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To: Senate Standing Committees on Environment and Communications

## **RE: Senate Standing Committees on Environment and Communications**

The Institute for Energy Economics and Financial Analysis (IEEFA) thanks the Senate Standing Committees on Environment and Communications for the opportunity to submit these comments in connection with its inquiry into the Middle Arm Industrial Precinct.

Based in Asia, Australia, Europe and North America, IEEFA's energy finance analysis team researches and analyses issues related to energy markets, trends, and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.

This submission is authored by Thomas Sanzillo, IEEFA's Director of Financial Analysis, who has extensive expertise in the analysis of the oil, gas, petrochemical and coal sectors, as well as government financial systems, including company and credit analyses, facility development, oil and gas reserves, and stock and commodity markets. As first deputy comptroller for the State of New York, he oversaw the finances of 1,300 local government units, more than US\$200 billion in state and local municipal bond programs, a US\$156 billion global pension fund and administration of a one-million-member retirement system.

Regards

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IEEFA released an analysis of the Middle Arm Industrial Precinct project on 14 June entitled *Middle Arm Gas and Petrochemicals Hub: Combination of problems makes it unprofitable for business and a red flag to the public*.<sup>1</sup> Its findings are summarised below, organised by the Terms of Reference set forth for the Committees' inquiry.

The Middle Arm Industrial Precinct project has multiple flaws. Its market assumptions are overly optimistic; the infrastructure needs will stress federal and local budgets, and the plan is misaligned with global efforts to curtail greenhouse gas emissions. Infrastructure challenges would require a level of support that the combined balance sheets of Australia's government and several corporations cannot afford. A new supply of natural gas is not a sufficient financial incentive to offset the costs of new roads, pipelines, ports, water systems, power plants, agricultural and petrochemical facilities, housing, schools and community facilities.

The fatal flaw of the project is its dependence on fossil fuels. Once the world's leading source of energy and financial growth, the era of coal, oil and gas leadership is on the wane. Australia, which benefited from the growth of fossil fuel use, now faces historically unprecedented competition. The plan's central reliance on natural gas makes it prohibitively speculative.

Taken alone, a single risk of the project, while substantial, might be manageable. Cumulatively, the risks create a daunting set of problems that lower the potential for profit. The plan may create fiscal imbalances among the states and territories and budget pressures in the Northern Territory (NT). The risks will fall on local communities, who cannot afford to bear them, and on taxpayers.

#### **A. The development of Darwin's Middle Arm Industrial Precinct, the role and funding intentions of the Northern Territory and Commonwealth Governments.**

Leading gas producers in the NT are financially unprepared to address the large investments needed to explore, drill and distribute the gas, and to support the infrastructure needed to establish a hub for liquefied natural gas (LNG), agricultural and petrochemical development.<sup>2</sup> Moving heavy equipment, for example, would be difficult due to road conditions. Australia's government and its partner companies would need to create a new system of roads, pipelines, rail, terminals and off-taker industries. Government and corporate resources are unlikely to be mobilised at sufficient levels and over the period necessary for the plan to succeed. Policy changes to address significant infrastructure issues in education, environment, transportation, water management and electricity regulation are too numerous to be practical.

Attempts to subsidise the Middle Arm Industrial Precinct development plan would strain existing fiscal arrangements between the federal government and the states and territories in ways that are unsustainable. States and territories rely on a revenue stream that includes the annually assessed distribution of federal dollars through revenue sharing. The formula used by the Commonwealth Grants Commission seeks to balance economic and population factors, property value, capital spending and other costs with annual tax collections. The Middle Arm plan requires an extended period of heavy financial commitments that is likely to place pressure on the current balance of intergovernmental transfers to states and territories.<sup>3</sup>

The NT government's economic reconstruction plan anticipates a 10-year infrastructure package "quarantined" from the Goods and Services Tax (GST) process.<sup>4</sup> Such quarantined expenditures may yield an increase in Commonwealth payments to the NT, and a decrease in the annual GST amount available for the NT budget.<sup>5</sup> Questions of a long-term package for the plan will likely



affect budget negotiations, and the impact on the NT's annual budget remains to be seen. The government has been made aware that some aspects of the project are too speculative to be supported by public funds.<sup>6</sup>

It is beyond the scope of IEEFA's submission to fully analyse the plan's impact on Australia's national budget, but the short- and long-term revenue and expense implications are likely to be material to current and future intergovernmental budgets.

### **B. Likely/intended future uses of the site; industries/supply chains that would benefit.**

The plan to extract natural gas from the Beetaloo Basin depends on hydraulic fracturing (fracking), which has proven a poor investment elsewhere and substantially destroyed investor value in the U.S.<sup>7</sup> With a weak business sector at its core, off-taker industries will lack a stable partner to produce a reliable, cost-competitive supply of natural gas.

The robust LNG export market the Middle Arm plan anticipates is unlikely to materialise.<sup>8</sup> LNG exports have spurred increased consumption of Australian natural gas, but conditions are eroding market fundamentals that once favoured Australia. The markets will be saturated with new LNG supply capacity through 2027.<sup>9</sup> The largest contributor to the Asian market will be Qatar, with several new projects coming online in 2026 and 2027.<sup>10</sup> Supply expansion is affecting forward pricing indexes. The Japan Korea Marker (JKM) futures curve, for example, has declined from \$18 per million metric British thermal units (mmbtu) in December 2023 to a low of \$8.20 in 2028.<sup>11</sup>

Australia's natural gas cost structure puts it at a competitive disadvantage compared with some of the world's leading suppliers, as shown in a Qenos study submitted to the Australian Competition and Consumer Commission in 2021.<sup>12</sup>

Australia's chief export markets—China, Japan and South Korea—are expected to slow or reduce LNG imports. The International Energy Agency's (IEA) China outlook estimates LNG growth will slow from 12% (compound annual growth rate, or CAGR) from 2010-2021, to 2% for most of the next decade. China has contracted long term for substantial volumes, initiated new domestic projects, and increased reliance on pipelines. The IEA estimates the contracts and new projects will more than cover China's demand requirements through 2035.<sup>13</sup>

International disruptions (COVID-19, invasion of Ukraine) spurred a decline in oil and gas industry production and temporary rise in prices starting in 2020. Since early 2022, the market adjusted. The prices decline was precipitous. In the first quarter 2023, the oil and gas sector struggled to stay above last place in the stock market. For most of the second quarter, it was in last place.<sup>14</sup>

These trends will undermine the financial success of the Beetaloo and Barossa gas investments.

Natural gas development costs in the NT are high. The Territory is at a disadvantage against robust competition globally and within Australia. Off-taker industries anticipated as partners (hydrogen, ammonia, urea, methane, manufacturing and mineral processing) are unlikely to locate in the NT. The Australian government's 2019 strategic vision for hydrogen production nationwide does not include the NT as a priority. Factors driving selection of hydrogen investment priorities include proximity not only to gas resources but also to subsurface storage, pipelines and water. The Department of Climate Change, Energy, the Environment and Water



rated opportunities in the Carnarvon Basin, the Gippsland Basin, offshore Western Australia and regions near the Cooper and Surat Basins as most favourable.<sup>15</sup>

The plan assumes robust domestic demand for natural gas, yet several factors suggest demand will not grow at rates sufficient to support new supply assets. Australia's domestic gas demand is likely to slow or even decline. It has dropped by 14% since 2014, and gas use for electric power has dropped by 43%. Further reductions are likely. Price volatility is expected to continue, and efforts to cut greenhouse gas emissions will build.<sup>16</sup> The Australian Energy Market Operator (AEMO) predicts domestic gas use in central and eastern Australia will drop by 36% to 52% by 2042.<sup>17</sup> It forecast a 16% rise in domestic demand (excluding LNG) in its base scenario for western Australia,<sup>18</sup> but that is materially smaller than the projected decrease in central and eastern Australia.

Development of a gas field and hub, particularly one dependent on costly carbon capture technology, requires a permanent commitment of government policy and financial support.

### **C. Any climate, environmental, health or cultural heritage impacts from developing the harbour and the industries seeking to establish themselves at Middle Arm.**

Regulations are not likely to protect the Australian public against the health risks of fracking. In the U.S., such mandates failed. Pollution of drinking water led to civil and criminal legal actions.<sup>19</sup>

The project's reliance on carbon capture and sequestration (CCS)—a costly, unproven technology—is unrealistic.<sup>20</sup> The Department of Industry, Planning and Logistics (DIPL) Profile Results provides strong support for CCS.<sup>21</sup> However, IEEFA has published a series of papers on the topic finding that the technology has not met its goals.<sup>22</sup> A recent IEEFA report finds CCS does not transform natural gas-based blue hydrogen into clean hydrogen.<sup>23</sup> Also, the costs for a CCS system, including storage, are prohibitively high. It appears CCS would require long-term subsidies to be broadly viable.<sup>24</sup> Governments have provided subsidies for CCS demonstrations or early-stage development,<sup>25</sup> but a critical question is whether CCS would require permanent public subsidies. IEEFA urges the Senate to investigate this technology thoroughly.

Extraction and transport of natural gas typically is plagued by emissions of methane (at least 84 times more powerful as a greenhouse gas than CO<sub>2</sub> over a 20-year period). Assertions about the efficacy of methane leak prevention must be evaluated based on actual measurements, not model estimates. Several studies, for example, demonstrate that the U.S. model for estimating methane leakage falls well short of the results of observations in the field.<sup>26</sup>

IEEFA's report details documented health risks to communities from fracking operations and the risks to local availability of water for other uses. Comparing water use in fracking operations to other water uses is misleading if it does not consider the water essentially lost from the locally available water cycle. IEEFA's report cites estimates that 50% to 95% of water used in fracking is lost in the underground formation or otherwise removed from the local usable-water cycle.<sup>27</sup>

Expanding natural gas drilling conflicts with Australia's net-zero policy. To meet targets for limiting global warming to 1.5°C by 2050, the IEA finds no new gas fields should be developed.<sup>28</sup> Natural gas is not a climate solution—it's a serious climate *problem*. Given the transition speed needed to forestall a global climate crisis, ramping up gas consumption is counterproductive.



The argument that natural gas is a valid transition fuel rests on weak assumptions. Natural gas transport leaks methane, which can erase most, if not all, of the emissions saved by replacing coal. China is not substituting natural gas for coal; it is burning more coal *and* more natural gas.

Support for natural gas as a transition fuel is based in part on concerns about reliability. New storage and transmission grid investments, however, can improve reliability of renewable energy. Also, fears of long-term carbon lock-in are reasonable. There is nothing temporary about power plants. They are long-term capital investments. In 2007, the U.S. decided to build 150 new coal plants. Billions in financial decisions were made, but by 2017 the plans were dead. Innovation in renewable energy and gas drilling had reshaped the market, with a revolutionary impact. Had the U.S. locked in 150 costly coal plants, it would have been a major financial blunder.

But the story does not end there.

Natural gas prices are volatile and cannot remain low forever.<sup>29</sup> Market economics demands the low-cost, long-term, **stable** choice. In the power sector, the long-term bet is renewable energy. An upcoming IEEFA report reviews the sustainability plans of major integrated oil and gas and individual petrochemical companies, and finds they intend to produce and use less natural gas as a petrochemical feedstock and energy source for production. Most plan to replace, or already have replaced, natural gas with electricity for production. They are testing blends of natural gas and biofuels or elimination of natural gas in producing plastics and a host of specialty chemicals. Large-scale recycling is being developed to reduce use of natural gas and naphtha in production.

Natural gas investment on the scale of the Middle Arm project requires robust growth patterns that exceed annual Gross Domestic Product (GDP) rates. ExxonMobil ties its petrochemical investment strategy to growth rates up to 2% above annual GDP, for example.<sup>30</sup> A reduction in growth of even one percentage point can be the difference between success and failure. Trends in the power, transport and petrochemical sector suggest natural gas use will decline.<sup>31</sup> When a fossil fuel investment fails, as several of ExxonMobil's have, for example, the loss is limited to shareholders, but governmental support for Middle Arm entails a significant risk to taxpayers.

The report notes both Moody's and Standard & Poor's have warned the oil, gas and petrochemical sector that large infrastructure investments of the type anticipated at Middle Arm are a credit risk. Significant cash amounts are tied up for long, increasingly unpredictable periods, often resulting in loss of off-taker and other critical financial support. Moody's has altered its credit perspective on such projects and requires greater evidence of investment viability before offering supportive credit commentary. Standard and Poor's has gone further, issuing a concern for the future of traditional petrochemical hubs and indicating that improved credit ratings increasingly lie with investments in growing industries driven by sustainable principles.

**D. The process and implications of the proposed strategic environmental assessment:**

*The above discussion of impacts is relevant to this Term of Reference.*

**E. Engagement/advocacy by industries in the Middle Arm proposal: IEEFA did not research the industry outreach and provides no comment on this topic.**

**F. Any other related matters.**

Ultimately, the costs of the Middle Arm Industrial Precinct project will probably fall on the people least likely to be able to afford it—Australian taxpayers.



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- <sup>1</sup> IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. The report is attached to these comments.
- <sup>2</sup> *Ibid.* Pages 33-38.
- <sup>3</sup> *Ibid.* Pages 24-25.
- <sup>4</sup> Territory Economic Reconstruction Commission (TERC). [Territory Economic Reconstruction Commission Final Report](#). November 2020. Page 92.
- <sup>5</sup> Commonwealth Grants Commission. [GST Revenues Sharing Relativities](#). 14 March 2023. Pages 31-32.
- <sup>6</sup> Since release of IEEFA's report, we have reviewed a document that provides a scoring of proposed infrastructure projects by Ernst & Young for the Department of Information, Planning and Logistics (DIPL). This submission cites material from 12.3 App. C – Infrastructure Profile MCA-1 and MCA 2 Results, March 2023 (DIPL Profile Results). The analysis suggests it is unwise for the government to finance an LNG pipeline due to market risks.
- <sup>7</sup> IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Pages 29-30.
- <sup>8</sup> The IEA projects an LNG glut will develop in the later part of this decade. The result will be diminished market opportunities. IEA. [World Energy Outlook 2023](#), October 2023. Page 21.
- <sup>9</sup> IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Pages 16-17.
- <sup>10</sup> *Ibid.* Page 50.
- <sup>11</sup> CME Group. [LNG Japan/Korea Marker \(Platts\) Futures](#). 11 April 2023. Also see IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Page 18.
- <sup>12</sup> Qenos, Orica and Incitec Pivot Limited. [Appendix – Submission to ACCC LNG Netback Price Series Review](#). May 2021. Page 17. Also see IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Pages 17-18.
- <sup>13</sup> IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Page 18. Also see: IEA. [Outlook for gaseous fuels](#). October 2022.
- <sup>14</sup> *Ibid.* Pages 30-33.
- <sup>15</sup> DCCEEW. [Australia's Hydrogen Strategy](#). 2019. Page 13. Also see IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Pages 18-19.
- <sup>16</sup> IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Pages 23-24.
- <sup>17</sup> AEMO. [Gas Statement of Opportunities](#). March 2023. Pages 26.
- <sup>18</sup> AEMA. [WA GSOO figures data register](#). December 2022. Figure 9.
- <sup>19</sup> IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Pages 41-44.
- <sup>20</sup> *Ibid.* Pages 20-22.
- <sup>21</sup> See: DIPL Profile Results. Pages 12, 19, 56 and 62.
- <sup>22</sup> IEEFA. [Carbon Capture and Storage](#), (last visited 29 October 2023).
- <sup>23</sup> IEEFA. [Blue Hydrogen: Not Clean, Not Low-Carbon, Not a Solution](#). 12 September 2023.
- <sup>24</sup> *Energy & Environmental Science*. M. Bui, et al. [Carbon Capture and Sequestration: The way forward](#). 12 March 2018.
- <sup>25</sup> For example, see the United States Government Accountability Office (U.S. GAO). [Carbon Capture and Storage: Actions Needed to Improve Management of Demonstration Projects](#), (GAO-22-109511), 20 December 2021.
- <sup>26</sup> IEEFA. [Middle Arm Gas and Petrochemicals Hub: Combination of Problems Makes It Unprofitable for Business and a Red Flag to the Public](#). June 2023. Pages 27-28.
- <sup>27</sup> *Ibid.* Pages 44-45.
- <sup>28</sup> *Ibid.* Page 27.
- <sup>29</sup> The prices skyrocketed from 2021/2022 due to the Ukraine invasion and post-pandemic recovery. Australian Energy Regulator. [Wholesale Statistics: Gas Market Prices](#). Accessed 29 October 2023.
- <sup>30</sup> Exxon Mobil. [2022 Investor Day](#). 2 March 2022.
- <sup>31</sup> IEA. [After peak in mature markets global gas demand is set for slower growth in coming years](#). 10 October 2023.