain model. The Commonwealth will facilitate engagement with other departments and agencies by providing introductions and contact information as required.

Deliverables

The Contractor will give regular progress updates (as agreed at inception meeting) throughout the project.

The Contractor will attend an inception meeting with the Commonwealth either face-to-face or via video-conference to discuss the project requirements and scope. This will occur the week of 3 August 2018.

1. The Contractor will deliver a written document (provided electronically in word format) containing a finalised project scope to the Commonwealth for its approval within a week of engagement.
2. The Contractor will provide an outline of the proposed format for the liquid fuel supply chain model, detailing how it will meet the requirements of Task 1a of the Requirement. This proposed format must be approved by the Commonwealth.
3. The Contractor will deliver the draft 'alpha' model (Task 1ai specified in the Requirement in Attachment A) and early modelling findings, including training to relevant staff to the Commonwealth by 14 September 2018.
4. The Contractor will present the results of Task 1b specified in the Requirement in Attachment A (in person or via video-conference) to the Commonwealth by 14 September 2018.
5. The Contractor will deliver the draft 'beta' model (Task 1aii specified in the Requirement in Attachment A) and modelling findings, including training to relevant staff to the Commonwealth by 19 October 2018.
6. The Contractor will present the results of Task 2 specified in the Requirement in Attachment A (in person or via video-conference) to the Commonwealth by 17 December 2018.
7. The Contractor will deliver the draft 'theta' model (Task 1aiii specified in the Requirement in Attachment A) and modelling findings to the Commonwealth, including training to relevant staff, by 17 December 2018.
8. The Contractor will deliver the final supply chain model and modelling findings for Task 1, including a presentation to the Commonwealth and key stakeholders (in person or via teleconference) and all training to relevant staff, by 28 February 2019.

Project milestones	
Contract execution and inception meeting between Contractor and the Commonwealth.	By 3 August 2018
Milestone 1 – Finalised project scope for the Commonwealth's approval	10 August 2018

Project milestones	
Milestone 2 – Proposed format for the liquid fuel supply chain model agreed with the Commonwealth	24 August 2018
Milestone 3 – Delivery of ‘alpha’ model and modelling findings (Task 1ai specified in the Requirement in Attachment A) to the Commonwealth	14 September 2018
Milestone 4 – Presentation of results of Task 1b specified in the Requirement in Attachment A	14 September 2018
Milestone 5 – Delivery of ‘beta’ model and modelling findings (Task 1aii specified in the Requirement in Attachment A) to the Commonwealth	19 October 2018
Milestone 6 – Presentation of the results of Task 2 specified in the Requirement in Attachment A	17 December 2018
Milestone 7 – Delivery of ‘theta’ model and modelling findings (Task 1aiii specified in the Requirement in Attachment A) to the Commonwealth	17 December 2018
Milestone 8 – Delivery of final model and modelling to meet all of Task 1 specified in the Requirement in Attachment A, including presentation of findings to the Commonwealth and key stakeholders, and staff training	28 February 2019

Performance Criteria

Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Contract execution and inception meeting between Contractor and the Commonwealth.	By 3 August 2018	NA	NA
Milestone 1 – Finalised project scope for the Commonwealth’s approval	10 August 2018	<p>The project scope:</p> <p>a) meets all requirements of the service delivery as specified in the Description of Services in Attachment A and as discussed in the inception meeting.</p> <p>b) details how the Contractor will ensure all IT products meet the Commonwealth’s IT requirements as discussed at the inception meeting</p>	NA

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Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Milestone 2 – Proposed format for the liquid fuel supply chain model agreed with the Commonwealth	Before 24 August 2018	<p>The proposed format for the supply chain model:</p> <ul style="list-style-type: none"> a) meets all requirements of the service delivery as specified in the Description of Services in Attachment A and as discussed in the inception meeting b) is compatible with the Commonwealth's IT requirements as agreed in the inception meeting and outlined in the finalised project scope (Milestone 1). 	NA
Milestone 3 – Delivery of 'alpha' model and modelling findings (Task 1ai specified in the Requirement in Attachment A) to the Commonwealth	14 September 2018	<p>The alpha model:</p> <ul style="list-style-type: none"> a) covers the liquid fuel supply chain from liquid fuel production through to consumption of petroleum products as specified in the Requirement in Attachment A b) is in the format agreed as per Milestone 2 c) meets the requirements of the service delivery as specified in the Description of Services in Attachment A at the level of detail agreed at the inception meeting and outlined in the finalised project scope (Milestone 1) d) is compatible with the Commonwealth's IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) e) is at a high standard as set out in the Deed 	\$51,324
Milestone 4 – Presentation of results of Task 1b specified in the Requirement in Attachment A	14 September 2018	<p>Separate reports with the data collected on the identified information gaps listed below:</p> <ul style="list-style-type: none"> • Transport of liquid fuels from storage terminals to wholesale/retail sites and some major consumers (e.g. trucking capacity, driver availability, diversity of ownership of trucking fleets). • Liquid fuel port infrastructure (e.g. berths including potential congestion, discharge rates, storage capacity). • Domestic jet fuel infrastructure assets (updating existing information on domestic fuel infrastructure). <p>The information is at a level of detail sufficient to support the development of the supply chain model as outlined in the Requirement in Attachment A and to meet the needs of the Commonwealth as agreed at the inception meeting and reflected in the project scope (Milestone 1).</p>	\$51,324

Performance Criteria

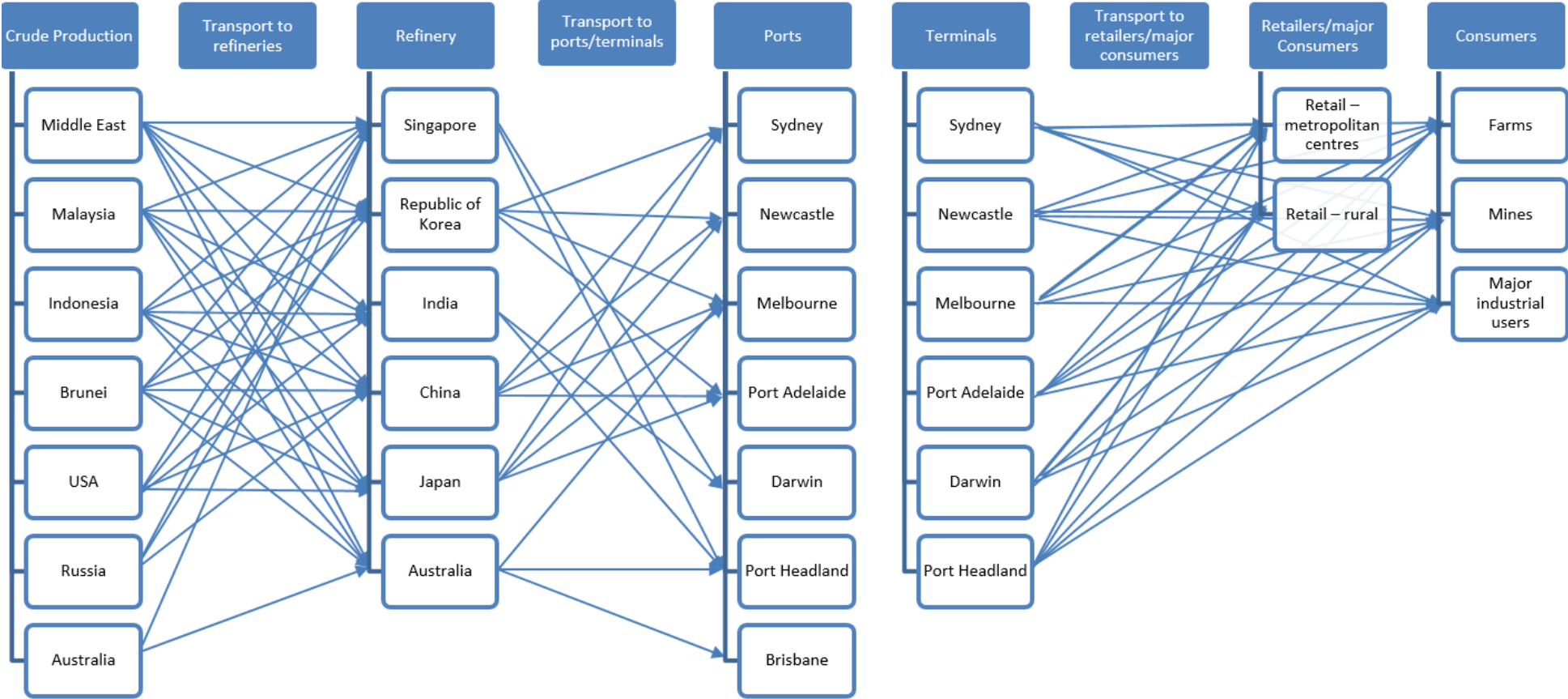
Milestone	Delivery Date	Performance Criteria	Payment
Milestone 5 – Delivery of ‘beta’ model and modelling findings (Task 1a ⁱⁱⁱ specified in the Requirement in Attachment A) to the Commonwealth	19 October 2018	The beta model: a) reflects feedback provided by the Commonwealth on the alpha model b) functions and is able to be tested as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth’s IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) d) is at a high standard as set out in the Deed	\$51,324

Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Milestone 6 – Presentation of the results of Task 2 specified in the Requirement in Attachment A	17 December 2018	<p><i>Modelling and report</i> meets all requirements of the service delivery of Task 2 as specified in the Description of Services in Attachment A and as discussed in the inception and subsequent meeting.</p> <p>Task 2: Mapping and projections modelling of Australian production and demand for liquid fuels:</p> <ul style="list-style-type: none"> • Mapping of current Australian demand for liquid fuel by fuel type. <ul style="list-style-type: none"> - This information will be included in the liquid fuel supply chain model (Task 1). • Modelling of Australian demand for liquid fuel (by fuel type) and associated transport fuels and technologies (e.g. electric vehicles, hydrogen). Projections modelling of future (to 2035) for the same. <ul style="list-style-type: none"> - This includes mid, high and low demand scenarios. - Detailed assumptions in terms of policy settings, macro and micro economic drivers etc. of demand by sector (e.g. road transport, passenger and freight; air transport; mining; manufacturing; agriculture; rail transport) will be clearly explained for the three scenarios including explanations of any limitations of the modelling. • Projections modelling of oil, condensate, LPG, natural gas liquids and biofuel production in Australia through to 2035 by type and in aggregate having regard to available reserves and resources. <ul style="list-style-type: none"> - This includes sensitivity analysis for oil price variation impacts and other macro and micro economic drivers influencing indigenous production. - This also includes detailed discussion of modelling assumptions as well as explanations of any limitations of the modelling. <p>The information is delivered at a level of detail sufficient to support the development of the supply chain model as outlined in the Requirement in Attachment A and to meet the needs of the Commonwealth as agreed at the inception meeting and reflected in the project scope (Milestone 1).</p>	\$51,324

Performance Criteria

Milestone	Delivery Date	Performance Criteria	Payment
<p>Milestone 7 – Delivery of ‘theta’ model and modelling findings (Task 1aⁱⁱⁱ specified in the Requirement in Attachment A) to the Commonwealth</p>	<p>17 December 2018</p>	<p>The theta model:</p> <ul style="list-style-type: none"> a) reflects feedback provided by the Commonwealth on the beta model b) functions and is able to be tested as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth’s IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) d) includes all of the information required e) is at a high standard as set out in the Deed 	<p>\$51,324</p>
<p>Milestone 8 – Delivery of final model and modelling to meet all of Task 1 specified in the Requirement in Attachment A, including presentation of findings to the Commonwealth and key stakeholders, and staff training</p>	<p>28 February 2019</p>	<p>The final model:</p> <ul style="list-style-type: none"> a) reflects feedback provided by the Commonwealth on the theta model b) functions as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth’s IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) d) is at a high standard as set out in the Deed e) is user friendly <p>Training of Commonwealth staff is to a high standard and allows the Commonwealth to use and further develop the model into the future.</p> <p>Documentation is delivered at a high standard, is appropriate to meet the Commonwealth’s needs and easy to understand.</p>	<p>\$51,325</p>

Diagram A: Conceptual diagram of the complexities of the physical flow of liquid fuel to Australia



Note connections in the above diagram are examples only, not reflecting actual supply chain

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3. Proposed Methodology and Issues to be Addressed in this Study

A range of issues need to be addressed in developing a liquid fuel supply chain model. Our methodology for developing the model will address these issues and provide the Department with the ability to test various scenarios that the supply chain must manage if Australia is to meet its future energy requirements securely, reliably and affordably.

The Australian Government has announced there will be an assessment of liquid fuel security to help deliver secure, reliable and affordable energy. This will be completed by the end of 2018 and contribute to a broader review of energy security across liquid fuel, electricity and gas in the National Energy Security Assessment (NESA) by mid-2019.

Two National Energy Security Assessments were previously released in 2009 and 2011. The 2019 NESA will consider human and environmental threats to the adequate, reliable and affordable delivery of liquid fuel, gas and electricity to Australian consumers.

These assessments (along with specific studies to monitor and analyse energy supply chains) are used by governments, market institutions and businesses to identify where change may be needed to address challenges affecting delivery of electricity, gas and liquid fuels to consumers and mitigate risks.

In this chapter we consider the major issues that need to be addressed in this study and develop a framework for developing a liquid fuel supply chain model of Australia.

3.1 Role of Liquid Fuels in Australia's Economy

Liquid fuels include oil, condensate, LPG, natural gas liquids, refined products and biofuels. Liquid fuels are primarily used by the transport sector in Australia (e.g. internal combustion engines) and are also used for power generation in remote regions which don't have access to pipeline gas or major electricity grids. Total energy use by the transport sector (27.1 per cent) in 2015-16 was second behind the electricity generation sector in Australia (28.5 per cent).¹

In 2015-16, oil remained the largest primary energy source in Australia (37 per cent), followed by coal (32 per cent), natural gas (25 per cent) and renewables (6 per cent). While coal is declining as a primary energy source due to the growth of renewable energy and gas use in the electricity generation sector, oil (and derived products) has been growing by 1.3 per cent per annum over the decade ending 2015-16.

¹ Department of the Environment and Energy (2017), *Australian Energy Statistics*.

Figure 1: Australian Energy Consumption, by Fuel Type

	2015–16		Average annual growth	
	PJ	share (per cent)	2015–16 (per cent)	10 years (per cent)
Coal	1,956.1	32.2	2.5	-1.9
Oil	2,243.3	37.0	0.3	1.3
Gas	1,504.9	24.8	4.9	3.2
Renewables	361.6	6.0	4.1	2.6
Total	6,065.9	100.0	2.3	0.6

Source: Department of the Environment and Energy (2017), *Australian Energy Statistics*.

While oil demand has consistently increased in Australia, crude oil, condensate and naturally occurring LPG production continued its longer-term decline, falling by 3 per cent in 2015–16 (680.6 PJ).² Because of declining oil production, Australia now has increasingly reliance on the overseas supply of both crude oil and refined petroleum products.

The decline in domestic refining capacity (three refineries closed between 2012–2015 leaving four operating), along with growth in demand, has contributed to a consistent increase in imports of refined products (reaching 1,242 PJ in 2015–16), which is 55 per cent of total refined product consumption in Australia.³

3.2 Australia’s Liquid Fuel Supply Chain

The supply chain covers the process from the extraction of crude oil to the delivery of useable products to customers. Table 1 illustrates the key components of the supply chain.

Table 4: Supply Chain Components

Supply chain	Description
Exploration and Production (Upstream)	Upstream refers to all elements of the petroleum industry involved in exploring for and producing petroleum to a point of sale or entry point into the supply chain. As well as the producing facilities, this may involve infrastructure such as pipelines, storage tanks (including floating storage) and offtake facilities. It may also include production from unconventional technologies such as gas or coal to liquids technologies.
Shipping	Petroleum tankers provide the means of transporting crude and product between various components in the supply chain.
Physical (or commodity) trading	Physical trading is the buying and selling of crude and products in international markets. Trading can be confined to the transactions required to support a company’s own supply chain (sometimes understood as supply trading) and as a business in its own right (trading for profit), or both.

² Ibid.

³ Ibid.

Bulk storage (crude and product) and product blending locations	The supply chain depends on storage to accrue, hold and make petroleum parcels available for delivery, transport and receipt. Storage can be for a specific supply chain or available generally for market participants to use as they see fit (e.g. renting storage to hold stock for later delivery or for blending product components to make finished or on-specification product) – there is significant storage in the supply system (for both crude and product), in which the business model provides facilities for petroleum to be traded into and sold out of. Bulk storage (which may include the use of tankers for storage) may be held by independent storage companies, traders, integrated oil companies or customers.
Refining and refining locations	Refining covers the process of refining crude oil into finished petroleum products that can be supplied and used by customers. Refineries are themselves very large storage facilities with significant crude, intermediate and product component storage. Refineries blend components produced into finished product grades. Many refineries also incorporate a petrochemical plant that uses products from the refinery as feedstock.
Domestic fuel storage	Domestic fuel storage covers in-country facilities used to receive and store product for distribution to the market.
Distribution/ Wholesaling/ Marketing	The process of distributing and selling product from a terminal to customers (via pipeline and/or truck).

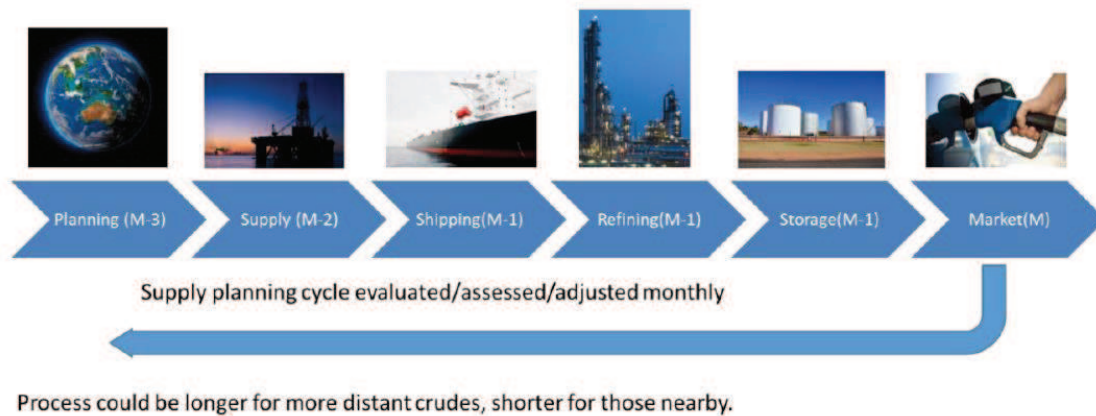
Source: *Hale and Twomey, Review of Market Resilience to Oil Supply Disruptions, Prepared for the Department of Industry, Canberra, 27 June 2014.*

Given the number of stages in the liquid fuel supply chain, participants (e.g. producers, shippers, refiners, distributors, major buyers etc) need to allow sufficient lead time to ensure that deliveries can be made to meet market requirements.

In the normal course of events, the time taken from planning (e.g. when and how much fuel do we need) to delivery of petroleum products to the customer could be 2 to 4 months. However, if a disruption occurs to deliveries, supply chain processes need to be speeded up to facilitate new orders (e.g. 14 to 28 days from order to delivery).

Understanding business as usual operational supply chain processes (as depicted in Figure 2), versus those processes required to deal with oil infrastructure disruptions (or high petroleum demand for diesel generation in the case of gas or electricity system failures in Australia) will be key to this assignment.

Figure 2: Liquid Fuel Supply Planning Cycle



Source: Hale and Twomey, *Review of Market Resilience to Oil Supply Disruptions*, Prepared for the Department of Industry, Canberra, 27 June 2014.

3.2.1 Australian Context

The four major suppliers in Australia (i.e. BP, Caltex, ExxonMobil and Viva Energy) all use a mix of domestic refineries and imports to meet their market demand. With continued growth in petroleum demand and refinery shutdowns, the proportion met by direct imports is increasing. This situation may change if electric vehicle penetration increases rapidly over the next 15 years, and renewable generation in combination with energy storage replaces diesel generators in remote areas of Australia (e.g. mining activities, remote communities). However, it is likely that growing petroleum demand will continue to occur for at least the next 5 to 10 years.

The domestic refineries currently meet demand requirements within their local regions. Petroleum products can be shipped from the refineries to other locations, although this will typically only be to adjacent regions. As refineries close, distribution from the remaining refineries will tend to become more localised. Local refineries try to operate at near full capacity (i.e. achieve operational efficiencies)

A feature of the Australian market is that oil companies and independents often buy and sell products to each other. This can occur because a company does not own a refinery or directly import and is reliant on those companies who undertake those activities. As a result, a single refinery is likely to provide petroleum products to several petroleum retailers in a region.

Hale and Twomey (2014) highlighted many of the strategies that can be deployed by liquid fuel participants to meet unexpected demand increases or supply interruptions in Australia:

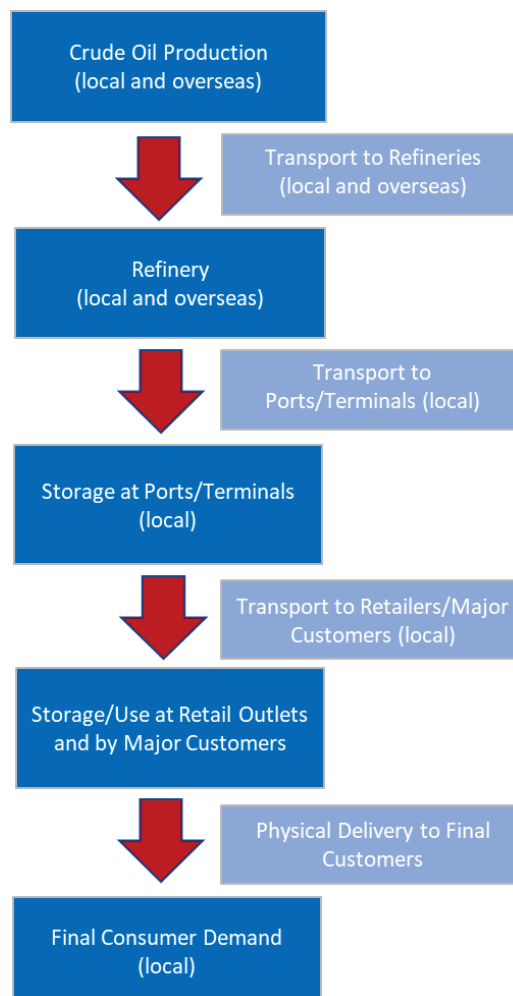
- Ability to vary refinery production slate (to a limited extent once crude supply is committed);
- Increasing refinery throughput (where not planned at capacity);
- Ensuring a secure and committed offtake for refineries (so production is not impacted by changes in offtake)
- Using operational inventory (intermediates and blending components) to manage production variation;
- Using a diverse range of product supply options (location, refineries and counterparties);
- Ability to adjust product split on mixed cargo imports;
- Ability to purchase cargoes relatively quickly if necessary through the trading system;
- Ability to purchase product from competitors (locally) to cover temporary shortages;

- Shifting cargo destinations (prior to loading) within system by using the company's total network to assist the location which is short of product;
- Ability to purchase cargoes from traders or blenders on shorter notice if the price paid is sufficient.

3.3 Framework for developing a Liquid Fuel Supply Chain Model

The proposed supply chain model is intended to provide a framework for understanding the liquid fuel supply chain, identifying potential vulnerabilities and providing a basis for scenario testing. The modelled supply chain will include each major stage of the value chain from crude oil production, to refining and storage at ports/terminals in Australia, to storage at retail outlets and by major customers, and final customer demand. This also includes shipping and transport from one step in the value chain to another. The separate value chains must be shown for the various major products used by both wholesale and retail customers (e.g. petrol, diesel and jet fuel).

Figure 3: Simplified Liquid Fuel Supply Chain for Australia



For each stage of the supply chain the model will capture:

- Physical location (local and overseas)
- Production volume or transport capacity

- Stocks (local and overseas)
- Timeframes for delivery from one stage to the next
- Ownership
- Spare capacity and response timeframes
- Price responsiveness of different stages of the value chain.

Wholesale oil prices are typically determined by global demand and supply factors. Final prices to domestic users in Australia are influenced by pricing behaviour of retail majors in Australia.

A linear programming approach will be used to determine supply and demand of petroleum products on a weekly basis for 7 regions in Australia. We have chosen a weekly optimisation model because oil disruption events in Australia have typically been short lived and resolved within one month. This is due the fact that cargoes from one destination can be diverted rapidly to meet a shortfall in regional demand. Average sailing time for oil cargoes to Australia is typically between 14 to 28 days and Australia can source crude oil or petroleum products from a variety of sources (e.g. SE Asia, West Africa, Middle East, NZ and Russia).

The linear programming model will assume world oil prices will be given (i.e. crude oil), and that various costs incurred in the supply chain will be added to world oil prices to form wholesale and retail prices in Australia.

The linear program will minimise the weekly cost of supplying petroleum products to final consumers in Australia subject to physical production, storage and transport capacity constraints. Given that over a week, capital costs are fixed and do not vary with changes in production, the model will only minimise variable operating costs.

However, capital costs and fixed O&M costs incurred in the value chain are incorporated into both wholesale and retail prices. To capture these costs in final prices to consumers (and to calculate wholesale and retail margins), a separate model will be used to capture fully distributed costs. Variable operating costs and quantities produced and purchased will be incorporated into the fully distributed cost model to calculate the total costs of meeting Australia's liquid fuel requirements. This also enables us to compare the total costs of meeting Australia's liquid fuel requirements with a different capital structure (e.g. less local refineries and more storage facilities to manage imported petroleum products).

The proposed linear program, including the objective function and constraints are discussed in more detail below.

3.4 Australian Liquid Fuel Market Model (ALFM2)

The purpose of ALFM2 is to project weekly liquid fuel prices in Australia, production activities, and movements of petroleum products into Australia and among various regions within Australia. ALFM2 is primarily used to understand how the industry would respond to unexpected supply shortfalls that may result from a variety of infrastructure failures that could result from both internal (e.g. unexpected facility outages) and external factors (e.g. weather, terrorism).

The ALFM2 simulates the operation of petroleum refineries in Australia, with a simple representation of the international refinery market used to provide competing and complimentary crude oil and product import prices and quantities. The Australian component includes the supply and transportation of crude oil to refineries, regional processing of these crude oil into petroleum products, and the distribution of petroleum products to meet regional demands. The essential outputs of this model are domestic liquid fuels product prices, a petroleum product supply/demand balance, and demands for refinery fuel use in Australia.

Because of the short-term focus of the model, capital expansion decisions are not solved within the model. That is, the model will not solve to minimise both capacity and operating costs. The model takes capacity as fixed and then optimises to minimise variable operating costs only. However, by varying the capacity mix, the model can calculate the impact on both variable operating costs and reliability of changes in the

capacity mix. By running multiple simulations, we can compare the overall costs of different capital decisions.

The variable operating costs that will be minimised in the optimisation include the following:

- Crude oil purchase cost;
- Costs to export or import crude oil;
- Costs to export or import petroleum products;
- Refinery processing costs (local versus overseas);
- Variable storage costs (local);
- Cost of transporting fuel from refineries to regional hubs in Australia (7 regions);
- Costs of transporting fuel to retailers and major customers from refineries/import terminals.

Inputs to the ALFM2:

- domestic petroleum product demands;
- international petroleum product import/export curves;
- domestic crude oil production levels – which takes into account domestic process facilities, resources and reserves;
- international crude oil supply curves (what types) and import/export links;
- costs of energy inputs such as natural gas and electricity;
- costs and available quantities of feedstocks used to produce blending components such as ethanol and biodiesel (E10 fuel);
- yield coefficients for crude oil distillation and other processing units;
- existing processing unit capacities;
- investment costs for capacity expansion;
- transportation modes;
- product specifications;
- policy requirements (e.g. strategic reserve requirements).

By changing supply side parameters, or reducing the capacity of existing facilities, we can look at the impact of supply disturbances on the liquid fuel supply chain and work out whether alternative supply strategies are effective at maintaining supply at a reasonable cost. We can also calculate fuel stockpile levels after a supply disturbance and determine if future supply reliability is impacted (i.e. ability to handle back to back supply disturbances or unanticipated increases in petroleum demand).

From these inputs, the ALFM2 produces:

- domestic prices for petroleum products (by region);
- the quantity of crude oil processed at domestic refineries;
- imports and exports of crude oil and petroleum products;
- estimates of other refinery inputs and processing;
- refinery fuel consumption;
- production and use of oil, condensate, LPG, natural gas liquids and biofuels.

While the model will determine the weekly supply of petroleum products in Australia, the model can be run for multiple weeks to determine annual supply and demand in Australia. Furthermore, by including annual

cost and price escalators, we can determine long term annual price and quantity projections (i.e. projections through to 2035).

ALFM2 can forecast the impact on refinery operations and on the marginal costs of refined products associated with changes in demands for various kinds of petroleum products; crude oil prices; refinery processing unit capacities; changes in certain petroleum product specifications; energy policies and regulations; and taxes, tariffs, and subsidies.

Within the ALFM2, a linear program (LP) is used to represent domestic liquid fuels production, distribution, and marketing operations. The model includes 7 Australian regions based on the location of refineries and major import terminals. A transportation network model represents the transport of domestic crude oils to the refining regions and products from the refining / import terminals to regional demand. Changes in one refining region can affect operations in other refining regions because each demand region can be supplied by more than one refining region (if the transportation connections exist). Similarly, a transportation structure is defined for international crude supply and product supply/demand, with additional links between Australia and a representative international market to allow modelling of crude and product imports and exports.

An optimal solution is found by minimizing net operating cost of supplying petroleum products while simultaneously meeting regional demands and various constraints. The liquid fuels production activities are constrained by material balance requirements on feedstocks and intermediate streams, product specifications, processing and transportation capacities, demand, and policy requirements. Economic forces also govern the decision to import (export) crude oil or refined products into (out of) the Australian regions.

ALFM2 assumes that the liquid fuels production and marketing industry is competitive. The market will move toward lower-cost refiners (producers) who have access to crude oil and markets. The selection of feedstocks, process utilization and logistics will adjust to minimise the overall cost of supplying the market with petroleum products. If petroleum product demand is unusually high in one region, the price will increase, driving down demand and providing economic incentives for bringing supplies in from other regions, thus restoring the supply/demand balance.

3.5 Forecasting Petroleum Product Demand in Australia

The petroleum product supply chain is an integral part of the broader Australian and world economy, with demand, supply and prices the result of a range interactions between various economic actors. Assessing the impacts of (for example) movements in global supply, economic growth and technological change demands an integrated assessment modelling framework that leverages the best features of global economic modelling frameworks with detailed supply chain modelling.

Computable General Equilibrium (CGE) models are a genre of economic models that are used extensively by the Australian Government to assess the economy-wide impacts of major policy changes and economic developments. CGE models provide a whole-of-economy assessment framework, with explicit representation of all economic actors including government, industry and private consumers. Cadence Economics is one of the few Australian providers of CGE modelling services who provide the complete suite of CGE modelling services in-house, including software development, model development, model handover and model training.

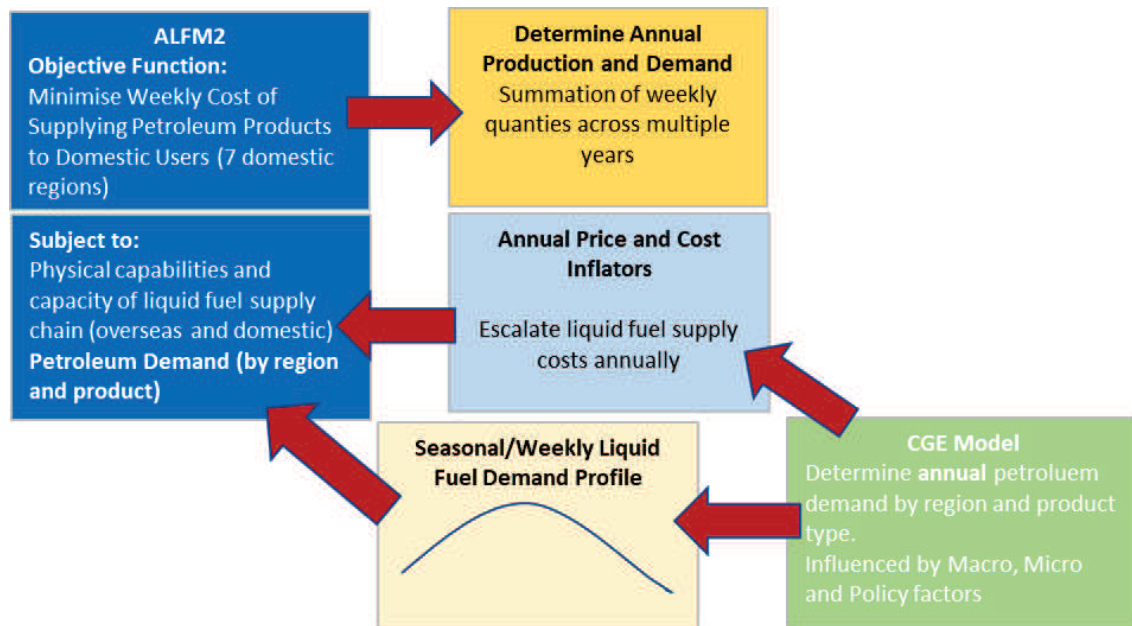
The CEGEM model is Cadence Economics' in house CGE model, and is a multi-commodity, multi-region, dynamic model of the world economy. Like all economic models, CEGEM is based on a range of assumptions, parameters and data that constitute an approximation to the working structure of an economy. Its construction has drawn on the key features of other economic models such as the global economic framework underpinning models such as GTAP and GTEM, with state and regional modelling frameworks such as Monash-MMRF and TERM. A more detailed description of the model is provided in Appendix 3.

The CEGEM model is ideally suited to complement the detailed supply chain modelling provided by the ALFM2 model. In this integrated assessment framework, the CEGEM model provides the ALFM2 model future projections of demand for liquid fuels under user specified scenario specifications. In return, the

ALFM2 model provides price projections to the CEGEM model driven by a detailed, data driven understanding of the specifics of the supply chain.

Shown below is the proposed model structure for forecasting the demand and supply of liquid fuels in Australia by week and across multiple years. In effect, ALFM2 takes the annual petroleum product demand by region and develops seasonal/weekly demand profiles. ALFM2 then minimises the total weekly cost (variable only) of supplying petroleum products by each region and calculates equilibrium quantities of petroleum products. The linear program can be run across 52 weeks to calculate annual quantities and/or run for multiple years. Weekly cost variables can be varied based on cost and price inflators calculated by the CEGEM model.

Figure 4: Proposed Model Structure



This framework provides a powerful toolset both to address both the immediate requirements of Task 2 of the RFQ, and to develop capability for future work as part of Task 3. For example:

- The CEGEM model can consider competing fuels and technologies to liquid fuel. For example, use of gas or renewables to produce electricity instead of distillate (especially in remote regions), or vehicles being increasingly run on hydrogen, compressed natural gas or electricity (i.e. EVs).
- Various scenarios can be run in the CEGEM model to determine mid, high or low demand cases. In addition, the CEGEM model can consider detailed assumptions in terms of policy settings, macro and micro economic drivers of demand by sector (e.g. road transport, passenger and freight; air transport; mining; manufacturing; agriculture; rail transport).
- The direct impact of events such as an international supply disruption or interruptions to domestic infrastructure can be measured through the ALFM2 model, with resulting economy wide impacts measured through the CEGEM model. This analysis can help to, for example, inform cost benefit analysis of policy to strengthen local supply infrastructure.

3.6 Addressing Data Requirements for this Study

Extensive information on the physical capabilities and capacities of liquid fuel facilities will need to be required for this assignment. This includes:

- Crude oil processing rates (ML per day) by facility – average and maximum (or a production curve).
- Refinery processing rates (ML per day) by facility - average and maximum (or a production curve).
- Ship loading/unloading rates (ML per hour) by port – average and maximum.
- Storage capacity at ports and terminals (ML) – average and maximum.
- Train/truck loading and unloading rates (ML per hour) – average and maximum.
- Train/truck delivery rates to retail outlets and major customers – (ML per hour)
- Ship travel times by port (days) – average and maximum
- Train/truck travel times by port (days) – average and maximum.

Our consulting team will consolidate material from existing sources wherever possible to populate the model. This includes undertaking desktop research. We will use the following data sources to help obtain some of the relevant information:

- **Department of Environment and Energy, Australian Petroleum Statistics** – petroleum production, refinery input and production, imports of petroleum, exports of petroleum, end of month stocks, retail prices and taxes.
- **Australian Bureau of Statistics**, Petroleum exploration expenditure.
- **International Energy Agency, Various publications** - Energy Balance, Oil Statistics, Oil Market Report, World Energy Statistics, Oil Information.
- **BP Statistical Review of World Energy**, Various publications – oil refinery capacities and production.
- **Statistica**, Global Refining Capacity
- **Australian Institute of Petroleum**, Australian and International petroleum prices.
- **OPEC, Monthly Oil Report**
- **US Energy Information Administration**, Various reports

The Department has identified data information gaps relating to:

- Transport of liquid fuels from storage terminals to wholesale/retail sites and some major consumers (e.g. trucking capacity, driver availability, diversity of ownership of trucking fleets).
- Liquid fuel port infrastructure (e.g. berths including potential congestion, discharge rates, storage capacity).
- Domestic jet fuel infrastructure assets (updating existing information on domestic fuel infrastructure).

In previous assignments, both Hale & Twomey and Marsden Jacob staff have conducted surveys and interviews with oil majors in Australia to understand refining capacity, storage capability, ship loading/unloading rates, truck loading and unloading rates. This has included BP (owners of the Kwinana refinery), ExxonMobil, Caltex and Viva Energy. Marsden Jacob and Hale & Twomey are well known in the liquid fuels sector and can leverage existing contacts to help gather information.

Engaging with key stakeholders and other government departments directly (interviews, surveys and questionnaires) will be a valuable source of information on the liquid fuel supply chain.

Both Marsden Jacob and Hale & Twomey already have extensive information on the liquid fuel supply chain because of undertaking assignments outlined in Chapter 2.

We acknowledge that the Department will be a valuable source of information and that introductions to other government agencies will be important to help parameterise the model, as well as providing valuable input data for the model.

4. Project Processes and Our Approach

The members of the Consulting Consortium adhere to rigorous project management practices to ensure that studies achieve major milestones and deliver in accordance with contract terms.

To be successful at developing a liquid fuel supply chain model will require extensive engagement with the Department and key stakeholders to ensure that all relevant information is available to determine the capability and capacity of facilities, operating and capital costs, and likely drivers of future liquid fuel demand in Australia.

This chapter provides an outline of the proposed processes and approach to complete the economic/security assessment.

We also outline the broad role of each consulting firm in this assignment.

4.1 Project Roles

Marsden Jacob will be the lead consulting firm for this assignment and will co-ordinate the overall project. In addition, Marsden Jacob has extensive modelling capability that will be used to develop the liquid fuel supply chain model (as outlined in Chapter 2). Part of our role will be to co-ordinate data collection and analysis on behalf of the consortium.

Hale and Twomey have extensive knowledge (and data) of the liquid fuel supply chain in Australia that is important in developing model parameters and obtaining relevant input data. Hale and Twomey will assist in data collection and analysis, including providing the project team with suitable industry contacts to obtain relevant data that cannot be sourced from desktop studies or through the Department or consulting consortium members.

Cadence Economics have a CGE model that can be used to develop forecasts of petroleum demand in Australia, as well as provide cost and price inflators for use in the proposed ALFM2 model. As part of the deliverables, we will make the model available to the Department to undertake future studies as part of the overall model deployment at the Department. BAEconomics will assist Cadence Economics, with Brian providing his extensive experience in the combination of energy markets and economic modelling. Both Cadence Economics and BAEconomics are Canberra based.

The high-level roles of the consulting consortium members are provided in the table below. Professional expenses (and travel costs) by consulting team is provided in Chapter 5: Value for Money.

Table 5: Consulting Consortium Roles

Consulting Consortium Member	Principal Role(s)
Marsden Jacob Associates	Project management, data collection and analysis, and build the liquid fuel supply chain model for Australia
Cadence Economics / BA Economics	Projections of petroleum demand in Australia using their computable general equilibrium (CGE) model of the Australian economy
Hale and Twomey	Data collection and analysis (e.g. storage and transport capacity) and using their extensive knowledge of liquid fuel supply chains, help with the high-level model design.

4.2 Project Processes

The various components of the project are summarised below. This is not necessarily in sequential order as data collection and analysis will be an ongoing project task throughout the model development (refer to project plan in Figure 5)

Inception Meeting

- Put in place project management processes – roles, regular weekly meetings, traffic light reports, risk registers, key milestone meetings.
- Finalise scope of work.
- Department to provide relevant data to build liquid fuel supply chain model and forecast liquid fuel demand in Australia (by region).
- Identify data limitations that need to be overcome.
- Agree on likely uses and scenarios that the model will have to handle.

Development of the Alpha Model (Tasks 1A, part i)

- Initial high-level design of the models (ALFM2 – interface- CGE).
- Review of high-level design by the Department.
- Detailed design document for the models (ALFM2 – interface – CGE). This includes the IT platforms (e.g. Microsoft Access or Excel as interfaces) and the linear programming solver (e.g. OpenSolver for Excel, Python, Mathematica).
- Review of the detailed design document by the Department.
- Development of a prototype model (alpha model).
- Testing and validation of the prototype model.
- Demonstration of the model to the Department.

Data Collection and Analysis (Tasks 1B)

- Identify input data requirements
- Identify data requirements to parameterise ALFM2 (based on Alpha requirement).
- Review of existing data sources (e.g. public, Department and consultant sources)
- Prepare summary of existing data sources (e.g. literature review) for the Department.
- Identify data gaps and develop strategy to address the gaps. This could include interviews, surveys and questionnaires.
- Survey design
- Implementation of the survey of key stakeholders
- Collation and analysis of data
- Formatting of data inputs for ALFM2.

Development of the 'beta' model (Tasks 1A, part ii)

- Further development of the model reflecting feedback from the Department on the draft 'alpha' model produced.
- Incorporate updated input information and parameterisation of the model.
- Further testing and validation.
- Presentation of the model to the Department for Review

Development of the ‘theta’ model (Tasks 1A, part iii)

- Further development of the model reflecting feedback from the Department on the draft ‘beta’ model produced.
- Incorporate updated input information and parameterisation of the model.
- Further testing and validation.
- Presentation of the model to the Department for Review

Development of the ‘final’ model (Tasks 1A, part iv)

- Further development of the model reflecting feedback from the Department on the draft ‘theta’ model produced.
- Incorporate updated input information and parameterisation of the model.
- Further testing and validation.
- Presentation of the model to the Department for Review

Mapping and projections modelling of the Australian production and demand for liquid fuels (Task 2)

- Mapping of current Australian demand for liquid fuel by fuel type.
- Modelling of Australian demand for liquid fuel (by fuel type) and associated transport fuels and technologies (e.g. electric vehicles, hydrogen). Projections modelling of future (to 2035) for the same using the CGE model.
 - This includes mid, high and low demand scenarios.
 - Detailed assumptions in terms of policy settings, macro and micro economic drivers of demand by sector (e.g. road transport, passenger and freight; air transport; mining; manufacturing; agriculture; rail transport) to be clearly explained for the three scenarios including explanations of any limitations of the modelling.
- Projections modelling of oil, condensate, LPG, natural gas liquids and biofuel production in Australia through to 2035 by type and in aggregate having regard to available reserves and resources.
 - This includes sensitivity analysis for oil price variation impacts and other macro and micro economic drivers influencing indigenous production.
 - This should also include detailed discussion of modelling assumptions as well as explanations of any limitations of the modelling.

Model handover to the Department

- Model specifications document – model framework, interfaces, input/output data definitions, solver, model input and output structures.
- Preparation of training manuals.
- Installation of the model(s) at the Department.
- In person training of Department staff to use the model
- Formalise model assistance framework (e.g. help desk support)

The estimated duration of key project stages is summarised below.

Table 6: Project Stages, Tasks and Duration

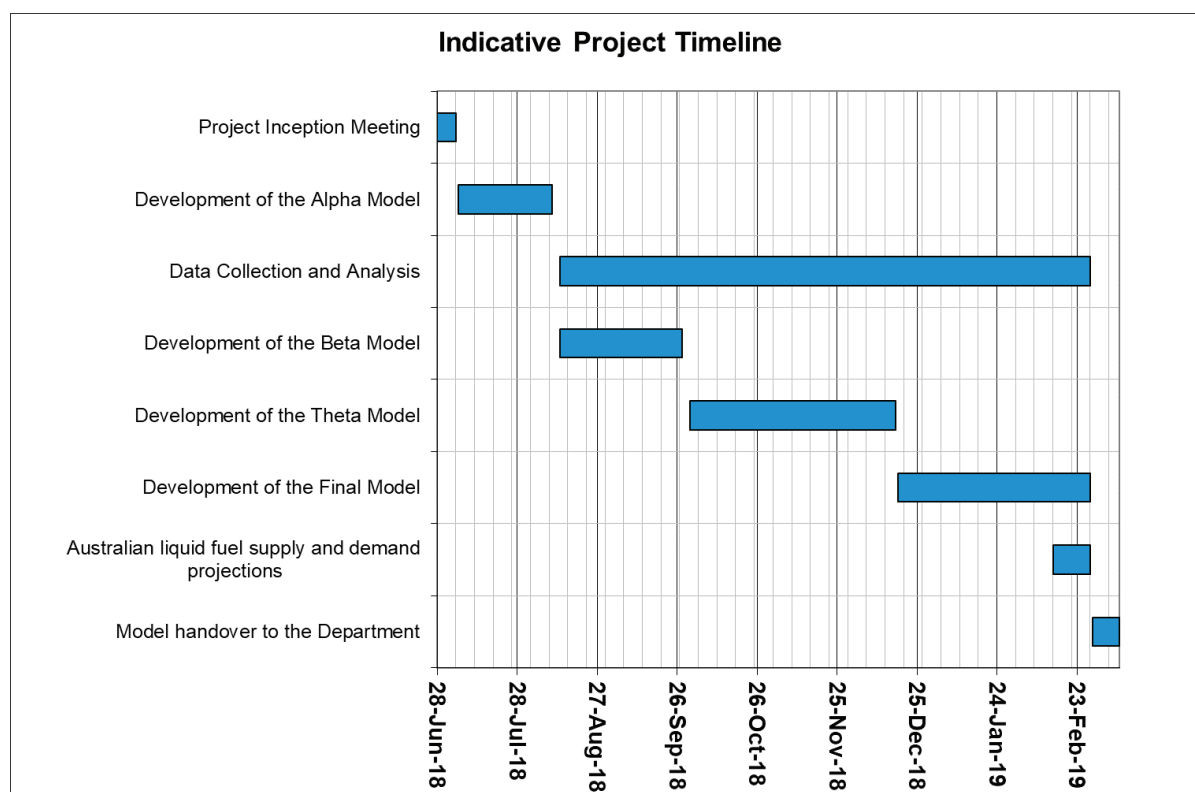
Project Stages	Tasks	Duration (total consultant days)
Inception Meeting	<ul style="list-style-type: none"> • Project management processes • Finalise scope of work • Agree model uses and supply disruption scenarios • Data availability and limitations 	4 days
Development of the Alpha Model (Tasks 1A, part i)	<ul style="list-style-type: none"> • High level design • Detailed design • Development of 'alpha' model • Testing and validation • Demonstration of the model to the Department 	18 days
Data Collection and Analysis (Tasks 1B)	<ul style="list-style-type: none"> • Identify input data requirements • Identify data requirements to parameterise ALFM2 (based on Alpha requirement). • Review of existing data sources (e.g. public, Department and consultant sources). • Prepare summary document (referred to as the literature review) on available data for the Department to review. • Identify data gaps and develop strategy to address the gaps. This could include interviews, surveys and questionnaires. • Survey design • Implementation of the survey of key stakeholders • Collation and analysis of data • Formatting of data inputs for ALFM2. 	22 days
Development of the 'beta' model (Tasks 1A, part ii)	<ul style="list-style-type: none"> • Further development of the model reflecting feedback from the Department on the draft 'alpha' model produced. 	19 days

	<ul style="list-style-type: none"> • Incorporate updated input information and parameterisation of the model. • Further testing and validation. • Presentation of the model to the Department for Review 	
Development of the 'theta' model (Tasks 1A, part iii)	<ul style="list-style-type: none"> • Further development of the model reflecting feedback from the Department on the draft 'alpha' model produced. • Incorporate updated input information and parameterisation of the model. • Further testing and validation. • Presentation of the model to the Department for Review 	21 days
Development of the 'final' model (Tasks 1A, part iv)	<ul style="list-style-type: none"> • Further development of the model reflecting feedback from the Department on the draft 'theta' model produced. • Incorporate updated input information and parameterisation of the model. • Further testing and validation. • Presentation of the model to the Department for Review 	22 days
Mapping and liquid fuel supply and demand projections (Task 2)	<ul style="list-style-type: none"> • Mapping of current Australian demand for liquid fuel by fuel type. • Modelling of liquid fuel (by fuel type) and associated transport fuels and technologies (using CGE model) • Projections of oil, condensate, LPG, natural gas liquids and biofuel production in Australia. 	13 days
Model handover to the Department	<ul style="list-style-type: none"> • Model specifications document – model framework, interfaces, input/output data definitions, solver, model input and output structures. • Preparation of training manuals. • Installation of the model(s) at the Department. 	5 days

	<ul style="list-style-type: none"> In person training of Department staff to use the model Formalise model assistance framework (e.g. help desk support) 	
Total		124 days

The project plan to complete the above project stages, tasks and deliver on the milestones (listed in Table 1) is provided below. Given the size and duration of the project, some flexibility in the timeline needs to be incorporated into the final project timeline (e.g. allowing for project extensions if required).

Figure 5: Project Plan



4.3 Project Management

Marsden Jacob will be the lead consulting firm for this assignment and will ensure that good project management processes are adhered to. Our general approach to project management and our accreditation of Quality Management System (QMS) are outlined in Chapter 6 (see Sections 6.1.1 and 6.1.2).

As project leaders, Marsden Jacob will undertake the following project management tasks (outlined in Item 12 of the RFQ):

- Attend (in person or via video-conference) an inception meeting with the Department;
- Attend progress meetings (in person or via telephone) with the Department as required;
- Provide a written project scope to the Department for approval;

PART C: ANSWERS TO CLARIFICATION QUESTIONS ABOUT THE QUOTE

RFQ 1718-008, Liquid Fuel Supply Chain, Commonwealth Department of Energy and Environment

Consortium (a) responses to clarification questions raised by DEE on the 25 June 2018

DEE Clarification Questions	Consortium Responses
Project Delivery	
<p>1. In the event that the consortium is the successful tenderer for this RFQ, the Department would enter into an arrangement with BAEconomics to align with the procurement process for this RFQ. Is BAEconomics willing to execute the contract on behalf of the consortium?</p>	<p>BAEconomics will execute the contract on behalf of the consortium. Marsden Jacob, Hale and Twomey and Cadence Economics will act as sub-contractors.</p>
<p>2. Given the potential complexities of the governance arrangements for this consortium, clarify BAEconomics’ capacity to fulfil this role and manage the associated risks.</p>	<p>Brian Fisher, Managing Director at BAEconomics will act as Project Lead and the consortium members have agreed to increase his hours of work to reflect this increased role. The revised breakdown of consultant costs is provided in Attachment A. There is no overall increase in the initial quote for this project, just in the allocation between consulting firms.</p>
<p>3. Will the Department be required to purchase ongoing proprietary information to maintain and update the liquid fuel supply chain model? Are there any licencing requirements for any part of the data or delivery of the model? If so, what are the associated costs?</p>	<p>The Department may be required to purchase reports to maintain the database supporting the liquid fuel supply chain model (ALFM2). This could include:</p> <ul style="list-style-type: none"> - International Energy Agency, Various publications - Energy Balance, Oil Statistics, Oil Market Report, World Energy Statistics, Oil Information. - Statistica, Global Refining Capacity <p>There are no licensing requirements associated with the installation and ongoing use of the liquid fuel supply chain model or the CGE model. ALFM2 will be built using MS Excel, MS Access, VBA and OpenSolver, while the CGE model is built using MS Excel, VBA and Python 3 (specifically the Anaconda 3 distribution). An alternative option could be to use PYTHON instead of OpenSolver for the ALFM2 component of the model.</p> <p>Our experience is that the success of projects that involve the handover and utilisation of various models is highly dependent on the capability and turnover of client staff and ongoing support from the model builder/supplier. We are conscious of this and will ensure that the model is easy to use and easy to learn (e.g. simple operating instructions with examples of simulations that could be considered). In addition, it is also important that when the model is deployed,</p>

	<p>and staff trained that there is ongoing engagement between the consortium and the client to ensure that any persistent errors are debugged and to provide ongoing support services. A services contract could be negotiated prior to the completion of this project.</p>
<p><u>Task 1a</u></p>	
<p>4. As per the Statement of Requirement, on pages 6 and 7 the Department is seeking the delivery of Milestone 4 (Task 1ai - alpha model) by 10 August 2018. As per page 2, Task 1ai is the delivery of an 'alpha model' for testing with the Department. Due to the number of high quality quotes the Department is taking longer to choose a supplier than expected. Given this delay, the Department is now willing to accept delivery of the alpha model by 17 August 2018.</p> <ul style="list-style-type: none"> - Could you please clarify how the alpha model will be able to be tested? For example will the Department be able to use the model for scenario testing as described in the section 'Why is the Department procuring this modelling' on page 2? - If you cannot deliver the alpha model by 17 August, could you please specify the earliest date you can deliver the alpha model and what you could deliver by 17 August? 	<p>The consortium commits to producing an 'alpha model' by 17 August 2018. The Alpha model may not have all the functionality, statistically derived parameters (95% Confidence Interval) and all the relevant input data at this time. The reason for this is that we will also be focusing on data collection, analysis and quantification over the same period (i.e. completed by 10 August 2018). However, the 'alpha model' will provide the key modules, equation parameters, and sufficient data inputs to enable us to derive an optimised multi-year solution (by week). The focus on the 'alpha model' is not the accuracy of initial results, but ensuring that we have captured the supply linkages, can vary supply and demand factors to generate the scenarios the Department is interested in, and that the model can solve consistently.</p> <p>It is our understanding that the purpose of the model is to assess how both demand and supply shocks may impact the delivery of liquid fuels to final customers in Australia and whether this would also impact prices paid by customers. This can include:</p> <ul style="list-style-type: none"> - The failure of major strategic liquid fuel supply assets, such as overseas refineries (e.g. Singapore), or a local refinery (e.g. Kwinana). - Unexpected increase in the demand for liquid fuels in Australia, which typically results due to the failure of domestic gas facilities in Australia (e.g. Varanus Island production facility explosion) and the need to use distillate in gas plant (which has dual fuel capability). - Unexpected increase in seasonal demand for liquid fuels due to higher agricultural yields (e.g. harvesting period). <p>The way we would structure the model is to effectively allow a user to limit the capacity of a specific infrastructure asset (e.g. Kwinana refinery has an unexpected forced outage for 2 weeks) or several assets and/or create a temporary increase in regional demand (one or more of the 7 Australia regions).</p> <p>In effect, we would develop a base case or reference scenario that would represent normal operations in the industry (e.g. including planned outages for infrastructure). This would be developed based on our understanding of the existing capability of the</p>

	<p>liquid fuel supply chain in Australia (with international linkages – especially Singapore).</p> <p>Then we would change demand and supply conditions to then understand the quantity and price responses for alternative scenarios. It is through this process that we can begin to understand the major risks in the supply chain (e.g. truck fleet capability, ship loading rates, storage capacity, refinery capacity etc).</p> <p>We can set up the model to do Monte Carlo simulation of key inputs (e.g. such as the forced outage rate of refineries) to develop a distribution of quantities and prices. This could be used to derive a distribution of liquid fuel shortages (ML per day) given changes to an input variable or range of input variables. This would help the Department to establish risk limits for potential supply reliability (i.e. must meet a 10 per cent probability of exceedance in liquid fuel demand and the failure of a strategic liquid fuel supply asset(s) in Australia).</p>
<p>5. As outlined on page 2, the liquid fuel supply chain model is intended to provide a framework for understanding the liquid fuel supply chain, identifying potential vulnerabilities and providing a basis for testing disruption scenarios. Given this situation, the model should accurately reflect the way that oil markets typically respond to supply disruptions. How will your model reflect any differences in the way that markets typically respond to international versus domestic supply disruptions?</p>	<p>As outlined in our proposal, understanding the way in which the liquid fuel supply sector can respond to market disruptions is key to understanding whether there are any outstanding or residual supply risks. Hale & Twomey have considerable insights into how governments and companies involved in the supply chain responds to events. This includes:</p> <ul style="list-style-type: none"> - Ability to vary refinery production slate (to a limited extent once crude supply is committed); - Increasing refinery throughput (where not planned at capacity); - Ensuring a secure and committed offtake for refineries (so production is not impacted by changes in offtake) - Using operational inventory (intermediates and blending components) to manage production variation; - Using a diverse range of product supply options (location, refineries and counterparties); - Ability to adjust product split on mixed cargo imports; - Ability to purchase cargoes relatively quickly if necessary through the trading system; - Ability to purchase product from competitors (locally) to cover temporary shortages; - Shifting cargo destinations (prior to loading) within system by using the company’s total network to assist the location which is short of product; - Ability to purchase cargoes from traders or blenders on shorter notice if the price paid

	<p>We shall be incorporating these strategies as “alternative supply options” in the ALFM2 model. The model will choose the least cost alternative supply method (if available) to meet demand given the market disruption, subject to physical capacity or capability constraints. The model may choose a range of methods given that one method (in above list) may not entirely resolve the supply issue.</p> <p>In the case of international disruption there is also likely to be a major price shock (either regionally or globally) depending on the event. The model will also allow these inputs to be adjusted in the case of international disruption events. This price adjustment is likely to drive some of the resulting actions (e.g. product coming from alternative locations in the case of a Singapore refinery disruption). While cost optimisation will also drive a domestic disruption solution, in this case this represents the suppliers finding the least cost solution to the disruption rather than a market price adjustment impacting customers.</p>
<p>6. Will your model cater for disruptions arising from surges in demand? If it will, please provide information on how the model will do this.</p>	<p>As outlined above, the model needs to cater for an increase in liquid fuel demand, such as an increase in distillate consumption, which can result from domestic gas shortages (or domgas infrastructure failures).</p> <p>The linear program minimises the weekly cost of liquid fuel supply in Australia given demand in each region (7 regions). Regional demand is an exogenous variable for ALFM2 and an immediate increase in demand for weeks or a month can be inputted into the model to understand the supply response.</p>
<p>7. As stated on page 2, the Department is undertaking this project to quantify the relative level of risk in different parts of the supply chain. How is risk addressed in your proposed model?</p>	<p>Given that ALFM2 is set up as a linear programming model which has an objective function (i.e. minimise weekly liquid fuel supply costs) subject to constraints (i.e. physical capacity or production capability), the model is readily able to allow us to understand how these constraints can impact on the solution. This means we will understand which parts of the value chain create the most significant risks for ensuring that liquid fuel supply can meet demand economically.</p> <p>By varying the physical capacity or capability of various assets in the supply chain, we can understand the impact of an asset (or class of assets) on both quantities and local prices.</p> <p>By deriving a distribution of input values (e.g. refinery production per day), we can use Monte Carlo methods to generate a distribution of market outcomes (e.g. product delivered) and understand if supply shortfalls are likely.</p>

<u>Task 1b</u>	
<p>8. As outlined on page 4, the Department has identified data information gaps relating to the parts of the domestic supply chain (Task 1b).</p> <ul style="list-style-type: none"> - How will you acquire the information required to complete this task? - What level of granularity of this information are you proposing to deliver? 	<p>The Department indicated that there were some significant information gaps relating to transport from terminals to retailers/major customers, port infrastructure and jet fuel domestic production.</p> <p>Hale & Twomey have indicated that in past assignments they have developed a considerable understanding of Australia’s liquid fuel supply chain and have good information on storage facilities at ports/terminals and jet fuel infrastructure. In addition, they have previously developed models assessing the requirements for, and cost of road transport from storage terminals. This will provide base information for this liquid fuel supply model.</p> <p>If the information needs to be updated to reflect recent changes, we would contact oil majors, transport companies and major liquid fuel users (e.g. airports) to update our database on current capabilities / limitations of specific elements of the supply chain. Major users, such as various airports will have a very good understanding of jet fuel infrastructure capabilities in Australia.</p> <p>To deliver the model outputs required, key information (e.g. storage capacity) will need to be provided split by location and product type. To fully assess the variation in the supply chain this will also be spilt by ownership (i.e. separate facilities identified). Information that is unlikely to be available in the public arena or unlikely to be provided by terminal operators due to confidentiality requirements (e.g. port discharge rates, truck loading rates) will be provided by H&T who have detailed knowledge of expected rates from shipping and standard oil industry terminal design.</p>
<p>9. Confirm if you will deliver Task 1b by 10 August 2018 as per the milestones set out on pages 6 and 7.</p>	<p>Task 1b (addressing information gaps) can be completed by 10 August 2018.</p>
<u>Data and IT</u>	
<p>10. Please provide additional details about:</p> <ul style="list-style-type: none"> - Projected size of data/model and projected growth - Processes for data capture and metadata capture and how this will be documented - Processes for data cleansing and how this will be documented 	<p>Computable General Equilibrium Model:</p> <ul style="list-style-type: none"> - 200 MB (minimal growth) - The CGE model is built on the GTAP database and publicly available data from the Australian Bureau of Statistics. We will separately identify the relevant components of the liquid fuel sector within the CGE model to harmonise to the requirements and outputs of the ALFM2 model, with Cadence Economics drawing on the same

- Process for data transformation and how this will be documented

data sources used to construct the ALFM2 model.

- This is a standard process for Cadence Economics, with some level of regional and/or sectoral decomposition undertaken for the vast majority of our projects. Owing to the nature of the data sources little data cleansing and transformation is required, and maintenance requirements are low. Our sources and calibration processes are frequently documented in our analysis, and we will document appropriately as part of the model handover.

ALFM2:

- **Projected size of data/model and projected growth**

The network model of the liquid fuel supply chain is represented by a series of mathematical equations. Each equation is represented in a structural form and includes a set of coefficient values. The equations and their coefficients can be readily stored within a single spreadsheet.

Even when expanding the model to allow for the evaluation of multiple alternative system configurations, we do not envisage a problem will arise in relation to model size.

Unlike other modelling techniques, the methodology proposed does not require the creation and storage of large, memory intensive sets of coefficients. Because of this analytical methodology, we do not believe that the size of the model will present a risk to development, ongoing support, and use by the client.

Processes for data capture and metadata capture and how this will be documented

Effective data capture and management processes will be put in place to ensure data validity is maintained throughout the lifecycle of the model. We will make use of industry standard approaches for the maintenance of modelling data repositories, including the standardisation on a single point of entry for modelling data, and the automated validation of inputs to ensure each is within an appropriate scale and range. Our consultants have experience developing data management systems for significantly larger models, and do not believe that data management complexity will be a significant risk for this project.

All input information will be stored within the clearly marked "input/assumptions" section of

the model that form the “front end” of the data repository. From there the data flows through a series of transformations before being used in the model.

Our approach enables the storage of metadata alongside input data and assumptions. Metadata may be defined manually by the user or exist as a formal attribute of the data. An example of a formal attribute would be a date range for which an input assumption can be considered valid. In this way the metadata can be used as an additional source of information for validating input assumptions.

Documentation will be included in-the model to assist the user in identifying essential and non-essential inputs for each scenario.

- **Processes for data cleansing and how this will be documented**

Manual and automated data cleaning steps will be used to ensure data validity. These checks will take place within the data repository. An initial manual process will take place requiring the user to confirm that the inputs are conceptually consistent with the scenario they are wishing to analyse. For example, that a “high growth” scenario is not paired with input assumptions that would only be applicable during a “low-growth” scenario. We do not believe that this step can be effectively automated. It will, however, be clearly documented so that every user will be guided in how they evaluate the conceptual consistency of the inputs.

A second phase of data cleaning will ensure that, prior to a model run, there are no missing inputs, duplicates, and that inputs exist within a predefined range. This will ensure, for example, that volumetric unit ranges (for example, giga-versus megalitres) are not confused by the user leading to an input that is an order of magnitude higher or lower than the expected value. This process will be automated.

- **Process for data transformation and how this will be documented**

Only minimal data transformations will be required in the model. Most inputs will flow directly from the “input/assumptions” sheet into the model.

As mentioned in our previous response regarding data capture, a transformation process may be required to transform some inputs. Such transformations will take place on a separate

	sheet. All documentation of the transformation steps will be included in the Excel spreadsheet to highlight what and why each transformation is taking place.
11. Please specify any specific IT requirements not already mentioned as part of the existing response.	CGE Model - Local installation of Anaconda 3, Microsoft Excel and read/write access to a local drive. ALFM2 – No additional requirements identified at this stage.

PART D: ADDENDUM TO ORIGINAL QUOTE



Specialists in minerals, energy and agricultural economics
35 Endeavour Street, Red Hill, ACT Australia 2603

s22

Australian Energy Security
Energy Security Branch
Energy Security and Efficiency Division
Department of the Environment and Energy
GPO Box 787, Canberra ACT 2601

Dear s22

Re: Addendum to proposal – RFQ 1718-008

Thank you for the opportunity to present to you and your colleagues regarding our recent response to RFQ 1718-008, Liquid Fuel Supply Chain.

Based on feedback received during our meeting on Thursday, 12 July 2018 we would like to make some clarifications and amendments to our proposal for your consideration, as per the table below and laid out against the questions contained in your email of Monday, 9 July 2018.

Where some additional work is required the cost implications are listed against the relevant items in the table. For clarity the additional work will increase the cost of the project from \$277,945 excluding GST to \$307,945 excluding GST.

We also accept an amendment to the payment schedule for payment to be based on acceptance of milestones rather than delivery of milestones. The date of delivery for the Alpha model is also amended from 10 August, 2018 to 24 August, 2018.

Please do not hesitate to contact us if any further clarification is required.

Yours sincerely

s47F

Brian Fisher
Managing Director

16 July, 2018

<i>Key point</i>	<i>Response</i>	<i>Cost</i>
Task 1a Domestic and international granularity ALFM2 model	<p>Based on feedback received we propose to increase domestic granularity in the ALFM2 model to separately identify 15-20 regions, separately identifying each of the 13 major terminals and an aggregation of the remaining 17 minor terminals.</p> <p>Internationally we suggest four Asian supply regions (i.e. North Asia, Singapore and surrounds, China and India), the US, Europe, Middle East and Rest of World (i.e. captures South America for example) in the ALFM2 model. The final decision about international regions will be discussed at the inception meeting.</p> <p>As discussed, increased granularity carries increased data risk. We will work in good faith to obtain or reverse engineer data wherever possible. Where issues of commercial confidentiality (for example) or time constraints reduce availability or reliability of data this will be noted in the documentation provided for future action by the Department.</p>	\$20,000 ex GST
Task 1a Domestic and international granularity CEGEM model	<p>Based on feedback received we propose to increase the international granularity in the CEGEM model to separately identify each of the international regions represented in the ALFM2 model. In addition, and based on ongoing discussion with the Department, there is scope to include some additional international regions that may meaningfully contribute to the international scenario design.</p> <p>Domestically, we propose to retain the original state and territory based aggregation.</p> <p>There will be a small amount of additional work in model integration owing to the different geographic boundaries, however we assess the additional project risk as being low.</p>	\$10,000 ex GST
Task 1b Data considerations	<p>Our current proposal includes both reliance on existing transport models, and also some direct data gathering. As discussed, our previous experience is that freight companies can be very reluctant to share information, and so this avenue of investigation carries some risk.</p>	None

	<p>State based authorities that carry legislative responsibility around liquid fuel transport have the potential to be a valuable alternate source of information. The likelihood of obtaining data from these agencies would be enhanced by Departmental facilitation.</p> <p>With regards to pipeline and rail transport, we do hold data on current pipeline transport in Melbourne and Sydney, and we understand that there is some limited rail transport in operation. Any data that the Department holds would be valuable for the project.</p>	
IT - web deployment	We suggest that the user case for this model does not lend itself well to cloud deployment, and deployment of this nature will severely threaten project deadlines. The cost of redevelopment of existing assets is unlikely to be palatable to the Department.	None
IT - Design documentation	Subsequent to discussion of this point we understand that there are concerns within the Department around the transition to (for example) a Windows 10 / Office 365 environment. We have existing models that are well suited to early testing with your Knowledge and Technology division, and we are happy to provide samples as early as possible in the project. Our proposal includes scope for design documentation as requested in the RFP.	None
IT - As-built documentation	Our proposal includes scope for design documentation as requested in the RFP.	None
IT - Installation documentation	Our proposal includes scope for design documentation as requested in the RFP.	None
IT - Testing documentation	We understand the requirement testing documentation to be based on functionality milestones agreed between the Department and consortium project teams at project inception or at another early, mutually convenient stage, with possible revision on a mutually agreed basis as required.	None
IT - Training documentation	Our proposal includes scope for design documentation as requested in the RFP. All training materials will be specific to the model delivered rather than generic, in large part owing to the bespoke nature of the product being provided.	None

Warranty period	We agree to a 90 day warranty period. Beyond that we suggest the Department may wish to consider separate service contracts (most likely with Cadence Economics and Marsden Jacob Associates) for longer term support of the CEGEM and ALFM2 models.	None
IT access	We foresee no obstacles to any consortium member passing a police check. Should the Department wish to sponsor security clearance/renewal (noting that both Brian and s47F have previously held Top Secret/Secret level clearance) we would welcome that.	None
Travel	<p>This is unlikely to be a material concern however, as we do not anticipate the need for consortium staff to have direct access to your systems.</p> <p>BAEconomics and Cadence Economics are Canberra based firms, and are available for meetings at no cost.</p> <p>s47F and s47F will be the key contacts in Marsden Jacob, and are both Perth based. The existing budget includes two trips for s47F, and three trips for s47F.</p> <p>Hale & Twomey are based in New Zealand, and no allowance for travel has been made for Hale & Twomey staff</p>	None

Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Contract execution and inception meeting between Contractor and the Commonwealth.	By 3 August 2018	NA	NA (completed)
Milestone 1 – Finalised project scope for the Commonwealth's approval	10 August	The project scope: a) meets all requirements of the service delivery as specified in the Description of Services in Attachment A and as discussed in the inception meeting. b) details how the Contractor will ensure all IT products meet the Commonwealth's IT requirements as discussed at the inception meeting	NA (completed)
Milestone 2 – Proposed format for the liquid fuel supply chain model agreed with the Commonwealth	24 August 2018	The proposed format for the supply chain model: a) meets all requirements of the service delivery as specified in the Description of Services in Attachment A and as discussed in the inception meeting b) is compatible with the Commonwealth's IT requirements as agreed in the inception meeting and outlined in the finalised project scope (Milestone 1).	NA (completed)
Milestone 3 – Delivery of 'alpha' model and modelling findings (Task 1ai specified in the Requirement in Attachment A) to the Commonwealth	14 September 2018	The alpha model: a) covers the liquid fuel supply chain from liquid fuel production through to consumption of petroleum products as specified in the Requirement in Attachment A b) is in the format agreed as per Milestone 2 c) meets the requirements of the service delivery as specified in the Description of Services in Attachment A at the level of detail agreed at the inception meeting and outlined in the finalised project scope (Milestone 1) d) is compatible with the Commonwealth's IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) e) is at a high standard as set out in the Deed	\$51,324 (completed and paid)

Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Milestone 4 – Presentation of results of Task 1b specified in the Requirement in Attachment A	16 November 2018	<p>Three separate reports with the data collected on the identified information gaps listed below:</p> <p>Transport of liquid fuels from storage terminals to wholesale/retail sites and some major consumers (e.g. trucking capacity, driver availability, diversity of ownership of trucking fleets).</p> <p>Liquid fuel port infrastructure (e.g. berths including potential congestion, discharge rates, storage capacity).</p> <p>Domestic jet fuel infrastructure assets (updating existing information on domestic fuel infrastructure).</p> <p>The information is at a level of detail sufficient to support the development of the supply chain model as outlined in the Requirement in Attachment A and to meet the needs of the Commonwealth as agreed at the inception meeting and reflected in the project scope (Milestone 1).</p>	\$51,324
Milestone 5 – Delivery of 'beta' model and modelling findings (Task 1aii specified in the Requirement in Attachment A) to the Commonwealth	14 December 2018	<p>The beta model:</p> <ul style="list-style-type: none"> a) reflects feedback provided by the Commonwealth on the alpha model b) functions and is able to be tested as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth's IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) d) is at a high standard as set out in the Deed 	\$51,324

Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Milestone 6 (a) – Presentation of the results of Task 2 specified in the Requirement in Attachment A	16 November 2018	<p><i>Modelling and report</i> meets all requirements of the service delivery of Task 2 as specified in the Description of Services in Attachment A and as discussed in the inception and subsequent meeting.</p> <p>Task 2: Mapping and projections modelling of Australian production and demand for liquid fuels:</p> <p>Infographic of Australian liquid fuel supply chain.</p> <p>Modelling of Australian demand for liquid fuel (by fuel type) and associated transport fuels and technologies (e.g. electric vehicles, hydrogen). Projections modelling of future (to 2035) for the same.</p> <p>This includes mid, high and low demand scenarios.</p> <p>Detailed assumptions in terms of policy settings, macro and micro economic drivers etc. of demand by sector (e.g. road transport, passenger and freight; air transport; mining; manufacturing; agriculture; rail transport) will be clearly explained for the three scenarios including explanations of any limitations of the modelling.</p> <p>The information is delivered at a level of detail sufficient to support the development of the supply chain model as outlined in the Requirement in Attachment A and to meet the needs of the Commonwealth as agreed at the inception meeting and reflected in the project scope (Milestone 1).</p>	\$25,662

Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Milestone 6 (b) – Presentation of the results of Task 2 specified in the Requirement in Attachment A	17 December 2018	<p><i>Modelling and report</i> meets all requirements of the service delivery of Task 2 as specified in the Description of Services in Attachment A and as discussed in the inception and subsequent meeting.</p> <p>Task 2: Mapping and projections modelling of Australian production and demand for liquid fuels:</p> <p>Mapping of current Australian demand for liquid fuel by fuel type.</p> <p>This information will be included in the liquid fuel supply chain model (Task 1).</p> <p>Projections modelling of oil, condensate, LPG, natural gas liquids and biofuel production in Australia through to 2035 by type and in aggregate having regard to available reserves and resources.</p> <p>This includes sensitivity analysis for oil price variation impacts and other macro and micro economic drivers influencing indigenous production.</p> <p>This also includes detailed discussion of modelling assumptions as well as explanations of any limitations of the modelling.</p> <p>The information is delivered at a level of detail sufficient to support the development of the supply chain model as outlined in the Requirement in Attachment A and to meet the needs of the Commonwealth as agreed at the inception meeting and reflected in the project scope (Milestone 1).</p>	\$25,662

Performance Criteria			
Milestone	Delivery Date	Performance Criteria	Payment
Milestone 7 – Delivery of 'theta' model and modelling findings (Task 1aiii specified in the Requirement in Attachment A) to the Commonwealth	18 January 2019	<p>The theta model:</p> <ul style="list-style-type: none"> a) reflects feedback provided by the Commonwealth on the beta model b) functions and is able to be tested as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth's IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) d) includes all of the information required e) is at a high standard as set out in the Deed 	\$51,324
Milestone 8 – Delivery of final model and modelling to meet all of Task 1 specified in the Requirement in Attachment A, including presentation of findings to the Commonwealth and key stakeholders, and staff training	29 March 2019	<p>The final model:</p> <ul style="list-style-type: none"> a) reflects feedback provided by the Commonwealth on the theta model b) functions as agreed at the inception and subsequent meetings and outlined in the finalised project scope (Milestone 1) c) is compatible with the Commonwealth's IT requirements as agreed in the inception meeting and any subsequent discussions with the Commonwealth and outlined in the finalised project scope (Milestone 1) d) is at a high standard as set out in the Deed e) is user friendly <p>Training of Commonwealth staff is to a high standard and allows the Commonwealth to use and further develop the model into the future.</p> <p>Documentation is delivered at a high standard, is appropriate to meet the Commonwealth's needs and easy to understand.</p>	\$51,325