I object to this proposal because the proponent has not adequately assessed the likely and significant greenhouse gas (GHG) risks and impacts to NSW. They have not adequately described the scale and impact of recent emissions from the existing HVO facility. Their projected emissions for the proposal make a mockery of any statement or commitment they may make pertaining to mitigating or reducing GHG emissions. They have not attempted to credibly mitigate likely and significant economic, social or environmental costs and impacts of emissions. They have not demonstrated that they can effectively manage and minimise emissions either now or in the future. The projected emissions demonstrate that the proponent will breach the reformed federal Safeguard Mechanism and fail to support NSW Net Zero Plan or legislated emissions reduction targets.

The proposal represents continuing activities that are a leading cause of physical impacts and economic costs already observed and experienced in Australia and documented in recent State of the Environment, State of the Climate, and UN reports. The observed impacts have led the International Energy Agency to declare that there should be no new coal proposals. The Department should reject this proposal because the proponent has not offered any credible mitigation of likely and significant impacts, and has not adequately observed the principles of ecologically sustainable development. The likely impacts of the proposal are unacceptable and it is not in the public interest. The proposal directly conflicts with state and federal policy objectives, the federal Climate Change Act, and international commitments such as the Global Methane Pledge.

Appendix H Section 4.4 Greenhouse Gas

The proponent presents reported greenhouse gas (GHG) emissions by Hunter Valley Operations (HVO) for recent years in Table 14. It is difficult to interpret this data because it is presented in million tonne (Mt) units. I compiled a table using Safeguard Mechanism (SGM) data reported to the Clean Energy Regulator since the scheme started in 2016/17. The SGM covers facilities emitting more than 100,000 tonnes Scope 1 emissions per year. Data in red font and highlighted yellow show difference between Table 14 and the proponent's SGM data.

Year	SGM Intensity (tCO2e/ tROM)	SGM Baseline (tCO2e)	SGM Reported Scope 1 (tCO2e)	SGM Share of Total (%)	SGM Rank	SGM Compliance (tCO2e)	Minimum SGM Compliance ($)	Maximum SGM Compliance ($)
2016/2017	0.06	1,162,065	548,415	0.42%	52 of 203	613,650	0	0
2017/2018	0.06	1,162,065	615,950	0.45%	52 of 211	546,115	0	0
2018/2019	0.06	1,162,065	574,927	0.40%	52 of 211	587,138	0	0
2019/2020	0.06	1,162,065	562,470	0.39%	60 of 215	599,595	0	0
2020/2021	0.04	633,681	563,127	0.41%	56 of 212	70,554	0	0

The highlighted difference may be due to rounding to Mt units for the purposes of Table 14. The data shows the HVO facility is typically in the top quarter of covered facilities in the SGM. The data shows the proponent has complied with the SGM by not exceeding the reported baseline significantly from 2016/17 to 2019/20. The proponent also complied in 2020/21 but with emissions much closer to the revised and reduced calculated baseline.

I compiled another table using the proponent's annual environmental reports. Data in red font and highlighted yellow show differences between Table 14 and the proponent's annual environmental reports. The blue column indicates SGM data.

Year	Production (Mt)	Fuel Scope 1 (tCO2e)	Fugitive Scope 1 (tCO2e)	Process Scope 1 (tCO2e)	Total Scope 1 (tCO2e)	Electricity Scope 2 (tCO2e)	Total Scope 1&2 (tCO2e)	Total Intensity (tCO2e/ tROM)	Fugitive Intensity (tCO2e/ tROM)	Fuel Intensity (tCO2e/ tROM)
2010/2011	16.99	287,077	751,861	3,651	1,042,589	126,340	1,168,929	0.07	0.04	0.02
2011/2012	15.98	345,165	369,512	5,582	720,259	126,404	846,663	0.05	0.02	0.02
2012/2013	18.17	321,782	90,041	4,194	416,017	126,642	542,659	0.03	0.00	0.02
2013/2014	17.67	322,792	130,882	2,462	456,136	125,541	581,677	0.03	0.01	0.02
2014/2015	17.58	334,000	125,399	7,050	466,449	121,170	587,619	0.03	0.01	0.02
2015/2016	17.75	350,817	133,064	3,581	487,462	120,540	608,002	0.03	0.01	0.02
2016/2017	20.48	361,655	198,694	1,689	562,038	117,408	679,446	0.03	0.01	0.02
2017/2018	18.85	354,210	261,660	80	615,950	111,050	727,000	0.04	0.01	0.02
2018/2019	18.63	312,240	262,670	200	575,110	112,660	687,770	0.04	0.01	0.02
2019/2020	18.80	315,130	247,320	20	562,470	111,920	674,390	0.04	0.01	0.02
2020/2021	14.87	261,330	301,800	30	563,160	94,930	658,090	0.04	0.02	0.02

Some differences in data may be due to rounding to Mt units for the purposes of Table 14. The Scope 1 emissions and direct emission intensity in 2013/14 and 2014/15 shown in Table 14 are more than double the data shown in the proponent's annual reports. These reports show that total Scope 1 and 2 emissions have increased by 16% in 2020/21 compared to 2013/14. These reports also show that total direct emissions intensity has increased by 9% over the same period. The proponent should explain these significant differences to assist the Department with assessing GHG emissions for recent years and the proponent's capability to limit GHG increases and comply with potential project conditions.

The proponent asserts that "*The decrease in reported Scope 1 emissions after 2014/15 was largely due to HVO adopting a more accurate method of reporting fugitive emissions (i.e. Method 2 instead of Method 1).*" This is not consistent with the proponent's annual environmental reports, which show that absolute fugitive methane emissions and fugitive methane emissions intensity in 2020/21 were more than double fugitive methane emissions in 2014/15. The reports also show that fugitive methane emissions intensity is stable from 2014/15 then doubles in 2020/21. The proponent should explain

these significant differences to assist the Department with assessing GHG emissions for recent years and the proponent's capability to limit GHG increases and comply with potential project conditions.

The proponent provides no further assessment of GHG emissions for recent years. Trends in emissions may be related to trends in production but the proponent does not explain this. Scope 2 emissions may be declining due to increasing renewable energy in the grid but the proponent does not explain this. Direct emission intensity drops after 2014/15 but increases again in 2017/18 but the proponent does not explain this.

The proponent's HVO North Consent (DA 450-10-2003) Schedule 3 Condition 4 states "*The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Secretary.*" The proponent's HVO South Project Approval (DA06_0261) Schedule 3 Condition 22 (a) states "*The Proponent must: (a) take all reasonable steps to minimise odour, fume, spontaneous combustion, greenhouse gas and dust (including PM10 and PM2.5) emissions of the project*". The proponent's HVO Air Quality and Greenhouse Gas Management Plan (version 2.0, effective 12/09/2019) describes four key areas of their climate change programme:

- "*Supporting research and promotion of technologies that reduce carbon dioxide emissions from the use of coal;*"
- "*The improved use of energy at operations, projects and supply chain;*"
- "*Designing future projects with energy efficiency and climate change risks considered; and*"
- "*Raising awareness amongst stakeholders that climate change is an issue that requires us all to change how we currently operate.*"

The proponent does not provide any assessment of progress in their four key areas, or how they may be complying with existing consent conditions. The Clean Energy Regulator, when determining the proponent's current calculated SGM baseline, noted that "*During the application period, the facility has not approved for implementation any projects that will specifically target reduction of the greenhouse gas emissions intensity from the facility.*" This suggests that the proponent is not currently complying with existing consent conditions.

The proponent's 2014 annual environmental report describes the 'Dhanna Yurubaya' project to optimise control systems of electrical drive systems on 63 trucks. It was expected to reduce HVO fuel usage by over 3 million litres per year. I expect this would likely save significant cost, improve workforce working conditions, and reduce air pollution for the community. None of the proponent's other annual environmental reports mention this project, or any other similar projects to limit emissions. The proponent does not describe the 'Dhanna Yurubaya' project in its assessment or whether the expected reduction in fuel consumption is being achieved or not.

The proponent's Independent Environmental Audit Report dated February 2020 states "*Northstar recommends that the AQMP Section 7 is updated to identify opportunities for emission reductions (in the reasonable and feasible areas of electricity use, diesel and other fuels, and Land Management. The Annual Review should include a summary of greenhouse gas emissions against commitments in AQMP*." The auditor found a low risk non-compliance:

"*Northstar advises that whilst a number of the actions undertaken by HVO may have some impact on the annualised GHG emission budget, these have not been presented in context of assessing all reasonable and feasible options*." The proponent does not describe these actions undertaken by HVO in its assessment of the Project. HVO's response to the auditor's finding states "*The current AQMP discuss' Greenhouse Gas Management and as such no further modification to the AQMP is considered necessary. HVO will recommence reporting in the Annual Review greenhouse gas emission summary information against the AQMP.*" The proponent's AQMP and annual environmental reports since the 2014 report don't identify specific opportunities for emissions reductions, or identify any measures or steps that have been evaluated to determine whether they could be implemented 'reasonably and feasibly'.

The proponent does not demonstrate capability to minimise GHG emissions from current HVO operations or to comply with existing consent conditions.

Appendix H Section 8.1 Project Emissions

The proponent presents their summary of estimated GHG emissions in Table 30. It is difficult to relate this data to the more detailed breakdown in Appendix G because it is presented in million tonne (Mt) units. I compiled a table using the Appendix G data.

Year	Production (Mt)	Fuel Scope 1 (tCO2e)	Fugitive Scope 1 (tCO2e)	Process Scope 1 (tCO2e)	Total Scope 1 (tCO2e)	Electricity Scope 2 (tCO2e)	Total Scope 1&2 (tCO2e)	Total Intensity (tCO2e/ tROM)	Fugitive Intensity (tCO2e/ tROM)	Fuel Intensity (tCO2e/ tROM)
2023	19.91	433,486	182,625	47,812	663,923	64,991	728,914	0.04	0.01	0.02
2024	20.98	421,771	249,818	9,843	681,432	66,846	748,278	0.04	0.01	0.02
2025	18.18	469,542	235,235	12,311	717,088	57,325	774,413	0.04	0.01	0.03
2026	28.17	521,726	450,007	15,878	987,611	79,068	1,066,679	0.04	0.02	0.02
2027	30.41	538,152	413,873	15,487	967,512	78,973	1,046,485	0.03	0.01	0.02
2028	31.21	514,111	527,872	14,736	1,056,719	78,935	1,135,654	0.04	0.02	0.02
2029	30.71	598,693	365,237	17,322	981,252	79,545	1,060,797	0.03	0.01	0.02
2030	31.50	582,840	590,284	17,090	1,190,214	79,402	1,269,616	0.04	0.02	0.02
2031	29.37	606,088	422,105	17,383	1,045,576	80,545	1,126,121	0.04	0.01	0.02
2032	30.06	632,973	451,025	17,020	1,101,018	79,630	1,180,648	0.04	0.02	0.02
2033	30.80	639,926	534,789	17,169	1,191,884	80,270	1,272,154	0.04	0.02	0.02
2034	31.50	621,707	538,123	17,809	1,177,639	79,895	1,257,534	0.04	0.02	0.02
2035	31.01	595,918	408,494	16,558	1,020,970	80,208	1,101,178	0.04	0.01	0.02
2036	31.50	618,553	604,714	16,217	1,239,484	79,901	1,319,385	0.04	0.02	0.02
2037	31.43	619,100	452,705	15,244	1,087,049	80,107	1,167,156	0.04	0.01	0.02
2038	29.45	671,216	469,173	15,517	1,155,906	79,825	1,235,731	0.04	0.02	0.02
2039	34.00	735,131	667,179	18,017	1,420,327	77,396	1,497,723	0.04	0.02	0.02
2040	38.26	738,297	1,071,195	17,789	1,827,281	78,552	1,905,833	0.05	0.03	0.02
2041	30.00	708,633	544,341	17,010	1,269,984	63,415	1,333,399	0.04	0.02	0.02
2042	29.50	655,457	946,518	16,195	1,618,170	63,784	1,681,954	0.06	0.03	0.02
2043	28.83	569,630	1,207,940	13,886	1,791,456	66,993	1,858,449	0.06	0.04	0.02
2044	27.72	553,132	1,464,963	13,492	2,031,587	66,408	2,097,995	0.08	0.05	0.02
2045	24.32	394,272	1,508,445	11,043	1,913,760	61,610	1,975,370	0.08	0.06	0.02
2046	19.31	399,585	856,297	10,225	1,266,107	52,112	1,318,219	0.07	0.04	0.02
2047	18.63	366,132	1,010,945	9,940	1,387,017	49,755	1,436,772	0.08	0.05	0.02
2048	16.29	261,450	926,548	7,604	1,195,602	43,191	1,238,793	0.08	0.06	0.02
2049	9.74	153,215	722,712	4,806	880,733	25,761	906,494	0.09	0.07	0.02
2050	3.79	59,951	352,944	1,904	414,799	10,059	424,858	0.11	0.09	0.02
Annual average	26.31	524,310	649,147	15,190	1,188,646	67,304	1,255,950	0.05	0.02	0.02
Total Project	736.59	14,680,687	18,176,106	425,307	33,282,100	1,884,502	35,166,602	0.05	0.02	0.02

Estimated annual average production increases 48% from 2023 to 2050 compared to actual production from 2010/11 to 2020/21. Compared to their respective actual annual averages, estimated annual average Scope 1 emissions increase 102%, estimated annual average fugitive methane emissions increase 149%, estimated annual average fuel emissions increase 62%, estimated Scope 1 & 2 emissions intensity increase 20%, estimated fugitive methane emissions intensity increases 68%, and estimated fuel intensity increases 9%.

Estimated annual average electricity Scope 2 emissions from 2023 to 2050 are 43% less than actual annual average emissions from 2010/11 to 2020/21. The proponent should explain how this reduction is achieved. It could be due to decarbonisation of the NSW grid but the proponent has not accounted for declining Scope 2 emissions in Appendix G.

Estimated total production increases 276% from 2023 to 2050 compared to actual production from 2010/11 to 2020/21. Compared to their respective actual totals, estimated total Scope 1 emissions increase 415%, estimated total fugitive methane emissions increase 533%, and estimated total fuel emissions increase 312%. Estimated total electricity Scope 2 emissions increase 46%.

Appendix H Section 8.2 Potential Impacts of the Project

The proponent claims the latest available annual data for the National Greenhouse Gas Inventory is from 2020. The national inventory is updated quarterly and the latest available data is from June 2022. Total Australia actual GHG emissions for the year ending at the June 2022 quarter were 486.9 Mt CO2e.

The proponent asserts "*The convention is to compare the Project emissions with the national and state figures…*" This comparison is used by proponents but is meaningless. The proponent's presentation in Table 32 misleads the Department: all proposals considered in isolation in this manner will be a small percentage of emissions inventory, which are comprised of many different emissions sources across many different industry sectors around NSW and the country. By presenting small percentages, the proponent gives the impression that the impacts of the Project are relatively insignificant and that mitigation is not important. However, all industry sectors must reduce emissions, so proponents should consider emissions for their particular sector, including annual, cumulative and projected emissions from existing operations and current proposals. Proponents should consider proposal emissions relative to their own current operations and to their public commitments to reduce emissions. Proponents should also assess their emissions relative to declining emissions elsewhere in the economy. The small percentages presented in Table 32 will increase in future in our decarbonising economy.

Actual fugitive methane emissions from Australia's coal sector were 28 Mt CO2e for the year ending at the June 2022 quarter. The proponent's estimated annual average fugitive methane emissions are 2.32% of this total. In NSW, actual fugitive methane emissions from coal mining were 12.2 Mt CO2e in 2018/19. The proponent's estimated annual average fugitive methane emissions are 5.32% of this total.

Projected fugitive methane emissions from open cut mines in Australia are 9.36 Mt CO2e in 2030. The proponent's estimated annual average fugitive methane emissions are 6.94% of this total. Projected total SGM facility emissions are no more than 100 Mt in 2030 under the proposed reformed SGM scheme. The proponent's estimated Scope 1 emissions in 2030 are 1.19% of this total, nearly three times higher than the proponent's share of SGM emissions in 2020/21. Projected total SGM facility emissions are capped at 1,233 Mt between 2021 and 2030 under the reformed SGM scheme. The proponent's estimated Scope 1 emissions from 2023 to 2030 are 5.88% of this total.

The proponent asserts "*The indirect sources listed above have been classified as Scope 3 for the Project as the emissions, while a result of the activities at HVO, are from sources not owned or operated by HVO. As noted in Section 3.2 the purpose of differentiating between the scopes of emissions is to avoid the potential for double counting, where two or more organisations assume responsibility for the same emissions. Coal produced by HVO is predominately exported to Asian markets. These countries are either signatories to the Paris Agreement and / or have announced or adopted domestic lawys or policies to achieve their emissions targets.*" The proponent refers to GHG Protocol accounting rules designed to avoid the potential for double counting of emissions. GHG Protocol accounting rules are not designed to assess the potential significant and likely impacts of Scope 3 emissions from the Project in NSW, which is supposed to be the purpose of this section. Scope 3 emissions from the Project are vastly greater than Scope 1 and 2 emissions from the Project. Scope 3 emissions do not respect accounting rules or state or international borders and are just as likely to significantly impact NSW as anywhere else. The proponent can't rely on unnamed countries in Asian markets who may or may not mitigate the impacts of Scope 3 emissions from the Project. The proponent should explain the impact of Scope 3 emissions from the Project to assist the Department with assessing potential impacts of the Project.

The proponent cites various International Energy Agency coal demand statistics. Coal demand and consumption are a leading cause of physical impacts and economic costs already observed and experienced in NSW and documented in recent State of the Environment, State of the Climate, and UN reports. The observed impacts have led the International Energy Agency to declare that there should be no new coal proposals. Therefore the proponent's proposal to serve such a small percentage of global coal demand can be rejected by the Department because it is not needed and it is not ecologically sustainable development.

The proponent asserts "*The Projects contribution to global climate change effects would be proportional to its contribution to global greenhouse gas emissions. These emissions would be small in the context of global greenhouse gas emissions (approximately 50 gigatonnes CO2-e). It is acknowledged that all sources of greenhouse gas emissions will contribute in some way towards the potential global, national, state and regional effects of climate change.*" The proponent cannot claim with any certainty that potential impacts from the Project will be proportional to its contribution to global greenhouse gas emissions. The Department can reject the proposal according to the precautionary principle of ecologically sustainable development. The proponent should assess how the Project will "*contribute in some way towards potential… effects of climate change*" to assist the Department with assessing potential impacts of the Project.

The proponent does not provide any further assessment of GHG emissions, their projected impacts on the environment including surrounding land uses, sensitive receptors, and local meteorological and air quality conditions, or their projected impacts on state and federal policy and legislation. The proponent has presented various misleading statistics to assess the potential numerical impacts of the Project on emission inventories and coal demand. The proponent has not adequately assessed the potential physical impacts and economic costs of emissions from the Project to NSW.

Appendix H Section 8.3 Potential Impacts on the Project

The proponent has not adequately assessed the potential physical impacts and economic costs of emissions to the Project. Near-term and long-term climate risk assessments can be completed regardless of the degree of confidence in emissions scenarios. The proponent does not seem to have a competent understanding of climate science and emissions scenarios. Risk assessment is basic business governance and the proponent should prepare a Climate Change Adaptation Plan according to the NSW Climate Change Policy Framework. The proponent should describe how it will mitigate and manage potential extreme weather events, flooding, and bushfires that may disrupt its proposed operations and economic activities. Coal mining in NSW and elsewhere has already been observed to have experienced these impacts and costs, which has contributed to the energy price crisis. The proponent should describe how it will mitigate and manage potential increased temperatures and exposure to bushfire smoke that may affect its workforce and their productivity.

The proponent does not seem to have applied the four key areas of its climate programme described in its Air Quality and Greenhouse Gas Management Plan to the Project, particularly in this case "*Designing future projects with energy efficiency and climate change risks considered*".

Appendix H Section 8.4 Greenhouse Gas Policies

The proponent has not complied with the SEARs in its assessment of greenhouse gas and climate change. The proponent has not provided detail on how the Project will support the NSW Climate Change Policy Framework in:

- The Project's contribution to NSW emissions targets;
- How the Project will be more resilient to a changing climate;
- How Project Scope 1 emissions will be reduced so as not to contribute to the current increasing trend in NSW; and
- The impact of alternative scenarios for the Project on the framework objectives.

The SEARs state "*The extent to which this Project aligns with the framework, and contributes to meeting the framework's objectives, is likely to be an important public interest consideration for any decision maker.*" The proponent has failed to demonstrate how the Project aligns with the framework and its objectives.

The proponent asserts "*That is, should the Project be rejected, global coal demand would be satisfied by alternative sources of coal of lower quality that would otherwise be consumed.*" This market substitution or carbon leakage argument are a form of the 'drug-dealers defence' that is a logical fallacy

contradicting basic economics and has been rejected by the courts. In 2019 Chief Judge Preston of the New South Wales (NSW) Land and Environment Court rejected the Drug Dealers' Defence raised by a coal mining company in Gloucester Resources Limited v Minister for Planning [2019]: "*There is also a logical flaw in the market substitution assumption. If a development will cause an environmental impact that is found to be unacceptable, the environmental impact does not become acceptable because a hypothetical and uncertain alternative development might also cause the same unacceptable environmental impact. The environmental impact remains unacceptable regardless of where it is caused.*" Also in 2019, the NSW Independent Planning Commission refused a 5-year extension to the Dartbrook Coal Mine and rejected the Bylong Coal Project, based on similar reasoning on climate change to Preston CJ. This reasoning has also been applied by the Queensland Land Court last year in deciding to reject applications for the Waratah Coal Project.

Concerning "*coal of lower quality*", last year federal MP Andrew Wilkie reported to parliament that an industry whistle-blower had provided evidence that Australian coal exporters have been falsifying data to suggest their coal is cleaner than it is in order to increase its export price in a scam involving two testing laboratories, major accountancy firms and an investment bank.

The proponent describes proposed amendments to the Safeguard Mechanism (SGM). The proponent has not assessed how the Project will perform in the reformed SGM. I compiled a table based on Appendix G data and the proposed reforms published by the federal government in its recent consultation. The SGM uses production-adjusted baselines where production is adjusted by the emissions intensity value. For 2023 I used the last reported site-specific intensity value reported in 2020/21. The reformed SGM proposes to apply a 4.9% decline value to emissions intensity values resulting in declining baselines over time to meet near-term 2030 targets and long-term 2050 targets. The reformed SGM also proposes to allow facilities to apply for trade-exposed status with baseline adjustment minimum 2% decline value. My calculations conservatively assume HVO will be considered trade-exposed with 2% decline value.

Year	SGM Intensity (tCO2e/ tROM)	SGM Baseline (tCO2e)	SGM Reported Scope 1 (tCO2e)	SGM Compliance (tCO2e)	Minimum SGM Compliance ($)	Maximum SGM Compliance ($)	Production (Mt)
2023	0.04	881,065	663,923	217,142	0	0	19.91
2024	0.04	909,791	681,432	228,359	0	0	20.98
2025	0.04	772,628	717,088	55,540	0	0	18.18
2026	0.04	1,173,516	987,611	185,905	0	0	28.17
2027	0.04	1,241,317	967,512	273,805	0	0	30.41
2028	0.04	1,248,669	1,056,719	191,950	0	0	31.21
2029	0.04	1,203,960	981,252	222,708	0	0	30.71
2030	0.04	1,210,229	1,190,214	20,015	0	0	31.50
2031	0.04	1,105,841	1,045,576	60,265	0	0	29.37
2032	0.04	1,109,089	1,101,018	8,071	0	0	30.06
2033	0.04	1,113,667	1,191,884	-78,217	-2,737,587	-5,866,258	30.80
2034	0.04	1,116,276	1,177,639	-61,363	-2,147,694	-4,602,201	31.50
2035	0.03	1,077,021	1,020,970	56,051	0	0	31.01
2036	0.03	1,072,072	1,239,484	-167,412	-5,859,428	-12,555,917	31.50
2037	0.03	1,048,422	1,087,049	-38,627	-1,351,956	-2,897,049	31.43
2038	0.03	962,685	1,155,906	-193,221	-6,762,733	-14,491,571	29.45
2039	0.03	1,089,135	1,420,327	-331,192	-11,591,706	-24,839,371	34.00
2040	0.03	1,201,151	1,827,281	-626,130	-21,914,533	-46,959,713	38.26
2041	0.03	922,806	1,269,984	-347,178	-12,151,220	-26,038,328	30.00
2042	0.03	889,389	1,618,170	-728,781	-25,507,333	-54,658,571	29.50
2043	0.03	851,820	1,791,456	-939,636	-32,887,269	-70,472,720	28.83
2044	0.03	802,728	2,031,587	-1,228,859	-43,010,076	-92,164,448	27.72
2045	0.03	690,060	1,913,760	-1,223,700	-42,829,515	-91,777,533	24.32
2046	0.03	536,979	1,266,107	-729,128	-25,519,492	-54,684,625	19.31
2047	0.03	507,610	1,387,017	-879,407	-30,779,257	-65,955,550	18.63
2048	0.03	435,090	1,195,602	-760,512	-26,617,922	-57,038,404	16.29
2049	0.03	254,977	880,733	-625,756	-21,901,471	-46,931,724	9.74
2050	0.03	97,204	414,799	-317,595	-11,115,824	-23,819,623	3.79
Annual average	0.03						26.31
Total Project			33,282,100	-7,756,903	-324,685,017	-695,753,607	736.59

The resulting baselines should not be exceeded by the facility's Scope 1 emissions. If the baselines are exceeded, in the current form of the SGM the facility should buy ACCU carbon offsets for the exceedance. The reformed SGM proposes to create 'Safeguard Mechanism Credits' (SMCs) that will be generated by facilities under their baseline and traded with facilities over their baseline. This creates a regulated emission limit or cap on absolute emissions. The default SMC price has not been proposed by the government. The reformed SGM continues to allow facilities to use ACCUs to comply, capped at a proposed maximum of $75 per ACCU. My calculation of 'minimum SGM ccompliance' uses current ACCU spot market prices of $35. My calculation of 'maximum SGM compliance' uses the proposed maximum of $75 per ACCU.

My analyses indicate the Project may not comply with the reformed SGM in 2033, 2034, and from 2036 onwards. The Project may exceed the proposed regulated emissions limit by 7,756,903 tCO2e. Potential reformed SGM compliance cost may be minimum $325 million or maximum $696 million. Potential costs may be avoided and more efficient emissions reductions achieved at the facility by investing in efficiency and lower or zero emissions technologies.

The proponent has not assessed how the Project will contribute to the greenhouse gas policies of its parent companies. HVO is a joint venture between Yancoal (51%) and Glencore (49%). Yancoal's Environment and Community Relations Policy is committed to "*Identify, understand, assess and manage potential environmental impacts and community*" and to "*Strive for continual improvement in environmental performance*". As members of the Minerals Council of Australia, both Yancoal and Glencore have "*a strong commitment to climate action, supporting the Paris Agreement and an industry ambition of net zero by 2050. The industry is also taking rapid climate action and a proactive approach to research and develop technologies.*" Glencore's climate change commitments: "*In line with the ambitions of the 1.5°C scenarios set out by the Intergovernmental Panel on Climate Change (IPCC), we target a short-term reduction target of 15% by 2026 and a medium-term 50% reduction of our total (Scope 1, 2 and 3) emissions by 2035 on 2019 levels. Post-2035, our ambition is to achieve, with a supportive policy environment, net zero total emissions by 2050.*"

The proponent should explain how the Project will impact the public commitments and targets of its parent companies to assist the Department with assessing potential impacts of the Project.

Appendix H Section 9.5 Greenhouse Gas Emissions

The proponent asserts "*Mitigation of GHG emissions is inherent in the development of the mine plan. For example reducing fuel usage by mobile plant and equipment is an objective of mine planning and good practice. Hence, savings of GHG emissions are attributable to appropriate mine planning. The mitigation measures to reduce the level of future GHG emissions from HVO are documented in the Air Quality and Greenhouse Gas Management Plan.*" Notably, and as an aside, an extremely similar statement was asserted by the proponent for the Modification 8 proposal for the Boggabri Coal Mine.

In Appendix V Table ES2, the proponent asserts "*At a broader business level, both Yancoal and Glencore (as the JV partners of HVO) have announced commitments relating to GHG emissions from their operations, supporting the transition to a low carbon future.*" In Appendix V section 6.44, the proponent asserts "*The AQGHGA (Jacobs 2022) report finds that HVO's "mitigation measures, strategies and initiatives outlined above demonstrate that HVO is actively engaged in minimising greenhouse gas emissions associated with their coal operations and supporting the State government objective of net-zero emissions by 2050""*.

In Appendix W Section 2.7.1.6, the proponent asserts "*The mitigation measures implemented to reduce the level of future GHG emissions from HVO include*" and then restates the four key areas of their climate change programme described in HVO Air Quality and Greenhouse Gas Management Plan (version 2.0, effective 12/09/2019). A management plan written nearly four years ago and that seems to have failed its objective or comply with current consent conditions does not provide necessary mitigation of the scale of estimated emissions proposed by the proponent.

The proponent does not seem to have applied the four key areas of its climate programme described in its Air Quality and Greenhouse Gas Management Plan to the Project, particularly "*Designing future projects with energy efficiency and climate change risks considered*". No *specific* mitigation measures are documented in the proponent's Air Quality and Greenhouse Gas Management Plan or annual environmental reports since 2014/15. The proponent has not demonstrated the capability to mitigate GHG emissions over ten years of operations from 2010/11 to 2020/21. Direct emission intensity has reduced since 2010/11 but increased again in 2017/18. Fugitive methane emissions intensity has reduced since 2010/11 but then doubled in 2020/21. Fuel emissions intensity has remained at the same value throughout the period. I expect emissions are fluctuating with production rather than any specific mitigation measures by the proponent. The available evidence suggests the proponent is not currently complying with existing conditions of approval for HVO to minimise emissions.

The proponent does not appear to have incorporated any mitigation of GHG emissions in its estimated emissions for the Project. Direct emissions intensity fluctuates slightly to 2039 but increases thereafter. Fugitive methane emissions intensity fluctuates slightly to 2043 but increases thereafter. Fuel emissions intensity is unchanged from 2023 to 2050. The proponent has not demonstrated the capability to comply with potential conditions of approval for HVO to minimise emissions. The Project is not compatible with NSW Net Zero Plan. The proponent is effectively proposing the emissions abatement burden should be carried by others not identified in the proposal ("free-loading"). The Department should reject the proposal because the existing operation makes best contribution to NSW Net Zero Plan.

The proponent anticipates the Safeguard Mechanism (SGM) will continue to apply to HVO and "*will acknowledge the baseline determination and performance measures and modify operations, where reasonable and feasible, to minimise greenhouse gas emissions*". The proponent does not consider the proposed amendments to the SGM in this section or the level of mitigation that may be required. The reformed scheme seeks to share the effort of emissions reduction equitably across our economy and community. The reformed scheme creates financial incentives to invest in efficiencies and

technologies that will increase productivity and profitability. The proponent does not describe any specific mitigation that it may investigate to determine whether it is 'reasonable and feasible' to implement. The proponent should at least comply with SEARs to assist the Department in determining the Project.

Appendix W Economics

The proponent presents their cost-benefit analysis of the proposal in Table 5 Section 2.2.1. Greenhouse gas emissions from the Project are estimated as $1.3 million NPV indirect costs.

The proponent's economic assessment method follows NSW guidelines in apportioning costs by population. However, the method does not seem adequate given impacts from GHG emissions do not observe population boundaries. Bushfires in regional NSW can and do have significant air quality and human health impacts on densely populated metropolitan Sydney. Mining projects are highly likely to be in remote locations with low populations so this method will always apportion low costs of GHG impacts to mining projects. In particular, the method does not seem adequate given large actual costs observed in responding to physical impacts from GHG emissions in Australia. For example, the Richmond Valley Flood 2022 Response estimates $150m recovery costs and $250m loss of production costs. The Insurance Council of Australia estimates $4.3b insured losses caused by the 2022 floods. While the entirety of these costs and losses cannot be attributed to the proponent's existing or proposed activities, the large observed costs suggest that the proponent's cost provision is grossly inadequate in its economic assessment. NSW guidelines should be updated to support more accurate assessment and provision for economic costs from GHG impacts. This could be achieved by reference to proponent cumulative emissions share of sector or state cumulative emissions inventory and state budgets for adaptation, resilience, and recovery.

The proponent's economic assessment follows NSW guidelines in excluding Scope 3 emissions. However, while consistent with the GHG Protocol, that protocol is not intended to assess likely and significant economic, social, and environmental costs to NSW from the proposal. Impacts from significant Scope 3 emissions do not observe state and international boundaries, and when emitted as Scope 1 emissions by other countries are just as likely to impact NSW as anywhere else. The proponent should assess likely and significant economic costs of Scope 3 GHG emissions to support the Department in making their decision. NSW guidelines should be updated to reflect the trans-boundary nature of economic, social, and environmental impacts from GHG emissions.

The proponent has not accounted for economic costs of complying with the reformed Safeguard Mechanism in their assessment. As indicated by my calculations above, these may be significant costs affecting the Project cost-benefit analysis if the proponent fails to genuinely reduce emissions at the facility. The proponent should revise their cost-benefit analysis to assist the Department with determining the Project.