

# Emissions exposé:

Australia's biggest  
polluters are emitting  
more than approved  
and getting away  
with it 



AUSTRALIAN  
CONSERVATION  
FOUNDATION

# One in five fossil fuel companies have **significantly exceeded approved emissions** according to new research by the ACF Investigations Unit and students from the Australian National University.

## The Australian Conservation Foundation (ACF) and a team of Australian National University (ANU) undergraduate students have researched whether fossil fuel companies are emitting the amount of scope 1 greenhouse gas (GHG) emissions they said they would when seeking approval.

We found that estimated emissions during the approval phase is not a good predictor of actual emissions.

We found that two in three fossil fuel projects were wrong about their estimates by more than 25%. In some scenarios, this includes projects that actually emitted less than anticipated.

But most concerning, we found that one in three fossil fuel projects are emitting more than estimated during the approval phase.

It is possible some of the fossil fuel companies attempted accuracy when seeking approval.

In some circumstances, we found the extra emissions could be explained by changes to the global warming potential (GWP) of methane or the law of averages.

But alarmingly, we found that one in five fossil fuel projects has been emitting significantly more GHG, and we could not explain the excess emissions with valid reasons.

Of the fossil fuel projects that are emitting less than expected, we could not find any examples in which the lower emissions are a result of deploying mitigation technology, or an overestimate when seeking approval. Most of the projects were either closed or operating under capacity.

One of the greatest problems with the inaccuracies of estimated emissions is the information is used for the Environment Impact Statements (EIS) that currently inform Australia's national emissions targets.

It means Australia's projected emissions are based on inaccurate information and therefore any emission reduction targets are based on a gross underestimation of the amount of carbon actually entering the atmosphere.

Accuracy is paramount both during the estimated emissions phase and also the actual emissions phase once the project is up and running.

Only then can this country accurately set emission reduction targets based on credible information.

## What were the **details?**

Over-emitters were spread across the country and across fossil fuel project types (Figure 2).

Of the over-emitters, there are examples of companies getting their estimates significantly wrong.

In aggregate emissions over the study period, one of the worst offenders was Chevron's Gorgon project. It emitted 16 million tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) more than it anticipated (Figure 1).

In terms of inaccuracy, the worst estimators of emissions were:

- Origin's LNG Pipeline (emitting 1800-2000% of its estimate)

- Anglo American's Grosvenor mine (emitting 188-239% of its estimate)
- Whitehaven's Maules Creek coal mine (emitting 357-452% of its estimate)
- Whitehaven's Narrabri Underground coal mine (emitting 240-340% of its estimate) and
- MACH Energy's Mount Pleasant coal mine (emitting 145-255% of its estimate).

Significant over-emitters broadly fit into three categories: the gas industry, coal mines in the Bowen Basin (QLD) and coal mines in NSW. These will be discussed in more detail below.

## Estimated vs actual emissions

Total scope 1 emissions in the tCO<sub>2</sub>e, over the reporting period (2017-2020 unless noted).

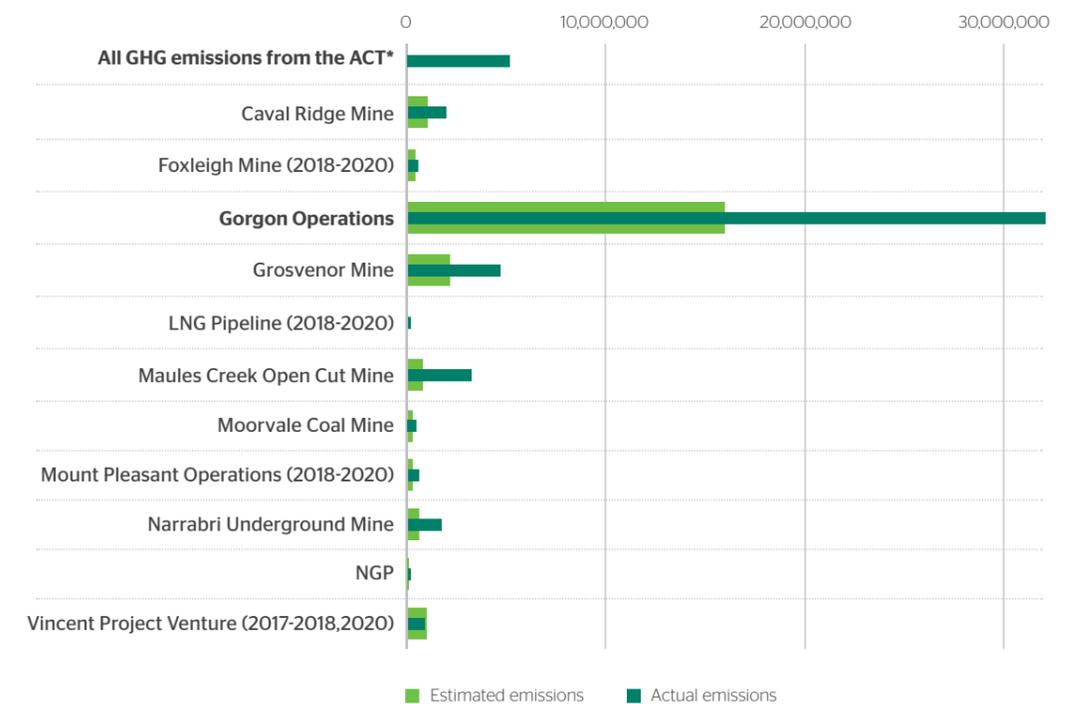


Figure 1. \*Data not disaggregated by scope.

Source: State and territory greenhouse gas inventories 2019: time series data. Downloaded from <https://www.industry.gov.au/data-and-publications/national-greenhouse-accounts-2019/state-and-territory-greenhouse-gas-inventories-data-tables-and-methodology#download-the-data-tables>



### Australia's worst over-emitting fossil fuel facilities

The location of each of the top ten over-emitting facilities. The size of the dot corresponds to the volume of excess emissions over four years of Safeguard reporting.

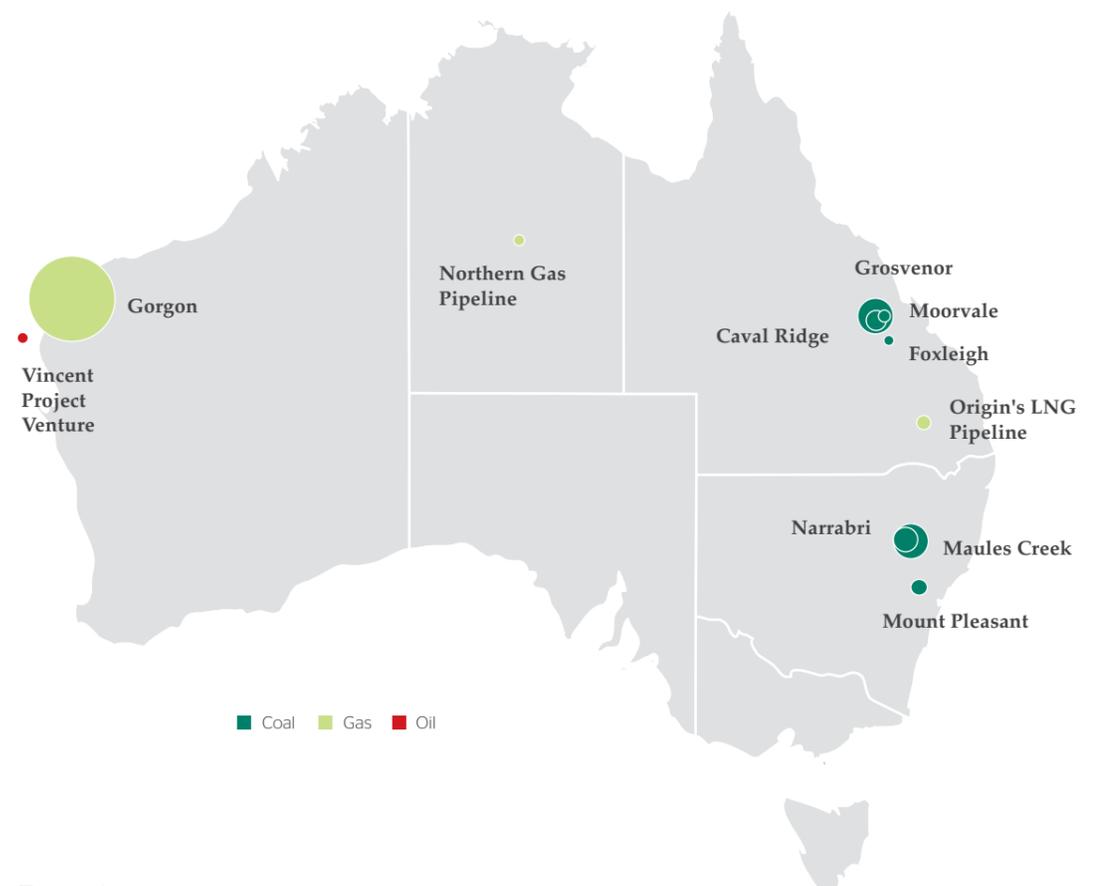


Figure 2

The Northern Gas Pipeline runs between Tennant Creek (NT) and Mount Isa (QLD). Origin's LNG Pipeline runs from CSG fields in the Surat and Bowen basins to the LNG facility on Curtis Island near Gladstone.

Source: ACF.

On average estimates are more accurate in more contemporary impact statements, but only marginally (Figure 3). Figure 3 shows that the projects that are the worst offenders with over-emitting are often highly inaccurate in their estimations, sometimes emitting two, three or twenty times as much.

### Trend of emissions estimation accuracy over time

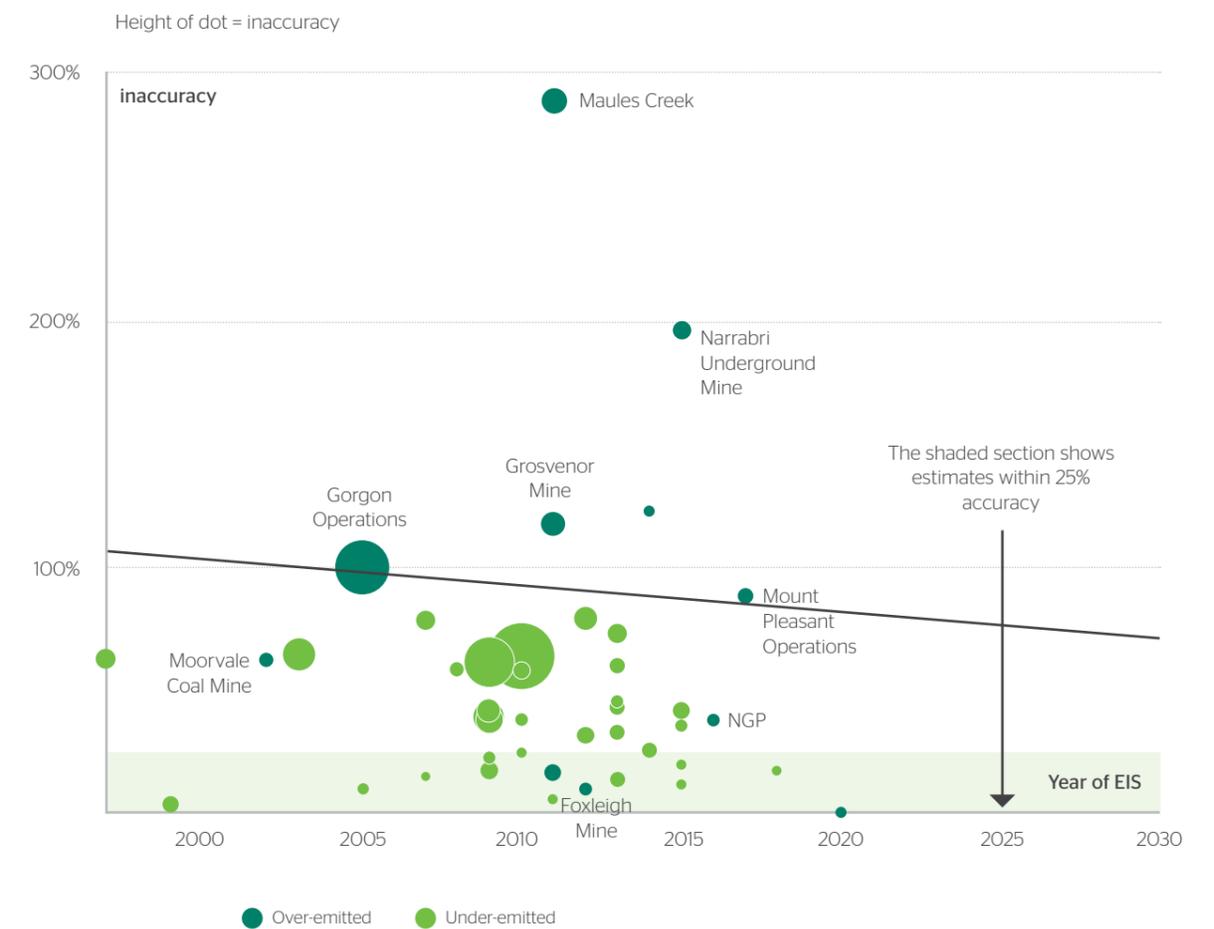


Figure 3

In order to visualise accuracy overall, for this graph underestimations and over-estimations are both represented with no positive values. Dots are scaled by the average annual volume of tCO<sub>2</sub>e that facilities under- or over-estimated by, but note that most of the "green" facilities (which emitted less than their approved estimations) were closed or operating under capacity.

Source: ACF

## The gas industry

**Recent studies conclude gas loses its climate benefits relative to coal when the leakage rate along the supply chain exceeds 2.7% of production.<sup>1</sup> This means if pipelines or other equipment spring a leak, and the amount of methane released is more than 2.7% of the methane (also known as “natural gas”) the project actually uses or sells, then gas is just as bad as coal in terms of heating our climate. And if the leaks are bad enough, gas could be much worse than coal.**

It is unclear whether the over-emitting by gas companies in this study is emblematic of the broader supply chain for these projects, but it certainly suggests the reality of gas projects is different from the touted climate benefits on paper. The worst two examples are Chevron’s Gorgon project and Origin’s LNG project. Others are Jemena’s Northern Gas Pipeline and Woodside’s Vincent oil and gas project.

Chevron’s Gorgon project was approved based on a requirement to sequester at least 80% of emissions from its offshore gas drilling over the first five years through Carbon Capture and Storage (CCS). In the 2020/21 financial year, only 68% of carbon released by the project had been “reinjecting” (that is, injected into the ground below Barrow Island).<sup>2</sup>

Assuming Chevron is beholden to the estimates that relied on CCS, emissions from the gas project ranged from 157% to 226% of annual emissions expected in its impact statement.<sup>3,4</sup> The excess emissions totalled 15,977,663 tCO<sub>2</sub>e.

Even using the estimate Chevron provided for the project without CCS, emissions were over the estimate in every single year of its non-CCS-operational period. Over these three years, it reported emissions at 115%, 135% and 134% of the estimated amount. Excess emissions in 2016/17 can be explained predominantly by changes to the GWP for methane, however excess emissions in 2017/18 and 2018/19 cannot.

This means the emissions at Gorgon have exceeded even the worst-case scenario described in Chevron’s EIS (Figure 4).

- <sup>1</sup> Storrow, B (5 May 2020) ‘Methane Leaks Erase Some of the Climate Benefits of Natural Gas’, Scientific American, accessed 1 December 2021. <https://www.scientificamerican.com/article/methane-leaks-erase-some-of-the-climate-benefits-of-natural-gas/>
- <sup>2</sup> Readfearn, G (12 November 2021) ‘Australia’s only working carbon capture and storage project fails to meet target’, Guardian Australia, accessed 1 December 2021. <https://www.theguardian.com/australia-news/2021/nov/12/australias-only-working-carbon-capture-and-storage-project-fails-to-meet-target>
- <sup>3</sup> page 198, WA EPA (Western Australia Environment Protection Authority) (2005) “Main Report: Vol II”, Draft Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Gorgon Development, WA EPA, Western Australian Government, accessed 1 December 2021. [https://www.epa.wa.gov.au/sites/default/files/PER\\_documentation/1496-ERMP-EIS-Main%20Report%20Volume%20II-HR.pdf](https://www.epa.wa.gov.au/sites/default/files/PER_documentation/1496-ERMP-EIS-Main%20Report%20Volume%20II-HR.pdf)
- <sup>4</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>



### Gorgon

Annual GHG emissions, tCO<sub>2</sub>e

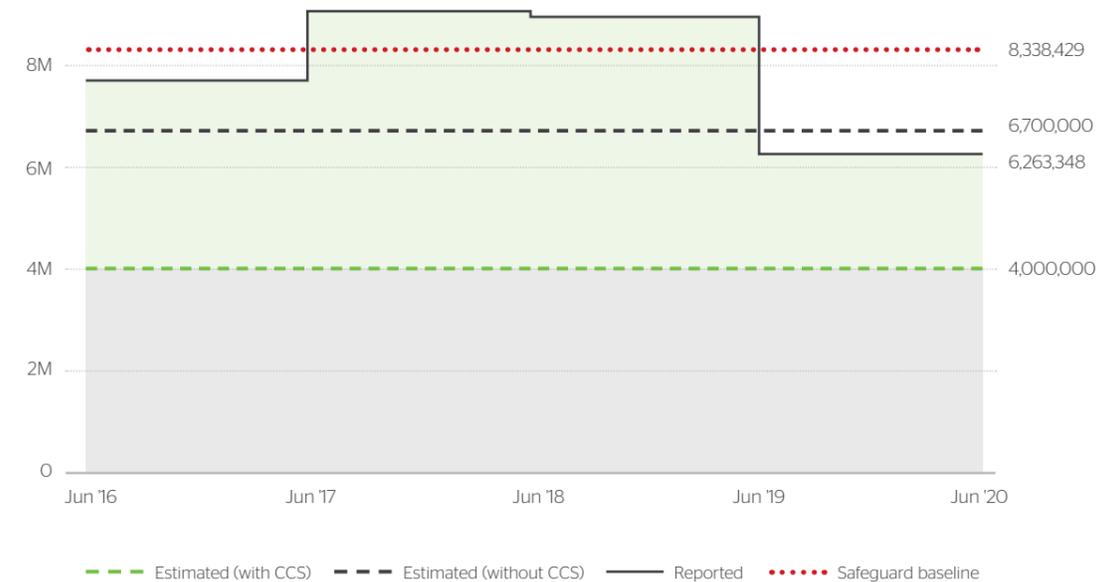


Figure 4

Chart: ACF Source: See detailed case study below.

Origin Energy's LNG pipeline is part of a broader joint venture gas project called APLNG. The maximum annual emissions at the pipeline were expected to occur in the second year, with 100,000 tCO<sub>2</sub>e expected to be released through land clearing and diesel consumption. After that, it was expected that annual average emissions would be 5,000 tCO<sub>2</sub>e.<sup>5</sup>

The APLNG project commenced in late 2015, with the first gas shipped in early 2016. Emissions reported for the pipeline over just three reporting years totalled 291,212 tCO<sub>2</sub>e, nearly eclipsing the 300,000 tCO<sub>2</sub>e emissions APLNG anticipated for the 33-year life of the project (Figure 5).<sup>6</sup>

## LNG Pipeline

Annual GHG emissions, tCO<sub>2</sub>e

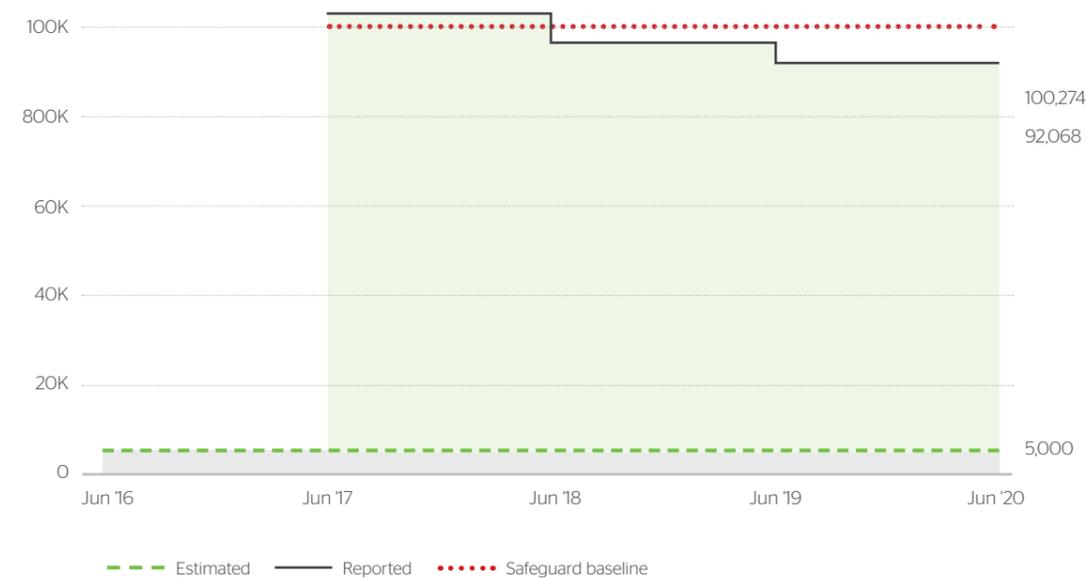


Figure 5

Chart: ACF Source: ACF, CER, EIS

Under the [safeguard mechanism](#), operators are not required to report facility emissions unless they exceed 100,000 tCO<sub>2</sub>e per year. After exceeding the 100,000 tCO<sub>2</sub>e threshold, Origin Energy entered a [three-year reporting period](#). It will not need to report in 2020/21 if its emissions are under 100,000 tCO<sub>2</sub>e.

Unless Origin's LNG pipeline once again emits 20 times its EIS estimate, we are unlikely to continue to see data from this project under the government's current reporting scheme.

This is despite the fact that, if the current trend continues, it is very likely to continue emitting just under 20 times its expected emissions.

## Coal mines in the Bowen Basin (QLD)

**There were several coal mines in the Bowen Basin that were among the worst over-emitters in our study. The mines were underground and open cut.**

The worst example of over-emitting was Anglo American's Grosvenor underground mine. Others are the BHP Mitsubishi Alliance (BMA) Caval Ridge open cut mine; Middlemount South, POSCO and Nippon Steel's joint venture Foxleigh open cut mine; and Peabody's Moorvale open cut mine.

In response to recent work health and safety issues, a number of problematic methane exceedances in the Bowen were investigated by the Queensland Coal Mining Board. It was recommended that additional drainage capacity be added beyond the maximum (suggesting, perhaps, that infrastructure was set up based on assumptions in the impact statements and that current methane concentrations were genuinely unexpected).<sup>7</sup>

The Board report's first finding was that

*Mining at an increased depth, where higher volumes of methane are present, and increased production rates, are both features of modern longwall mining. They present complex challenges for the management of methane in underground coal mines.*<sup>8</sup>

Deeper and older coal seams are known to be more methane-rich and deeper seams in the Bowen Basin are considered some of the most methane-rich in the country.

One of the mines in the Bowen Basin that had significant work health and safety issues related to methane was Anglo American's Grosvenor. Its methane issues are not isolated to health and safety concerns. Over the four reporting years in the study, Grosvenor was estimated in its impact statement to release 2,169,880 tCO<sub>2</sub>e. Grosvenor has instead emitted more than twice that — 4,710,236 tCO<sub>2</sub>e. This is 2,540,356 tCO<sub>2</sub>e (scope 1) more than its expected maximum (which included scope 2) (Figure 6).

Grosvenor Mine has a corresponding Emissions Reduction Fund (ERF) project which involves capturing methane and burning it for electricity generation. The project has generated 288,797 carbon credits between 2018 and 2021.<sup>9</sup> In addition to those credits, an energy company called EDL holds an

active contract with the Clean Energy Regulator from the November 2015 ERF auction for the delivery of 740,406 tCO<sub>2</sub>e of abatement over a seven-year period. The contract is worth roughly \$9 million.<sup>10</sup>

So far, EDL has sold 461,228 carbon credits to the government.<sup>11</sup> Based on the average price at auction in November 2015, ACF estimates this would have cost the taxpayer around \$5 million.

It is concerning that taxpayer money is being spent on abatement that is being far outstripped by excess emissions at Grosvenor. We will explain what this means in a policy context later in this report.

Despite Anglo American recently stating that "tackling climate change could not be more urgent" and the fact that Grosvenor is a loss-making mine, the company is committed to keeping the mine open with a view to long-term profitability.<sup>12</sup>

<sup>7</sup> page 7, Queensland Coal Mining Board of Inquiry (2020) Report Part 1, Parliament, Queensland Government, accessed 1 December 2021. <https://www.parliament.qld.gov.au/documents/committees/TRC/2020/Estimates2020/tp-11Dec2020-3.pdf>

<sup>8</sup> page 1, Queensland Coal Mining Board of Inquiry (2020) Report Part 1, Parliament, Queensland Government, accessed 1 December 2021. <https://www.parliament.qld.gov.au/documents/committees/TRC/2020/Estimates2020/tp-11Dec2020-3.pdf>

<sup>9</sup> CER (Clean Energy Regulator) (2021) 'Grosvenor 2 Waste Coal Mine Gas Power Station Project', CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId=%7B7F242924-BF02-45EE-A289-1ABCC954E9CE%7D&ItemID=676>

<sup>10</sup> Calculated based on the average price of ACCU at the November 2015 auction—\$12.25.

<sup>11</sup> CER (Clean Energy Regulator) (2021) 'Grosvenor Waste Coal Mine Gas Power Station', CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId=%7F242924-BF02-45EE-A289-1ABCC954E9CE%7D&ItemID=385>

<sup>12</sup> Creamer, M (26 April 2021) 'Tackling climate change could not be more urgent – Anglo American', Mining Weekly, accessed 1 December 2021. [https://www.miningweekly.com/article/tackling-climate-change-could-not-be-more-urgent-anglo-american-2021-04-26/rep\\_id:3650](https://www.miningweekly.com/article/tackling-climate-change-could-not-be-more-urgent-anglo-american-2021-04-26/rep_id:3650); Morrison, K (13 April 2021) 'Australia's Queensland coal exports hit four-year low', Argus Media, accessed 1 December 2021. <https://www.argusmedia.com/en/news/2204625-australias-queensland-coal-exports-hit-four-year-low>

<sup>5</sup> APLNG (2010) 'Volume 3: Gas Pipeline Chapter 14: Greenhouse Gases' Australia Pacific LNG Project EIS, APLNG, accessed 1 December 2021. [https://aplng.com.au/wp-content/uploads/2021/07/Vol\\_3\\_Chapter14\\_GHG.pdf](https://aplng.com.au/wp-content/uploads/2021/07/Vol_3_Chapter14_GHG.pdf)

<sup>6</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>



## Coal mines in NSW

**The final category of projects among our worst over-emitters is coal mines in NSW. There are three examples in this category, and each tells an interesting story: Whitehaven’s Maules Creek and Narrabri mines, and MACH Energy’s Mount Pleasant mine.**

Over four reporting years, Whitehaven Coal has emitted approximately 16.5 years’ worth of the emissions estimated for the life of the Maules Creek mine. Between 2016 and 2020, reported emissions were 3.6-4.5 times what was estimated (Figure 7)<sup>13,14</sup>

In 2019, Whitehaven reported that emissions intensity across its portfolio had been getting incrementally worse for four years in a row, which it “attributed to an increase in fugitive emissions related to increased ROM [run-of-mine] coal extraction”.<sup>15</sup>

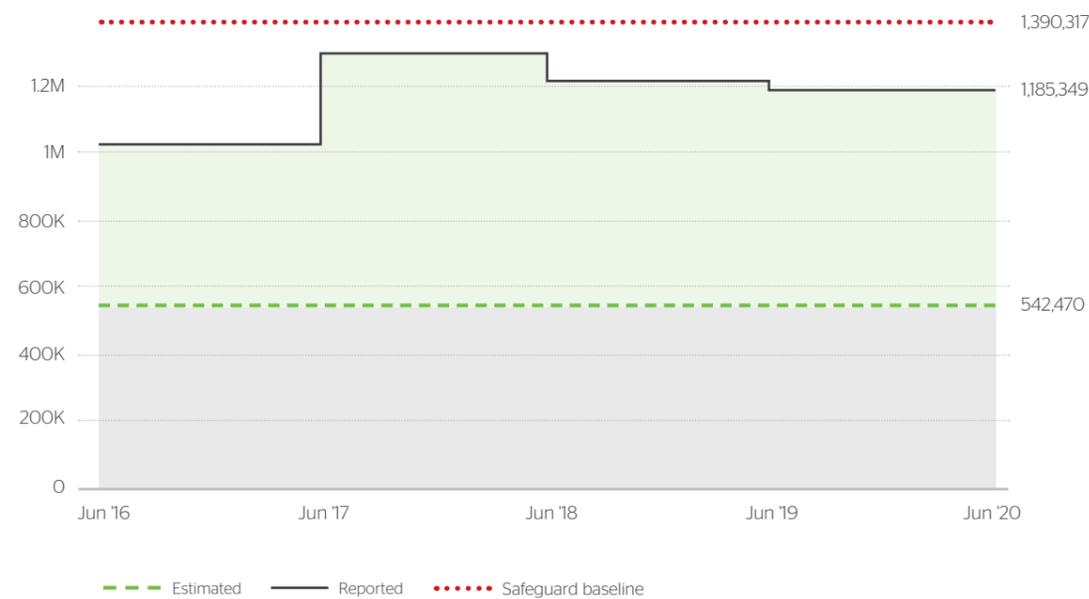
<sup>13</sup> PAE Holmes (2011) ‘Air Quality Impact Assessment’, Maules Creek Coal Project Environmental Assessment, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Environmental%20Assessments/MCC-Environmental%20Assessment-Appendix%20F%20-%20Air%20Quality%20Impact%20Assessment%20Part%203.pdf>

<sup>14</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

<sup>15</sup> page 6, Whitehaven Coal (2020) ‘Environment’, Sustainability Report 2020, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/wp-content/uploads/2020/09/Whitehaven-Coal-Sustainability-Report-2020-Environment.pdf>

### Grosvenor Mine

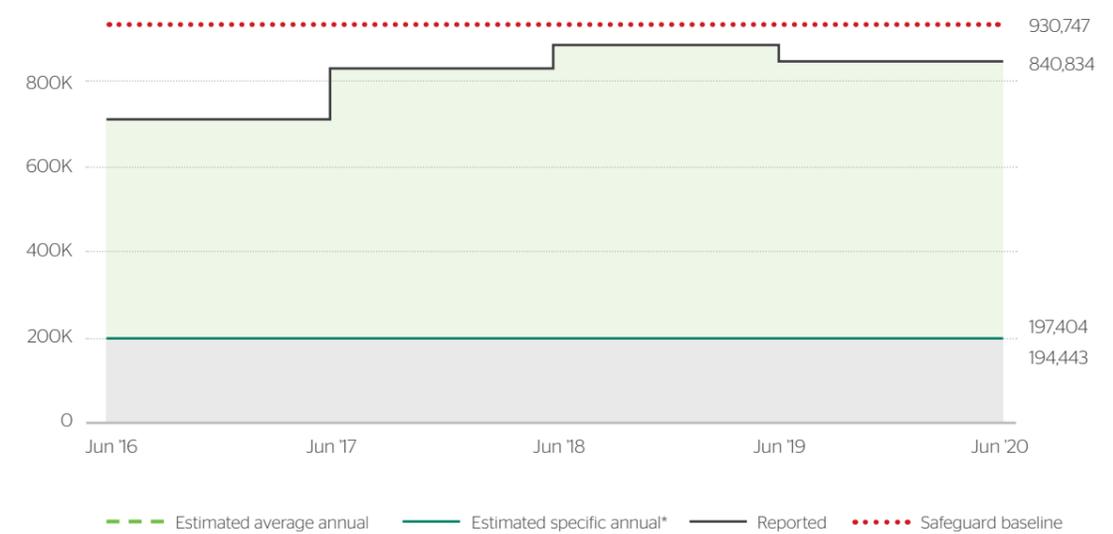
Annual GHG emissions, tCO<sub>2</sub>e



**Figure 6**  
Chart: ACF Source: See detailed case study below.

### Maules Creek Open Cut Coal Mine

Annual GHG emissions, tCO<sub>2</sub>e



**Figure 7**  
\*Year-specific estimates are based on summing the individual scope 1 emissions for each category for each year, but as the graph shows, they are very close to the estimate average.

Chart: ACF Source: See detailed case study below.

At Narrabri underground coal mine, Whitehaven’s actual emissions were either double or triple the estimate (ranging from 2.4 to 3.4 times the anticipated amount) (Figure 8).<sup>16,17</sup>

In four years, the mine has emitted 1,782,696 tCO<sub>2</sub>e. This is 11 years’ worth of emissions at the mine.

In its annual reviews of the mine’s performance against the impact statement, Whitehaven states that the additional emissions are a result of “additional drainage from the goaf circuit, which is attributable to higher gas concentrations in the coal than [sic] has been previously encountered.”<sup>18</sup>

A greenhouse gas minimisation plan for Narrabri underground states that the installation of Ventilation Air Methane (VAM) oxidation units would be feasible when taking into account the carbon price.<sup>19</sup> When this plan was written, the Rudd and Gillard Governments’ Carbon Pollution Reduction Scheme (CPRS) was yet to come into effect, but was expected to be in effect by July 2012.<sup>20</sup>

In February 2020, an independent environmental audit of the mine stated the methane content is too low for VAM oxidation units:

*As noted in the revised [Greenhouse Gas Minimisation Plan], currently with [Office of Environment and Heritage] for review the concentrations required for VAM cannot be <0.2% methane. Current levels in the ventilation airstream are 0.028%.<sup>21</sup>*

This is despite the 2012 greenhouse gas minimisation plan stating that VAM oxidation units were feasible and Whitehaven’s annual reviews stating that there was a higher gas concentration in the seams than anticipated.

The audit also noted that no oxidation units had been established at the mine because they were no longer considered feasible, stating: “the latest Emissions Reduction Fund reverse auction price for tCO<sub>2</sub>e would mean a payback period of >40 years.”<sup>22</sup>

The implications of climate policy in the context of our findings are discussed later.



<sup>16</sup> Resource Strategies (2015) ‘Appendix E Air Quality and Greenhouse Gas Assessment’, Narrabri Mine Modification 5 Environmental Assessment, NSW Government, accessed 1 December 2021. [https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP08\\_0144-MOD-5%2120190708T035446.931%20GMT](https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP08_0144-MOD-5%2120190708T035446.931%20GMT)

<sup>17</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

<sup>18</sup> Whitehaven Coal (2021) Narrabri Mine 2020 Annual Review, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20and%20Compliance/Annual%20Reviews/NAR-Annual%20Review%202020.pdf>

<sup>19</sup> page 16, SLR Consulting (2012) Narrabri Mine Greenhouse Gas Minimisation Plan Stage 2 Longwall Project, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20and%20Compliance/Environmental%20Management%20Plans,%20Strategies%20and%20Programs/NAR-MP-Greenhouse%20Gas%20Minimisation%20Plan.pdf>

<sup>20</sup> page 26, PAE Holmes (2011) ‘Air Quality Impact Assessment’, Maules Creek Coal Project Environmental Assessment, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20and%20Compliance/Environmental%20Assessments/MCC-Environmental%20Assessment-Appendix%20F%20-%20Air%20Quality%20Impact%20Assessment%20Part%203.pdf>; ABC News (2014) ‘Carbon Tax Timeline’, ABC News, accessed 1 December 2021. <https://www.abc.net.au/news/2014-07-10/carbon-tax-timeline/5569118>

<sup>21</sup> page 13, McKay H and Gleadhill P, ERM (2020) Independent Environment Audit 2019, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20and%20Compliance/Independent%20Environmental%20Audits/NAR-Independent%20Environmental%20Audit%20Report%202019.pdf>

<sup>22</sup> page 19, McKay H and Gleadhill P, ERM (2020) Independent Environment Audit 2019, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20and%20Compliance/Independent%20Environmental%20Audits/NAR-Independent%20Environmental%20Audit%20Report%202019.pdf>

## Narrabri

Annual GHG emissions, tCO<sub>2</sub>e

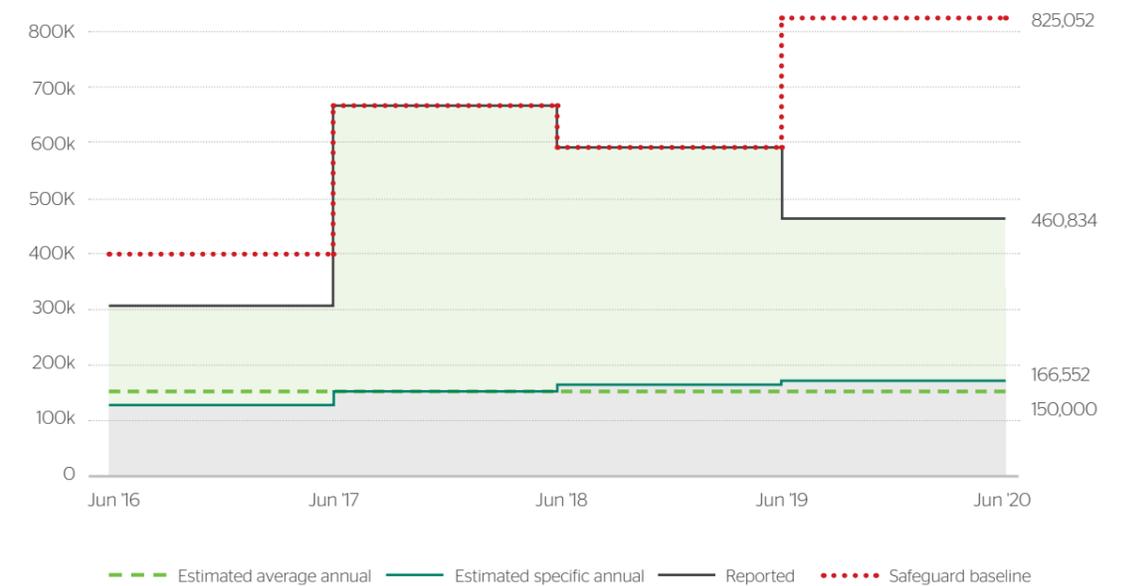


Figure 8

Chart: ACF Source: See detailed case study below.

MACH Energy started reporting emissions from its Mount Pleasant coal mine in 2018/19. Emissions were 149% of the emissions expected for that year.<sup>23,24</sup> In 2019/20, emissions from the mine shot up to 448,683 tCO<sub>2</sub>e.<sup>25</sup> This is 255% — more than twice — the anticipated emissions for that year specifically and twice the average annual estimate (Figure 9).

MACH Energy is currently seeking approval from the NSW government for another extension and is asking to more than double coal production and extend the life of the project to December 2048.<sup>26</sup>

Interestingly, the greenhouse gas assessment for the relevant EIS expects the project's emissions to be below the figure from 2019/20 until 2032. In 2032, the assessment expects scope 1 emissions to be 453,000 tCO<sub>2</sub>e and production to be approximately 150% of the rate in 2019/20. The EIS expects annual emissions to peak at 607,000 tCO<sub>2</sub>e when it reaches maximum production (approximately double production in 2019/20) in 2041.<sup>27</sup>

In July 2020, MACH Energy requested that from 2021, the Clean Energy Regulator (CER) raise Mount Pleasant's baseline to 668,971 tCO<sub>2</sub>e, more emissions than it expects at double production.<sup>28</sup> More on this later.

## Mount Pleasant Operations

Annual GHG emissions, tCO<sub>2</sub>e

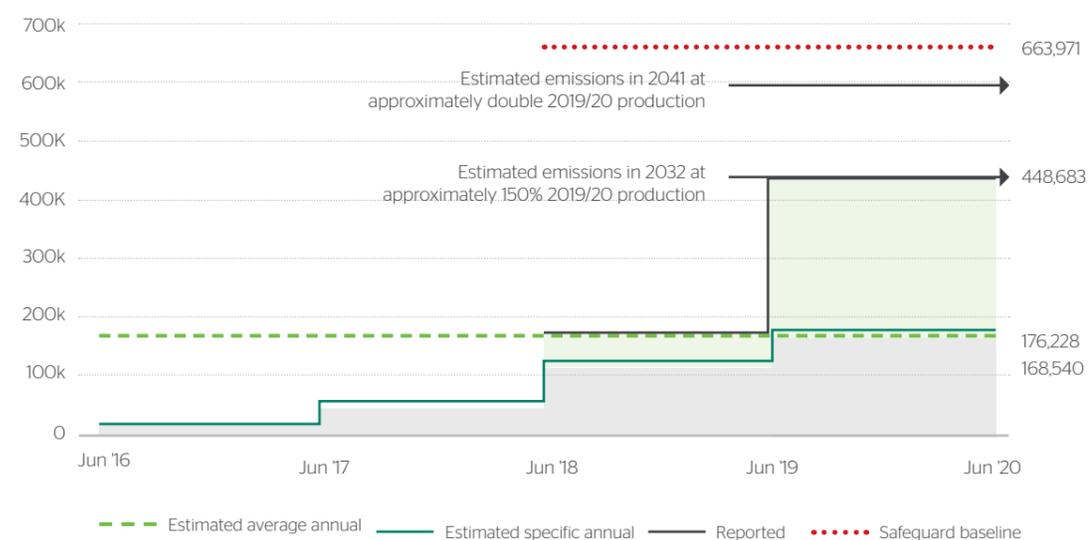


Figure 9:

\*Approximate estimated year-specific emissions (converted from calendar year to financial year)

Chart: ACF Source: See detailed case study below.

<sup>23</sup> MACH Energy (2017) 'Appendix B Air Quality and Greenhouse Gas Assessment', Mod 3 Environmental Assessment, MACH Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/2017-MOD3-EA-Appendix-B-Air-Quality-and-Greenhouse-Gas-Assessment.pdf>

<sup>24</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

<sup>25</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

<sup>26</sup> Mach Energy (2021) 'Mount Pleasant Optimisation Project', Mach Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/mount-pleasant-optimisation-project/>

<sup>27</sup> Mach Energy (2020) 'Appendix S – Greenhouse Gas Assessment', Mount Pleasant Optimisation Project – Greenhouse Gas Assessment, Mach Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/45-Appendix-S-Greenhouse-Gas-Assessment.pdf>

<sup>28</sup> CER (Clean Energy Regulator) (2022) <http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/Safeguard-baselines-table>, accessed 25 January 2022

## Why are companies emitting so much more?

**We should start by saying we don't yet have a complete answer to that question, and we would love to know. The companies might have the answer but unfortunately at the time of writing none have responded to our requests.**

First, it is important to understand how emissions are reported to the CER. The short story is: [methods for calculating emissions](#) range from a back-of-napkin calculation to direct real-time measurement at the site. The back-of-napkin calculation uses standard government 'emissions factors' and companies multiply those factors with their own data on things like how much diesel was consumed, how long the gas pipeline is or how much coal was mined that year.

While seeking approval, no fossil fuel company has the benefit of real-time onsite monitoring, so they must use either the back-of-napkin calculation or samples from the site to make estimates in their EISs.

Because underground coal mines must actively vent gas from the coal seam for safety reasons, the necessary infrastructure is already there to measure emissions relatively accurately. Underground mines cannot use the back-of-napkin calculation for fugitive emissions and must measure them at the site once operational. Other fossil fuel projects can use the back-of-napkin calculation both during the EIS stage and when operational.

In our study, we found some of the over-emitters were likely to be reporting more tCO<sub>2</sub>e than expected because the emissions factors had changed over time. One thing that impacts these factors is the accepted global warming potential (GWP) of methane. Over the time period examined in this study the GWP has changed from 21 to 25, meaning one tonne of methane is now considered to be worth more tCO<sub>2</sub>e than it used to be.<sup>29</sup>

For some of the projects emitting more than estimated, we were able to explain the excess emissions when considering the changes to GWP or emissions factors, combined with a reasonable variation in emissions relative to the average annual estimate. [See the list of projects exceeding estimates within reason here](#) and [more information on explanations here](#).

For one in five projects though, changes to emissions factors, GWP, and reasonable variation in emissions were not sufficient answers to the question of why. [See the list here](#).

For Gorgon, we know Chevron's CCS project failed to meet expectations and that accounts for some of the excess emissions. However, we also know it emitted beyond even the worst-case scenario without a CCS project predicted in the EIS.

While seeking approval,  
**no fossil fuel company**  
has the benefit of real-time onsite monitoring.

For gas pipelines (like the LNG pipeline and the Northern Gas Pipeline), it is unlikely the length of pipeline has changed significantly. We think it is more likely the companies are consuming more diesel than anticipated. For example, Origin did not anticipate any scope 1 emissions from diesel at all after the construction of the pipeline, so it is possible heavy vehicle use associated with maintenance of the pipeline has generated emissions that were not included in the EIS.

<sup>29</sup> CER (Clean Energy Regulator) (2021) Global warming potentials, CER, Australian Government, accessed 13 January 2022. <http://www.cleanenergyregulator.gov.au/NGER/About-the-National-Greenhouse-and-Energy-Reporting-scheme/global-warming-potentials>

For underground coal mines in the Bowen Basin (like Grosvenor and Moorvale), our cursory theory is that deeper seams are more methane-rich than anticipated, and this was not factored into impact assessments. Now that fugitive emissions are being directly measured and reported, new data could be revealing that either the earlier samples or the back-of-napkin calculations were wrong.

At Narrabri underground mine (in the Gunnedah Basin), Whitehaven is emitting far beyond the anticipated emissions and decided against implementing emissions mitigation technology, in part because of the federal government's climate policy providing a disincentive to innovate.

For open cut mines (like Caval Ridge or Foxleigh), the higher emissions could be due to greater-than-expected diesel consumption or coal production. Remember, we factored in changes in emission factors and the GWP of methane and found these projects were still emitting more than expected.

At Mount Pleasant we can see emissions exceeding anticipated levels only a couple of years after they were first anticipated. Further, we see MACH Energy concurrently asking the Clean Energy Regulator for a baseline far beyond what is anticipated in the worst-case scenario for Mount Pleasant. Meanwhile, it is telling the NSW government it will emit its current level with 150% of production.<sup>30</sup>

It is important to note we do not know the reporting method used by the companies for some of the fossil fuel projects studied. To better understand when inaccuracy is caused by inherent limitations of estimating, and when accuracy could be improved by changes to methods for calculating and reporting, further enquiry is needed.

While we don't have satisfying explanations for the over-emitters, one thing is certain: EISs are not good predictors of the emissions of fossil fuel projects.

<sup>30</sup> Mach Energy (2020) 'Appendix S – Greenhouse Gas Assessment', Mount Pleasant Optimisation Project – Greenhouse Gas Assessment, Mach Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/45.-Appendix-S-Greenhouse-Gas-Assessment.pdf>

## Why is this important?

### This is important for a few reasons.

This is important for a few reasons. The impact statements that companies provide to the government when seeking approval contain important information that is relied upon by:

- the community and experts to understand the impacts of proposed developments and comment on proposals
- consent authorities (such as government ministers and environmental protection agencies) to decide whether or not to approve a proposal, and which conditions to apply to an approved project
- the Commonwealth Government to calculate projected national emissions.<sup>31</sup>

Emissions that come from fossil fuel projects constitute up to 29% of Australia's latest emission projections.

The accuracy of this information is therefore highly consequential. There is a community expectation that accurate information is being provided about the impact of a proposal when providing comment and when choosing whether or not to support a proposal. Likewise, anticipated emissions from proposed fossil fuel projects are increasingly becoming important in decision-making by approval authorities. Recently, climate impacts have contributed to decisions to refuse projects.<sup>32</sup>

Further, emissions that come from fossil fuel projects constitute up to 29% of Australia's latest emissions projections. Impact statements, among other sources, inform these projections.<sup>33</sup> There are 116 future fossil fuel projects that have impact statements that inform Australia's projections.<sup>34</sup> As these projections are used by the Commonwealth Government to determine the level of ambition required to meet targets (like Net Zero Emissions by 2050), the accuracy of the source data is critical.

If impact statements are not a good predictor of the actual emissions of projects, this means the community and experts cannot rely on them to understand the impacts of proposed developments. Consent authorities cannot rely on the information when determining whether the impact of a proposal is acceptable.

For example, when deciding whether or not to approve the Gorgon project, the WA government may have formed a different view if it knew that the first four years of operation would see an additional ~16 million tCO<sub>2</sub>e in emissions. Or perhaps the NSW government would have formed a different view about Whitehaven's Narrabri underground coal mine if it knew the mine would emit close to four times the estimated greenhouse gas emissions.

<sup>31</sup> [https://www.industry.gov.au/sites/default/files/October%202021/document/methodology\\_for\\_the\\_2021\\_projections.pdf](https://www.industry.gov.au/sites/default/files/October%202021/document/methodology_for_the_2021_projections.pdf)

<sup>32</sup> For example: Gloucester Resources Limited v. Minister for Planning [2019] NSWLEC 7 [422] – [556]; Sharma by her litigation representative Sister Marie Brigid Arthur v Minister for the Environment [2021] FCA 560; KEPCO Bylong Australia Pty Ltd v Bylong Valley Protection Alliance Inc [2021] NSWCA 216. See also Covington, C et al. (24 September 2019) 'NSW Independent Planning Commission refuses development consent for Bylong Valley Coal Mine', Insights, Corrs Chambers Westgarth, accessed 30 November 2021. <https://corrs.com.au/insights/nsw-independent-planning-commission-refuses-development-consent-for-bylong-valley-coal-mine>

<sup>33</sup> [https://www.industry.gov.au/sites/default/files/October%202021/document/australias\\_emissions\\_projections\\_2021\\_0.pdf](https://www.industry.gov.au/sites/default/files/October%202021/document/australias_emissions_projections_2021_0.pdf)

<sup>34</sup> Morton, A and Pridham, B (3 November 2021) 'Australia considering more than 100 fossil fuel projects that could produce 5% of global industrial emissions', Guardian Australia, accessed 1 December 2021. <https://www.theguardian.com/environment/2021/nov/03/australia-considering-more-than-100-fossil-fuel-projects-that-could-produce-5-of-global-industrial-emissions>



If impact statements are not a good predictor of the actual emissions of projects, this also means that our projected national emissions are likely to be based on inaccurate estimates of future emissions.

Our study found very few impact statements were accurate and one in three projects ultimately emitted more than estimated. We could explain some of those by looking at the change in global warming potential (GWP) of methane. The GWP of methane is considered by the US Environmental Protection Agency to be anywhere between 28 and 36 times the potency of carbon dioxide — the projects we looked at used a GWP of either 21 or 25.<sup>35,36</sup>

This means as the global understanding of the impact of methane on climate improves, we are likely to discover that existing fossil fuel projects are emitting even more CO<sub>2</sub>e than previously estimated.

However, one in five projects was emitting even more than we could account for with updates in global standards. Significantly more.

<sup>35</sup> <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

<sup>36</sup> <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

## Isn't it illegal to increase your impact on the climate once you have approval?

**Greenhouse gas emissions are, in theory, regulated at a federal and state or territory level. But not strictly enough for any of the companies in our case studies to be punished for getting their estimated impact terribly wrong.**

At a federal level, there are two regulatory schemes that could regulate GHG emissions: *the Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *the safeguard mechanism of the National Greenhouse Energy Reporting Act 2007* (NGER).

The EPBC Act is our national environment law and is supposed to protect Australia's nationally threatened wildlife and ecosystems, and our nationally and internationally significant wetlands and heritage places. If a proposal is going to have a significant impact on protected places or wildlife, it needs to be approved under the EPBC Act and the federal environment department will often apply conditions to the approval.

In theory, since climate change impacts protected species and places, the federal department administering the Act (currently the Department of Agriculture, Water and the Environment) could write conditions to limit GHG emissions or require mitigation or abatement activities. ACF knows of only one example, in 2011, where EPBC approval conditions required a company to demonstrate a mitigation strategy and comply with it. Those conditions were revoked in 2013.<sup>37</sup>

There has been some discussion in recent years about updating the EPBC Act to include consideration of climate impacts more explicitly. This issue will be considered in the next section of this report.

The NGER Act requires companies to report annual greenhouse gas emissions to the Clean Energy Regulator. The safeguard mechanism was introduced under the NGER Act to require companies to report scope 1 emissions at a facility-level for facilities that emit more than 100,000 tCO<sub>2</sub>e per year. The safeguard mechanism also introduced

'baselines' for these facilities, which put a limit on net annual emissions. This was to ensure that the emissions abatement and sequestration being achieved through the Emissions Reduction Fund (ERF) was not undercut by increases in emissions by industry.

If a facility emits more than its baseline, the company can purchase and then surrender Australian carbon credit units (ACCUs) created under the ERF to keep its net emissions below the baseline. If it fails to reduce its emissions below the baseline, penalties apply.

In practice, however, the baselines are far higher than the emissions estimated by companies when they sought approval. Companies that are emitting beyond their baseline can also apply for a new baseline, and can apply for various concessions that allow them to avoid surrendering carbon credits. [More here.](#)

For example, MACH Energy's baseline under the safeguard exceeds the maximum expected emissions at double current production at Mount Pleasant.<sup>38,39</sup> It is virtually impossible for MACH Energy to fail. Therefore, it is virtually impossible the company will ever be required by the Commonwealth Government to surrender ACCUs or reduce its emissions, despite emitting far more than it said it would when it sought approval.

<sup>37</sup> [http://epbcnotices.environment.gov.au/\\_entity/annotation/7b8fa276-2d68-e511-9099-005056ba00a8/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1643848037822](http://epbcnotices.environment.gov.au/_entity/annotation/7b8fa276-2d68-e511-9099-005056ba00a8/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1643848037822)

<sup>38</sup> MACH Energy (2017) 'Appendix B Air Quality and Greenhouse Gas Assessment', Mod 3 Environmental Assessment, MACH Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/2017-MOD3-EA-Appendix-B-Air-Quality-and-Greenhouse-Gas-Assessment.pdf>

<sup>39</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

Our study found that of the 48 facilities studied for this report:

On average, baselines are set at 202% of emissions estimated in the project impact statements.

Comparing the actual tCO<sub>2</sub>e value of average estimated emissions and average allowed emissions, this leniency creates a “gap” of almost 2.4 million tCO<sub>2</sub>e every year.

Ten fossil fuel projects had baselines more than double their estimated emissions. This means that the intended “safeguard mechanism” is only actually triggered if the facility emits twice as much GHG as originally estimated when it was approved.

Our analysis found that if baselines were set based on the estimates in impact statements when projects were approved, the [ten companies responsible for the eleven facilities](#) would have been required to surrender 24,087,880 ACCUs — over 24 million ACCUs. At the current average price of \$12.06 ACCUs, these eleven companies have avoided total costs of up to AUD \$290,499,833.

Instead, only two over-emitters in our study surrendered ACCUs in the last four years, abating just 7,924 tCO<sub>2</sub>e in excess emissions in total.<sup>40</sup>

Further, we found that Anglo American's Grosvenor mine has released roughly double its estimated emissions. However, emissions have never exceeded Grosvenor's baseline set with the Clean Energy Regulator, which is 2.5 times the estimated maximum in the EIS.<sup>41,42</sup> Meanwhile, about \$5 million of public money has been paid to energy company EDL for abating a fraction of the fugitive emissions at Grosvenor through an ERF project.<sup>43</sup>

We also found an example, Origin's LNG pipeline, in which emissions were 18-20 times the emissions estimated in the impact statement but only reached the threshold for the safeguard mechanism by a marginal 274 tCO<sub>2</sub>e. It is concerning that a project in Australia could emit 18-20 times its estimated amount of CO<sub>2</sub>e without any federal sanction. While it is a small quantity of emissions compared to a project like Gorgon, cumulatively this could quickly become a big emissions problem.

This shows the safeguard mechanism is not doing what it was intended to do.

## State and territory consent authorities

**State and territory consent authorities, like Environment Protection Authorities (EPAs) and planning or environment departments, use impact statements to inform their decision to approve or refuse a proposal.**

They also use them to guide the conditions placed on any consent given (which may be called a range of things like a license, permit, ministerial statement, environmental authority or approval).

All state and territory authorities can impose conditions on a consent given — meaning it is already in their power to strictly regulate emissions by imposing limits based on impact statement estimates and require mitigation measures to be taken or offsets to be secured.

However, in our case studies we could not find conditions rigorous enough to impose a limit on a company's emissions, or to be effectively enforced — except for the WA Ministerial Statement for the Gorgon project which we will discuss later.

For example, for the projects in our study that were significantly over-emitting in NSW, the consents had conditions relating to emissions along the lines of: “The Proponent shall implement all reasonable and feasible measures to minimise the greenhouse gas emissions from the operations to the satisfaction of the Secretary.”<sup>44</sup>

These conditions are usually accompanied by a broad condition that requires the company to act generally in accordance with its impact statement and a condition that requires the company to prepare a GHG mitigation plan and implement that plan.

Conditions like these serve to be more like guiding principles than enforceable non-negotiable requirements. For example, Whitehaven revised its GHG minimisation plan in 2017 for Narrabri underground coal mine and the NSW Department of Planning, Industry and Environment is yet to approve it.<sup>45</sup>

Similarly, in Queensland, BHP Mitsubishi Alliance's environmental authority for Caval Ridge requires the company to develop and implement a GHG management plan which must include “a fugitive gas management plan, incorporating the identification and evaluation of opportunities to reduce fugitive emissions of methane gas”.<sup>46</sup> The company is only required to identify and evaluate, not act.

All state and territory authorities can impose conditions on a consent given — meaning it is **already in their power to strictly regulate emissions by imposing limits based on impact statement estimates** and require mitigation measures to be taken or offsets to be secured.

<sup>40</sup> CER (Clean Energy Regulator) (2021) Safeguard multi-year monitoring period table, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-multi-year-monitoring-period-table>

<sup>41</sup> Hansen Bailey (2010) ‘Executive Summary’, EIS, Anglo American, accessed 1 December 2021. <https://www.angloamerican.com.au/~media/Files/A/Anglo-American-Australia-V2/pdf/0%20-%20Executive%20Summary>

<sup>42</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

<sup>43</sup> CER (Clean Energy Regulator) (2021) ‘Grosvenor Waste Coal Mine Gas Power Station’, CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId={7F242924-BF02-45EE-A289-1ABCC954E9CE}&ItemID=385>

<sup>44</sup> NSW Department of Planning and Environment (2016) Schedule 4, condition 31 of the Project Approval for the Narrabri Coal Project – Stage 2, Whitehaven Coal, accessed 30 November 2021. [https://whitehavencoal.com.au/wp-content/uploads/2019/08/NAR-Stage-2-Project-Approval-PA-08\\_0144-consolidated.pdf](https://whitehavencoal.com.au/wp-content/uploads/2019/08/NAR-Stage-2-Project-Approval-PA-08_0144-consolidated.pdf)

<sup>45</sup> Schedule 4, condition 31. See page 13, ERM, Independent Environmental Audit 2019 (2020), <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Independent%20Environmental%20Audits/NAR-Independent%20Environmental%20Audit%20Report%202019.pdf> accessed 28 January 2022.

<sup>46</sup> page 163, Caval Ridge Coordinator-General Report - Appendix 1 - Conditions and Recommendations (2010), QLD Department of State Development, Infrastructure, Local Government and Planning [https://www.statedevelopment.qld.gov.au/\\_\\_data/assets/pdf\\_file/0014/15071/cg-report-caval-ridge-mine-conditions-appendix-01.pdf](https://www.statedevelopment.qld.gov.au/__data/assets/pdf_file/0014/15071/cg-report-caval-ridge-mine-conditions-appendix-01.pdf) accessed 28 January 2022.



The only example of any government (state, territory or federal) taking compliance action in response to a breach of emissions conditions was the WA government's recent response to the failure of Chevron to capture and store carbon released by its Gorgon project.

In this case, the conditions were written with a strict deadline and a clear minimum amount of carbon dioxide to be sequestered. Unfortunately, compliance with the conditions relied on a mitigation technology that is unproven — Carbon Capture and Storage (CCS).

Our findings show that not only did the CCS project fail, but Chevron emitted beyond its worst-case scenario estimate which was calculated based on the absence of the CCS project.

In July 2021, Chevron's deadline for compliance with its CCS target elapsed without the company capturing and storing sufficient carbon at Gorgon. Chevron entered into 'discussions' with the WA government and in November 2021 announced an offsets package including \$40 million of investment in Western Australian "lower carbon projects" and a plan to acquire and surrender 5.23 million tCO<sub>2</sub>e worth of carbon credits. So far, Gorgon has released approximately 16 million tCO<sub>2</sub>e of excess emissions.

In December 2021, the WA government issued Chevron a notice of non-compliance that did not include a penalty and stated that "Chevron has committed in their Environmental Performance Report (November 2021) to offset the shortfall (5.2 million tonnes) and use reasonable endeavours to complete the offset acquisition and surrender by July 2022."<sup>47</sup> The options for the WA government included prosecution, infringements and cautions.<sup>48</sup>

While the Gorgon consent had more enforceable conditions, the compliance response from the WA government was mild and, disproportionate to the severity of the breach. For most of the other state or territory consents, the conditions are, in practice, a licence to emit freely while *thinking* about mitigation. We do not have the luxury of criticising enforcement action for these conditions, as enforcement is virtually impossible. [More on GHG conditions here.](#)

Aside from the problem of regulating emissions, there is still a question of regulating the provision of information to government officials. If impact statements end up *being* this wrong, are companies knowingly providing false or misleading information? Isn't it illegal to lie to the government? Yes.

It is an offence to provide false and misleading information to a government official (in certain circumstances) under Commonwealth law and a host of relevant state laws. These are often criminal offences and allegations of crime must be investigated thoroughly to prove an offence has occurred beyond reasonable doubt.

A forensic investigation would be required to determine whether this offence is relevant to any of our case studies.

## How can we fix this?

### Strengthen the safeguard mechanism

So, the safeguard mechanism is not currently an effective regulatory scheme for ensuring companies emit what they say they're going to emit when a project is approved. Was it ever intended to be? Not entirely — it was intended to prevent emissions increasing from the projects' emissions at the time when the ERF was introduced. In theory, there should not be a difference between these two benchmarks, but we know from our findings that impact statements are frequently inaccurate.

We know there are some inherent difficulties in estimating the emissions from a project prior to commencement — for example, the mines in the Bowen Basin, which likely took samples to ascertain fugitive emissions but later learned that deeper seams had a different methane concentration. We know that the GWP for methane has been changing.

Should companies be held accountable under the safeguard mechanism to their estimates when we know the estimates are so frequently wrong (both over and under)? One way of ensuring that the impact statements assessed by consent authorities are accurate about emissions is by prescriptively ensuring that is the case.

Safeguard mechanism baselines should be set based on estimated emissions from impact statements and the concessions should be removed that allow companies to exceed baselines with no consequence. This would mean that any increases beyond what was assessed by the consent authority would need to be mitigated through technology, or offset. It would mean consent authorities and the federal government could be confident that the climate impacts expected from proposed projects are reliable.

If the 100,000 tCO<sub>2</sub>e threshold was lowered to 25,000 tCO<sub>2</sub>e, this would give more adequate coverage and regulation of significant emissions that are currently going unnoticed.

Ensuring estimates reflect actual future emissions will also give the federal government confidence in its emission projections and allow for more certainty in deciding on the climate policy settings required to meet our targets.

For example, it would mean those companies in the Bowen Basin would have to find a way to manage the extra impact of those deeper, more methane-rich seams, rather than the government needing to adapt its climate policy to shore up carbon abatement elsewhere.

We can see from Whitehaven's Narrabri underground case study that more prescriptive policies that put a price on carbon emissions encourage companies to innovate and deploy mitigation technology far more than the current policy settings. More prescriptive policies would be a way of dealing with emissions through prevention at the source and making industry emissions predictable.

This still leaves the problem of the companies that are emitting less than estimated. We know most of the under-emitters are emitting less due to lower production or projects shutting down. For these projects the baseline will be too high. Companies should be obliged to inform the CER and the state consent authority of operational changes, which in turn could trigger a few things:

- The CER would set a new baseline using the estimates from the impact statement in proportion with the new production levels, or with essential venting during care and maintenance.
- Companies would need an additional approval from the consent authority to place a mine in care and maintenance (rather than complete closure), as the impacts of the ongoing emissions (which at present are often higher when a mine is mothballed as opposed to closed properly) should be weighed against new social and economic factors (like fewer local employment benefits).
- New conditions in approvals may be required based on the above.

Given the safeguard mechanism is the primary federal lever for regulating emissions from fossil fuel projects, baselines could be prescriptive and ambitious — ratcheting down emissions limits for industry in a predictable fashion, aligned with emissions reduction goals.

In this scenario, new projects should start with a baseline based on estimates in their impact statements and then baselines should be ratcheted down over time.

<sup>47</sup> Conservation Council of Western Australia, 22 December 2021, "Chevron 'taking us for fools' says Conservation Council as regulator lets CCS failure go unpunished", CCWA [https://www.ccwa.org.au/chevron\\_ccs\\_failure\\_goes\\_unpunished#:~:text=The%20WA%20state%20government%20has,by%20its%20Gorgon%20gas%20project](https://www.ccwa.org.au/chevron_ccs_failure_goes_unpunished#:~:text=The%20WA%20state%20government%20has,by%20its%20Gorgon%20gas%20project).

<sup>48</sup> [https://www.wa.gov.au/system/files/2021-05/Compliance\\_and\\_Enforcement\\_Policy\\_0.pdf](https://www.wa.gov.au/system/files/2021-05/Compliance_and_Enforcement_Policy_0.pdf)

### Strengthen assessments and approvals

Where individual states and territories have more ambitious emissions targets than the federal government, state and territory consent authorities already have the option of writing stronger conditions that enforce limits on emissions through mining licenses, permits or approvals. This could have the same effect as the safeguard baselines, and in the same way could be ratcheted down in a predictable fashion over time to align with the targets of the relevant state or territory governments.

Consent authorities can do better than simply accept the emissions anticipated by a company and not ask companies to do anything to minimise emissions. Consent authorities should take a more active role in regulating the climate impacts of projects and should enforce their standards with a firm hand.

Consent authorities should require impact statements to include consideration of global, national and state or territory carbon budgets, alignment of the proposal with emission reduction targets and the confidence level of the emissions estimate.

They should also require projects to apply a hierarchy to climate impacts and emissions, similar to what is required for other environmental impacts (such as native vegetation), by prioritising avoidance, minimising what can't be avoided and managing the remaining emissions through offsetting (this is a standard approach for other environmental and heritage impacts, but not yet for climate impacts).

### Integrate climate change considerations into decision-making under the EPBC Act

At a national level, there is no consent authority for climate impacts. There is no federal government body that decides whether a proposal's greenhouse gas emissions are acceptable or asks a company to consider a hierarchy of climate impacts before going ahead. Currently, the federal government only becomes involved once a project is operational, already emitting beyond 100,000 tCO<sub>2</sub>e and begins reporting under the NGER Act.

For projects like Chevron's Gorgon, which affect Australia's national emissions significantly, there is no opportunity for the federal government to intervene or consider whether the project was in the best interest of the country.

There is no federal oversight or accountability when companies emit more than they said they would when seeking approval. This can be partially addressed by the safeguard mechanism, but it is not designed to give consent to new projects or ensure the best possible scenario for emissions prior to project commencement.

While the EPBC Act was designed to protect things, like the Great Barrier Reef, that we know are enormously affected by climate change, it has (to date) not been an effective mechanism for regulating the emissions driving the climate crisis, which in turn has already damaged world heritage like the Great Barrier Reef.

The EPBC Act should be amended to strongly integrate climate change considerations (both mitigation and adaptation) into all decision-making processes and plans under the EPBC Act. This way the EPBC Act can effectively protect the climate by refusing consent to projects with clearly unacceptable emissions, writing conditions that require active management of emissions and providing another layer of accountability when projects go pear-shaped.

### Treat impact statements with caution

In the absence of rigorous and enforceable conditions, consent authorities and the federal government should treat emissions estimates with caution, and should factor in the likelihood that climate impacts will be greater than what is described in impact statements. In the absence of requiring accurate estimates, consent authorities could require impact statements to provide a confidence level to assist in treating the estimates with caution.

Consent authorities should be asking questions like: would the state government approve this if the emissions were four times as much, or twenty? What is the maximum GWP for methane being contemplated in current science? What if the mitigation measures proposed do not go ahead?

The federal government, when designing climate policy to meet emissions reduction targets, should ask itself: what if 20-35% of the fossil fuel facilities in this projection emit significantly more than estimates? How will we meet our targets then?

Further, for some impact statements we analysed, an independent audit may have found inaccuracies or issues. It would be valuable for impact statements to be peer reviewed by independent consultants or forensically audited by consent authorities. The relevant state governments responsible for our case studies might want to consider investigating whether false or misleading information has been provided to them.

### Update the 'emissions factors' and methods for estimating emissions

We suspect that the emissions factors for open cut mines in the Bowen Basin (at a minimum) could be wrong and not truly reflect the methane concentration of gas in deeper seams. The federal Department of Industry, Science, Energy and Resources and the Clean Energy Regulator should review whether the current emissions factors are scientifically valid and result in emissions calculations comparable to those measured directly at commensurate operational underground mines.

**Would the state government approve this** if the emissions were four times as much, or twenty?



## How did we do the **research?**

Investigators looked at fossil fuel projects that report annual emissions to the Clean Energy Regulator and have emissions baselines with the Regulator. Fossil fuel projects that emit more than 100,000 tCO<sub>2</sub>e have reported annual emissions to the

CER since 2016/17. There are four financial years' worth of data available. We gathered all publicly available Environmental Impact Statements or equivalent for those projects. There were 48 projects with the data required to undertake our analysis.

## More **information**

This section lists in full the facilities studied in detail, and covers key background information about the safeguard mechanism, as well as emissions estimation, baseline measurement and reporting practices for Australia's biggest emitters.

### List of facilities that exceeded emissions estimates

The study found that of the 48 fossil fuel facilities with publicly available EIS and NGER data, 20 exceeded their estimated annual emissions in at least one reporting year.<sup>49</sup>

**Nine facilities** reported emissions that either fell within an acceptable range (despite emitting more than estimated for one or more years) or can be explained by changes in the methane GWP:

- Batchfire Resources' Callide Coal Mine in the Callide Basin, QLD
- Centennial Coal's Mandalong Mine, in the Sydney Basin, NSW
- Centennial Coal's Myuna Colliery in the Sydney Basin, NSW
- Glencore's Beltana/Blakefield South mine in the Sydney Basin, NSW
- INPEX's Ichthys LNG project, offshore NT
- Shell's FLNG project, offshore WA
- Shell's Prelude LNG project, offshore WA
- Woodside's Pluto LNG project, offshore WA
- Yancoal's Ashton Coal Mine, Sydney Basin NSW

**Eleven facilities** (20.8% of all fossil fuel facilities with publicly available EIS data) emitted significantly more greenhouse gas emissions than estimated, and without a reasonable explanation:

- Anglo American's Grosvenor Mine, QLD
- BHP Mitsubishi Alliance (BMA)'s Caval Ridge Mine, QLD
- Chevron's Gorgon Project, WA
- Jemena's Northern Gas Pipeline (NGP), NT/QLD
- MACH Energy's Mount Pleasant Operations, NSW
- Middlemount South, POSCO and Nippon Steel (Joint Venture)'s Foxleigh Mine, QLD
- Origin Energy's LNG Pipeline, QLD
- Peabody's Moorvale Mine, QLD
- Whitehaven Coal's Maules Creek open cut mine, NSW
- Whitehaven Coal's Narrabri underground Mine, NSW.
- Woodside's Vincent oil and gas project, offshore WA

<sup>49</sup> Reporting years covered by the data are 2016/17, 2017/18, 2018/19 and 2019/20.



## Explanations for **excess emissions**

Projects might report more GHG emissions than anticipated in the planning phase for a number of reasons.

### **Reason 1: the estimation is based on an average**

The EIS often provides a figure for average annual emissions, calculated to include the negligible annual emissions expected in the early stages of the project. For example, when a coal seam has not yet been opened but construction has commenced. In these cases, it could be expected that emissions in production years would be slightly higher than the average annual emissions provided in the EIS, within reason. Where possible, the investigators have used specific annual estimated emissions but for some EISs this was not possible, and we have instead relied on average annual emissions.

### **Reason 2: changes to agreed global warming potential (GWP) of methane**

Over the time period examined in this study, one tonne of methane is now considered to be worth more tCO<sub>2</sub>e than it used to be. The GWP of methane is currently considered by the US EPA to be anywhere between 28 and 36 times the potency of carbon dioxide.<sup>50</sup>

The CER updates the officially recognised GWP of methane from time to time. From 2021, the CER's official GWP for methane is 28.<sup>51</sup> The projects included in this investigation used a GWP of either 21 or 25.<sup>52</sup>

### **Reason 3: changes to agreed methods for calculating emissions**

Australian and internationally recognised methods for calculating emissions have changed over time. This occurs not just due to new GWPs, but also updates in the science around sources of emissions and new methods for calculating emissions. For example, in 2014, fugitive emissions for open cut coal mines in NSW had an emissions factor of 0.045 tCO<sub>2</sub>e per tonne of run of mine (ROM) coal. The emissions factor was then increased to 0.054 between 2015 and 2019 and then finally in October 2020 it was increased to 0.061.

For facilities with older EISs, the emissions intensity used to calculate reported emissions could have increased by up to 35.6% compared to today's standards as an artefact of the changes to agreed emissions factors used to make those calculations. For the purposes of the data in this study, older EISs may have underestimated fugitive emissions at open cut coal mines in NSW by 20%.

Not all fossil fuel projects use a method for estimating emissions that rely on default emissions factors.

Over the time period examined in this study, **one tonne of methane is now considered to be worth more tCO<sub>2</sub>e than it used to be.**

### **Reason 4: the facility operator has used inconsistent methods for calculating emissions**

Another explanation is that a company may have used one method for estimating emissions and another for reporting emissions.

#### **Methods used to calculate emissions**

There are four methods of calculating emissions accepted by the Australian government.

Method 1 relies on the Australian and internationally recognised emissions factors (discussed above) to make calculations based on proxy measurements, such as litres of diesel consumed or ROM coal. Method 1 is the easiest to use but may not be accurate, which is why projects with highly variable emissions and readily available ways to measure emissions at the site (such as underground mines) are not allowed to use it for things like fugitive emissions.

Methods 2 and 3 are based on site-specific sampling and analysis of fuels or raw materials to give a more accurate emissions factor. For example, a company can analyse the gas content of samples of coal that are representative of the broader coal seam and use those numbers to later calculate fugitive emissions based on the amount of coal mined in a given year. Methods 2 and 3 are still proxy measurements but are generally considered more accurate.<sup>53</sup>

Method 4 involves directly monitoring fugitive emissions, either periodically or in real time. This method is the only means to measure actual greenhouse gas emissions, rather than calculate emissions based on proxy figures. Method 4 is data-intensive and requires effort, but is the most accurate.<sup>54</sup> However, it is impossible to use Method 4 in the EIS phase of a new project.

Using different methods for estimating and then reporting is one reason companies might report more or less emissions than estimated. If a company has, for example, estimated emissions using samples (Method 2) when writing its EIS and then begins real-time sampling upon commencement (Method 4), it might ultimately report different and more accurate emissions. Examples such as this still require additional interrogation as, depending on the choice of methods, it may be that emissions were underestimated in the EIS. For example, if an operator is estimating emissions for a site with a particularly methane-rich coal seam, it could choose to use standard government emissions factors and Method 1, generating a lower estimate than it would with Methods 2 or 3.

#### **Other reasons**

Other explanations for significant under-estimation of emissions include:

- unanticipated emissions (for example, the coal seam being mined is more methane-rich than predicted - see Grosvenor and Moorvale case studies)
- the inherent difficulty in estimating emissions before a project begins (especially for coal mining)
- the project is operating in a manner inconsistent with how it was approved to operate (for example, by not installing mitigation technology that was factored into the approval, or by using different haulage routes and therefore burning more diesel)
- reckless or negligent miscalculations of emissions in the EIS (for example, using out of date GWPs, using selective data that is not representative of a given coal seam, or providing the wrong metrics (e.g. MtCO<sub>2</sub>e instead of tCO<sub>2</sub>e)), or
- a combination of any of the above

<sup>50</sup> <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

<sup>51</sup> CER (Clean Energy Regulator) (2021) Global warming potentials, CER, Australian Government, accessed 13 January 2022. <http://www.cleanenergyregulator.gov.au/NGER/About-the-National-Greenhouse-and-Energy-Reporting-scheme/global-warming-potentials>

<sup>52</sup> <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

<sup>53</sup> CER (Clean Energy Regulator) (2021) Methods and Measurement Criteria Guideline, CER, Australian Government, accessed 30 November 2021. <http://www.cleanenergyregulator.gov.au/DocumentAssets/Documents/Methods%20and%20measurements%20criteria%20guideline.pdf>

<sup>54</sup> CER (Clean Energy Regulator) (2021) Methods and Measurement Criteria Guideline, CER, Australian Government, accessed 30 November 2021. <http://www.cleanenergyregulator.gov.au/DocumentAssets/Documents/Methods%20and%20measurements%20criteria%20guideline.pdf>

## Federal obligations on fossil fuel projects to mitigate emissions

Most EIS processes at state and federal levels require proponents to identify and address environmental, social and economic impacts by a hierarchy of actions: avoid, minimise and manage.

Federal environmental approvals made through the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) rarely if ever have a condition that requires facilities to mitigate GHG emissions, but approvals often do require facilities to implement relevant plans that are approved by federal and/or state consent authorities and to comply with the specific state conditions for approval of that project. Theoretically, the GHG emissions could be subject to conditions in relation to their impacts on matters protected under the EPBC Act, many of which are exacerbated by the climate crisis. However, to the best of our knowledge, this is yet to occur.

## State and territory obligations on fossil fuel projects to mitigate emissions

In NSW, recent state development consent approvals usually contain conditions that require fossil fuel projects to a) operate in line with the approved operations plan and EIS, and b) take reasonable and feasible measures to mitigate GHG emissions. At Whitehaven's Narrabri Coal Mine, for example, "The Proponent shall implement all reasonable and feasible measures to minimise the greenhouse gas emissions from the underground mining operations to the satisfaction of the Secretary".<sup>55</sup> At Whitehaven's Maules Creek Coal Mine, "The Proponent shall implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Director-General".<sup>56</sup> At MACH Energy's Mount Pleasant, "The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site."<sup>57</sup>

In Queensland, for projects declared "coordinated", terms of reference for EISs are prepared by the Department of State Development, Infrastructure, Local Government and Planning. From at least 2008 onward these terms of reference include a significant section requiring the EIS to address GHG minimisation and mitigation. For example, both Caval Ridge Mine and Grosvenor (two of the top ten over-emitters in this report) have such a condition.<sup>58</sup>

At the time of publishing an evaluation report on the EIS (or impact assessment report) for a project, the Coordinator-General may choose to impose conditions that must be attached to future approvals such as an environmental authority, or a relevant planning approval.

Under the *State Development and Public Works Organisation Act 1971* (Qld) and *Strong and Sustainable Resource Communities Act 2017* (Qld), conditions required by the Coordinator-General are legally enforceable. These apply to anyone undertaking the project, including the project proponent and the proponent's agents, contractors, subcontractors or licensees.<sup>59</sup>

In WA, Chevron's Gorgon approval has a similar condition. It must comply with conditions on Ministerial Statement (MS) 800, MS 965 and MS 769. Ministerial Statements are WA environmental approvals under the *Environmental Protection Act 1986* (WA). MS 800 conditions 5.1-5.2 and 27.1-27.3 require Chevron to submit a greenhouse gas abatement plan, implement it, and report on it annually.<sup>60</sup>

Several major projects since 2005 have had to produce a Greenhouse Gas Abatement Program, and in August 2019 the Western Australian state government released its greenhouse gas emissions policy for major projects assessed by the Environmental Protection Authority, the Greenhouse Emissions Gas Policy for Major Projects.

<sup>55</sup> NSW Department of Planning and Environment (2016) Schedule 4, condition 31 of the Project Approval for the Narrabri Coal Project – Stage 2, Whitehaven Coal, accessed 30 November 2021. [https://whitehavencoal.com.au/wp-content/uploads/2019/08/NAR-Stage-2-Project-Approval-PA-08\\_0144-consolidated.pdf](https://whitehavencoal.com.au/wp-content/uploads/2019/08/NAR-Stage-2-Project-Approval-PA-08_0144-consolidated.pdf)

<sup>56</sup> NSW Department of Planning and Environment (2012) Schedule 3, condition 27 of the Project Approval for the Maules Creek Coal Mine, Independent Planning Commission, NSW Government, accessed 30 November 2021. <https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2012/08/maules-creek-coal-project/determination/maulescreekcoalprojectconditions.pdf>

<sup>57</sup> NSW Department of Planning and Environment (2018) Schedule 3, condition 19 of the Determination Of Development Application for the Construction and operation of the Mt Pleasant open cut coal mine and associated infrastructure, MACH Energy, accessed 30 November 2021. <https://machenergyaustralia.com.au/wp-content/uploads/2018-MOD4-Consolidated-Consent.pdf>

<sup>58</sup> QLD Department of State Development, Infrastructure, Local Government and Planning (2021) [https://www.statedevelopment.qld.gov.au/\\_data/assets/pdf\\_file/0024/18861/bowen-basin-coal-growth-tor-november-08.pdf](https://www.statedevelopment.qld.gov.au/_data/assets/pdf_file/0024/18861/bowen-basin-coal-growth-tor-november-08.pdf), [https://www.qld.gov.au/\\_data/assets/pdf\\_file/0022/108364/grosvenor-final-tor.pdf](https://www.qld.gov.au/_data/assets/pdf_file/0022/108364/grosvenor-final-tor.pdf), QLD government, accessed 14 December 2021.

<sup>59</sup> QLD Department of State Development, Infrastructure, Local Government and Planning (2021) <https://www.statedevelopment.qld.gov.au/coordinator-general/assessments-and-approvals/compliance>, QLD government, accessed 14 December 2021.

<sup>60</sup> WA EPA (Western Australia Environment Protection Authority) (2009) Ministerial Statement 800, WA EPA, accessed 30 November 2021. [https://www.epa.wa.gov.au/sites/default/files/Ministerial\\_Statement/00800.pdf](https://www.epa.wa.gov.au/sites/default/files/Ministerial_Statement/00800.pdf)

## The **safeguard** mechanism

The safeguard mechanism is attached to Australia's emissions reporting framework<sup>61</sup> that was introduced as part of the Abbott Government's "Direct Action" climate policy. The mechanism is intended to ensure that the abatement and sequestration achieved through the Emissions Reduction Fund (the ERF, sometimes called the Climate Solutions Fund) is not undermined by emissions blowouts in other parts of the economy.<sup>62</sup>

In theory, the mechanism sets a baseline on covered emissions from identified facilities responsible for substantial carbon emissions. Covered emissions are "direct" emissions (known as scope 1) with some exceptions, such as emissions from landfill facilities and electricity generators. The safeguard mechanism applies to facilities that have emissions of more than 100,000 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) a year (henceforth safeguard facilities or facilities). In 2019/20, 215 facilities reported under the safeguard mechanism.<sup>63</sup>

If the baseline is exceeded, the proponent can reduce its net emissions by acquiring and then surrendering abatement generated by ERF projects. For example, creating a secondary market for carbon credits and inspiring some companies to undertake their own ERF projects. Carbon credits are issued by the Government, or are purchased, in the form of Australian carbon credit units (ACCUs), with one ACCU representing mitigation equivalent to one tonne CO<sub>2</sub> (one tCO<sub>2</sub>e).

If sufficient ACCUs to reduce net emissions below the baseline are not surrendered, penalties apply - in theory. Compliance options available to the Clean Energy Regulator include issuing infringement notices, accepting enforceable undertakings, seeking injunctions to rectify excess emissions situations, and civil penalties to a maximum of \$18,000 per day, and a maximum of \$1.8 million in total.<sup>64</sup>

However, there are design flaws in the legislation that allow proponents to avoid both of these costly options and still increase their emissions. To the best of our knowledge, no company has ever been penalised by the Clean Energy Regulator under the safeguard mechanism for exceeding its baseline.<sup>65</sup>

<sup>61</sup> National Greenhouse and Energy Reporting Act 2007, Australian Government, accessed 30 November 2021. <https://www.legislation.gov.au/Details/C2019C00263>

<sup>62</sup> Explanatory Statement: National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015, Australian Government, accessed 30 November 2021. <https://www.legislation.gov.au/Details/F2015L01637/Explanatory%20Statement/Text>

<sup>63</sup> <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions/safeguard-facility-emissions-2019-20>

<sup>64</sup> CER (Clean Energy Regulator) (2017) safeguard mechanism workshop presentation, CER, Australian Government, accessed 30 November 2021. <http://www.cleanenergyregulator.gov.au/DocumentAssets/Documents/Safeguard%20mechanism%20workshop%20presentation%202017.pdf>

<sup>65</sup> To ascertain whether enforcement action of this nature had been taken by the CER we searched the Federal Court and the CER website: <http://www.cleanenergyregulator.gov.au/About/Compliance-and-Enforcement/Compliance%20and%20enforcement%20action/enforceable-undertakings>

## Baselines

Emissions baselines represent the reference point against which emissions performance will be measured under the safeguard mechanism. They are not based on the emissions anticipated by companies in their EISs.

In practice, emissions baselines are often set much higher than the estimates used in EISs when a facility was approved.

Of the 48 facilities studied for this report, many had baselines more than double their estimated emissions. This means that the intended "safeguard mechanism" is only actually triggered if the facility emits twice as much greenhouse pollution as originally approved.

Further, if a safeguard facility emits more emissions than expected in any given year, the baseline is usually adjusted to avoid material consequences for the operator. Rather than pay a penalty or surrender carbon credits, proponents of large industrial facilities can apply to have their baseline temporarily altered in several ways.

- Until July 2019, proponents could apply for a one-off baseline alteration (Emissions-Intensity) if they could demonstrate that, while their annual emissions are excessive, they had made efficiencies in the emission-intensity of production.<sup>66</sup> ACF analysis found that the Emissions-Intensity baseline adjustment had been used by six facilities up to July 2019, and allowed for emissions to increase by 604,684 tCO<sub>2</sub>e without penalty. Five of those six facilities were coal mines.<sup>67</sup> For example, this is how [Centennial Coal exceeded its baseline at Myuna colliery by 65% in 2017/18 at no cost](#) and again in 2018/19 by 47%.

<sup>66</sup> National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015, Section 46, <https://www.legislation.gov.au/Details/F2020C00399>, Australian Government, accessed 30 November 2021; CER (Clean Energy Regulator) (2020) Baseline Variation, CER, Australian Government, accessed 30 November 2021.

<sup>67</sup> ACF analysis of baselines data. Data source: CER (Clean Energy Regulator) (2021) <http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/Safeguard-baselines-table>, accessed 30 November 2021.

Of the 48 facilities studied for this report, many had baselines more than double their estimated emissions.

- From 1 July 2019 onwards, the 'emissions-intensity' baseline adjustment option was removed. It has been replaced by the 'transitional calculated' baseline, the 'production-adjusted' baseline and the 'inherent emissions variability' baseline.
- From July 2021, all facility operators had to nominate a calculated baseline with the Clean Energy Regulator (though some facility baselines are yet to be updated). This meant that operators could no longer rely on a baseline derived from the historic high-point of emissions between 2009/10 and 2013/14. Instead, proponents were required to calculate expected annual emissions based on production variables (e.g. ROM coal) and either a default emissions-intensity or a site-specific emissions-intensity of production variables. This 'transitional' calculated baseline allowed proponents to self-determine their limits based on current emissions and production.<sup>68</sup>

<sup>68</sup> <http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines/Baseline-variation> <http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines/Calculated-baseline>

28 facilities are using a Multi-year Monitoring Period, including **Anglo American at its Moranbah North coal mine**, which ACF estimates has used the Multi-year Monitoring Period to emit an extra 2.5 Mt to 2.7 Mt of excess GHG emissions without penalty to date.

The new transitional baselines meant that some facilities were forced to decrease baselines to more realistic reflections of their emissions, while others had an opportunity to increase their baselines. As of 24 January 2022, 64 facilities were using transitional baselines. In total, ACF calculates the 64 facilities can emit 3.7% more than their original baselines and 0.03% less than their most recent baseline prior to the changes.<sup>69</sup>

- If a facility has variable emissions due to volatile productivity or is not a transitioning facility or a new facility, it can apply for a 'production-adjusted' baseline. This is a baseline that is derived from a site-specific or default emissions-intensity and is calculated each year based on actual production levels.<sup>70</sup> As of 24 January 2022, 15 facilities are using the production-adjusted baseline.
- If a facility, like a coal mine with unpredictable fugitive emissions, is likely to have highly variable emissions year-to-year, it can apply for an 'inherent emissions variability' baseline. This allows the proponent to increase its baseline to allow for the variability.<sup>71</sup> ACF analysis has found that five facilities use an inherent emissions variability baseline and it has allowed an increase in allowable emissions of 1,722,519 tCO<sub>2</sub>e. All five facilities are coal mines.

- Proponents can also apply for a Multi-year Monitoring Period which aggregates the baseline over a two or three year period to allow for emissions reductions in future years to balance out the initial baseline breach. Currently, 28 facilities are using a Multi-year Monitoring Period, including [Anglo American at its Moranbah North coal mine](#), which ACF estimates has used the Multi-year Monitoring Period to emit an extra 2.5 Mt to 2.7 Mt of excess GHG emissions without penalty to date.<sup>72</sup>
- In addition, proponents can apply for a one year extension to a Multi-year Monitoring Period from two to three years. In response to the Covid-19 pandemic, an amendment was made to the rules that allowed proponents to extend Multi-year Monitoring periods ending 30 June 2020 by an additional year, including those already using the maximum three year period. Four facilities, including two operated by Anglo American, are currently in an extended Multi-Year Monitoring Period using the new Covid-19 provision.

Of the ten worst over-emitters identified in this report, three are using an ongoing Multi-year Monitoring Period baseline and two have completed Multi-year Monitoring Periods in the last four years.

<sup>69</sup> Note: this analysis did not include emissions-intensity baselines as they are not considered ongoing baselines. Data available at: <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/Safeguard-baselines-table>

<sup>70</sup> <http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines/Production-adjusted-baseline>

<sup>71</sup> <http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines/Calculated-baseline>

<sup>72</sup> ACF analysis of Multi-year Monitoring Period data and historical safeguard baseline data. Data source:

<http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions/safeguard-facility-emissions-2016%E2%80%9317>; <http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions/safeguard-facility-emissions-2017%E2%80%9318>

Note that the Multi-year monitoring period was extended to 30 June 2021, and data is yet to be published on whether or not Anglo American will surrender enough ACCUs to abate these excess emissions.

## Case studies: eleven fossil fuel facilities with unexplained excess emissions

### Caval Ridge Mine | BHP Mitsubishi Alliance (BMA)

Bowen Basin, QLD (traditional lands of the Barada Barna and Widi peoples)

#### Caval Ridge Mine

Annual GHG emissions, tCO<sub>2</sub>e

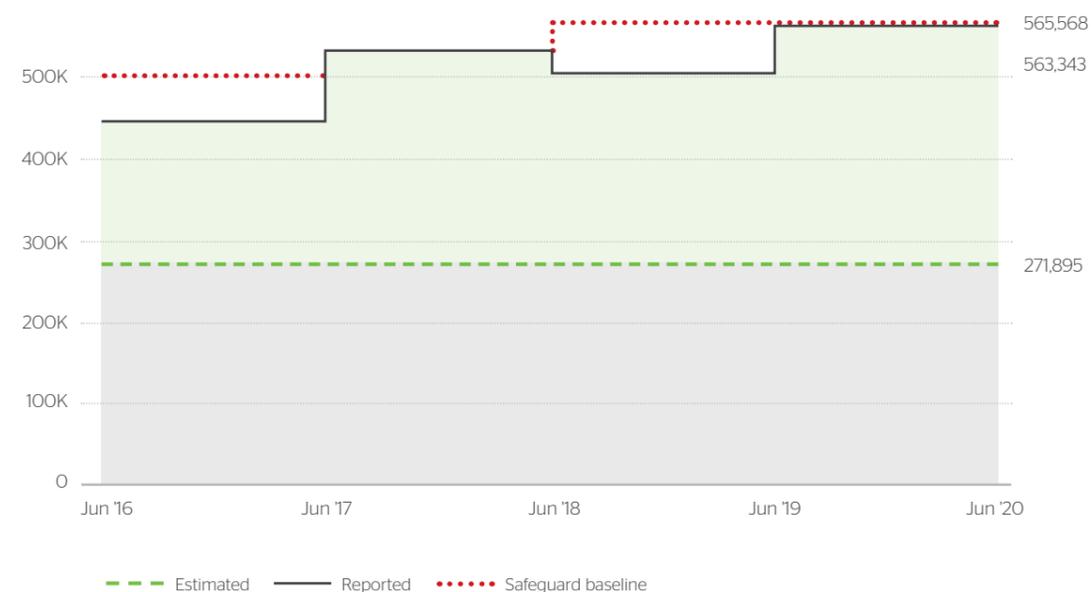


Figure 10

Chart: ACF Source: BMA<sup>73</sup>, CER<sup>74</sup>, ACF

<sup>73</sup> BMA (2009) page 10, Chapter 11 of Caval Ridge Coal Mine Project – Environmental Impact Statement, Department of State Development, Infrastructure, Local Government and Planning, Queensland Government, accessed 30 November 2021. <https://eisdocs.dsdip.qld.gov.au/Bowen%20Basin%20Coal%20Growth%20Proj%202%20-%20Caval%20Ridge%20Mine/EIS/EIS/11-greenhouse-gases.pdf>

<sup>74</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

#### What did we find?

- Over the four reporting years, emissions were between 139% and 176% of the anticipated maximum.<sup>75</sup>
- Even factoring in the GWP for methane and the emissions factor used in 2009, Caval Ridge emitted significantly more than the anticipated maximum every reporting year.
- The mine emitted 6.3 to 7.5 years worth of tCO<sub>2</sub>e, or 21-25% of total estimated life of mine emissions in four years between 2016 and 2020.<sup>76</sup>

#### What were the details?

State approval for BMA's Caval Ridge Mine, under the *State Development and Public Works Organisation Act 1971* (SDPWO Act), was granted by the Queensland Coordinator General in August 2010.<sup>77</sup> Commonwealth approval under section 130(1) and 133 of the EPBC Act was granted on 18 March 2011.<sup>78</sup>

The EIS, written by URS Australia Pty Ltd in 2009, predicts an average annual scope 1 emissions of 271,895 tCO<sub>2</sub>e and an annual scope 1 emissions maximum of 319,480 tCO<sub>2</sub>e.<sup>79</sup> The total scope 1 emissions for the 30-year life of the mine was anticipated to be 8,156,843 tCO<sub>2</sub>e.

URS Australia Pty Ltd applied method 1, using an emissions factor of 0.0171 tCO<sub>2</sub>e per tonne of ROM coal.<sup>80</sup> The emissions factor in the reporting years analysed was 0.020 tCO<sub>2</sub>e per tonne of ROM coal, meaning we could reasonably expect a 16.9% increase in emissions reported (i.e. 373,472.12 tCO<sub>2</sub>e annually) without interpreting an increase of actual emissions.<sup>81</sup>

BMA has applied to the Queensland government for a number of changes to the approval since August 2010, but none of these involved material changes to emissions.<sup>82</sup>

For all four reporting years, Caval Ridge exceeded the maximum annual emissions anticipated in its EIS. Actual emissions ranged from 139% to 176% of the maximum. The change to GWP in that time can only account for a maximum of 19% of this discrepancy. Over the four reporting years, emissions totalled 2,042,677 tCO<sub>2</sub>e, approximately 764,757 tCO<sub>2</sub>e more than the combined estimated maximum.

In four years, BMA has reported 25% of the emissions expected over the 30-year life of its mine. If the new emissions factor was applied to the original estimate, the estimated life of mine emissions would be 9,540,167 tCO<sub>2</sub>e, and the emissions reported over the four years still equate to approximately 21% of the 30-year total.

<sup>75</sup> Unless otherwise specified, the percentage and actual differences in emissions described and illustrated in this report refer to the difference between reported emissions and estimated emission as written in EISs, i.e. not adjusted to reflect changes to GHG calculation methods.

<sup>76</sup> Depending on whether we calculate using the emissions factor current at the time of the EIS or the most relevant emissions factor for each of the reporting years.

<sup>77</sup> Queensland government (2010) Bowen Basin Coal Growth Project: Caval Ridge Mine Coordinator-General's evaluation report for an environmental impact statement, Department of State Development, Infrastructure, Local Government and Planning, Queensland Government, accessed 30 November 2021. [https://www.statedevelopment.qld.gov.au/\\_data/assets/pdf\\_file/0018/33417/cg-report-caval-ridge.pdf](https://www.statedevelopment.qld.gov.au/_data/assets/pdf_file/0018/33417/cg-report-caval-ridge.pdf)

<sup>78</sup> BMA (2015) Caval ridge Mine EPBC Compliance Report, BHP, accessed 30 November 2021. [https://www.bhp.com/-/media/bhp/regulatory-information-media/coal/bhp-billiton-mitsubishi-alliance/caval-ridge/regulatory-compliance/150909\\_coal\\_bma\\_cavalridge\\_compliancereport\\_environmentalprotectionandbiodiversityconservationact19992015report.pdf](https://www.bhp.com/-/media/bhp/regulatory-information-media/coal/bhp-billiton-mitsubishi-alliance/caval-ridge/regulatory-compliance/150909_coal_bma_cavalridge_compliancereport_environmentalprotectionandbiodiversityconservationact19992015report.pdf)

<sup>79</sup> BMA (2009) page 10, Chapter 11 of Caval Ridge Coal Mine Project – Environmental Impact Statement, Department of State Development, Infrastructure, Local Government and Planning, Queensland Government, accessed 30 November 2021. <https://eisdocs.dsdip.qld.gov.au/Bowen%20Basin%20Coal%20Growth%20Proj%202%20-%20Caval%20Ridge%20Mine/EIS/EIS/11-greenhouse-gases.pdf>

<sup>80</sup> BMA (2009) page 9, Chapter 11 of Caval Ridge Coal Mine Project – Environmental Impact Statement, Department of State Development, Infrastructure, Local Government and Planning, Queensland Government, accessed 30 November 2021. <https://eisdocs.dsdip.qld.gov.au/Bowen%20Basin%20Coal%20Growth%20Proj%202%20-%20Caval%20Ridge%20Mine/EIS/EIS/11-greenhouse-gases.pdf>

<sup>81</sup> Department of the Environment and Energy (2019) National Greenhouse Accounts Factors, Department of Industry, Sciences, Energy and Resources, Australian Government, accessed 30 November 2021. <https://www.industry.gov.au/sites/default/files/2020-07/national-greenhouse-accounts-factors-august-2019.pdf>; Department of the Environment and Energy (2016) National Greenhouse Accounts Factors, Department of Industry, Sciences, Energy and Resources, Australian Government, accessed 30 November 2021. <https://www.industry.gov.au/sites/default/files/2020-07/national-greenhouse-accounts-factors-august-2016.pdf>

<sup>82</sup> Department of State Development, Infrastructure, Local Government and Planning (2017) Caval Ridge Mine Project Changes, Department of State Development, Infrastructure, Local Government and Planning, Queensland Government, accessed 30 November 2021. <https://www.statedevelopment.qld.gov.au/coordinator-general/assessments-and-approvals/coordinated-projects/completed-projects/caval-ridge-mine/project-changes>

## Foxleigh Mine | Middlemount South, POSCO and Nippon Steel (Joint Venture)

Bowen Basin, QLD (traditional lands of the Barada Barna and Widi peoples)

### Foxleigh Mine

Annual GHG emissions, tCO<sub>2</sub>e

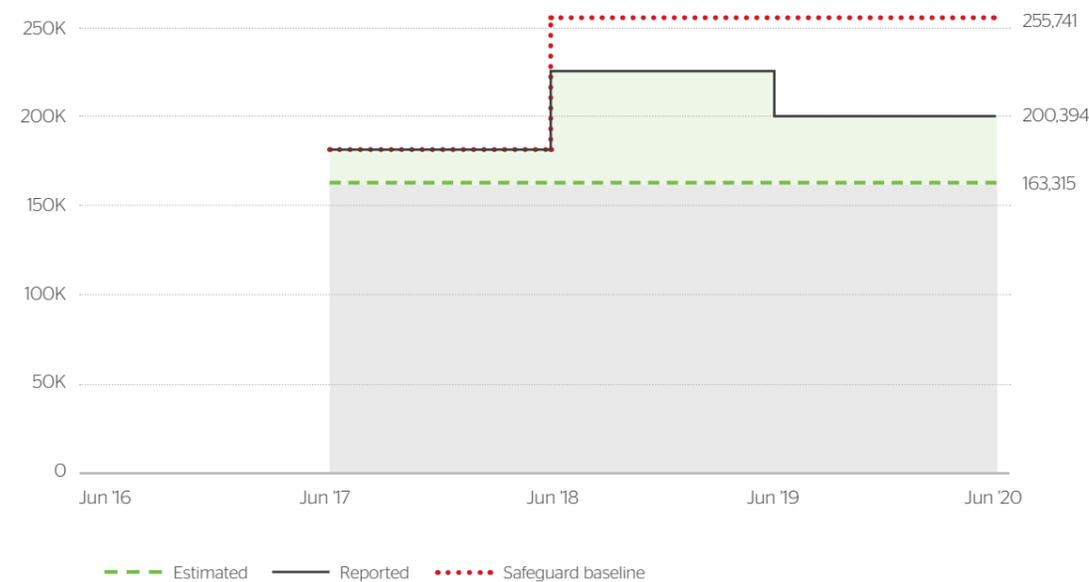


Figure 11

Source: Hansen Bailey<sup>83</sup>; CER<sup>84</sup>; ACF

### What did we find?

- Over the three years that the Joint Venture reported emissions were between 11.35% and 38% over the maximum anticipated at the mine.
- Even factoring in changes to GHG calculations, the Foxleigh Mine exceeded the anticipated maximum in 2018/19. The same year its safeguard baseline increased by 57%.

<sup>83</sup> Department of Environment and Science, Queensland Government, 2012, Foxleigh Mine EIS, provided to ANU students by the Department of Environment and Science, Queensland Government, 2020. Not available online.

<sup>84</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>



### What were the details?

The Queensland government finalised the EIS assessment report for Foxleigh Mine in July 2013.<sup>85</sup> The EIS, written by Hansen Bailey in 2012 for Anglo American, states that the maximum annual emissions from the mine would be 183,605 tCO<sub>2</sub>e, and since 20,290 tCO<sub>2</sub>e of that was allocated to electricity (scope 2), we estimate that 163,315 tCO<sub>2</sub>e of that figure can be considered Scope 1.<sup>86</sup> The EIS used Method 1.<sup>87</sup>

The reported emissions from the last three reporting years was 181,850 tCO<sub>2</sub>e in 2017/18, 225,384 tCO<sub>2</sub>e in 2018/19, and 200,394 tCO<sub>2</sub>e in 2019/20.<sup>88</sup> Emissions each year were 11.35%, 38% and 22.7% respectively above the EIS estimate. The 2017/18, and even the 2019/20 reported emissions (if we are being generous), can possibly be explained by the changed GWP for methane and the updated emissions factor for Method 1 (which would result in a 16.9% increase overall). However, the excess emissions in 2018/19 cannot be explained by changes in GHG calculation methods.

<sup>85</sup> Queensland Government (2013) Foxleigh Plains Project, Queensland Government, accessed 30 November 2021. <https://www.qld.gov.au/environment/pollution/management/eis-process/projects/completed/foxleigh-plains-project>

<sup>86</sup> Hansen Bailey (2012) page 293, Foxleigh Plains Project Environment Impact Statement. The EIS reports 20,290 tCO<sub>2</sub>e for electricity from the mine, which was deducted from the total figure. Department of Environment and Science, Queensland Government, 2012, Foxleigh Mine EIS, provided to ANU students by the Department of Environment and Science, Queensland Government, 2020. Not available online.

ACF has obtained documents under Freedom of Information laws that show an audit of Foxleigh's NGER reporting in 2018/19 had an adverse finding. The audit stated that the company had inadvertently included something incorrectly when calculating the energy content of fuel produced from some element of the mine. Due to redactions, we can only ascertain that this led to overreporting of the energy production from an 'activity'.<sup>89</sup>

It is difficult to know whether this would account for the increase in emissions. The reported emissions for Foxleigh for 2018/19 have not changed on the public record since the audit was conducted.

<sup>87</sup> Department of Environment and Science, Queensland Government, 2012, Foxleigh Mine EIS, provided to ANU students by the Department of Environment and Science, Queensland Government, 2020. Not available online.

<sup>88</sup> The mine did not report emissions in 2016/17.

<sup>89</sup> FOI 01\_2021, Clean Energy Regulator

## Gorgon Project | Chevron

Barrow Island, offshore north of Exmouth, WA (traditional lands of the Jinigudera peoples)

### Gorgon

Annual GHG emissions, tCO<sub>2</sub>e

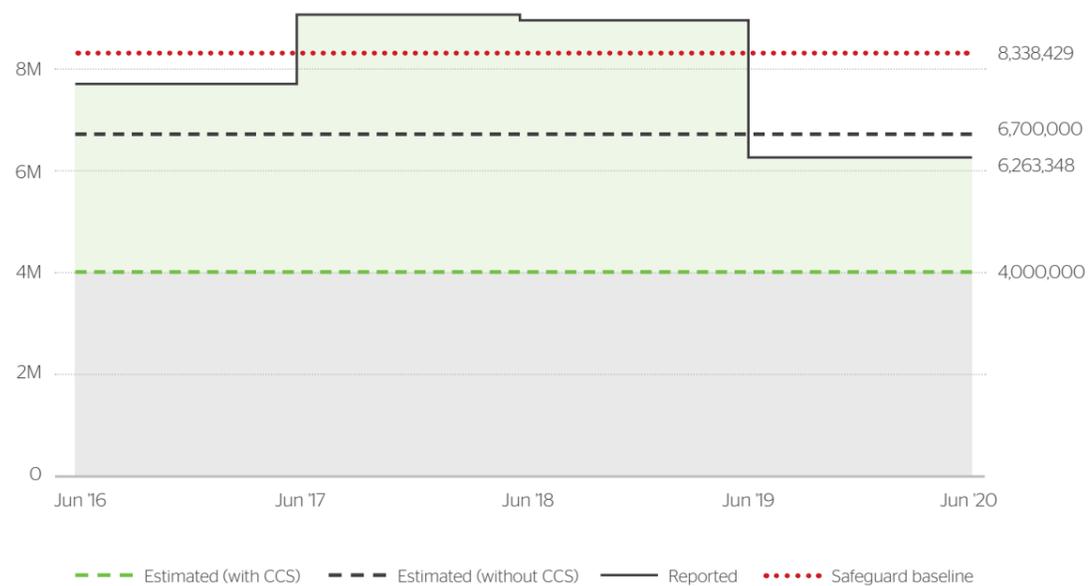


Figure 12

Source: EPA WA<sup>90</sup>; CER<sup>91</sup>; ACF

<sup>90</sup> page 198, WA EPA (Western Australia Environment Protection Authority) (2005) "Main Report: Vol II", *Draft Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Gorgon Development*, WA EPA, Western Australian Government, accessed 1 December 2021. [https://www.epa.wa.gov.au/sites/default/files/PER\\_documentation/1496-ERMP-EIS-Main%20Report%20Volume%20II-HR.pdf](https://www.epa.wa.gov.au/sites/default/files/PER_documentation/1496-ERMP-EIS-Main%20Report%20Volume%20II-HR.pdf)

<sup>91</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

### What did we find?

- Chevron's Gorgon Project was approved based on a requirement to sequester at least 80% of emissions over the first five years through Carbon Capture and Storage (CCS). In the 2020/21 financial year, only 68% of carbon released by the project had been reinjected.<sup>92</sup>
- Assuming Chevron is beholden to the estimates that relied on CCS, emissions from the gas project ranged from 157% to 226% of annual emissions expected in the EIS.
- Even using the estimate Chevron provided for the project without CCS, emissions were over the estimate in every single year of its non-CCS-operational period. Over these three years, it reported emissions at 115%, 135% and 134% of the estimated amount. Excess emissions in 2016/17 can be explained predominantly by changes to the GWP for methane, however excess emissions in 2017/18 and 2018/19 cannot.
- This means the emissions at Gorgon have exceeded even the worst case scenario described in Chevron's EIS.

### What were the details?

Chevron's 2005 EIS stated that with CCS its emissions would be 4 million tCO<sub>2</sub>e annually. Without CCS, the company estimated its annual emissions would be as high as 6.7 million tCO<sub>2</sub>e annually.<sup>93</sup> The EIS used an American petroleum industry program called SANGEA™ Emissions Estimating System to estimate the emissions.<sup>94</sup>

Chevron's Gorgon Project was approved based on a requirement to sequester at least 80% of emissions over the first five years through CCS. In the 2020/21 financial year (the CCS project's most successful year to date), only 68% of that year's target for carbon reinjection was achieved.<sup>95</sup>

Actual emissions are well over Chevron's given estimate of 4,000,000 tCO<sub>2</sub>e per year (which assumed CCS was operational), with 7,721,771 tCO<sub>2</sub>e in 2016/17 (193%), 9,022,087 tCO<sub>2</sub>e in 2017/18 (226%), 8,970,457 tCO<sub>2</sub>e in 2018/19 (224%) and 6,263,348 tCO<sub>2</sub>e in 2019/20 (157%).

If we calculate using Chevron's estimate without the CCS project (6,700,000 tCO<sub>2</sub>e), Chevron still clearly emitted more than it estimated in its approved EIS every year until the CCS project was operational. In 2016/17, emissions were 115% of the anticipated amount. In 2017/18 emissions were 135% and in 2018/19 emissions were 134% of the anticipated amount.

Given the EIS is from 2005, we can expect emissions to be up to 119% of estimates due to the change in the accepted GWP of methane from 21 to 25. This means emissions from 2016/17 are within a reasonable range of the estimate. However, 2017/18 and 2018/19 cannot be explained by changes to methane calculations.

When Chevron advised in its final EIS that emissions would be "as high as" 6.7 million tCO<sub>2</sub>e, it also noted that: "The impact of this increased level of greenhouse gas emissions at local, regional and global scales has not been assessed as it is outside the agreed scope of the EIS/ERMP".<sup>96</sup> This means the full impact of the recent years of emissions from the project were not formally considered by the WA government.

<sup>92</sup> Readfearn, G (12 November 2021) 'Australia's only working carbon capture and storage project fails to meet target', *Guardian Australia*, accessed 1 December 2021. <https://www.theguardian.com/australia-news/2021/nov/12/australias-only-working-carbon-capture-and-storage-project-fails-to-meet-target>

<sup>93</sup> page 198, WA EPA (Western Australia Environment Protection Authority) (2005) "Main Report: Vol II", *Draft Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Gorgon Development*, WA EPA, Western Australian Government, accessed 1 December 2021. [https://www.epa.wa.gov.au/sites/default/files/PER\\_documentation/1496-ERMP-EIS-Main%20Report%20Volume%20II-HR.pdf](https://www.epa.wa.gov.au/sites/default/files/PER_documentation/1496-ERMP-EIS-Main%20Report%20Volume%20II-HR.pdf)

<sup>94</sup> page 210, WA EPA (Western Australia Environment Protection Authority) (2005) "Main Report: Vol II", *Draft Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Gorgon Development*, WA EPA, Western Australian Government, accessed 1 December 2021. [https://www.epa.wa.gov.au/sites/default/files/PER\\_documentation/1496-ERMP-EIS-Main%20Report%20Volume%20II-HR.pdf](https://www.epa.wa.gov.au/sites/default/files/PER_documentation/1496-ERMP-EIS-Main%20Report%20Volume%20II-HR.pdf)

<sup>95</sup> Readfearn, G (12 November 2021) 'Australia's only working carbon capture and storage project fails to meet target', *Guardian Australia*, accessed 1 December 2021. <https://www.theguardian.com/australia-news/2021/nov/12/australias-only-working-carbon-capture-and-storage-project-fails-to-meet-target>

<sup>96</sup> page 387, Chevron (2006) *Final Environmental Impact Statement/Response to Submissions on the Environmental Review and Management Programme for the Proposed Gorgon Development*, Chevron, accessed 1 December 2021. [https://australia.chevron.com/-/media/australia/our-businesses/documents/entire\\_document.pdf](https://australia.chevron.com/-/media/australia/our-businesses/documents/entire_document.pdf)

## Grosvenor Mine | Anglo American

Bowen Basin, QLD (traditional lands of the Barada Barna and Widi peoples)

### Grosvenor Mine

Annual GHG emissions, tCO<sub>2</sub>e

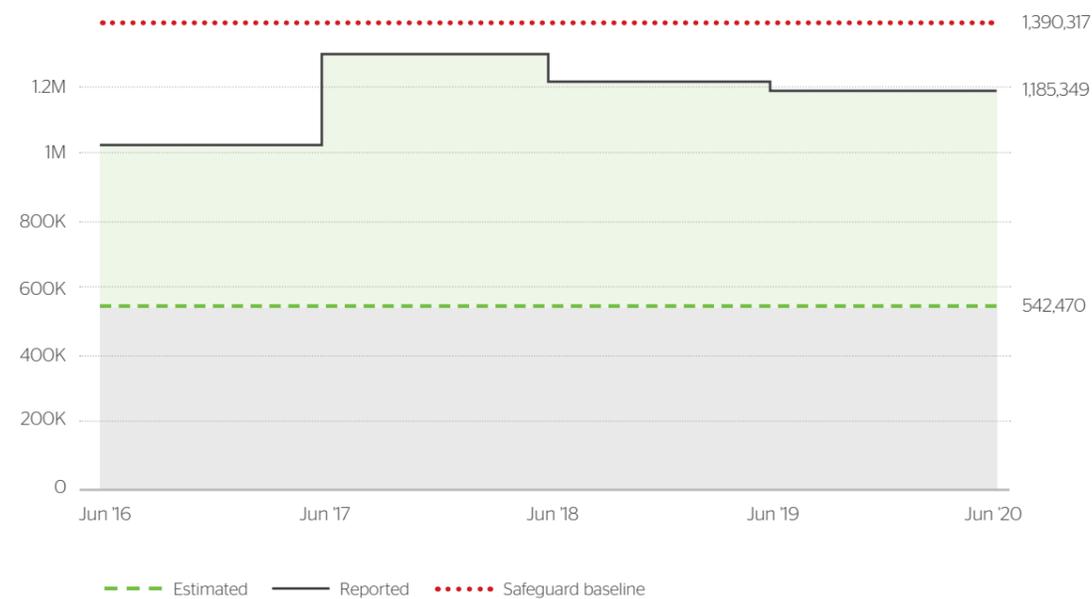


Figure 13

Source: Anglo American<sup>97</sup>; CER<sup>98</sup>; ACF

### What did we find?

- Scope 1 emissions from Grosvenor in the four reporting years were roughly double the anticipated maximum of combined scope 1 and 2 emissions in the EIS, ranging between 188% and 239% of the estimate.
- Anglo American has had methane issues at the mine that go beyond climate pollution, with five workers suffering serious injuries after an explosion in May 2020.

<sup>97</sup> Hansen Bailey (2010) 'Executive Summary', EIS, Anglo American, accessed 1 December 2021. <https://www.angloamerican.com.au/~media/Files/A/Anglo-American-Australia-V2/pdf/0%20-%20Executive%20Summary>

<sup>98</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021.

- Interestingly, an energy company, EDL, has an Emissions Reduction Fund (ERF) project relating to abating emissions from Grosvenor.<sup>99</sup> The Clean Energy Regulator has handed 750,025 carbon credits to EDL for abating a small fraction of the fugitive emissions from the mine.<sup>100</sup> Approximately \$5 million of taxpayer money was used to purchase 412,785 of those credits through an ERF reverse auction. The total contract is worth an estimated \$9 million.
- Anglo American has never exceeded its safeguard baseline, which is 2.5 times the estimated maximum in the 2010 EIS. Grosvenor is a perfect example of the failure of the safeguard mechanism to ensure emissions from industry did not undermine gains made spending taxpayer money in the ERF.

### What were the details?

Anglo American received an EIS assessment report from the Queensland government on 22 September 2011.<sup>101</sup> In the EIS, written by Hansen Bailey in 2010, Anglo American stated that the maximum annual emissions from diesel consumption, electricity and fugitive emissions (scope 1 and 2) at the mine would be 542,470 tCO<sub>2</sub>e.<sup>102</sup> Reported emissions under the safeguard mechanism only cover scope 1, therefore we would expect the relevant estimated emissions to be lower. However, since we cannot disaggregate them using the EIS we have used the total scope 1 and 2 estimate for our calculations and for the graph above.

Method 1 is not available for calculating emissions at underground mines like Grosvenor, so we can be confident that the emissions being reported are based on site-specific emissions factors or on-ground monitoring.<sup>103</sup>

Anglo American was in the spotlight for methane emissions at Grosvenor after a methane explosion injured five workers on 6 May 2020.<sup>104</sup> In response to work health and safety issues, a number of problematic methane exceedances in the Bowen were investigated by the Queensland Coal Mining Board. It was recommended that additional drainage capacity be added beyond the maximum (suggesting, perhaps, that infrastructure was set up based on assumptions in the impact statements and that current methane concentrations were genuinely unexpected).<sup>105</sup>

<sup>99</sup> Two registered ERF projects: CER (Clean Energy Regulator) (2021) 'Grosvenor Waste Coal Mine Gas Power Station', CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId={7F242924-BF02-45EE-A289-1ABCC954E9CE}&ItemID=385>; CER (2021) 'Grosvenor 2 Waste Coal Mine Gas Power Station Project', CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId={7F242924-BF02-45EE-A289-1ABCC954E9CE}&ItemID=676>

<sup>100</sup> CER (Clean Energy Regulator) (2021) 'Grosvenor Waste Coal Mine Gas Power Station', CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId={7F242924-BF02-45EE-A289-1ABCC954E9CE}&ItemID=385>; CER (2021) 'Grosvenor 2 Waste Coal Mine Gas Power Station Project', CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId={7F242924-BF02-45EE-A289-1ABCC954E9CE}&ItemID=676>

<sup>101</sup> Queensland Government (2011) 'Grosvenor Coal Project', Queensland Government, accessed 1 December 2021. <https://www.qld.gov.au/environment/pollution/management/eis-process/projects/completed/grosvenor-coal-project>

<sup>102</sup> Hansen Bailey (2010) 'Executive Summary', EIS, Anglo American, accessed 1 December 2021. <https://www.angloamerican.com.au/~media/Files/A/Anglo-American-Australia-V2/pdf/0%20-%20Executive%20Summary>

<sup>103</sup> Department of the Environment (2014) National Greenhouse Accounts Factors, Department of Industry, Sciences, Energy and Resources, Australian Government, accessed 1 December 2021. <https://www.industry.gov.au/sites/default/files/2020-07/national-greenhouse-accounts-factors-decemeber-2014.pdf>

<sup>104</sup> Maddison, M, Parsons, A and Loftus, T (14 June 2021) 'Queensland Coal Mining Board of Inquiry releases report into Grosvenor explosion', ABC News, accessed 1 December 2021. <https://www.abc.net.au/news/2021-06-14/coal-mining-inquiry-report-grosvenor-explosion/100213202>

<sup>105</sup> page 7, Queensland Coal Mining Board of Inquiry (2020) Report Part 1, Parliament, Queensland Government, accessed 1 December 2021. <https://www.parliament.qld.gov.au/documents/committees/TRC/2020/Estimates2020/tp-11Dec2020-3.pdf>

The board's report conceded that:

*Mining at an increased depth, where higher volumes of methane are present, and increased production rates, are both features of modern longwall mining. They present complex challenges for the management of methane in underground coal mines.<sup>106</sup>*

Deeper and older coal seams are known to be more methane-rich and deeper seams in the Bowen Basin are considered some of the most methane-rich in the country.

Over the four reporting years in the study, Grosvenor was estimated in its impact statement to release 2,169,880 tCO<sub>2</sub>e. Grosvenor instead emitted more than twice this — 4,710,236 tCO<sub>2</sub>e. This is 2,540,356 tCO<sub>2</sub>e (scope 1) more than its expected maximum (which included scope 2) (Figure 6).

Grosvenor Mine has a corresponding Emissions Reduction Fund (ERF) project which involves capturing methane and burning it for electricity generation. The project has generated 288,797 carbon credits between 2018 and 2021.<sup>107</sup> In addition to those credits, an energy company called EDL holds an active contract with the Clean Energy Regulator from the November 2015 ERF auction for the delivery of 740,406 tCO<sub>2</sub>e of abatement over a seven-year period. The contract is worth roughly \$9 million.<sup>108</sup>

So far, EDL has sold 461,228 carbon credits to the government.<sup>109</sup> Based on the average price at auction in November 2015, ACF estimates that this would have cost the taxpayer around \$5 million.

It is concerning that public money is being spent on abatement that is being far outstripped by excess emissions at Grosvenor. We will explain what this means in a policy context later in this report.

Despite Anglo American recently stating that “tackling climate change could not be more urgent” and the fact that Grosvenor is a loss-making mine, the company is committed to keeping the mine open with a view to long-term profitability.<sup>110</sup>

This is a perfect example of the failure of the safeguard mechanism to ensure emissions from industry did not undermine gains made spending public money in the ERF.

## LNG Pipeline | Origin Energy

QLD (traditional lands of the Barunggam, Yiman, Wuli-wuli, Wadjigu, Gangulu, Bayali and Gureng Gureng peoples)

### LNG Pipeline

Annual GHG emissions, tCO<sub>2</sub>e

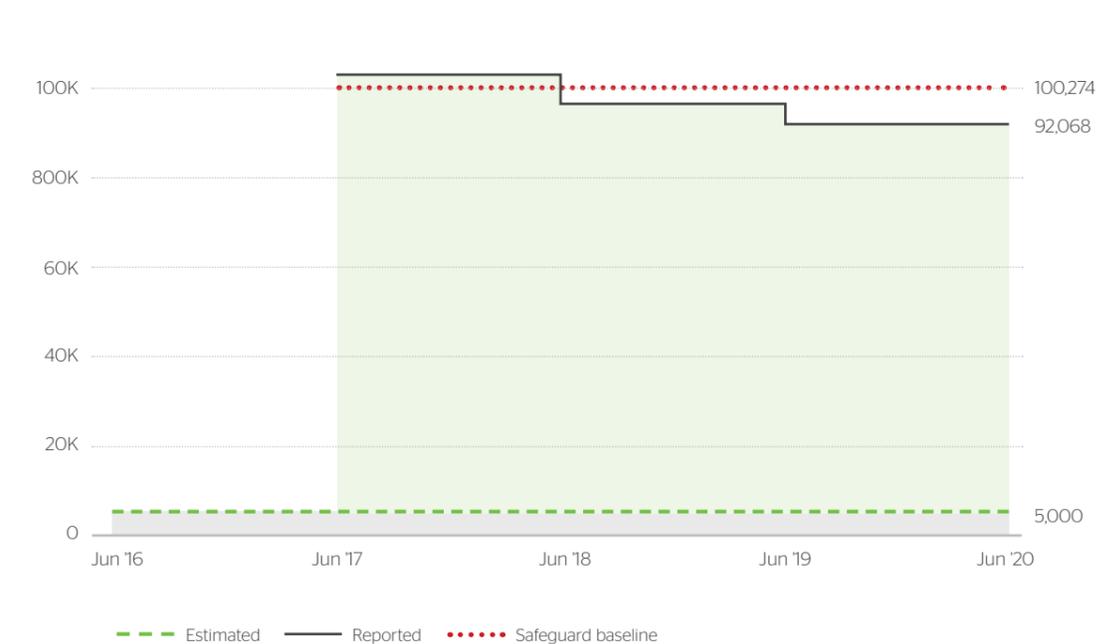


Figure 14

Source: APLNG<sup>111</sup>; CER<sup>112</sup>; ACF

### What did we find?

- Emissions at Origin Energy's LNG pipeline were expected to be negligible. Instead, emissions have been 18 to 20 times the amount anticipated in the EIS. In three years, it has emitted nearly its entire 33-year lifetime predicted emissions.
- The EIS identifies that “gas leaks are the dominant source of GHG emissions”. This suggests the reported excess emissions are a result of leaks in the pipeline, but given pipeline emissions are calculated using proxy figures it is unlikely a leak would be reflected in the data used in this study. Proxy figures rely on the length of the pipeline and a default emissions factor. It is also unlikely the length of the pipeline is 18 to 20 times longer than anticipated.

- Recent studies conclude that gas loses its climate benefits relative to coal when the leakage rate along the supply chain exceeds 2.7% of production. It is unclear whether the underestimation by Origin Energy is emblematic of the broader supply chain for the project.

<sup>106</sup> page 1, Queensland Coal Mining Board of Inquiry (2020) Report Part 1, Parliament, Queensland Government, accessed 1 December 2021. <https://www.parliament.qld.gov.au/documents/committees/TRC/2020/Estimates2020/tp-11Dec2020-3.pdf>

<sup>107</sup> CER (Clean Energy Regulator) (2021) ‘Grosvenor 2 Waste Coal Mine Gas Power Station Project’, CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId=%7B7F242924-BF02-45EE-A289-1ABCC954E9CE%7D&ItemID=676>

<sup>108</sup> Calculated based on the average price of ACCU at the November 2015 auction—\$12.25.

<sup>109</sup> CER (Clean Energy Regulator) (2021) ‘Grosvenor Waste Coal Mine Gas Power Station’, CER, Australian Government, accessed 1 December 2021. <http://www.cleanenergyregulator.gov.au/ERF/Pages/Emissions%20Reduction%20Fund%20project%20and%20contract%20registers/Project%20register/ERF-Project-Detailed-View.aspx?ListId=%7F242924-BF02-45EE-A289-1ABCC954E9CE&ItemID=385>

<sup>110</sup> Creamer, M (26 April 2021) ‘Tackling climate change could not be more urgent – Anglo American’, Mining Weekly, accessed 1 December 2021. [https://www.miningweekly.com/article/tackling-climate-change-could-not-be-more-urgent-anglo-american-2021-04-26/rep\\_id:3650](https://www.miningweekly.com/article/tackling-climate-change-could-not-be-more-urgent-anglo-american-2021-04-26/rep_id:3650); Morrison, K (13 April 2021) ‘Australia's Queensland coal exports hit four-year low’, Argus Media, accessed 1 December 2021. <https://www.argusmedia.com/en/news/2204625-australias-queensland-coal-exports-hit-four-year-low>

<sup>111</sup> APLNG (2010) ‘Volume 3: Gas Pipeline Chapter 14: Greenhouse Gases’ Australia Pacific LNG Project EIS, APLNG, accessed 1 December 2021. [https://aplng.com.au/wp-content/uploads/2021/07/Vol\\_3\\_Chapter14\\_GHG.pdf](https://aplng.com.au/wp-content/uploads/2021/07/Vol_3_Chapter14_GHG.pdf)

<sup>112</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

## What were the details?

The LNG pipeline is a portion of a project called the APLNG project. APLNG is a joint venture between Origin Energy, ConocoPhillips and Sinopec. Origin is responsible for coal seam gas extraction and piping the gas to the processing plants.<sup>113</sup>

The EIS chapter on greenhouse gases for the APLNG pipeline was authored by APLNG in March 2010.<sup>114</sup> It anticipates that the lifetime scope 1 emissions from the pipeline will be 300,000 tCO<sub>2</sub>e. Emissions were calculated using method 1. The emissions factors have increased since the EIS was written due to the change in the GWP for methane, however a small change in the factors cannot explain the almost twenty-fold emissions reported.<sup>115</sup>

The maximum annual emissions were expected to occur in the second year (expected to be 2012), with 100,000 tCO<sub>2</sub>e expected to be released through land clearing and diesel consumption. After that, it was expected that annual average emissions would be 5,000 tCO<sub>2</sub>e.<sup>116</sup>

The APLNG project commenced in late 2015, with the first LNG shipped in early 2016.<sup>117</sup>

Emissions reported for the pipeline over just three reporting years totalled 291,212 tCO<sub>2</sub>e, nearly all 300,000 tCO<sub>2</sub>e emissions APLNG anticipated for the 33-year life of the project.

APLNG states in the EIS that the calculation of leaked methane is based on the National Greenhouse Accounting factors, “where the factor (tCO<sub>2</sub>e/pipeline km) is multiplied by the length of the pipeline to give the scope 1 GHG emissions. In practice gas leakages from pipelines are extremely small, and this estimation method is likely to provide an overestimate.”<sup>118</sup>

It is highly likely that Origin is reporting emissions using method 1, however we do not consider it likely that the length of the pipeline has increased by 18 to 20 times the original length. We are unsure what has caused the reported emissions to be so much greater than the EIS anticipated emissions. Unfortunately, Origin did not respond to our request for clarification.

It could be a highly significant finding that the APLNG project is emitting 18 to 20 times the amount of methane anticipated along its pipeline — if there is no alternate explanation. Recent studies conclude that “gas burned to generate electricity loses its climate benefits in the near term relative to coal when the leakage rate along the supply chain exceeds 2.7% of production”.<sup>119</sup> The fact that APLNG has potentially underestimated emissions along the pipeline by such an enormous amount is not

sufficient to demonstrate a more than 2.7% leakage rate across all of production, but it is a worrying sign.

The Guardian reported in 2017 that Origin Energy (the operators of the APLNG coal seam gas extraction and pipeline) were alleged by a company whistleblower to intentionally ignore CSG well leakage.<sup>120</sup>

Under the safeguard mechanism, operators are not required to report facility emissions unless they exceed 100,000 tCO<sub>2</sub>e per year. In this case Origin entered into a three-year Multi-year Monitoring Period, which requires it to report emissions for three years regardless of the amount. From FY 21/22 it will only need to report if emissions again exceed 100,000 tCO<sub>2</sub>e.

Unless Origin’s LNG Pipeline once again emits 20 times its EIS estimate, we are unlikely to continue to see data from this project under the government’s current reporting scheme. This is despite the fact that, if the current trend continues, it is very likely to continue emitting roughly 20 times its expected emissions. This case study provides a good example of why the threshold should be reduced to increase visibility of climate-polluting projects.

<sup>113</sup> Origin Energy (2021) ‘Exploration and Production’, Origin Energy, accessed 1 December 2021. <https://www.originenergy.com.au/about/who-we-are/what-we-do/exploration-production.html>

<sup>114</sup> APLNG (2010) ‘Volume 3: Gas Pipeline Chapter 14: Greenhouse Gases’ *Australia Pacific LNG Project EIS*, APLNG, accessed 1 December 2021. [https://aplng.com.au/wp-content/uploads/2021/07/Vol\\_3\\_Chapter14\\_GHG.pdf](https://aplng.com.au/wp-content/uploads/2021/07/Vol_3_Chapter14_GHG.pdf)

<sup>115</sup> age 32, Department of the Environment and Energy (2019) *National Greenhouse Accounts Factors*, Department of Industry, Sciences, Energy and Resources, Australian Government, accessed 30 November 2021. <https://www.industry.gov.au/sites/default/files/2020-07/national-greenhouse-accounts-factors-august-2019.pdf>

<sup>116</sup> page 12-15, APLNG (2010) ‘Volume 3: Gas Pipeline Chapter 14: Greenhouse Gases’ *Australia Pacific LNG Project EIS*, APLNG, accessed 1 December 2021. [https://aplng.com.au/wp-content/uploads/2021/07/Vol\\_3\\_Chapter14\\_GHG.pdf](https://aplng.com.au/wp-content/uploads/2021/07/Vol_3_Chapter14_GHG.pdf)

<sup>117</sup> Origin Energy (2021) ‘Exploration and Production’, Origin Energy, accessed 1 December 2021. <https://www.originenergy.com.au/about/who-we-are/what-we-do/exploration-production.html>

<sup>118</sup> age 12, APLNG (2010) ‘Volume 3: Gas Pipeline Chapter 14: Greenhouse Gases’ *Australia Pacific LNG Project EIS*, APLNG, accessed 1 December 2021. [https://aplng.com.au/wp-content/uploads/2021/07/Vol\\_3\\_Chapter14\\_GHG.pdf](https://aplng.com.au/wp-content/uploads/2021/07/Vol_3_Chapter14_GHG.pdf)

<sup>119</sup> Storrow, B (5 May 2020) ‘Methane Leaks Erase Some of the Climate Benefits of Natural Gas’, *Scientific American*, accessed 1 December 2021. <https://www.scientificamerican.com/article/methane-leaks-erase-some-of-the-climate-benefits-of-natural-gas/>

<sup>120</sup> Slezak, M (27 January 2017) ‘Origin Energy ignores coal seam gas well leaks, whistleblower says’, *Guardian Australia*, accessed 1 December 2021. <https://www.theguardian.com/environment/2017/jan/27/origin-energy-ignores-coal-seam-gas-well-leaks-whistleblower-says>

## Maules Creek open cut mine | Whitehaven Coal

Gunnedah basin, NSW (traditional land of the Gunn-e-darr people of the Kamilaroi Tribe)

### Maules Creek Open Cut Coal Mine

Annual GHG emissions, tCO<sub>2</sub>e

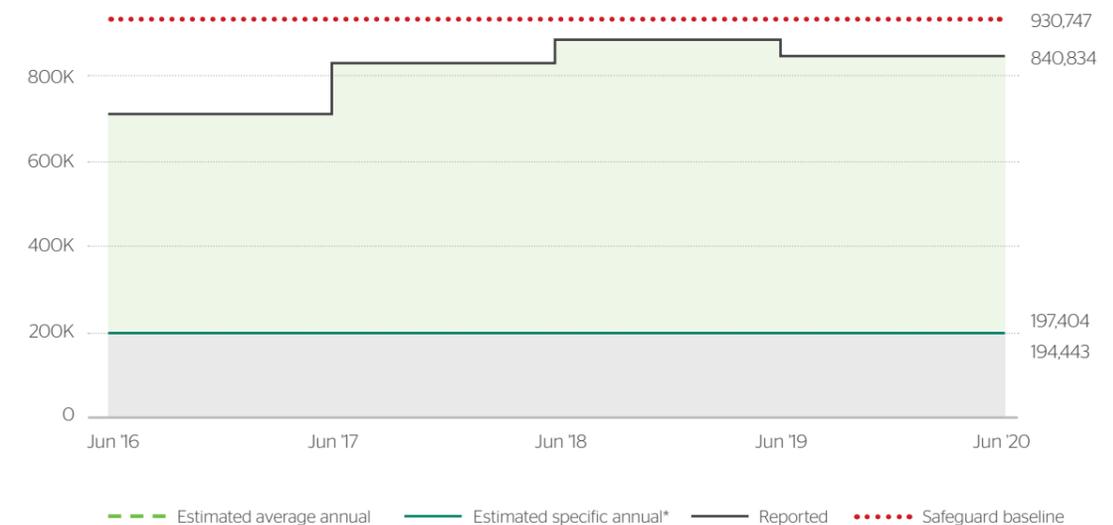


Figure 15

\*Year-specific estimates are based on summing the individual scope 1 emissions for each category for each year, but as the graph shows, they are very close to the estimate average.

Source: Whitehaven Coal<sup>121</sup>; CER<sup>122</sup>; ACF

## What did we find?

- Over four reporting years, Whitehaven Coal has emitted approximately 16.5 years’ worth of the original emissions estimated for the life of the mine.
- Between 2016 and 2020, emissions were 3.6 to 4.5 times what was estimated.
- It appears the blowout is partially due to fugitive emissions. Whitehaven and the government use very different methods for calculating fugitive emissions.
- Whitehaven’s emissions factor for calculating fugitive emissions, which it believes is specific to its site, is an astonishing 61 times less than the government’s default factor for NSW open cut mines. The site specific factor was used in Whitehaven’s EIS — nevertheless, it currently reports using the government’s default factors.

<sup>121</sup> PAE Holmes (2011) ‘Air Quality Impact Assessment’, Maules Creek Coal Project Environmental Assessment, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Environmental%20Assessments/MCC-Environmental%20Assessment-Appendix%20F%20-%20Air%20Quality%20Impact%20Assessment%20Part%203.pdf>

<sup>122</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

Over four reporting years,  
**Whitehaven Coal has emitted approximately 16.5 years' worth of the original emissions** estimated for the life of the mine.



### What were the details?

The EIS for Whitehaven Coal's Maules Creek was written in 2011 by Hansen Bailey. The emissions estimation is published in the EIS Air Quality Assessment, undertaken by PAE Holmes.<sup>123</sup> The mine was approved 14 March 2012 by the NSW Planning and Assessment Commission.<sup>124</sup> The mine's approval has subsequently had seven modifications, none of which affect emissions.<sup>125</sup>

The average annual scope 1 emissions for Maules Creek were predicted to be 197,404 tCO<sub>2</sub>e.<sup>126</sup> Year-specific estimates in the graph above are based on summing the individual scope 1 emissions for each category for each year, but as the graph shows, they are very close to the estimated average. The life of the project is expected to be 21 years and mining commenced in 2014.<sup>127</sup> The expected total scope 1 emissions for the life of the mine by our calculations is 4,145,484 tCO<sub>2</sub>e.

In the four reporting years, Whitehaven Coal has emitted 3,259,340 tCO<sub>2</sub>e in total (approximately 79% or 16.5 years' worth of the original emissions estimated). Between 2016 and 2020, emissions were between 3.6 and 4.5 times what was estimated.

Whitehaven argues that the apparent emissions excess at Maules Creek open cut mine is an artefact of using different methodologies to calculate emissions.<sup>128</sup> Whitehaven maintains that the emissions reported under the safeguard mechanism are an over-calculation, because method 2, which Whitehaven used in its EIS, is more accurate than method 1, which it uses to report to the CER. But since Whitehaven is theoretically free to choose to report using method 2, we have to assume that Whitehaven's site-specific emissions factors are not compliant with the CER's requirements or that Whitehaven chose to report using method 1.

However, in 2019 Whitehaven also reported that emissions intensity across its portfolio had been getting incrementally worse for four years in a row, which it "attributed to an increase in fugitive emissions related to increased ROM coal extraction".<sup>129</sup>

ACF has undertaken calculations based on Whitehaven's site-specific emissions factor and default emissions factor for fugitive emissions. We also calculated diesel emissions based on the outdated default factor used in the PAE Holmes report, and based on the most relevant default factor for each reporting year. The result was that, even using the PAE Holmes emissions factors, in three of the four reporting years, Whitehaven's emissions were 20-35% beyond estimates.

<sup>123</sup> PAE Holmes (2011) 'Air Quality Impact Assessment', *Maules Creek Coal Project Environmental Assessment*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Environmental%20Assessments/MCC-Environmental%20Assessment-Appendix%20F%20-%20Air%20Quality%20Impact%20Assessment%20Part%203.pdf>

<sup>124</sup> NSW Independent Planning Commission (2012) 'Maules Creek Coal Project', Independent Planning Commission, NSW Government, accessed 1 December 2021. <https://www.ipcn.nsw.gov.au/projects/2011/08/maules-creek-coal-project>

<sup>125</sup> NSW Government, 'Maules Creek Coal Mine', NSW Government, accessed 1 December 2021. <https://www.planningportal.nsw.gov.au/major-projects/project/14591>

<sup>126</sup> page 34, PAE Holmes (2011) 'Air Quality Impact Assessment', *Maules Creek Coal Project Environmental Assessment*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Environmental%20Assessments/MCC-Environmental%20Assessment-Appendix%20F%20-%20Air%20Quality%20Impact%20Assessment%20Part%203.pdf>

<sup>127</sup> page 21, Hansen Bailey (2011) 'Stakeholder Engagement', *Maules Creek Coal Project Environmental Assessment*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Environmental%20Assessments/MCC-Environmental%20Assessment-02-Main%20Volume%20Part%202.pdf>; Mining Technology (c. 2015) 'Maules Creek Coal Mine, New South Wales', Mining Technology, accessed 1 December 2021. <https://www.mining-technology.com/projects/maules-creek-coal-mine-new-south-wales/>; Construction of the MCCM commenced in December 2013 and was substantially completed in 2015. The operations phase of the MCCM commenced in June 2014, and coal was first transported from the MCCM via the rail spur in December of 2014. Whitehaven Coal (2015) *Maules Creek Coal Mine 2015 Annual Review*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Annual%20Reviews/MCC-Annual%20Review%202015.pdf>

<sup>128</sup> page 32, Whitehaven Coal (2015) *Maules Creek Coal Mine 2020 Annual Review*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Annual%20Reviews/MCC-Annual%20Review%202020.pdf>

<sup>129</sup> page 6, Whitehaven Coal (2020) 'Environment', *Sustainability Report 2020*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/wp-content/uploads/2020/09/Whitehaven-Coal-Sustainability-Report-2020-Environment.pdf>

## Moorvale Mine | Peabody

Bowen Basin, QLD (traditional lands of the Barada Barna and Widi peoples)

### Moorvale Coal Mine

Annual GHG emissions, tCO<sub>2</sub>e

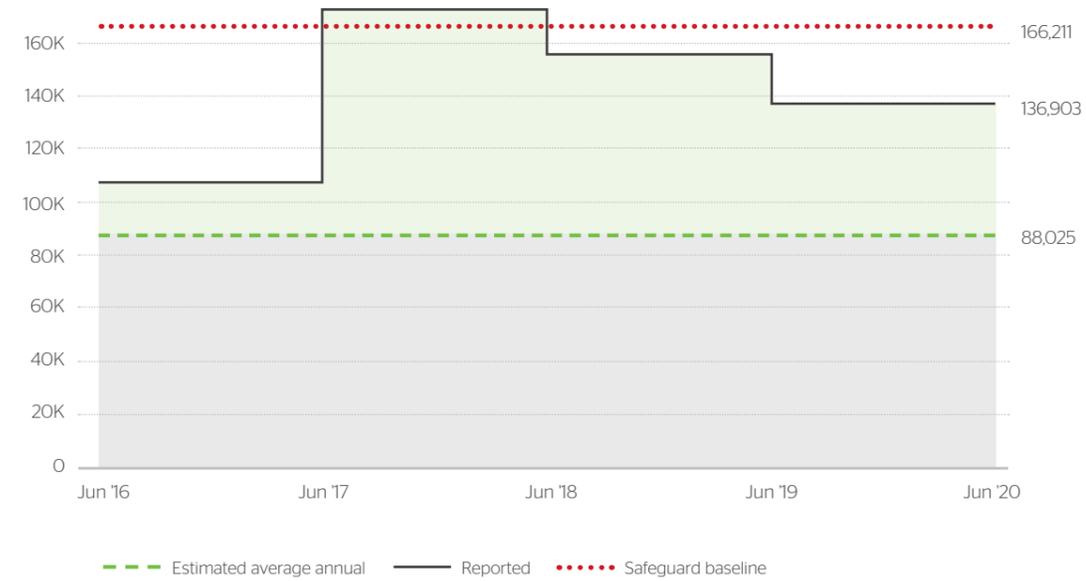


Figure 16

Source: EPA QLD<sup>130</sup>; CER<sup>131</sup>; ACF

### What did we find?

- The EIS underestimated annual emissions, even accounting for the changed GWP of methane since 2002.
- Every reporting year, Peabody had higher emissions, ranging from 121% to 196% of the anticipated amount.
- The mine has been operating for around 20 years and we theorise that Peabody is reaching deeper and more methane-rich seams (characteristic of seams in the Bowen Basin).

<sup>130</sup> page 7, QLD EPA (2012) Moorvale Coal Project EIS Assessment Report, QLD Government, accessed 1 December 2021. [https://www.qld.gov.au/\\_\\_data/assets/pdf\\_file/0022/108382/moorvale-eis-assessment-report-web.pdf](https://www.qld.gov.au/__data/assets/pdf_file/0022/108382/moorvale-eis-assessment-report-web.pdf)

<sup>131</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

### What were the details?

The Queensland government published the assessment report for Moorvale Mine on 2 July 2002.<sup>132</sup> At the time, the total estimated emissions based on 2 million tonnes of coal production a year was 88,025 tCO<sub>2</sub>e.<sup>133</sup> This estimate was for scope 1 and scope 2 emissions. According to Peabody's website, coal production in 2019 was slightly less than 2 million tonnes, suggesting that the estimate is still relevant to existing operations.<sup>134</sup>

Even allowing for the changes to GWP, the higher reported emissions at Moorvale Mine appear to represent an increase of real GHG emissions. The GWP for methane in 2002 was 21, which is 19% less in the relevant reporting years (25). If we multiply the entire 2002 estimate by 1.19 (despite it being unlikely that 100% of those emissions would be from methane), the relative annual emissions (scope 1 and 2) today should be around 102,109 tCO<sub>2</sub>e. However, the estimated emissions included scope 2 emissions and the reported emissions only include scope 1. We would therefore expect the reported emissions to be less than the adjusted estimate.

There is very limited public information on operations at Moorvale, but given it has been operational for nearly 20 years it is highly likely that Peabody is reaching deeper and more methane-rich seams. If this is true, without the adoption of new GHG mitigation measures we can expect emissions at Moorvale to remain significantly higher than estimated.

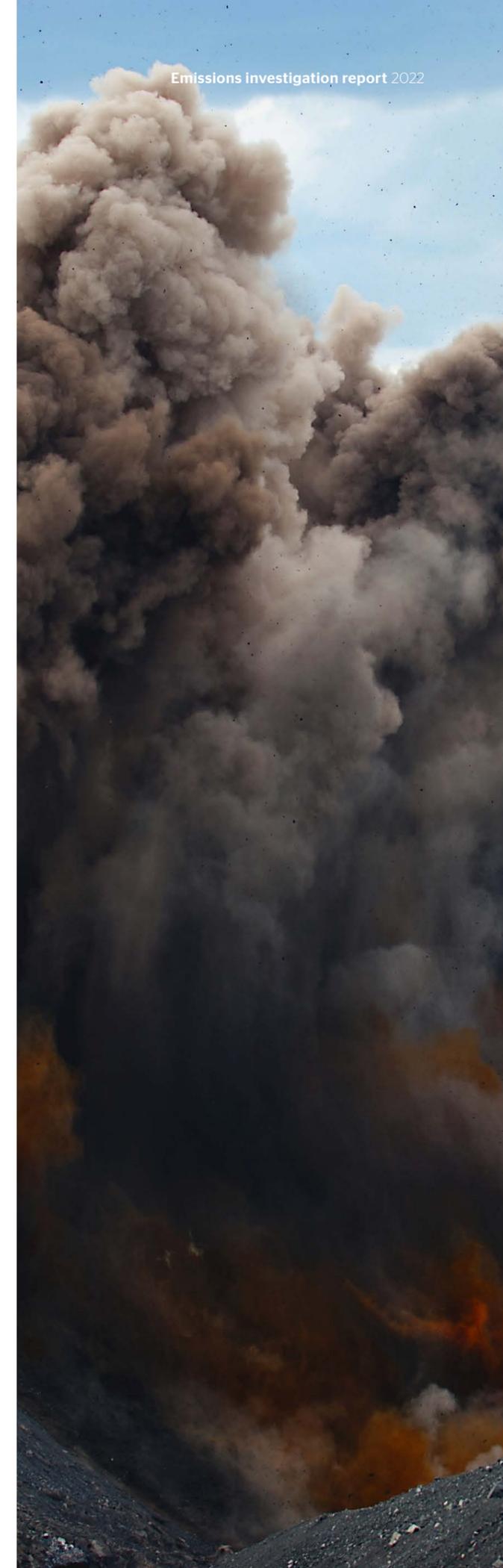
Documents obtained by ACF under Freedom of Information laws show when Peabody's NGER reporting for 2018/19 was audited in 2020, its data for Moorvale was accurate and compliant.<sup>135</sup>

<sup>132</sup> QLD EPA (2012) Moorvale Coal Project EIS Assessment Report, QLD Government, accessed 1 December 2021. [https://www.qld.gov.au/\\_\\_data/assets/pdf\\_file/0022/108382/moorvale-eis-assessment-report-web.pdf](https://www.qld.gov.au/__data/assets/pdf_file/0022/108382/moorvale-eis-assessment-report-web.pdf)

<sup>133</sup> page 7, QLD EPA (2012) Moorvale Coal Project EIS Assessment Report, QLD Government, accessed 1 December 2021. [https://www.qld.gov.au/\\_\\_data/assets/pdf\\_file/0022/108382/moorvale-eis-assessment-report-web.pdf](https://www.qld.gov.au/__data/assets/pdf_file/0022/108382/moorvale-eis-assessment-report-web.pdf)

<sup>134</sup> Peabody (2019) 'Moorvale Mine', Peabody, accessed 1 December 2021. <https://www.peabodyenergy.com/Operations/Australia-Mining/Queensland-Mining/Moorvale-Mine>

<sup>135</sup> FOI 01\_2021, Clean Energy Regulator



## Mount Pleasant Operations | MACH Energy

Sydney basin, NSW (traditional lands of the Wonnarua/Wanaruah people of the Gamilaraay Indigenous Nation)

### Mount Pleasant Operations

Annual GHG emissions, tCO<sub>2</sub>e

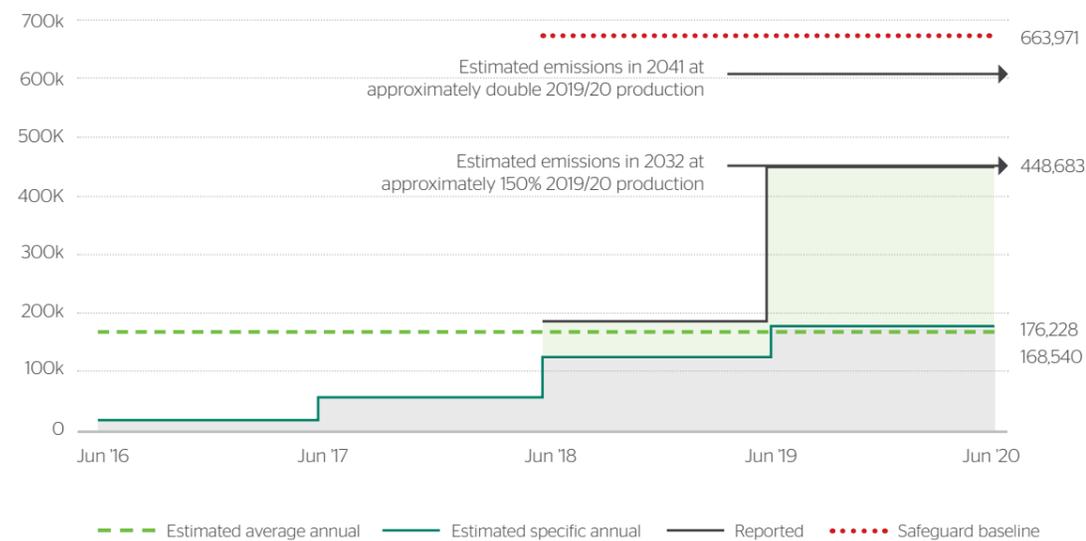


Figure 17

\*Approximate estimated year-specific emissions (converted from calendar year to financial year)

Source: MACH Energy<sup>136</sup>; CER<sup>137</sup>; ACF

### What did we find?

- A little over one year after the EIS was written, the company was already exceeding estimates.
- MACH Energy exceeded its estimated emissions in the two years it reported by 19% (2018/19) and 129% (2019/20).
- MACH Energy is currently seeking approval to double production at Mount Pleasant. Its 2020 EIS estimates that when Mount Pleasant increases to 150% of current production, its emissions will be the same as they are today. Based on current trends, we find it hard to believe that Mount Pleasant Operations can increase production to 150% of 2020 levels while its emissions levels stay the same.

<sup>136</sup> MACH Energy (2017) 'Appendix B Air Quality and Greenhouse Gas Assessment', Mod 3 Environmental Assessment, MACH Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/2017-MOD3-EA-Appendix-B-Air-Quality-and-Greenhouse-Gas-Assessment.pdf>

<sup>137</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

### What were the details?

MACH energy commenced mining at Mount Pleasant in October 2017.<sup>138</sup> On 24 August 2018, the NSW Independent Planning Commission approved a six-year life extension for the project (moving the closure date from December 2020 to December 2026).<sup>139</sup> The associated greenhouse gas assessment for the EIS was written by Todoroski Air Sciences on 26 May 2017.<sup>140</sup> All estimates by Todoroski Air Sciences have been calculated using method 1.

The EIS estimated emissions for the mine, including the extension, and provided yearly estimates. It estimated average annual emissions of 168,540 tCO<sub>2</sub>e, and the maximum annual emissions were expected to be 215,185 tCO<sub>2</sub>e in 2021. For the period covered by this report, the estimates were 16,690 tCO<sub>2</sub>e (2017), 93,539 tCO<sub>2</sub>e (2018), 156,379 tCO<sub>2</sub>e (2019) and 196,077 tCO<sub>2</sub>e (2020).<sup>141</sup>

Safeguard reporting for the mine commenced in 2018/19. We can assume that the emissions from 2016/17 and 2017/18 were considered to be below the 100,000 tCO<sub>2</sub>e threshold for reporting. In 2018/19 emissions at Mount Pleasant were 185,921 tCO<sub>2</sub>e — approximately 110% of the average annual estimate published in 2017 (168,540 tCO<sub>2</sub>e), and 149% of the emissions expected for that year (124,959 tCO<sub>2</sub>e). In 2019/20, emissions from the mine shot up to 448,683 tCO<sub>2</sub>e. This is more than double (255%) the anticipated emissions for that year specifically (176,228 tCO<sub>2</sub>e), and double the average annual estimate.

MACH Energy is currently seeking approval from the NSW government for another extension and is asking to more than double coal production and extend the life of the project to December 2048.<sup>142</sup>

Interestingly, the greenhouse gas assessment for the relevant EIS expects the project's emissions to be below the figure from 2019/20 until 2032. In 2032, the assessment expects scope 1 emissions to be 453,000 tCO<sub>2</sub>e and production to be approximately 150% of the rate in 2019/20. The EIS expects annual emissions to peak at 607,000 tCO<sub>2</sub>e when it reaches maximum production (approximately double production in 2019/20) in 2041.<sup>143</sup>

In July 2020, MACH Energy requested that from 2021, the CER raise Mount Pleasant's baseline to 668,971 tCO<sub>2</sub>e.<sup>144</sup> This seems like an inappropriate limit on emissions given that even with double current production, MACH Energy does not expect its operations to release that volume of emissions.

As the Clean Energy Regulator puts it: "Emissions baselines are the reference point against which emissions performance will be measured under the safeguard mechanism".<sup>145</sup> With a baseline that exceeds the maximum expected emissions at double current production, it is virtually impossible for MACH Energy to fail. Therefore, it is virtually impossible MACH Energy will ever be required by the Commonwealth Government to surrender ACCUs or reduce its emissions, despite Mount Pleasant Mine emitting far more than the company said it would when it sought approval.

<sup>138</sup> Mach Energy (2020) 'Appendix S – Greenhouse Gas Assessment', Mount Pleasant Optimisation Project – Greenhouse Gas Assessment, Mach Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/45-Appendix-S-Greenhouse-Gas-Assessment.pdf>

<sup>139</sup> NSW Independent Planning Commission (2018), 'Mount Pleasant Coal Mine Extension of Life', NSW Independent Planning Commission, NSW Government, accessed 1 December 2021. <https://www.ipcn.nsw.gov.au/projects/2018/06/mount-pleasant-coal-mine-extension-of-mine-life>

<sup>140</sup> MACH Energy (2017) 'Appendix B Air Quality and Greenhouse Gas Assessment', Mod 3 Environmental Assessment, MACH Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/2017-MOD3-EA-Appendix-B-Air-Quality-and-Greenhouse-Gas-Assessment.pdf>

<sup>141</sup> MACH Energy (2017) 'Appendix B Air Quality and Greenhouse Gas Assessment', Mod 3 Environmental Assessment, MACH Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/2017-MOD3-EA-Appendix-B-Air-Quality-and-Greenhouse-Gas-Assessment.pdf>

<sup>142</sup> Mach Energy (2021) 'Mount Pleasant Optimisation Project', Mach Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/mount-pleasant-optimisation-project/>

<sup>143</sup> Mach Energy (2020) 'Appendix S – Greenhouse Gas Assessment', Mount Pleasant Optimisation Project – Greenhouse Gas Assessment, Mach Energy, accessed 1 December 2021. <https://machenergyaustralia.com.au/wp-content/uploads/45-Appendix-S-Greenhouse-Gas-Assessment.pdf>

<sup>144</sup> CER (Clean Energy Regulator) (2022) <http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/Safeguard-baselines-table>, accessed 25 January 2022

<sup>145</sup> CER (Clean Energy Regulator) (2021) 'Baselines', CER, Australian Government, accessed 1 December 2021. <http://cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines>

## Narrabri underground mine | Whitehaven Coal

Gunnedah basin, NSW (traditional land of the Gunn-e-darr people of the Kamilaroi Tribe)

### Narrabri

Annual GHG emissions, tCO<sub>2</sub>e

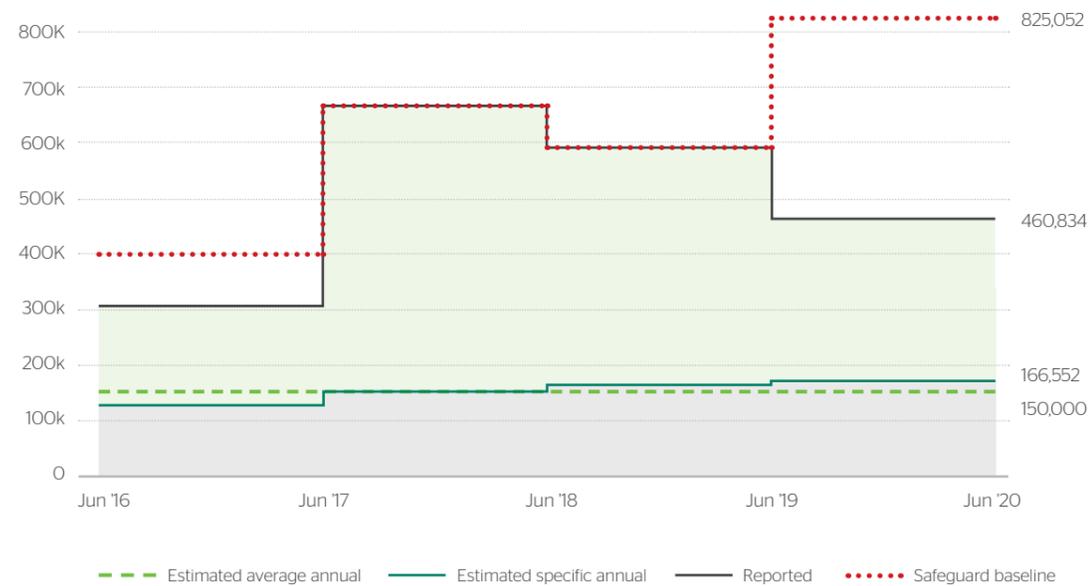


Figure 18

Source: Ramboll Environ<sup>146</sup>; CER<sup>147</sup>; ACF

### What did we find?

- Actual emissions reported by Whitehaven were between double and more than triple the estimate.
- In four years, the mine has emitted 11 years' worth of emissions.
- Whitehaven states in its annual reviews that this is a result of fugitive emissions.
- Whitehaven had plans to install flaring units that would reduce fugitive emissions, but the plans were discontinued after the carbon price was revoked. The price of carbon in ERF auctions is cited as one of the reasons why it is not "feasible" for the company to install the emissions reduction equipment.<sup>148</sup>

<sup>146</sup> Resource Strategies (2015) 'Appendix E Air Quality and Greenhouse Gas Assessment', *Narrabri Mine Modification 5 Environmental Assessment*, NSW Government, accessed 1 December 2021. [https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP08\\_0144-MOD-5%2120190708T035446.931%20GMT](https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP08_0144-MOD-5%2120190708T035446.931%20GMT)

<sup>147</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

<sup>148</sup> page 19, McKay H and Gleadhill P, ERM (2020) *Independent Environment Audit 2019*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Independent%20Environmental%20Audits/NAR-Independent%20Environmental%20Audit%20Report%202019.pdf>

### What were the details?

Narrabri was approved under Section 75J of the *Environmental Planning and Assessment Act 1979* in 2007,<sup>149</sup> and commenced operations in 2012.<sup>150</sup> The mine has had seven modifications in total. The most recent modification with relevant impacts on carbon emissions is modification 5 (MOD 5), which increased production rate to 11 Mtpa. It was approved on 9 December 2015.<sup>152</sup> The most recent estimates for emissions are those calculated for MOD 5 in a 2015 Ramboll Environ greenhouse gas assessment.<sup>153</sup>

The approved modification estimates total scope 1 emissions for the life of the project from 2015 to 2031 will be 2,556,933 tCO<sub>2</sub>e. This was based on average annual scope 1 emissions of 150,000 tCO<sub>2</sub>e, with a high point in 2015 of 178,169 tCO<sub>2</sub>e.<sup>154</sup> The report used a site specific emissions factor (Method 2). Narrabri, being an underground coal mine, cannot rely on method 1 and must report either using site specific emissions factors or direct monitoring.

The emissions estimated for the 2016/17-2019/20 reporting years were 126,511 tCO<sub>2</sub>e (2016/17), 151,231 tCO<sub>2</sub>e (2017/18), 158,363 tCO<sub>2</sub>e (2018/19) and 166,552 tCO<sub>2</sub>e (2019/20). The actual emissions reported in those years were either double or triple the estimate (ranging from 2.4 to 3.4 times the anticipated amount).

In four years, the mine has emitted 1,782,696 tCO<sub>2</sub>e. This is 70% of the total lifetime emissions or, in other words, 11 years' worth of emissions at the mine.

In its annual reviews of the mine's performance against the EIS, Whitehaven states that the additional emissions are a result of "additional drainage from the goaf circuit, which is attributable to higher gas concentrations in the coal then [sic] has been previously encountered."<sup>155</sup>

The failure to adequately estimate emissions at the mine cannot be explained by changes in methane GWP or acceptable variations from the average. Further, Whitehaven has failed to minimise emissions and this appears to be (at least in part) a direct consequence of federal climate policy.

A greenhouse gas minimisation plan for Narrabri underground states that the installation of Ventilation Air Methane (VAM) oxidation units would be feasible when taking into account the carbon price.<sup>156</sup> The Rudd and Gillard Governments' Carbon Pollution Reduction Scheme (CPRS) was yet to come into effect, but was expected to be in effect by July 2012.<sup>157</sup>

<sup>149</sup> 05\_0102 [https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP05\\_0102%2120190813T065134.281%20GMT](https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP05_0102%2120190813T065134.281%20GMT), NSW Government, accessed 1 December 2021.

<sup>150</sup> Whitehaven Coal (2021) 'Narrabri Mine Stage 3 Extension Project', Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/our-business/our-assets/narrabri-mine/#sect7>

<sup>151</sup> page 13, Whitehaven Coal (2020) *Narrabri Mine Mining Operations Plan (MOP) / Landscape Management Plan*, Whitehaven Coal, accessed 1 December 2021. [https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Mining%20Operations%20Plan%20\\_%20Rehabilitation%20Management%20Plan/NAR-Mining%20Operations%20Plan.pdf](https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Mining%20Operations%20Plan%20_%20Rehabilitation%20Management%20Plan/NAR-Mining%20Operations%20Plan.pdf)

<sup>152</sup> page 13, Whitehaven Coal (2020) *Narrabri Mine Mining Operations Plan (MOP) / Landscape Management Plan*, Whitehaven Coal, accessed 1 December 2021. [https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Mining%20Operations%20Plan%20\\_%20Rehabilitation%20Management%20Plan/NAR-Mining%20Operations%20Plan.pdf](https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Mining%20Operations%20Plan%20_%20Rehabilitation%20Management%20Plan/NAR-Mining%20Operations%20Plan.pdf)

<sup>153</sup> Resource Strategies (2015) 'Appendix E Air Quality and Greenhouse Gas Assessment', *Narrabri Mine Modification 5 Environmental Assessment*, NSW Government, accessed 1 December 2021. [https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP08\\_0144-MOD-5%2120190708T035446.931%20GMT](https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP08_0144-MOD-5%2120190708T035446.931%20GMT)

<sup>154</sup> page 45-46, Resource Strategies (2015) 'Appendix E Air Quality and Greenhouse Gas Assessment', *Narrabri Mine Modification 5 Environmental Assessment*, NSW Government, accessed 1 December 2021. [https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP08\\_0144-MOD-5%2120190708T035446.931%20GMT](https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=MP08_0144-MOD-5%2120190708T035446.931%20GMT)

<sup>155</sup> Whitehaven Coal (2021) *Narrabri Mine 2020 Annual Review*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Annual%20Reviews/NAR-Annual%20Review%202020.pdf>

<sup>156</sup> page 16, SLR Consulting (2012) *Narrabri Mine Greenhouse Gas Minimisation Plan Stage 2 Longuall Project*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Environmental%20Management%20Plans,%20Strategies%20and%20Programs/NAR-MP-Greenhouse%20Gas%20Minimisation%20Plan.pdf>

<sup>157</sup> page 26, PAE Holmes (2011) 'Air Quality Impact Assessment', *Maules Creek Coal Project Environmental Assessment*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Environmental%20Assessments/MCC-Environmental%20Assessment-Appendix%20F%20-%20Air%20Quality%20Impact%20Assessment%20Part%203.pdf>; ABC News (2014) 'Carbon Tax Timeline', ABC News, accessed 1 December 2021. <https://www.abc.net.au/news/2014-07-10/carbon-tax-timeline/5569118>



In February 2020, an independent environmental audit of the mine stated that the methane content was too low for VAM oxidation units:

*As noted in the revised [Greenhouse Gas Minimisation Plan], currently with [Office of Environment and Heritage] for review the concentrations required for VAM cannot be <0.2% methane. Current levels in the ventilation airstream are 0.028%.<sup>158</sup>*

This is despite the 2012 greenhouse gas minimisation plan stating that VAM oxidation units were feasible and Whitehaven’s annual reviews stating that there was a higher gas concentration in the seams than anticipated.

The audit also noted that no oxidation units had been established at the mine because they were no longer considered feasible: “The latest Emissions Reduction Fund reverse auction price for tCO<sub>2</sub>e would mean a payback period of >40 years.”<sup>159</sup>

On 20 January 2022, the NSW Planning Department approved Whitehaven’s Stage Three plans to extend Narrabri, which will open up a new area for mining and extend the life of the mine to 2044.<sup>160</sup> The plans are set to go before a public hearing of NSW’s Independent Planning Commission on 14 February 2022.<sup>161</sup>

<sup>158</sup> page 13, McKay H and Gleadhill P, ERM (2020) *Independent Environment Audit 2019*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Independent%20Environmental%20Audits/NAR-Independent%20Environmental%20Audit%20Report%202019.pdf>

<sup>159</sup> page 19, McKay H and Gleadhill P, ERM (2020) *Independent Environment Audit 2019*, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/Documentations/Narrabri%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Independent%20Environmental%20Audits/NAR-Independent%20Environmental%20Audit%20Report%202019.pdf>

<sup>160</sup> Whitehaven Coal (2021) ‘Narrabri Mine Stage 3 Extension Project’, Whitehaven Coal, accessed 1 December 2021. <https://whitehavencoal.com.au/our-business/our-assets/narrabri-mine/#sect7>

<sup>161</sup> Bell, Patrick and Kemii Maguire, ‘Whitehaven Coal’s Narrabri mine extension closer to approval, despite ‘significant’ emissions’, ABC News, <https://www.abc.net.au/news/2022-01-20/whitehaven-coal-narrabri-mine-extension-closer-to-approval/100769172>, accessed 21 January 2022.

## Northern Gas Pipeline | Jemena

NT and QLD (traditional lands of the Kalkaddon, Bularnu, Wakaya, Kaytej and Warumungu peoples)

### Northern Gas Pipeline

Annual GHG emissions, tCO<sub>2</sub>e

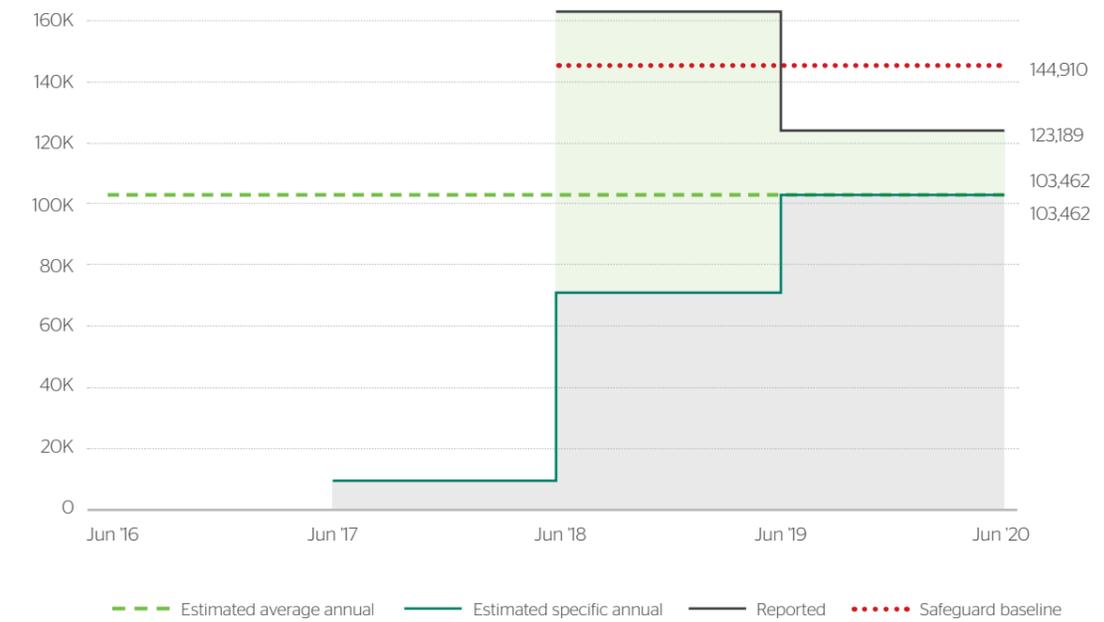


Figure 19

Source: NT EPA<sup>162</sup>, CER<sup>163</sup>, ACF

### What did we find?

- In its first year of reporting, the Northern Gas Pipeline (NGP) emitted 225% of the specific annual emissions anticipated in the EIS.
- The following year emissions were 119% of the anticipated amount. This is within the range of possible values around the average, but we are interested to see how Jemena performs in following years. It is likely Jemena burned more diesel than expected in 2018/19.

<sup>162</sup> NT Minister for Environment and Natural Resources (2017) ‘Notice of comment provided on the Northern Territory Environment Protection Authority’s (NT EPA) Assessment Report 79: Jemena Northern Gas Pipeline’, NT EPA, Northern Territory Government, accessed 1 December 2021. [https://ntepa.nt.gov.au/\\_\\_data/assets/pdf\\_file/0005/405554/jemena\\_minister\\_comments\\_on\\_assessment\\_report.pdf](https://ntepa.nt.gov.au/__data/assets/pdf_file/0005/405554/jemena_minister_comments_on_assessment_report.pdf)

<sup>163</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

### What were the details?

The EIS assessment for the NGP was completed by the NT Environment Protection Authority (NT EPA) on 16 February 2017.<sup>164</sup> Construction was completed in July 2018 and commercial operations began in January 2019.<sup>165</sup>

The air quality assessment, written by Air Noise Environmental Pty Ltd in August 2016, anticipated that the first two years of construction and commissioning would release emissions of 9,604 tCO<sub>2</sub>e in Year 1 and 72,229 tCO<sub>2</sub>e in Year 2.<sup>166</sup> The assessment used Method 1 to calculate anticipated emissions.

Year 1 for the project is considered to be 2017/18 and it is highly likely Jemena was under the 100,000 tCO<sub>2</sub>e reporting threshold in that year. Year 2 operations are described as: “Construction completion, commissioning and commencement of operations.”<sup>167</sup> Jemena started reporting emissions in 2018/19, Year 2, and reported emissions of 162,441 tCO<sub>2</sub>e. This is 225% of the estimated emissions for Year 2. Reported emissions in 2019/20 were 123,189 tCO<sub>2</sub>e, 119% of 103,462 tCO<sub>2</sub>e, the estimated average for annual operations.<sup>168</sup>

The emissions figure for 2019/20 may be considered to be within a reasonable amount above average annual emissions, given that the previous year-specific estimates are lower. However, the 2018/19 emissions require further explanation. It is possible that Jemena experienced a leakage event or burned significantly more fuel than anticipated in year 2 of operations. It will be interesting to watch how the company performs in reporting next year.

### Vincent Project Venture | Woodside Energy

50km offshore of Exmouth, WA (traditional lands of the Jinigudera peoples)

### Vincent Project Venture

Annual GHG emissions, tCO<sub>2</sub>e

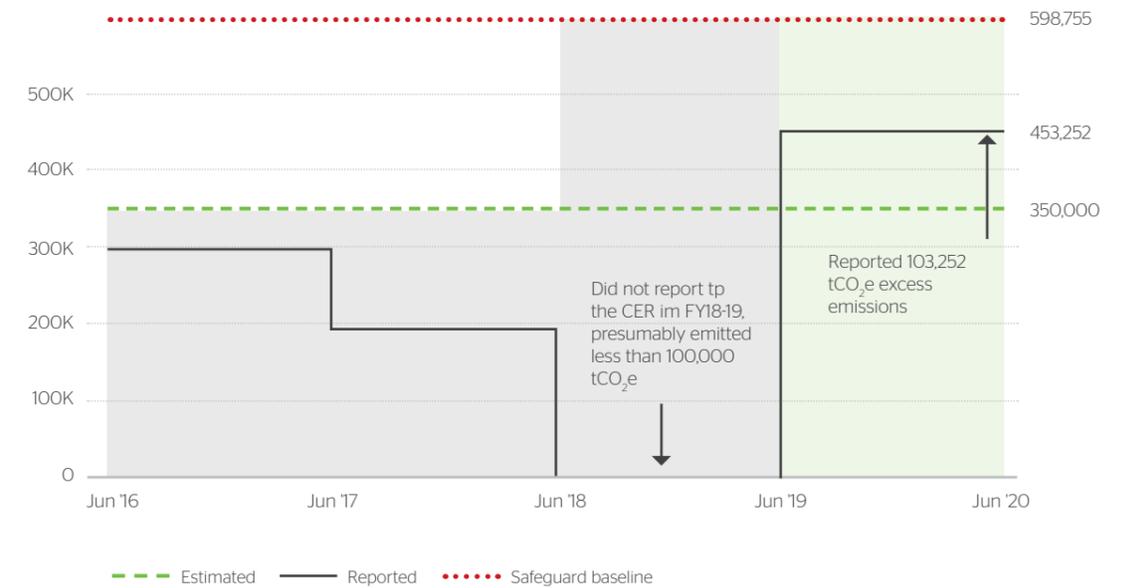


Figure 20

Source: Woodside<sup>169</sup>, CER<sup>170</sup>, ACF

<sup>164</sup> NT Minister for Environment and Natural Resources (2017) 'Notice of comment provided on the Northern Territory Environment Protection Authority's (NT EPA) Assessment Report 79: Jemena Northern Gas Pipeline', NT EPA, Northern Territory Government, accessed 1 December 2021. [https://ntepa.nt.gov.au/\\_\\_data/assets/pdf\\_file/0005/405554/jemena\\_minister\\_comments\\_on\\_assessment\\_report.pdf](https://ntepa.nt.gov.au/__data/assets/pdf_file/0005/405554/jemena_minister_comments_on_assessment_report.pdf)

<sup>165</sup> Jemena (2018) 'Northern Gas Pipeline Construction Complete', Jemena, accessed 1 December 2021. <https://jemena.com.au/about/newsroom/media-release/2018/northern-gas-pipeline-construction-complete>; ESD (Energy Source & Distribution) News (23 July 2018), 'Northern Gas Pipeline construction complete', ESD News, accessed 1 December 2021. <https://jemena.com.au/pipelines/northern-gas-pipeline>

<sup>166</sup> page 62, Jemena (2016) 'Appendix V - Air Quality Assessment', Northern Gas Pipeline Draft Environmental Impact Statement, NT EPA, Northern Territory Government, accessed 1 December 2021. [https://ntepa.nt.gov.au/\\_\\_data/assets/pdf\\_file/0010/368173/jemena\\_draft\\_eis\\_appendix\\_V.PDF](https://ntepa.nt.gov.au/__data/assets/pdf_file/0010/368173/jemena_draft_eis_appendix_V.PDF)

<sup>167</sup> page 57, Jemena (2016) 'Appendix V - Air Quality Assessment', Northern Gas Pipeline Draft Environmental Impact Statement, NT EPA, Northern Territory Government, accessed 1 December 2021. [https://ntepa.nt.gov.au/\\_\\_data/assets/pdf\\_file/0010/368173/jemena\\_draft\\_eis\\_appendix\\_V.PDF](https://ntepa.nt.gov.au/__data/assets/pdf_file/0010/368173/jemena_draft_eis_appendix_V.PDF)

<sup>168</sup> page 6, Jemena (2016) 'Appendix V - Air Quality Assessment', Northern Gas Pipeline Draft Environmental Impact Statement, NT EPA, Northern Territory Government, accessed 1 December 2021. [https://ntepa.nt.gov.au/\\_\\_data/assets/pdf\\_file/0010/368173/jemena\\_draft\\_eis\\_appendix\\_V.PDF](https://ntepa.nt.gov.au/__data/assets/pdf_file/0010/368173/jemena_draft_eis_appendix_V.PDF)

### What did we find?

- In the financial years ending 2017 and 2018, the Vincent Project Venture caused less climate pollution than the maximum expected, but was not yet at capacity.
- In the financial year ending 2019, Vincent Project Venture was almost completely non-operational.
- In the most recent reporting year, Woodside reported significantly more pollution than expected, probably because the project is now processing oil from a new oil field as well, which wasn't included in the original impact statement.

<sup>169</sup> Hard copy obtained from state library 30 April 2021. [https://encore.slwa.wa.gov.au/iii/encore/record/C\\_\\_Rb2333941\\_\\_Svincent%20woodside%20energy\\_\\_P0,2\\_\\_Orighresult\\_\\_U\\_\\_X1?lang=eng&suite=def&ivts=mbMD8jEAKIxrW%2BQJzUf2g%3D%3D&casts=XB1sfKkT%2Fmu09jFBF6xa1w%3D%3D](https://encore.slwa.wa.gov.au/iii/encore/record/C__Rb2333941__Svincent%20woodside%20energy__P0,2__Orighresult__U__X1?lang=eng&suite=def&ivts=mbMD8jEAKIxrW%2BQJzUf2g%3D%3D&casts=XB1sfKkT%2Fmu09jFBF6xa1w%3D%3D)

<sup>170</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

## What were the details?

The EIS for the Vincent Project was written by Woodside in 2005. The EIS states that after full expansion, the emissions from the project would reach a maximum of 350,000 tonnes CO<sub>2</sub>e.<sup>171</sup>

The Ngujima-Yin FPSO (a floating vessel for processing, storing and offloading oil) commenced production at the Vincent oil and gas field in August 2008.<sup>172</sup>

In the financial year ending 2019, the Vincent Project Venture did not report to the CER, so we can assume emissions as calculated by Woodside were less than 100,000. According to Woodside: “Production was suspended for approximately 12 months from the second quarter of 2018 to undertake modifications, which will enable additional production as part of the Greater Enfield Project.”<sup>173</sup>

In mid-2019, the FPSO Ngujima-Yin began processing oil piped 31km from the Greater Enfield oil field as well as oil from the Vincent oil field.

We expected that the oil drilled at Enfield would be accounted for in the EIS for a separate project, and expected that the Vincent Project approval would have been modified to include the Enfield operations and emissions estimate, but found no indication that an estimate for the Enfield emissions was re-assessed as part of any modification approval decision.<sup>174</sup>

Therefore, the extra 103,252 tCO<sub>2</sub>e emissions released in the year ending 2020 remain unexplained, and in excess of the emissions estimated as part of Vincent Project Venture’s approved operations.

<sup>171</sup> Hard copy obtained from state library 30 April 2021. [https://encore.slwa.wa.gov.au/iii/encore/record/C\\_\\_Rb2333941\\_\\_Svincent%20woodside%20energy\\_\\_P0,2\\_\\_Orightresult\\_\\_U\\_\\_X1?lang=eng&suite=def&ivts=ySsXy2Ph%2BqbOJWm5npag3A%3D%3D&casts=2WngxCShWmPqS3bCk2VuNg%3D%3D](https://encore.slwa.wa.gov.au/iii/encore/record/C__Rb2333941__Svincent%20woodside%20energy__P0,2__Orightresult__U__X1?lang=eng&suite=def&ivts=ySsXy2Ph%2BqbOJWm5npag3A%3D%3D&casts=2WngxCShWmPqS3bCk2VuNg%3D%3D)

<sup>172</sup> [https://www.mitsui.com/au/en/group/1216674\\_9223.html](https://www.mitsui.com/au/en/group/1216674_9223.html)

<sup>173</sup> <https://www.woodside.com.au/what-we-do/australian-operations/australia-oil>

<sup>174</sup> <https://www.epa.wa.gov.au/proposals/greater-enfield-tieback-project-%E2%80%93-exmouth-gulf-shipping-operations-0>

## Methodology

### Note about the authors

This report was prepared by the Australian Conservation Foundation’s Environmental Investigations Unit. We are immensely grateful to the dedication and intellect of the volunteers who worked on the research project with us: Peter Kongmalavong, Hamish McQuade, Erin Ronge, Jacqui Turner, and especially Jackson Balme, Adam Gottschalk, Meghan Malone and Connor Woulfe.

### Scope

Large fossil fuel projects, such as coal mines and gas fields, are some of Australia’s largest individual greenhouse gas emitters. These “facilities” are required by the National Greenhouse and Energy Reporting Act 2007 (NGER Act) to report their annual emissions to the Clean Energy Regulator (CER). In the financial year 2019/20, 215 facilities were required to report “covered emissions” to the CER.<sup>175</sup>

This research project focused on safeguard facilities that are primarily fossil fuel production facilities, narrowing the scope from 215 to 117 facilities.

Since this study intended to specifically interrogate discrepancies between estimated and reported emissions, analysis was limited to the subset of facilities for which volunteer researchers could locate a publicly available EIS. Under state and federal environmental laws, these fossil fuel corporations are typically required to complete a detailed EIS, before a new project or expansion can proceed. There is usually a section in the EIS that estimates the annual average GHG emissions from the project. In some cases, particularly for coal mines, an EIS may not be available, as the mine may have commenced operations long before the introduction of the relevant environmental laws. This further narrowed the scope from 117 to 48 facilities.

The safeguard data covers financial years from 2016-17 onward. Not all facilities included in the dataset were required to report all of the years — some facilities, including some of the 48 facilities within the scope of this report, have commenced or ceased operations within that time frame.

### Data source

Facility emission baseline figures, the type of baselines, annual reported emission amounts, and ACCUs surrendered were all gathered from the safeguard facility reported emissions dataset.<sup>176</sup> This data is published annually and covers only the reported emissions for the latest financial year. Facility-specific emissions estimates were gathered from the relevant EISs or equivalent.

### Data analysis

For this project we defined “significant” under- or over-estimation as any difference that could not be explained by the law of averages or by changes to GWP or other emissions factors. This study looked at scope 1 emissions, which are the emissions most directly in the control of the operating company. This means the emissions in question are also the most likely to be subject to conditions by consent authorities, for example requiring companies to take measures to reduce emissions, such as flaring ventilated methane from coal mines.

### Right of reply

Volunteer researchers contacted the ten facilities with significant underestimation in September 2021 to inform operators of their findings and give the operators an opportunity to correct or explain the findings. Each operator was given two weeks to reply. None responded.

<sup>175</sup> CER, ‘Safeguard facility reported emissions 2019–20’, 11 August 2021, CER, <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions/safeguard-facility-emissions-2019%E2%80%9320>, accessed 21 January 2022.

<sup>176</sup> CER (Clean Energy Regulator) (2021) Safeguard facility reported emissions, CER, Australian Government, accessed 30 November 2021. <http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions>

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