



Expert Witness Statement on Greenhouse Gas Emissions

For

Crib Point Gas Jetty and Crib Point-Pakenham Pipeline Project Environmental Effects Statement

Inquiry and Advisory Committee Hearing

02 October 2020

Prepared for Mornington Peninsula Shire Council and Bass Coast Shire Council under the instruction of Harwood Andrews

by

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B.E. (Chemical) Honours



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1 Introduction

1.1 Name and address of expert

- [1] Edmund Smith, Managing Director, Northmore Gordon, 132 Cremorne Street, Cremorne, VIC 3121.

1.2 Expert's qualifications, experience and area of expertise

- [2] I hold a Bachelor of Chemical Engineering with Honours from the University of Cape Town, South Africa and I have been assisting organisations improve their energy efficiency and greenhouse gas management for 30 years.
- [3] I have helped design and implement greenhouse gas mitigation plans, energy management programs and processes and delivered energy and carbon management training across five continents. I have provided strategic advice to Government and Utilities on targeted projects focusing on energy supply requirements, demand response potential and trends in energy usage across sectors. Of particular relevance to this project is the assistance I provide to organisations in the development of their energy and greenhouse gas inventories, including their reporting obligations in the National Energy and Greenhouse Reporting scheme. These companies include an electricity and gas supply utility, several food processing industries and data centres.
- [4] My employment includes:
- Northmore Gordon, Managing Director, Executive Director
 - Oakley Greenwood, Principal Consultant
 - Golder Associates, Global Leader, Energy and Carbon Management
 - Hatch, Practice Director, Energy Management
 - Energetics, General Manager – Consulting

I have also held other positions in Energetics and other energy management consulting practices, as well as engineering positions at manufacturing facilities in the United Kingdom and South Africa.

1.3 Other significant contributors to the report

- [5] Cheryl Bowler, Principal Consultant, Northmore Gordon. Cheryl holds a Bachelor of Electrical Engineering with Honours from the University of Technology, Sydney and a Master of Business Administration from La Trobe University. Cheryl is an energy markets and greenhouse gas inventory expert. With over twenty years' experience in



the energy industry, Cheryl has extensive expertise as a trader in electricity, renewable energy and carbon credit markets. Cheryl's thorough knowledge of the different greenhouse gas reporting frameworks such as ISO 14064, The Greenhouse Gas Protocol and the Carbon Disclosure Project is invaluable in determining inventory items and emission factors which apply to different regulatory regimes.

- [6] Cheryl has developed comprehensive greenhouse gas management strategies and carbon footprints for customers in sectors such as banking, resources, air travel, ports, manufacturing and primary production assets in Australia, Europe and the USA.

1.4 Instructions that define the scope of the statement

- [7] On 6 August 2020 I was instructed in writing by Kate Morris, Principal, Harwood Andrews, acting for Mornington Peninsula Shire Council, to review the exhibited Crib Point Gas Import Jetty and Crib Point-Pakenham Pipeline Project (Project) Environment Effects Statement (EES) documents relevant to Council's municipal area (the Mornington Peninsula) and my areas of expertise (greenhouse gas emissions).

I was to provide my preliminary opinion and if instructed, prepare an expert witness report on behalf of Council that contains my opinion on the following matters, as relevant to my area of expertise:

- a) Does the EES adequately document the investigation, avoidance and minimisation of potential environmental effects (greenhouse gas emissions), of the Project and relevant alternatives (for rather than to the Project), as well as associated environmental mitigation and management measures? If not, why not?
- b) Do I agree with the EES assessment of the potential environmental effects (greenhouse gas emissions) of the Project, their significance and acceptability having regard to the draft evaluation objectives in the EES scoping requirements, relevant policy, legislation, best practice, and the principles and objectives of "ecologically sustainable development"? If not, why not?
- c) Are there any specific measures or changes (including to the design or management of the Project via the draft Amendment, works approval and environmental management framework) I recommend to avoid, mitigate or manage the environmental effects of the Project within acceptable limits having regard to the draft evaluation objectives in the EES scoping requirements, relevant policy, legislation, best practice, and the principles and objectives of "ecologically sustainable development"?



- d) If I do recommend such measures, then to the extent that it is within my expertise to do so, please provide my opinion on whether or not such measures are feasible.

[8] I was instructed that my expert witness statement must:

- a) Comply with Planning Panels Guide to expert evidence, April 2019;
- b) Provide a summary of key issues, opinions and recommendations.

[9] The preliminary advice was provided to Harwood Andrews on 21 August 2020.

[10] I was instructed via email on 22 September by Allison Tansley, Associate, Harwood Andrews to prepare the expert witness statement and that this expert witness statement was to be prepared on behalf of Bass Coast Shire Council in addition to Mornington Peninsula Shire Council.

[11] I was instructed via email on 27 September 2020 by Kate Morris, to review expert evidence filed for the Proponent together with the Proponent's response to the IAC's request for further information. In particular:

- a) Technical Note 2 - GGE which relates to Greenhouse Gas Emissions
- b) Expert Evidence - Ben Sichlau of Point Advisory – GHG
- c) Expert Evidence - Richard Bolt of Nous Group - Energy Policy

I was instructed to review these documents when preparing my expert witness statement.

1.5 Documents and materials relied upon

[12] The documents I have relied upon in preparing my statement are exhibited materials for the Environmental Effects Statement as listed below. I have assumed that these documents are an accurate reflection of the analysis that was performed in their preparation.

- a) Summary Document;
- b) Main Report:
 - i. Chapter 2: Project rationale
 - ii. Chapter 3: Project development
 - iii. Chapter 4: Project description
 - iv. Chapter 5: Key approvals and assessment framework
 - v. Chapter 11: Greenhouse Gas
 - vi. Chapter 24: Sustainability

- vii. Chapter 25: Environmental Management Framework;
- c) Technical Report F: Greenhouse Gas Emissions;
- d) Attachment II: Legislation and policy report;
- e) Attachment III: Environmental risk report;
- f) Attachment VI: Draft Planning Scheme Amendment C272morn including the Draft Incorporated Document;
- g) Attachment VII: Map Book
- h) Attachment VIII: Works Approval Application.

I have also been instructed to specifically review the following documentation:

- i) Ministerial Guidelines for assessment of environmental effects under the Environmental Effects Act 1978 (2006).
- j) Point Advisory (25 September 2020) – Greenhouse gas assessment components of the Crib Point Gas Import Jetty and Pipeline Project Environmental Effects Statement – Ben Sichlau Expert witness statement
- k) Nous Group (25 September 2020) – Gas Import Jetty and Pipeline Project – Inquiry and Advisory Committee – Richard Bolt Expert witness statement

[13] In preparing this statement, reference has been made to the following documents.

- a) International Standard ISO 14064-1: 2018 Greenhouse gases – Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals.
- b) International Standard ISO 14064-1:2006 Greenhouse gases – Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals.
- c) The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard Revised Edition (2015)
- d) The Greenhouse Gas Protocol – Technical Guidance for Calculating Scope 3 Emissions
- e) IPIECA Sustainability reporting guidance for the oil and gas industry March 2020
- f) American Petroleum Institute – Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry (2009)
- g) National Greenhouse and Energy Reporting Act (2007) and Measurement Determination

- h) National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015
- i) National Greenhouse Accounts Factors – Australian National Greenhouse Accounts (August 2019)
- j) Climate Change Act 2017 (Vic)
- k) Mornington Peninsula Shire Council – Climate Emergency Plan

[14] In preparing this statement, reference has been made to the following documents prepared by third parties. These documents were used for reference purposes only and not the subject of review and are assumed to be an accurate reflection of the analysis that was undertaken in their preparation.

- a) Australian Energy Market Operator 2020 Integrated System Plan for the National Electricity Market (July 2020)
- b) Australian Energy Market Operator Victorian Gas Planning Report Update – Gas Transmission Network Planning for Victoria (March 2020)
- c) Australian Energy Market Operator Gas Statement of Opportunities for eastern and south-eastern Australia (March 2020)
- d) AGL 2020 Reporting Suite <https://www.2020annualreport.agl.com.au>
- e) BP Sustainability Report <https://www.bp.com/en/global/corporate/sustainability.html>
- f) Narrabri Gas Project Environmental Impact Statement – Chapter 24 Greenhouse gas

1.6 Summary opinion

[15] It is my view that the emissions inventory has not been prepared in line with current gas industry reporting practices due to the exclusion of Scope 3 emissions and the following changes be incorporated:

- a) Inventory be prepared according to ISO14064-1:2018 Greenhouse gases - Part 1: Specification with guidance at the organisation level for the quantification and reporting of greenhouse gas emissions and removals rather than the obsolete 2006 standard used in preparing Technical Report F.
- b) Upstream emissions for LNG associated with extraction, liquefaction and transport be calculated for multiple LNG source countries under the precautionary principle.

- c) Upstream emissions be separated into extraction and liquefaction elements to enable fair comparison to the 'no project' scenario of natural gas from existing sources.

- [16] It is my view that the decarbonisation benefits of the project are potentially overstated due to the exclusion of liquefaction emissions from the inventory.
- [17] It is my view that the greenhouse gas emissions calculations covering construction and operational activities utilise a reasonable estimation methodology that follows industry standards, however, the base assumptions used in the calculations pertaining to equipment selection cannot be fully verified.
- [18] It is my view that options to mitigate emissions from the project through the use of offsets has not been adequately addressed. This should be considered to ensure that the project has no adverse impact on the Mornington Peninsula Shire Council's ability to meet their community carbon target.
- [19] If closed loop operations are extended, or required due to other factors or project requirements, then the expected operational carbon emissions will rise significantly.

1.7 Declaration

- [20] I have made all the enquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.



Ed Smith, Managing Director, Northmore Gordon

2 Review of greenhouse gas inventory

2.1 Use of greenhouse reporting standards

2.1.1 International Standards Organisation ISO

- [21] The greenhouse gas impact assessment methodology in Technical Report F followed the principles set out in ISO 14064-1: 2006 Greenhouse gases – Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals. An updated version of ISO 14064:1 was released in 2018 and one of the key changes was: ‘A new approach has been introduced to reporting boundaries, facilitating the inclusion and expansion of indirect emissions. This change is a response to a growing number of organizations that are recognizing the importance and significance of indirect emissions and are developing GHG inventories that include more types of indirect emissions across the value chain.’
- [22] Operational boundaries has been renamed reporting boundaries and specifies that ‘the organisation shall define and explain its own pre-determined criteria for significance of indirect emissions, considering the intended use of the GHG inventory. Whatever the intended use is, criteria should not be used to exclude substantial quantities of indirect emissions.’
- [23] Section 5.2.4 specifies the GHG inventory categories that emissions should be aggregated into at the organisational level. Specifically:
- a) Direct GHG emissions and removals
 - b) Indirect GHG emissions from imported energy
 - c) Indirect emissions from transportation
 - d) Indirect emissions from products used by the organisation
 - e) Indirect emission associated with the use of products from the organisation
 - f) Indirect emissions from other sources.
- [24] The inventory covers all emissions from 5.2.4 except items (e) downstream emissions from the use of the natural gas and (f) upstream emissions from the extraction and liquefaction of natural gas.

[25] Annex H of the ISO 1406:2018 standard provides further guidance for the process of identifying significant indirect GHG emissions. The intended use of the GHG inventory (in this case the greenhouse gas impacts of the Project) needs to consider:

- a) Relevance – which indirect emissions need to be selected in order to meet the needs of the intended user.
- b) Completeness – which indirect emissions need to be included to ensure all relevant emissions are calculated.
- c) Consistency – which emissions need to be included to ensure that meaningful comparisons can be made.
- d) Accuracy – are the inclusion of the indirect emissions required to ensure that the inventory is reasonably free from uncertainty.
- e) Transparency – whether the exclusion of the indirect emissions without disclosure or justification impedes the intended users from making decisions with reasonable confidence.

[26] Annex H recommends criteria to evaluate significance of the indirect emissions. These include the magnitude of the indirect emissions and sector specific guidance. Sector specific guidance is addressed in 2.1.2 and section 2.1.3.

[27] Scope 3 emissions of the Project are estimated in Technical Report G at 1.3Mt for upstream emissions (in the lowest case) and 8 Mt for downstream emissions. These are significant when compared to the calculated inventory of 459,620 t CO₂-e pa in open loop mode and 640,190 tCO₂-e in closed loop mode. It can be concluded that the exclusion of these substantial scope 3 emissions is not in keeping with the intent of the standard as outlined in paragraphs [22], [23], [24], [25] and [26].

2.1.2 Greenhouse Gas Protocol

[28] Estimation of greenhouse gas emissions during construction and operation of the Project were stated as being prepared in accordance with the principals of the *Greenhouse Gas Protocol* (GHG Protocol). Under the current GHG Protocol (2015) the organisational boundary can be set either by equity share approach or control approach.

- [29] The Project has taken the control approach however it is current practice to report both equity share and control approach emissions. BP is cited as an example in the GHG Protocol and BP currently reports both equity share and operational emissions.
- [30] IPIECA is the global oil and gas industry association for advancing environmental and social performance. Members include the world's largest oil and gas companies such as BP, Shell, Chevron, TOTAL, ExxonMobil. The IPIECA Sustainability reporting *guidance for the oil and gas industry March 2020* state with respect to the application of GHG Protocol "Of the 15 categories of Scope 3 emissions defined in this standard, Category 11 'Use of sold products' is the most relevant to the oil and gas industry."
- [31] The EES states that The Project has no ability to influence the end-use consumption of the gas. In addition, the emissions associated with the consumption of this gas would represent Scope 1 emissions for the entity that consumes the gas and including them in this inventory would lead to double counting of these emissions as cautioned against by the API (2009) Compendium of GHG Emissions Methodologies for the Oil and Natural Gas Industry. The API (2009) reference to double counting is outdated and current industry practice includes downstream emissions in greenhouse gas inventories. The GHG Protocol divides emissions into Scope 1, 2 and 3 to specifically avoid the double counting issue.

2.1.3 Australian industry practice

- [32] AGL reports on Scope 3 upstream and downstream emissions from natural gas sold to end users in its 2020 reporting suite¹.
- [33] There is a proposed coal-seam gas supply project in Narrabri, NSW that is currently undergoing assessment under the NSW equivalent of an EES. The Environmental Impact Statement – Greenhouse Gas Assessment includes Scope 3 downstream emissions from the use of gas in the emission inventory. Upstream emissions are already included as scope 1 emissions for the Narrabri project.

2.2 Upstream emissions

- [34] In Technical Report F, it is estimated that the annual emissions associated with the production of 160PJ of LNG are 1.3 Mt CO₂-e. This calculation assumes LNG is sourced in Qatar, which has a lower emission factor than Australian sourced LNG. Upstream LNG emissions should to be calculated for multiple LNG source countries under the precautionary principle, including differences from transportation of LNG.

¹<https://www.2020datacentre.agl.com.au/environment/greenhouse-energy/energy-supply-greenhouse-gas-footprint>

- [35] Under the Ministerial Guidelines for Assessment of Environmental Effects under the Environmental Effects Act the EES (p15) the 'no project scenario' provides a baseline for describing the potential environmental effects from a project. The 'no project' scenario sets the current and anticipated conditions if the project did not proceed.
- [36] The Australian Energy Market Authority 2020 Integrated System Plan states that 'southern Australia will need to either develop new local sources (and pipeline infrastructure), progress liquefied natural gas (LNG) import terminals or address pipeline limitations from northern Australia.' It is feasible that under a 'no project' scenario that gas requirements may be met from existing sources only. The key GHG differences between natural gas supplied from existing sources and LNG are the emissions from liquefaction and transportation. Scope 3 emissions from transportation have been included in the inventory but Scope 3 emissions from liquefaction have not. Scope 3 emissions from liquefaction should be included in the EES to fairly compare the Project to a 'no project' scenario.
- [37] Gas from LNG sources have significantly higher lifecycle emissions than other natural gas sources due to the emissions associated with liquefaction, transport and regasification processes. The decarbonisation benefits of the project use an emission factor that relates to electricity generated from existing natural gas sources, not LNG. Without the inclusion of these upstream emissions in the calculations the decarbonisation benefits of the project are probably overstated.

2.3 Downstream emissions

- [38] Draft evaluation objectives Table 1-1 relates to waste, specifically 'to minimise generation of wastes by or resulting from the Project during construction and operation, including accounting for direct and indirect greenhouse gas emissions.' My interpretation of this draft evaluation objective is consistent with that of Point Advisory. Namely that the objective can be considered having two components:
- a) 'To minimise generation of wastes by or resulting from the project during construction and operation'; and
 - b) '...including accounting for direct and indirect greenhouse gas emissions.'
- [39] With reference to the inventory, the indirect greenhouse gas emissions have not been adequately accounted for due to the absence of upstream and downstream emissions as previously stated.
- [40] Chapter 11 Greenhouse Gas and Technical Report F of the EES both estimate the emissions associated with the commercial and residential end use of natural gas equivalent to the project's highest possible annual supply of 160PJ are 8 million tonnes

of CO₂-e per annum. Using the NGER factors for natural gas the emissions are in fact 8.248 million tonnes of CO₂-e. The difference of 248,000 tonnes may be attributed to rounding, however this difference is significant when comparing these emissions to the operational emissions stated in Table 11-4, 11-5 and 11-6. The rounding error is over 50% of the calculated inventory in open loop mode.

2.4 Emissions offsets

- [41] Technical Report F recommended consideration of purchasing of certified carbon offsets to compensate for the long-term impact of the project's greenhouse gas emissions (MM-GG09). This mitigation measure was not included in Chapter 11 Greenhouse Gas or Chapter 25 Environmental Management Framework.
- [42] The Mornington Peninsula Shire Council has adopted a target of net zero emissions across the Peninsula by 2040, including an interim target of reducing community emissions by 30% by 2025, 65% by 2030 and 80% by 2035. The 2018 Mornington Peninsula community inventory was reported as 2.07 million tonnes of CO₂-e. This includes scope 1 and 2 emissions for residents and businesses (including industrial processes) within the Shire boundaries. The operational scope 1 and 2 emissions from this project would potentially increase emissions in the Shire by 12% in closed loop mode and 3% in open loop mode. This is a significant increase for the Shire inventory and as such it would be considered appropriate to offset the operational emissions to assist the achievement of the existing carbon targets.
- [43] Purchase of these offsets will also be in line with achieving the Victorian target of zero emissions by 2050 as stated under the Climate Change Act 2017 (Vic).

2.5 Operational emissions

- [44] The proposed operating scenario is for open loop regasification mode as default and combined loop only when the seawater intake temperature is close to 10°C or below. There is an assumption that combined loop mode may only be used for 30 days or less per year.
- [45] Technical report F estimates the combined loop mode adds 17,370 t CO₂-e if the combined loop is obliged to operate for 30 days. This is equivalent to >30% increase on the total annual emissions in open loop mode.
- [46] There may be other factors that impact the operational mode of the FSRU. Any operational decision that is taken, or external obligation that needs to be met, that increases the requirement for combined loop mode, or a full switch to closed loop mode, will significantly increase expected scope 1 operational emissions.