

Public Submission SSD-80824235

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I object to the proposal in its current form. The application does not yet provide a sufficiently clear, consistent or proportionate basis for the Department to determine the project's land-use character, combined hazard profile, cumulative impacts or enforceability.

The proposal has genuine potential to recover a significant industrial by-product and reduce direct carbon dioxide emissions. Those benefits are relevant but they do not displace the need to assess the development against its actual function, scale, location and consequences.

The central issue is simple: the project is presented as a standalone general industry development, while the documents describe a plant that is physically connected to, operationally dependent upon and intended to interoperate with Shoalhaven Starches. That relationship affects classification, hazard, flooding, wastewater, transport, emergency response and the legal operation of any consent.

The proposal should be assessed as it will operate, not as it has been administratively divided.

Nature and operational context

The Air Liquide plant would be separately owned and operated, but it would not function as an independent industrial process. Separate ownership does not remove the planning relevance of operational dependence.

Shoalhaven Starches would generate the raw CO₂-rich fermentation gas and transfer it to the proposed plant through an approximately 1.3-kilometre buried pipeline. Wastewater, condensate and recovered process streams would be returned to Shoalhaven Starches for treatment or reuse. The pipeline and associated works would cross land controlled by Manildra, while commissioning, planned shutdowns, unplanned outages and emergency response would require coordination between the two operators. (Environmental Impact Statement, Project Description and Water Assessment; Appendix 11, Hazard and Risk Assessment.)

These service connections are significant. Feed-gas supply, waste acceptance and coordinated safe operating states are essential to the plant's function. Ergo the proposal is commercially separate but operationally interdependent.

The facility would also be substantial in its own right. It would operate 24 hours a day and include gas purification, compression, refrigeration and distillation equipment; storage vessels holding approximately 1,800 tonnes of liquid CO₂; tanker-loading infrastructure; pipe bridges; buildings; paved vehicle areas; and a distillation column exceeding the 11-metre height standard. (Environmental Impact Statement; Site Plans; Visual Impact Assessment.)

The assessment must therefore do two things at once: evaluate the Air Liquide facility as a major new industrial development, and evaluate the consequences of connecting it to the wider Shoalhaven Starches operation.

Planning pathway and historical treatment

CO₂ processing at Bomaderry has been characterised differently over time, although each facility has relied on fermentation gas produced by Shoalhaven Starches.

The former BOC plant was expressly described as a CO₂ processing and storage plant 'ancillary to the starch mill' and was enabled through a site-specific amendment to the former Shoalhaven Local Environmental Plan. The later Supagas facility, despite being a separate commercial operation, was assessed through Modification 15 to MP06_0228. Subsequent additions were also dealt with as modifications to that approval.

Air Liquide is now being assessed as a separate State significant development. This pathway may be legally available because the proponent and capital investment threshold differ however, that does not answer the planning question created by the change in approach.

The Department should identify which differences in ownership, location, scale, statutory threshold or operating arrangement are material, and explain why those differences justify assessing the new plant separately while earlier CO₂ plants were treated as part of the Shoalhaven Starches development.

More importantly, it must demonstrate that the separate pathway has not fragmented matters that cross the consent boundary, including feed gas, wastewater, pipeline integrity, process disruptions, shutdowns, emergency management and cumulative environmental effects.

Any alternative approval pathway must not produce a narrower assessment of the same operational relationship.

Land-use characterisation and permissibility

The applicant characterises the proposal as general industry. That conclusion is central because general industry is permitted with consent in the E4 General Industrial zone, while heavy industry is prohibited.

The proposed plant would receive an untreated fermentation-gas stream, remove impurities, compress and refrigerate the gas, liquefy and distil carbon dioxide, hold a large refrigerated inventory and load the finished product into road tankers. The correct characterisation must suitably reflect those activities and their consequences, not just a project title.

Under the Shoalhaven Local Environmental Plan 2014, heavy industry becomes relevant when the nature of the processes or the materials used, stored or produced require separation from other development. Hazardous industry is included within heavy industry. The relevant query then, is whether the actual process, inventory, operating conditions and consequence profile require separation?

The application does not adequately resolve that question. It relies heavily on the absence of a Class 2.2 screening threshold under Applying SEPP 33. Yet a screening outcome is not a complete land-use analysis, thus the Assessors should require an express comparison between the proposed operation and the LEP definitions of general industry, heavy industry, hazardous industry and potentially hazardous industry before determining the project.

This is reinforced by the project's own Scoping Report, which described the proposal as likely to constitute potentially hazardous and potentially offensive industry and stated that a Preliminary Hazard Analysis would accompany the application. The EIS should explain what subsequently changed in the process, inventory or assessment basis. It does not.

Part of the buried pipeline would also cross RU1 Primary Production land, where the industrial use is otherwise prohibited. The SSD pathway may permit consideration of the pipeline despite that prohibition, but it does not make the use consistent with the rural zone or remove the need to assess land-use conflict, contamination, agricultural constraints and future sterilisation of affected land.

Hazardous substances and consequence assessment

Appendix 11 identifies approximately 1,800 tonnes of liquid carbon dioxide stored at about -25°C and 20 barg. The inventory is described as Class 2.2 liquefied carbon dioxide, but the report does not clearly state the applicable UN number, proper shipping name or the Safety Data Sheet classification relied upon.

That distinction should be resolved. The application should identify whether the stored and transported product is treated as UN 1013 Carbon dioxide or UN 2187 Carbon dioxide, refrigerated liquid, and explain the classification against the actual safe storage and transport conditions.

Carbon dioxide is commonly described as an asphyxiant, but its health effects are not confined to oxygen displacement. Safe Work Australia sets workplace exposure limits for CO₂ itself, recognising that elevated concentrations can adversely affect health. It is colourless, may provide little warning and, at elevated concentrations, can cause headache, confusion, loss of consciousness and death.

A large refrigerated release may also form a cold, dense cloud that follows low ground, drainage lines or enclosed spaces. The site's floodplain setting, nearby roadway, adjoining industrial workforce and dependence on external emergency access are therefore directly relevant.

Appendix 11 concludes that no Preliminary Hazard Analysis is required because Class 2.2 substances are not assigned a screening threshold under SEPP 33. That addresses the guideline's initial screening mechanism. It does not demonstrate that credible releases from vessels, pipework, loading equipment or the connecting pipeline have been modelled and found acceptable.

The contrast with the earlier Supagas proposal is significant. A Preliminary Hazard Analysis was prepared for approximately 300 tonnes of CO₂ storage and examined releases from storage vessels, process equipment, pipelines and tanker transfer. The proposed Air Liquide inventory is approximately six times larger. One must ask why the greater inventory attracts a materially lower level of consequence assessment?

Air Liquide operations elsewhere also demonstrate that industrial gas plants are routinely assessed within hazardous-industry risk frameworks when their processes and surrounding context warrant it. Air Liquide's Botany air-separation, hydrogen-storage and CO₂ operations are documented within the Botany Industrial Park quantitative risk assessment and hazardous-incident identification framework. That does not prove that the Bomaderry plant is legally 'hazardous industry', but it confirms that corporate identity or Class 2.2 classification is no substitute for site-specific risk assessment.

A proportionate consequence assessment is necessary for addressing the maximum credible inventory, release duration, phase change, dense-gas dispersion, occupied areas, road and rail exposure, emergency access and escalation from failures at the adjoining Shoalhaven Starches operation.

Pipeline contents and process streams

The EIS describes the finished liquid CO₂ product in detail but does not give the same attention to the gas conveyed through the buried pipeline. The pipeline should be assessed according to what it carries not a clean, final product.

Only bulk condensate would be removed before the CO₂-rich fermentation gas enters the approximately 1.3-kilometre HDPE pipeline. Water scrubbing, cooling, compression, substantial dewatering, hydrogen sulphide removal, hydrocarbon removal, liquefaction and final purification would occur after the gas reaches the Air Liquide plant. The pipeline would therefore transport a variable raw process stream, not purified carbon dioxide.

The assessment should disclose the expected, maximum and upset-condition composition of that stream, including the concentration of water vapour, ethanol, hydrogen sulphide and any methane, methanol, particulates or other fermentation constituents that may be present.

It should also identify pressure, temperature, flow rate, condensate formation, low-point drainage, isolation arrangements and the consequences of credible leakage or rupture.

With volatile organic contaminants (VOCs) present in the raw gas feedstock the process description should include a complete mass balance for hydrocarbons and contaminants removed during treatment. That balance

should identify what is returned to Shoalhaven Starches, discharged to air, captured as liquid waste, retained in filtration media or otherwise disposed of.

This information is relevant to air quality, odour, waste classification, wastewater loading, pipeline corrosion, worker safety and emergency response. Those impacts cannot be assessed reliably while the composition and destination of process streams remain unclear.

Legal responsibility and enforceability

The EIS identifies Air Liquide Australia Solutions Pty Ltd as the sole proponent. Other exhibited documents describe the project differently.

The Scoping Report states that Manildra Energy Australia Pty Ltd and Air Liquide Australia Solutions Pty Ltd are seeking approval. The Community Engagement Report is submitted on behalf of both entities. The Detailed Site Investigation and Transport Assessment also identify both companies as clients, while Air Liquide's public announcement describes the project as a partnership with Manildra Group.

Those descriptions may be commercially understandable, but commercial cooperation does not clearly designate enforceable accountability. Conditions of consent attach to the named consent holder but do not automatically assume that another company will supply gas, accept wastewater, provide access, maintain an interface or undertake emergency action. Before determination, this needs to be resolved.

The applicant(s) must legally identify the entity responsible for feed-gas quality and continuity; ownership and operation of the connecting pipeline; land access; wastewater and condensate acceptance; shutdown coordination; emergency response; and compliance where infrastructure crosses the boundary between the two operations.

The assessment should also explain what occurs if the relevant Shoalhaven Starches approval, environment protection licence, wastewater capacity or operating arrangement changes. A consent should not authorise a development whose safe and lawful operation depends on arrangements that are neither secured nor enforceable.

The exhibited documents refer variously to Manildra Group, Shoalhaven Starches and Manildra Energy Australia Pty Ltd. The consent and any associated management plans should use precise legal names and allocate responsibility at every interface.

Cumulative impacts and assessment boundary

The cumulative-impact question is not whether each proposal produces a small modelled increment in isolation. It is what residents, workers, road users and river users will experience when existing, approved and proposed development operates together.

The Transport Assessment recognises this principle by considering other Shoalhaven Starches approvals relevant to future traffic conditions. Earlier assessment of the Supagas CO₂ plant also considered cumulative noise and odour from the wider starch operation.

The same assessment boundary should be applied consistently to hazard, noise, air quality, odour, flooding, wastewater, lighting, visual amenity, greenhouse accounting, emergency demand and social impacts. Selectively broadening the baseline for one discipline while narrowing it for another produces an incomplete picture.

The assessment should identify existing operations, approved but unconstructed works and reasonably foreseeable proposals affecting the same site and infrastructure. That includes relevant Shoalhaven Starches modifications and proposed development on the former paper-mill land, particularly where they share Bolong Road, the floodplain, wastewater systems, river views or emergency access.

Findings that separate effects are ‘minor, low or negligible’ do not establish that their combined effect will remain acceptable. The Department should require a consolidated schedule of cumulative projects, operating assumptions and impact pathways so that each specialist report is working from the same future scenario. Comparing apples to apples if you like.

Flooding, ground conditions and emergency scenarios

The former paper-mill site lies within the Shoalhaven River floodplain. The relevant issue is not limited to the change in flood level produced by the Air Liquide structures alone. Flood safety and process safety should be assessed together where the same event can affect both.

A series of developments may each produce a small modelled change while collectively occupying flood storage, constricting hydraulic conveyance, changing debris behaviour or affecting the same evacuation and emergency-access route. The flood assessment should therefore include existing development, approved but unbuilt works and reasonably foreseeable proposals affecting the same floodplain.

The assessment should also examine combined flood and industrial-failure scenarios. These include scour or ground movement affecting the buried pipeline; loss of power or refrigeration; isolation-valve failure; damage to tanker-loading infrastructure; impaired emergency access; and the release of CO₂, chemicals, wastewater or contaminated condensate during inundation.

The 2020 Satartia pipeline failure is not a direct analogue because the proposed Bomaderry pipeline is shorter, smaller and apparently much lower pressure. It is nevertheless relevant to the way dense CO₂ can follow terrain and drainage, and to the consequences of ground movement, delayed recognition and restricted access.

Site-specific consequence modelling should use the actual topography, drainage network, flood behaviour, meteorology, occupied areas and emergency routes. Generic statements about low pressure or buried construction do not replace an assessment of credible site-specific failure.

Transport and access

The Transport Assessment concludes that the project is supportable and describes operational traffic as fewer than 40 vehicle trips per day, including regular tanker movements. The Social Impact Assessment adopts those conclusions and assigns low residual significance to traffic and road-safety concerns.

That approach focuses on network capacity and intersection performance. It gives less attention to the lived and operational consequences of adding dangerous-goods tankers to a road already carrying heavy industrial traffic, serving rural residents and Shoalhaven Heads, crossing the railway and forming part of an emergency route.

The assessment should clearly state the maximum daily and hourly tanker movements, vehicle configuration, delivery windows, dangerous-goods routes, interaction with shift changes and construction peaks, and the assumptions made for all approved Shoalhaven Starches traffic.

It should also address road pavement demand, queuing or obstruction during incidents, railway-crossing delay, emergency-service access and the consequences of a tanker breakdown or collision near the plant entrance.

A finding that intersections retain an acceptable level of service does not resolve every transport impact relevant to planning merit.

Visual amenity and landscape character

The visual assessment should not be confined to motorists travelling along Bolong Road.

The Shoalhaven River is a public recreational and scenic corridor. A river has two banks. Views from the water and southern bank may be longer in duration and less screened than roadside views. They may include the combined appearance of storage vessels, the distillation column, process equipment, pipework, buildings, tanker facilities and lighting against the existing Shoalhaven Starches complex.

The proposed height variation should also be assessed in that broader landscape context. Compliance with an industrial-zone expectation does not remove the need to consider prominence, skyline change, night lighting and the progressive expansion of built form across the former paper-mill site.

Representative viewpoints should be provided from the river, the southern bank and other publicly accessible locations during both daytime and night-time conditions that should show the proposal together with approved and reasonably foreseeable development on the same site.

Roadside screening does not establish that the wider landscape impact is acceptable.

Social impact, engagement and equity

The Social Impact Assessment concludes that likely benefits at local, State and national levels outweigh adverse impacts experienced by ‘a small number of people in the immediate locality’. (Appendix 15, Social Impact Assessment, section 8, p. 42.)

That conclusion gives considerable weight to the number and geographic spread of beneficiaries. It gives insufficient attention to the distribution, duration and cumulative nature of the burden.

The claimed benefits include emissions reduction, industrial production and supply of CO₂ for food, beverage, medical and water-treatment uses. Those benefits are broad. The adverse effects are concentrated around Bomaderry through further industrialisation, tanker movements, visual change, night operations, perceived risk and continued pressure on the locality’s amenity.

The SIA does not demonstrate why that distribution is equitable. A smaller affected population is not, by itself, a reason to reduce the significance of an impact. Equity requires attention to vulnerability, existing disadvantage, cumulative exposure, capacity to adapt and whether the same community repeatedly bears the consequences of development delivering benefits elsewhere.

Equity is not achieved by spreading benefits widely while concentrating the burden on one community.

The SIA itself identifies older and disadvantaged populations within the social locality. It also records community concern about traffic, industrial growth, safety, amenity and existing Shoalhaven Starches impacts. Those concerns are then largely reduced by adopting the findings of the project’s technical reports. This creates circular reasoning: the technical assessment predicts compliance, so the social consequence is rated low, even where the social issue is cumulative burden, loss of confidence or perceived safety.

Low participation should not be treated as evidence of low concern. Nine attendees and four submissions may also reflect limited awareness, consultation fatigue, distrust, technical complexity or the difficulty of engaging with a large SSD document suite.

The assessment should revisit the significance ratings using a cumulative social baseline, test the assumptions with affected residents, distinguish mitigation from ordinary complaint handling and explain how the proposal advances distributive and procedural equity.

Ecologically sustainable development and planning merit

Capturing up to 100,000 tonnes per year of CO₂-rich gas may provide a significant emissions benefit. That benefit should be assessed accurately and given appropriate weight.

It should not, however, be treated as a complete answer to sustainability. Ecologically sustainable development requires the integration of environmental, social and economic considerations, including intergenerational equity and the precautionary principle.

The proposal's climate benefit does not remove the need to actively resolve local hazard, land-use compatibility, flood interaction, waste streams, transport, visual amenity and social equity. Nor does it justify relying on uncertainty where consequence modelling or enforceable operating arrangements can reasonably be obtained.

The Department should also distinguish between gross captured CO₂ and net emissions reduction after electricity use, refrigeration, compression, construction, tanker transport, product losses and the ultimate release of CO₂ during end use. The claimed benefit should be expressed transparently and on a consistent lifecycle basis.

Requested action

The proposal should not be determined until the applicant has provided, and the Department has publicly assessed:

- a clear land-use characterisation addressing general industry, heavy industry, hazardous industry and potentially hazardous industry against the plant's actual processes, inventory and required separation;
- an explanation of why the Scoping Report proposed a Preliminary Hazard Analysis but the EIS does not include one;
- site-specific consequence modelling for credible releases from storage vessels, process equipment, tanker loading and the buried pipeline;
- confirmation of the applicable UN classification, proper shipping name and Safety Data Sheet for stored and transported liquid CO₂;
- full characterisation of the raw fermentation-gas pipeline and a mass balance for contaminants, hydrocarbons, wastewater and waste streams;
- a legally enforceable allocation of responsibility between Air Liquide and the relevant Manildra entity for every shared operational interface;
- a consistent cumulative-project scenario applied across hazard, flooding, traffic, noise, air quality, odour, wastewater, lighting, visual and social assessments;
- combined flood and industrial-incident assessment using site-specific topography, drainage, ground conditions and emergency access;
- representative daytime and night-time visual assessment from the Shoalhaven River and southern bank; and
- a revised Social Impact Assessment addressing cumulative burden, meaningful engagement, vulnerability and distributive and procedural equity.

If these matters cannot be satisfactorily resolved, consent should be refused. If the project is approved, the consent should contain measurable limits, clear interface responsibilities, independent verification, incident notification, public reporting and review mechanisms that remain effective throughout the life of the development.

In closing, the proposal offers a potentially valuable emissions-reduction outcome, but the assessment presently relies on boundaries and assumptions that do not reflect how the plant will operate.

Functionally, it is a separate commercial development connected to a much larger industrial system. It introduces substantial new processing, storage and transport activity on a floodplain beside existing industry, public infrastructure to the Bomaderry community. These are facts, they are relevant and they define the planning task.

The assessment should be consistent across disciplines, proportionate to consequence and enforceable across every operational interface. Public benefit should be demonstrated, not presumed, and Local burden should be examined, not discounted because fewer people bear it.

Planning integrity requires the whole development to be seen clearly before any part of it is approved and this information should be publicly accessible.

References

- Air Liquide Australia Solutions Pty Ltd, Shoalhaven CO₂ Processing Plant Environmental Impact Statement, SSD-80824235.
- Air Liquide Australia Solutions Pty Ltd, Scoping Report, February 2025.
- Riskcon Engineering Pty Ltd, Appendix 11 - Hazard and Risk Assessment.
- Judith Stubbs & Associates, Appendix 15 - Social Impact Assessment, 2026.
- Arc Traffic + Transport, Appendix 17 - Transport Assessment, January 2026.
- NSW Department of Planning, Hazardous and Offensive Development Application Guidelines: Applying SEPP 33, January 2011.
- NSW Department of Planning, Hazardous Industry Planning Advisory Paper No. 4: Risk Criteria for Land Use Safety Planning.
- Shoalhaven Local Environmental Plan 2014, Dictionary and Land Use Tables for Zones E4 and RU1.
- Pinnacle Risk Management, Preliminary Hazard Analysis - Supagas CO₂ Plant, 10 December 2017, Modification 15 to MP06_0228.
- Safe Work Australia, Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants, revised July 2025.
- NSW Department of Planning, Quantitative Risk Assessment 2018 - Botany Industrial Park.
- United States Pipeline and Hazardous Materials Safety Administration, Failure Investigation Report: Denbury Gulf Coast Pipelines LLC, 26 May 2022.