

Please direct all responses/queries to:

[Redacted]

Our reference:

[Redacted]

Woodside Energy Group Ltd

ACN 004 898 962

Mia Yellagonga

11 Mount Street

Perth WA 6000

Australia

T: +61 8 9348 4000

www.woodside.com

1 September 2025

Commercial-in-Confidence

Department of Mines, Petroleum and Exploration (DMPE)
100 Plain Street
East Perth WA 6004

Submission via REC.Consultation@dmpe.wa.gov.au

To whom it may concern,

OPEN CONSULTATION – DMPE - DRAFT PETROLEUM, GEOTHERMAL ENERGY AND GREENHOUSE GAS STORAGE (GREENHOUSE GAS INJECTION AND STORAGE) REGULATIONS 2025

Woodside Energy Group Ltd. (**Woodside**) refers to the Department of Mines, Petroleum and Exploration (**the Department**) public consultation on the draft Petroleum, Geothermal Energy and Greenhouse Gas Storage (Greenhouse Gas Injection and Storage) Regulations 2025 (**GHG Regulations**) in relation to the *Petroleum Legislation Amendment Act 2024*. We welcome the opportunity to comment.

Woodside understands the draft GHG Regulations aims to deal with a number of matters to facilitate and regulate greenhouse gas (GHG) injection and storage operations.

As a participant in various joint ventures, Woodside holds five greenhouse gas assessment permits enabling carbon capture and storage (CCS) assessments in the Browse Basin, Northern Carnarvon Basin, Bonaparte Basin and Gippsland Basin. We have also entered into three non-binding memoranda of understanding to enable studies of a potential CCS value chain between Japan and Australia.

Given the extensive and positive industry engagement to date by the Department, which supported a fit for purpose and robust outcome, Woodside's comments primarily address technical matters contained within the public consultation. However, Woodside appreciates the effort of the Department to align State and Commonwealth regulatory frameworks as much as possible and the State Government's recently published CCUS Action Plan which outlines actions required to provide policy certainty and guidance to attract investment and accelerate deployment of proven technologies and infrastructure.

It is recommended that the Department should continue collaboration with stakeholders to develop guidance for the draft regulations once enacted. Ensuring adequate resources and investing in systems and processes will streamline implementation and regulatory approvals obtention.

Woodside also draws the Department's attention to input it may receive from the Australian Energy Producers (AEP) and Chamber of Minerals and Energy (CME) WA.

Yours faithfully

[Redacted signature]

General Manager of CCS
Woodside Energy Group Ltd.

General

Woodside draws the Department's attention to the use of the terms "sound basis" and "soundly based" throughout the GHG Regulations. The lack of clear definition or criteria for assessing what constitutes a "sound basis" introduces uncertainty for both proponents and regulators. Clarification is requested on the standards, benchmarks, or methodologies to be used in determining whether supporting information or technical work meets this threshold. Establishing explicit guidance or reference frameworks would improve transparency and ensure consistent interpretation across applications.

Part 5 - Information that may be made publicly available

46. Information relating to leakages during injection or from well bores
(2) (b) "*any raw data collected ...*"

In certain situations, implementing this clause may be challenging due to the large volume of some raw data, making storage and transmission to the Department difficult. Raw data may also risk being misinterpreted if taken out of context. Woodside considers Clause (2) (a) may provide sufficient coverage of relevant information that serves the public interest.

46(2) and 47(2) Information release:

As per current wording, only the Minister has discretion over public release, with no titleholders involvement beforehand, especially regarding measurement and monitoring data. Recommendation for the Minister to have an obligation to consult with titleholders before public disclosure of relevant data.

Schedule 1 – Information required for identified GHG storage formations and estimates of spatial extent, Division 2 – Information about part of geological formation

3. Understanding of the subsurface environment
- (3) (c) "*any faults in the structure...*"

It is recommended this phrase includes a qualifier or caveat. Faults are fractal and arbitrarily small faults are universally present in geological formations, however such faults are usually of no relevance to the behaviour of a CO₂ plume and not usually detectable in the subsurface. It would therefore be impossible to identify. A qualifier such as "any faults that may affect fluid movement in..." or "any macroscopic faults in..." would result in an achievable requirement without sacrificing any relevant information regarding subsurface fluid flow and risk.

4. Model of reservoirs and seal rocks
- "*A 3-dimensional static earth model...*"

Providing the actual digital model is likely to present many challenges in terms of software access, format compatibility, archiving, and data interpretation. Woodside considers the wording used in 5. *Dynamic modelling: "Details of any...modelling..."* is likely to be clearer for the regulator (or other relevant parties) to assess and interpret, and less likely to present ongoing challenges for data management and interpretation.

5. Dynamic modelling
- (2) *The details of dynamic modelling described in subclause (1) must demonstrate probability distributions for, at a minimum...*
 - (a) *the behaviour of the injected greenhouse gas substance*

Woodside considers assigning a probability to this scenario to not be feasible. Woodside recommends focusing on the spatial extent of the plume, as it aligns with established migration pathways.

- (c) *any other parameter of change...*

We suggest adding examples of parameter types in section c).

Schedule 1 - Division 3 – Requirements for estimates of spatial extent

7-9. Spatial Extent definition

Please consider amendments to the Spatial Extent definition to incorporate a caveat to allow for Ministerial discretion to consider inclusion of graticular blocks that may not adhere to the >10% probability of modelled GHG plume pathway (if there is sufficient justification from applicants for their inclusion).

This is particularly pertinent to depleted hydrocarbon fields that may serve as future storage locations since the GHG plume tends to be largely constrained within the existing structural traps. This could lead to restrictive injection licence areas if solely based on the existing definition. Ministerial discretion would also allow for situations where the modelled probability plume pathway is very close to but not crossing graticular block boundaries, or where including graticular blocks may support a GHG Projects' MMV or risk management plan (even if those blocks do not contain GHG modelled probability plume pathways).

Schedule 2 – Information: draft site plan Part B

5. Monitoring and Verification Plan

- (1) (b) *“...will detect any variations...”*

This sentence may be considered too broad. As such, it is suggested to include a qualifier such as *“...will detect any material or relevant variations...”* to help reflect the intent of the regulations without suggesting a level of monitoring precision that cannot be achieved.

- (2) *“...or an aquifer.”*

Woodside understands this phrase likely refers to a “freshwater aquifer”. It is more likely that CO₂ will be injected into a formation which contains a brine aquifer, however this does not impact safety or environmental outcomes. Using ‘freshwater’ would more accurately reflect community expectations.

- (6) *“A description of each measurement...that would be regarded as a significant deviation from the predicted subsurface behaviours...”*

The current level of detail appears excessive for these regulations and does not reflect the intended objectives of being risk-based, site-specific, and adaptable.

Best practice risk management plans should not depend on specific measurements but instead require operators to assess an ongoing suite of measurements over time to identify signs of increased risk or deviation from normative behaviour, as well as to undertake supplementary measurements as necessary. This approach enables timely and efficient response to events, ensuring optimal safety for both personnel and the community.

Furthermore, any specific information tied to this clause may quickly become obsolete as new data regarding subsurface dynamics emerge and thresholds are updated. A more suitable provision might state: “A contingency management plan describing how monitoring measurements will be used to identify and mitigate increases in the subsurface risk levels identified in (1).”

8. Site closure: decommissioning, remediation and monitoring

- (2) *A plan for monitoring the behaviour of greenhouse gas substances stored in an identified GHG storage formation after the ceasing of operations for the injection of greenhouse gas substances into the formation.*

Woodside suggests including the timeline and objectives for post-closure monitoring would clarify this clause.