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Department of Resources, Energy and Tourism

Draft *Offshore Petroleum Amendment (Greenhouse Gas Storage) Bill 2008* OVERVIEW

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Presentation Overview

- Guiding Principles
- Proposed Legislative Model
- Storage Formations
- Awarding of Acreage
- GHG Tenure
- Project Closure
- Serious Situations
- Interactions with Petroleum Operations
- Regulations and Guidelines
- Site Plan

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Regulatory Guiding Principles for Greenhouse Gas (GHG) Storage

In November 2005, MCMPR Ministers endorsed Regulatory Guiding Principles for GHG Capture and Geological Storage in Australia.

- Consistent, transparent and flexible regulatory regime
- Provide investment certainty
- Ensure public confidence
- Promote, technology transfer, research and development

Guiding principles – Key Areas

- Access and property rights
  - Exclusivity of tenure
  - Consider multi-user infrastructure and facilities
- Assessment and approvals process
  - Consistent with agreed national protocols and guidelines
  - Modification of existing legislation where appropriate
  - Liability and post-closure responsibilities
  - Minimise health, environmental and financial risks for project operators, governments and future generations.
  - Current regulatory principles and common law should apply to liability issues for all stages of CCS projects.

Guiding principles – Key Areas

- Financial issues
  - Established regimes and processes should be used where possible
  - Treated as for any other business venture for taxation purposes.
  - Post-closure liabilities and appropriate financial instruments
- Transportation issues
  - Consistent with agreed national protocols and guidelines
- Monitoring and verification
  - Appropriate monitoring and verification requirements to manage environmental, health, safety and economic risks.

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Proposed GHG Legislative Model

Centralised model to be adopted

- Responsible Commonwealth Minister (RCM) has ultimate regulatory responsibility
- Delegation/Contracting to appropriate Commonwealth and States/Territories agencies
- Use of the *Offshore Petroleum Act* as platform for GHG legislation
- GHG pipeline management will remain with JA/DA

Advantages of this model

- National consistency
- Issues of liability
- Small number of projects anticipated in early years

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Offshore Petroleum Act Platform

Offshore Petroleum Act 2006 chosen due to:

- Technological similarities with petroleum activities
- Effectiveness of the PSLA/OPA over the past 40 years
- Potential for the overlapping or close proximity of petroleum and GHG activities
- Established regimes and processes can be used
  - NOPSA
  - Acreage release process
  - Regulations and guidelines
- MCMPR Endorsement Dec 2006

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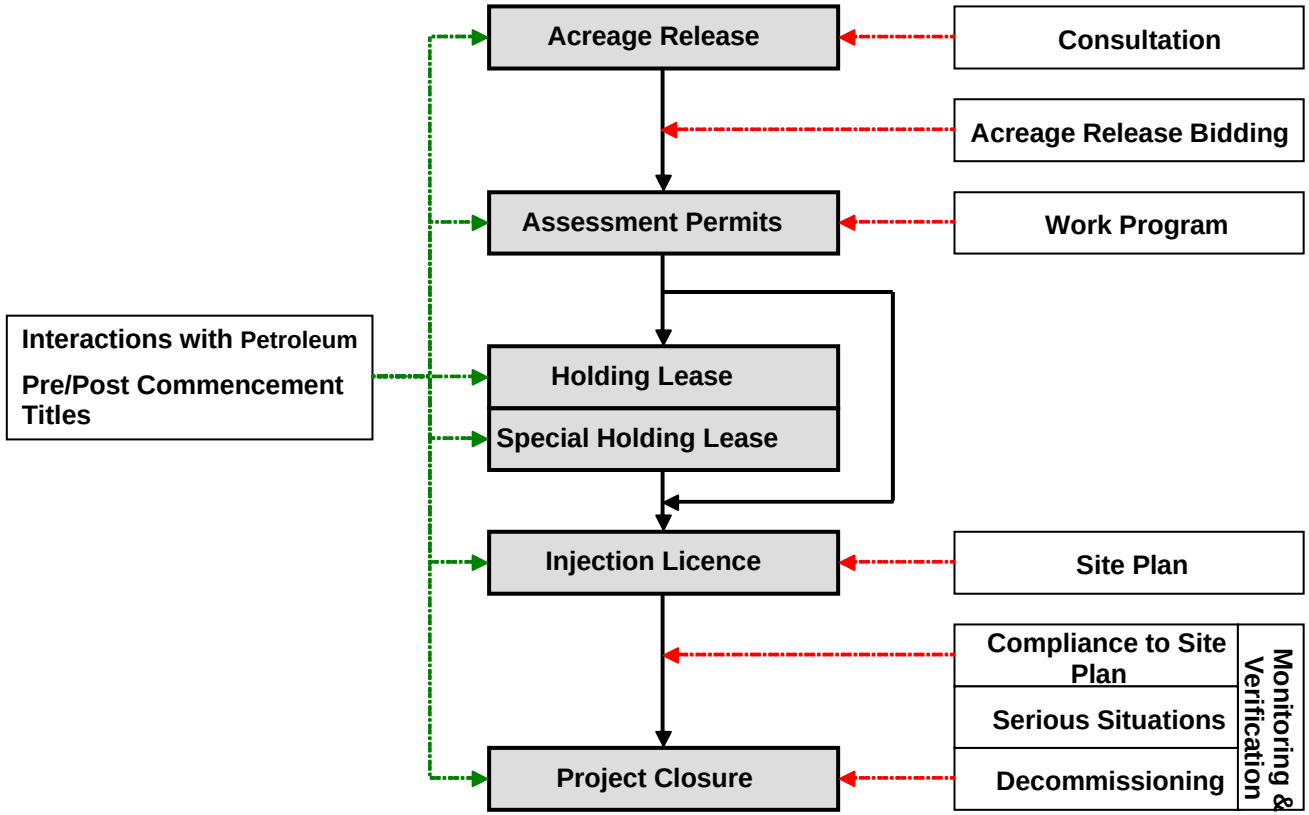
Greenhouse Gas Tenure Terminology

Petroleum	Greenhouse Gas
Exploration Permit	Assessment Permit
Retention Lease	Holding Lease Special Holding Lease
Production Licence	Injection Licence
Special Prospecting Authority Access Authorities Scientific Investigation Consents	Search Authorities Special Authorities Research Consents
Infrastructure Licence	

Summary - Legislative Overview



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STORAGE FORMATIONS

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GHG Storage Formation Progression

Potential GHG Formations

- Reasonable suspicion that a storage formation has been identified
- Part of a geological formation potentially suitable for the storage of a GHG substance i.e. Sealing mechanism

Eligible GHG Formations

- Include details of the fundamental suitability determinants i.e. Injection profile
- Identify the spatial extent of migration pathway
- Injection amount must be at least 100,000 tonnes

Declared GHG Storage Formation

- Must lie wholly within the title area
- Title holder applies for an eligible storage formation to be declared.
- If acceptable, RCM declares identified GHG storage formation.
- Declaration gazetted and registered
- Declared storage formation required to progress from assessment permits to holding lease / injection licence

Fundamental Suitability Determinants

- Amount to be injected *(How much)*
- Composition of substance to be injected *(What)*
- The injection point(s) *(Where)*
- The period over which injection occurs *(Period / rate)*
- Engineering enhancements
- Effective sealing feature, attribute or mechanism

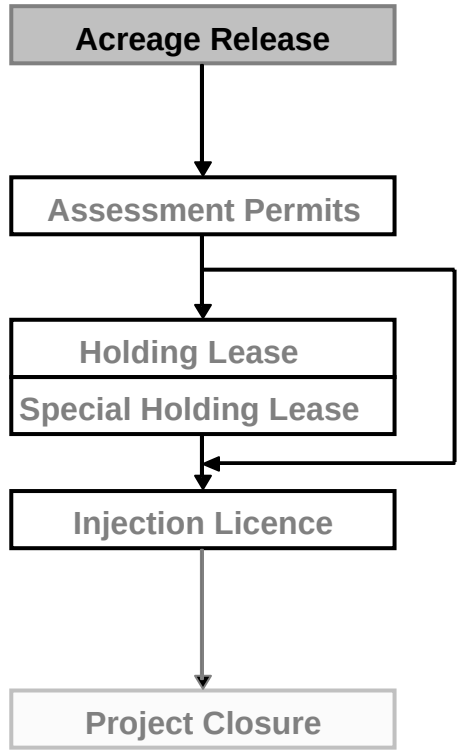
Legislation Ref - 15B Part2A.2 249AU

" Proving Up" GHG Storage Formations

- Establishing the likely spatial extent of a migration path will typically require a substantial work program.
- For an identified GHG storage formation to be declared, and hence be suitable for injection, a work program is likely to require:
  - Extensive analysis of existing data
  - Acquisition of new data using 2D and 3D seismic and wells
  - Reservoir simulation and Dynamic Modelling of migration pathways

Activity leading to granting of tenure

1. Acreage Release
2. Bidding



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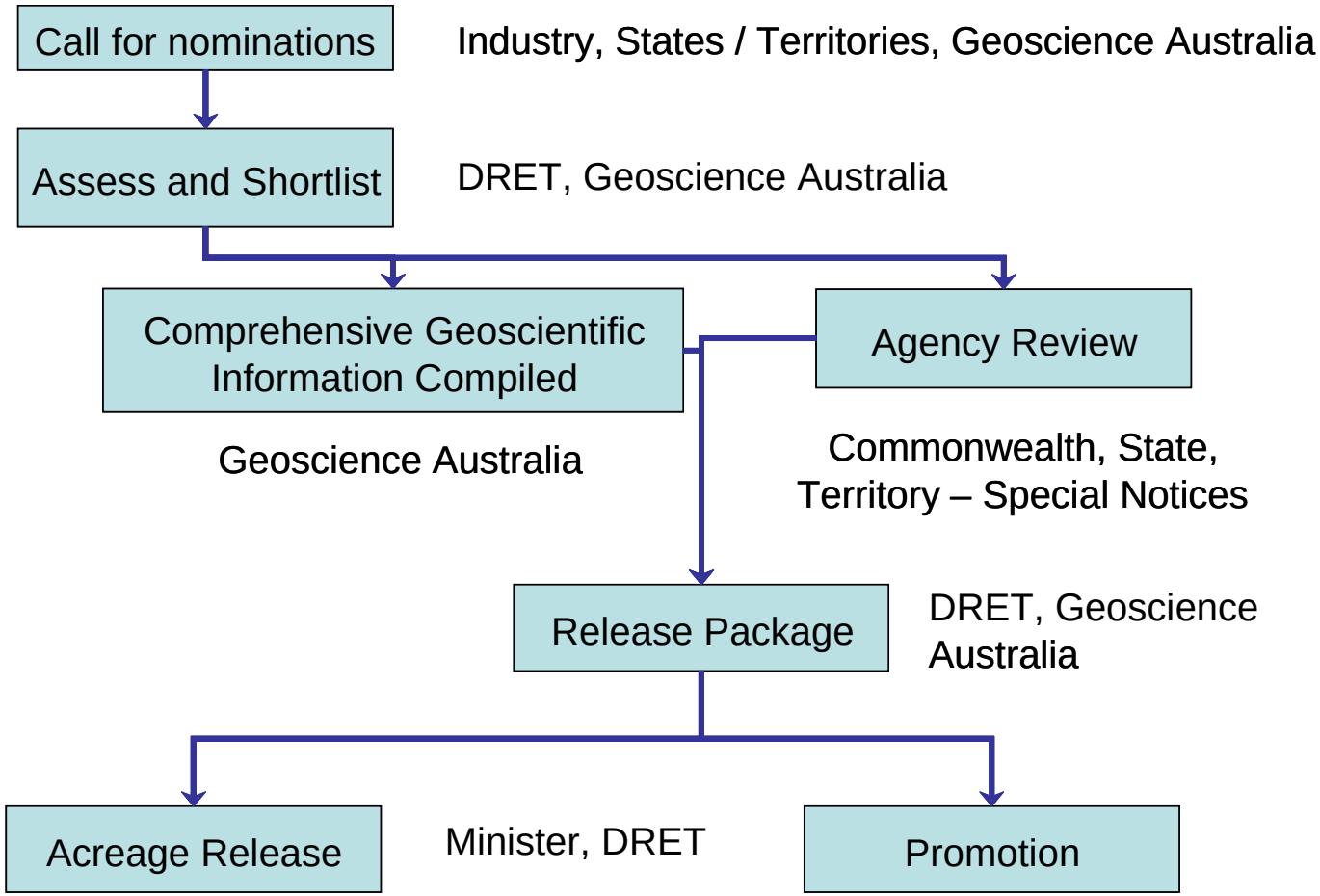
Proposed Acreage Release Process



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Acreage Release Considerations

- Prospective for storage formations.
- Regional geological formations match need for migration control.
- Activities compatible with other resource usage (esp. petroleum).
- Source sink matching.
  - Storage capacity and injectivity
  - Source volume
  - Proximity to source/s
- Impact on likely industry structure.

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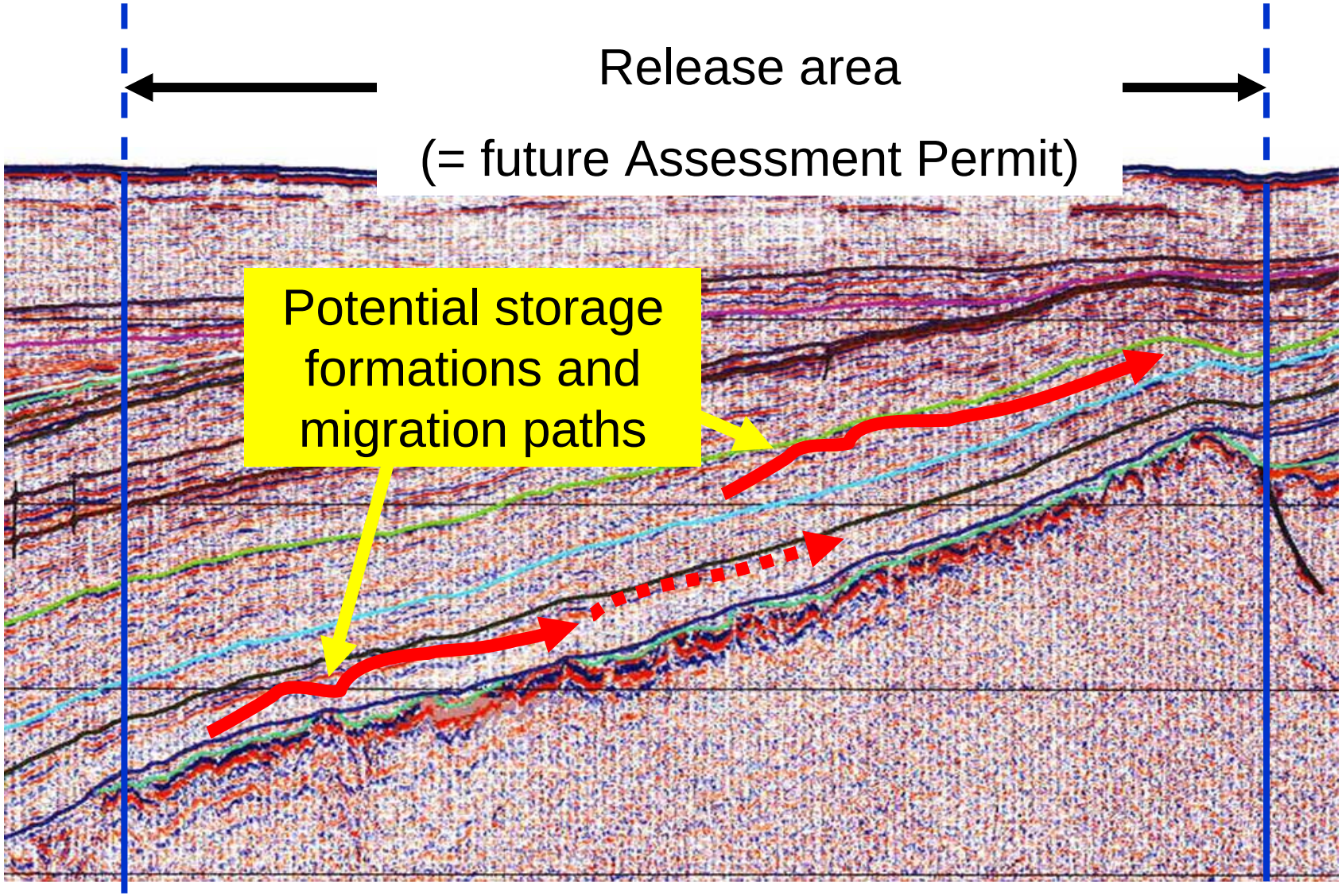

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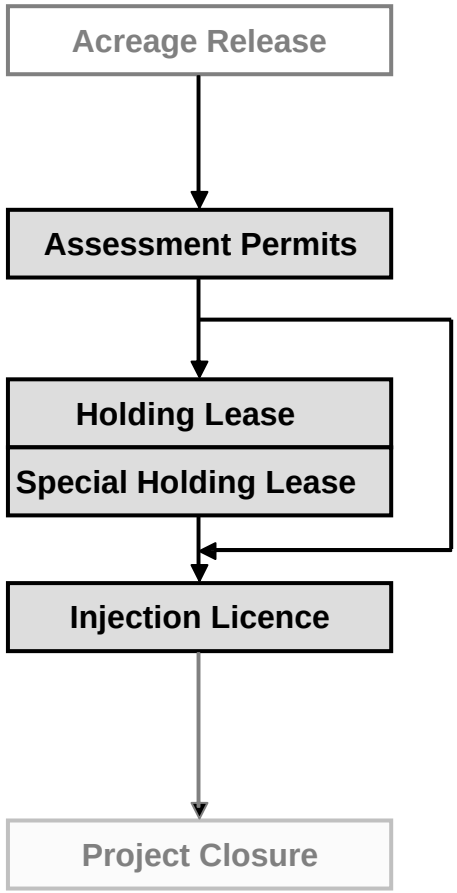
Bid Process

- Bid types:
  - Work program bids
  - Cash bids
- Application period may vary, but typically 6 or 12 months.
- Guidelines on bid assessment will be issued.
- Regulator assesses bids and invites winning bidder to apply for grant of Assessment Permit.

Legislation Ref - Part 2A.2 249AJ-AS

GHG TENURE


Acreage Release
Assessment Permits
Holding Lease
Special Holding Lease
Injection Licence
Project Closure

GHG Assessment Permits – Rights Conferred

- Explore for potential GHG storage formations and injection sites.
- To inject on an appraisal basis.
- To recover petroleum as consequence of exploration for the sole purpose of appraising the discovery.
- Undertake activities as per agreed work program.
- Purpose is to identify a storage formation.

Duration – 6 Years (max 12 month extension)

Legislation Ref - Part 2A.2 249AD & 249AE

Obtaining a GHG Holding Lease

- Declared storage formation.
- Not in a position to inject or store within 5 years
- Holding tenure for infrastructure development and sourcing of CO_2.
- Not an obligatory step to progress to an Injection licence.
- Injection licensees may apply if sources of GHG do not materialise.
- Special Holding Lease

Legislation Ref - Part 2A.3 249BH 249BI 249BN 249BO 249BSA 249BSB

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GHG Holding Lease – Rights and Conditions

- Analogous to a petroleum retention lease
- Similar exploration rights to assessment permits
- Consideration of impacts on petroleum activities
- May be renewed once only

Duration – 5 years + 5 years

Legislation Ref - Part 2A.3 249BB 249BC 249BD 249 BF 249BT 249BZ

Obtaining a GHG Injection Licence

- Declared storage formation.
- Submission of a draft site plan.
- Must inject and store within 5 years.
- Subject to an impacts test.
- Baseline monitoring considerations.

Legislation Ref - Part2A.4 249CH 249CI 249CJ 249CQ 249CR 249CT

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GHG Injection Licence – Rights and Conditions

- Inject and store a GHG substance.
- Exploration rights
- Subject to proposal specific licence conditions
- Licence conditions will be project specific

Duration – Indefinite

(Depending on approved injection plan and post injection monitoring requirements.)

Legislation Ref - Part2A.4 249CD 249CE 249CF 249CG

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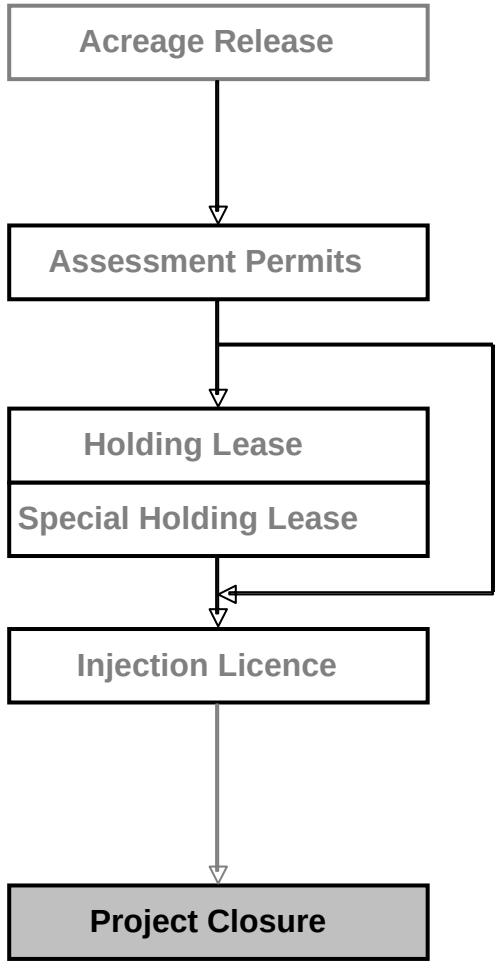
PROJECT CLOSURE



Overview – Site Closure

- Licensee must apply for site closure
- Undertake decommissioning activities – work program
- Confidence in long term fate of injected GHG - MMV
- Post closure monitoring requirements and cost estimates
- Payment of a security and offer of closure certificate
- Licence surrender

Legislation Ref - Part 2A.4 249CZE 249CZF 249CZG

Site Closure Timeframes

- No set period of post injection monitoring.
- Closure timeframes highly site specific
- Monitoring of short term migration to confirm modelling
- Confidence required in accuracy of and scenarios from long term modelling

Legislation Ref - Part 2A.4 249CZF

Securities

Securities may be requested to ensure compliance with statutory obligations.

Operational Securities

- Compliance with permit, lease or licence conditions
- Compliance with directions
- Liabilities and potential expenses

Post Closure Securities

- Cover the cost of the long term MMV requirements
- Based on agreed work program and determined case by case
- May be taken prior to the issuing of closure certificate

Legislation Ref - Part 2A.4 249CZGAA 249CZJB 249CZJC 249NCA

Long Term Liability

Who bears liability for injected CO_2	
Prior to Closure	**Post Closure**
Statutory & Common Law Responsibility	Common Law Responsibility
• Liability lies with the licensee • Injection Licensee required to comply with statutory obligations • Common law liability applies	• Common law liability lies where it falls • Commonwealth does not 'take over liability'. • Longer term the risk will pass to the community when or if project participants cease to exist

SERIOUS SITUATIONS

What Are Serious Situations

There has been, or could be;

- Leakage of a GHG substance from a GHG storage formation.
- Behaviour otherwise than predicted in approved site plans.
- Adverse impact on the geotechnical integrity of a geological formation.
- The GHG storage formation is found to not be suitable for the storage of a GHG substance.

Legislation Ref - Part 2A.4 249CZ

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Powers to Deal with Serious Situations

Operators must take whatever action the Responsible Commonwealth Minister requires, to deal with the situation

- Comply with any and all directions.
- To undertake activities for the purpose of eliminating, mitigating, managing or remediating the serious situation.
- Inject only at directed locations.
- Cease or suspend injection
- Formally apply for a closure certificate.

Legislation Ref - Part 2A.4 249CZA 249CZB

Offence Provisions

Examples of offences

- Unauthorised exploration for storage formations/injection sites
- Unauthorised injection and storage
- Failure to notify of the identification of a potential storage formation or discovery of petroleum
- Compliance with directions i.e. site closing or dealing with serious situations
- Disposing of waste or other matter
- Interference with other rights
- Inappropriate work practices
- Maintaining and supplying of records to inspectors
- False or misleading information documents or evidence

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INTERACTIONS WITH PETROLEUM OPERATIONS

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Key GHG Operations

- GHG Assessment Permittees must obtain approval for these activities
- Assessment activities that may have impacts on petroleum operations
- Does not cover injection licence activities
- Reciprocal concept : Declared Petroleum Titles (Post Commencement Titles only)
- Key petroleum activities require approval

Legislation Ref - 249AF

Key GHG Operations

- Any GHG exploration activity that may impact on petroleum operations
- Making of a well
- Injection and storage on an appraisal basis
- Seismic surveys
- Monitoring of the behaviour of a stored GHG substance

Legislation Ref - 249AF

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Approval of Key GHG Operations Pre-Commencement Petroleum Titles

Existing and future rights are protected

- Minister **must not** approve Key GHG Operations if there is a significant risk of a significant impact on petroleum operations unless.
  - The petroleum title holder has agreed to the GHG operations **and**
  - Terms of the agreement are not contrary to public interest
- Post-commencement production licences protected by same impacts test as pre-commencement titles

Legislation Ref - Part 2A.2 249AF(11)(12)

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Approval of Key GHG Operations Post-Commencement Exploration Permits and Retention leases

Existing and Future rights are taken into account

In approving Key GHG Operations the Minister **must have regard to** :

- The impact on petroleum exploration or recovery operations on existing and future petroleum tenure
- Any agreements between GHG and petroleum operators
- Public Interest

Reciprocal consideration - Declared petroleum titles

- Approval required for petroleum activities that may impact on existing GHG injection and storage

Legislation Ref - Part 2A.2 249AF(4)-(8)

Current Petroleum Injection and Storage Rights

- Injection rights are considered incidental to the right to recover petroleum.
- Two main purposes
  - Gas recycling / enhanced hydrocarbon recovery
  - CO_2 / Methane stripped from petroleum recovered in the licence area

Proposed Petroleum GHG Rights

- Holders of petroleum production licences would continue to have their current rights in relation to injection and storage for the purpose of recovering petroleum (subject to obtaining normal regulatory approvals).
- Petroleum rights to inject and store overlap proposed GHG Injection licence requirements.
- Public comment will be invited about the scope of the GHG injection and storage activities of petroleum titleholders to be covered by this part.

REGULATIONS AND GUIDELINES

Types of Activities to be Regulated

- Assessment stage
  - Seismic, drilling, injection for appraisal purposes
- Construction
  - Drilling, construction of structures, pipelines
- Operation
  - Injection and storage and related activities
- Closure
  - Removal of structures, site rehabilitation

Existing framework

- Occupational health and safety
- Non CO2 environmental matters
  - EPBC
  - Management of the Environment regulations
- Non CO2 reporting
- Decommissioning
  - Sea Dumping Act
  - Decommissioning regulations and guidelines

Existing Petroleum (Submerged Lands) Regulations

- Management of Well Operations Regulations 2004
- Data Management Regulations 2004
- Management of Safety on Offshore Facilities Regulations 1996
- Occupational Health and Safety Regulations 1993
- Management of Environment Regulations 1999
- Pipelines Regulations 2001
- Registration Fees Regulations 1990
- Fees Regulations 1994
- Datum Regulations 2002
- Diving Safety Regulations 2002

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New regulations and guidelines

- Award of exploration areas
- Declaration of an identified GHG storage formation
- Baseline monitoring plan
- Site plan, including site closure
- Taking of securities
- Petroleum injection and storage activities
- No significant impact test
- Public interest assessment

Baseline Monitoring

- Baseline monitoring data requirements
  - For grant of Injection Licence
  - Prior to commencement of Injection activities
- Precise monitoring requirements will be project specific
- Used to assess appropriateness of site plan monitoring and verification proposals
- Access considerations

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Site Plan

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Site Plan Objective

Must satisfy the regulator that the operations under the licence will be carried out in a manner that ensures that the site is a 'safe and secure' location for the permanent storage of GHG and that risks have been identified and that strategies for dealing with them are adequate

Overview of Site Plan Content

Main Components

- Project planning and management
- Operations overview
- Equipment integrity
- Reservoir integrity and plume migration modelling
- Risk assessment and mitigation and remediation strategies
- Reportable incidents
- Monitoring
- Reporting and verification
- Decommissioning and site closure.

Project Planning and Management

Regulator needs to be satisfied that:

- Adequate planning has been undertaken
- Sufficient standard of project design and proposed management
- Pro-active risk management

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Operations Overview

- Description of facilities
- Rates of injection
- Injection pressures
- Source and composition of the greenhouse gas substance
- Number and location of injection wells

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Reservoir Integrity and Migration Modelling

- Geological setting
- Plume migration modelling
- History of activity in the area

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Risk Assessment, Mitigation and Remediation Strategies

- Must be consistent with recognized standards
- Must describe risks, possible impacts and control and remediation strategies
- Examples of types of risks
  - Containment of the GHG substance over geological times
  - Impacts on petroleum
  - Impacts on other resources (eg potable water, other storage operations)

Monitoring

- Must satisfy regulator that significant events in all stages of the process, including in the reservoir, will be detected in a timely manner
- Must nominate what should be reportable incidents
  - noting that some, eg amount of any deviation in migration path, will be site specific
- Thresholds for reporting leaks from injection equipment

Interaction with the Petroleum Industry

- Must identify overlapping petroleum titles and other area users
- Must demonstrate no significant impact on pre-amendment titles or a production licence
- Must include analysis of potential impact on petroleum resources – known and possible future discoveries

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Reporting and Verification

- Must report basic data on
  - Quantity of greenhouse gas at input flange of pipeline
  - Quantity injected
  - Estimated losses at each point until entry into the reservoir
- May need refinement in light of any carbon pricing system
- Consistency with international reporting requirements

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Conclusion

- Exposure draft of legislation completed
- Referred to the House of Representatives Standing Committee on Primary Industries and Resources
- Forums with stakeholder groups will be conducted
- Copies of the draft legislation and supporting information are available at

http://www.ret.gov.au/General/Resources-CCS/

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THANK YOU

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