

Petroleum and Greenhouse Gas Storage (Submerged Lands) (Greenhouse Gas Injection and Storage) Regulations 2025

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Petroleum and Greenhouse Gas Storage (Submerged Lands) (Greenhouse Gas Injection and Storage) Regulations 2025

Made by the Governor in Executive Council.

Part 1 — Preliminary

1. Citation

These regulations are the *Petroleum and Greenhouse Gas Storage (Submerged Lands) (Greenhouse Gas Injection and Storage) Regulations 2025*.

2. Commencement

These regulations come into operation as follows —

- (a) regulations 1 and 2— on the day on which these regulations are published on the WA legislation website;
- (b) the rest of the regulations — on the day after that day.

3. Objects of regulations

The object of these regulations is —

- (a) to ensure that operations relating to the injection and permanent storage of greenhouse gas substances in the State are —
 - (i) carried out in a proper and workmanlike manner; and

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- (ii) compatible with the permanent storage of greenhouse gas substances in underground storage formations; and
 - (iii) conducted with appropriate measurement and monitoring; and
 - (iv) carried out in a way that reduces the risk of aquifer contamination; and
 - (v) carried out in a way that reduces the long-term liability risk to the State;
- and
- (b) to ensure that the Minister is informed, in a timely and consistent manner, of —
 - (i) any risk or change in risk to the permanent containment of injected greenhouse gas substances; and
 - (ii) any loss of containment of injected greenhouse gas substances; and
 - (iii) any change in the predicted behaviours of injected greenhouse gas substances;
- and
- (c) to provide a framework for public transparency of —
 - (i) the operations relating to the injection and permanent storage of greenhouse gas substances; and
 - (ii) any monitoring data relating to the permanent storage of greenhouse gas substances.

4. Terms used

- (1) In these regulations —
 - engineering enhancement***, in relation to GHG storage —
 - (a) means an action taken by an individual to facilitate GHG storage; and

- (b) includes any of the following —
 - (i) remediating an existing well from a previous operation that penetrated the storage formation;
 - (ii) managing formation pressure;
 - (iii) extracting formation water;
 - (iv) increasing the injectivity potential;

proposed operations, in relation to a draft site plan, means the operations that would be authorised by a licence granted under section 43(2B) of the Act in relation to the plan.

- (2) For the purposes of section 4B(5)(b) of the Act, in determining the spatial extent of an eligible GHG storage formation, the expected migration pathway or pathways of the particular greenhouse gas substance injected as mentioned in section 4B(1) of the Act must be ascertained on the basis of the level of probability specified as the probability of occurrence in Schedule 1 clause 7(1).

5. References to declarations in force under Act s. 74AE

If a declaration in force under section 74AE of the Act is varied under section 74AG of the Act, a reference in these regulations to the declaration is a reference to the declaration as varied.

Part 2 — Applications for declarations of identified GHG storage formations

6. Information to be set out in applications

For the purposes of section 74AB(3)(b)(iii) of the Act, clause 1(1) and Divisions 2 and 4 of Schedule 1 have effect.

7. Requirements for estimates of spatial extent

For the purposes of section 74AB(4) of the Act, clause 1(2) and Division 3 of Schedule 1 have effect.

8. Variation of application

- (1) This regulation applies if an application is made under section 74AB(2) of the Act.
- (2) If the Minister is not satisfied that an application meets the requirements of section 74AE(1)(b)(i) of the Act but reasonably believes that the applicant could vary the application to satisfy the requirements, the Minister must give written notice to the applicant —
 - (a) informing the applicant that the Minister is not satisfied and the reasons for not being satisfied; and
 - (b) giving the applicant an opportunity to vary the application.
- (3) If the application is varied, a reference in subregulation (2) to the application includes a reference to the application as varied.

Part 3 — Site plans

Division 1 — Obligations for GHG licensees

9. Purpose of this Division

This Division is made for the purposes of section 74AI(1) and (2) of the Act.

10. Carrying on operations

- (1) A GHG licensee must not carry on any operations in relation to an identified GHG storage formation specified in the licence unless an approved site plan is in force for the formation.
- (2) If an approved site plan is in force in relation to an identified GHG storage formation specified in a GHG injection licence, the licensee must comply with the plan.
- (3) A person who contravenes subregulation (1) or (2) commits an offence.

Penalty for this subregulation: a fine of \$10 000.

Division 2 — Requirements for draft site plans

11. General requirements

- (1) A draft site plan must be appropriate for the nature and scale of the proposed operations.
- (2) A draft site plan must demonstrate, on the basis of available data and current technical knowledge, that if the proposed operations are undertaken in accordance with the site plan, the identified GHG storage formation will be safe and secure for the permanent storage of —
 - (a) any greenhouse gas substances that are already stored in the formation; and
 - (b) the greenhouse gas substances that are proposed to be injected into and stored in the formation.

- (3) A draft site plan must demonstrate all of the following for the proposed operations that are operations for the injection or permanent storage of a greenhouse gas substance —
- (a) that the risks associated with the operations have been identified;
 - (b) that new risks associated with the operations will be identified as they arise;
 - (c) that increases in the levels of existing risks associated with the operations will be identified as they arise;
 - (d) that the risks mentioned in paragraphs (a), (b) and (c) will be reduced to as low as is reasonably practicable;
 - (e) that if a risk mentioned in paragraph (a), (b) or (c) is reduced but not eliminated, the remaining risk will be of an acceptable level;
 - (f) that all operations will be carried out in accordance with sound engineering principles, codes, standards and specifications.

12. Part A requirements

- (1) Part A of a draft site plan must —
- (a) be presented as “Part A — Behaviours predicted for the purposes of paragraph 74AJ(c) of the Act”; and
 - (b) set out predictions for the behaviour, at specified times, of each greenhouse gas substance that is already stored in, or is proposed to be injected into and stored in, the identified GHG storage formation; and
 - (c) include information relevant to the predictions.
- (2) For the purpose of subregulation (1)(b) —
- (a) the specified times must be of a sufficient number, and be at sufficiently frequent intervals, to ensure that —
 - (i) the predictions have been arrived at on a sound basis; and

- (ii) the comparison of the actual and predicted behaviours of each substance will enable the timely detection of the existence of serious situations mentioned in section 74AJ(c) of the Act in relation to the identified GHG storage formation;

and

- (b) the predictions must be set out and explained in sufficient detail to demonstrate that the predictions have been arrived at on a sound basis; and
- (c) the predictions must be consistent with the estimated spatial extent of the formation (as declared under section 74AE(3)(a) of the Act); and
- (d) the predictions for the behaviour of a substance must be described by reference to the following —
 - (i) each known or expected migration pathway of the substance;
 - (ii) each known or expected migration rate of the substance;
 - (iii) any other matter relevant to the accuracy of the predictions;

and

- (e) the predictions must demonstrate that the behaviour of each substance, if it were to occur at the times at which it is predicted to occur, will be consistent with the formation being safe and secure for the permanent storage of —
 - (i) any substances that are already stored in the formation; and
 - (ii) the substances that are proposed to be injected into and stored in the formation.

- (3) For the purpose of subregulation (1)(c), the information must include —
- (a) the information that was included in the application for the declaration under section 74AB of the Act in relation to the identified GHG storage formation in accordance with clause 3 and Division 3 of Schedule 1; and
 - (b) if a variation of the declaration under section 74AE of the Act has been made under section 74AG of the Act — the information in relation to the identified GHG storage formation in accordance with clause 3 and Division 3 of Schedule 1 that was included in the variation application.

13. Part B requirements

- (1) Part B of a draft site plan must —
- (a) be presented as “Part B — Other matters”; and
 - (b) set out the information specified in Schedule 2; and
 - (c) set out an integrated operations management plan showing clear chains of command where appropriate; and
 - (d) include an appropriate strategy for the implementation of the site plan; and
 - (e) include appropriate arrangements for monitoring, recording and reporting in relation to —
 - (i) the implementation of the site plan; and
 - (ii) compliance with the site plan.
- (2) Information set out in Part B of the draft site plan must be consistent with the declaration of the identified GHG storage formation under section 74AE of the Act.

Division 3 — Approval of draft site plans

14. Purpose of Division

This Division is made for the purposes of section 74AI(3) of the Act.

15. Application of Division

This Division applies to an application for approval of a draft site plan in relation to an identified GHG storage formation from a GHG licensee or an applicant for a GHG injection licence.

16. Application for approval of draft site plan

- (1) A GHG licensee or an applicant for a GHG injection licence may apply to the Minister for approval of a draft site plan.
- (2) An application must be in writing and in a form approved by the Minister.

17. Decision on approval of draft site plan

- (1) The Minister must —
 - (a) approve the draft site plan; or
 - (b) refuse to approve the draft site plan.
- (2) The Minister may approve the draft site plan if the Minister is reasonably satisfied that the plan meets the requirements set out in Division 2.
- (3) In deciding whether to approve the draft site plan, the Minister may have regard to any other matters the Minister considers relevant.
- (4) The Minister may approve the draft site plan subject to conditions.

18. Decision-making process: request for further information

- (1) The Minister may, by written notice given to the applicant, request the applicant to provide further written information relating to any of the requirements set out in Division 2.
- (2) The request must specify —
 - (a) each requirement in relation to which further information is requested; and
 - (b) a reasonable period within which the further information is to be provided.
- (3) If the applicant provides the further information within the specified period, or a longer period agreed by the Minister, a reference in this Division to the draft site plan is a reference to the draft site plan as including the further information.

19. Decision-making process: notice about meeting requirements

- (1) If the Minister is not reasonably satisfied that the draft site plan meets the requirements set out in Division 2 but reasonably believes that the applicant could vary the draft site plan, or provide additional information, to satisfy the Minister, the Minister must give written notice to the applicant —
 - (a) informing the applicant that the Minister is not satisfied and of the reasons for not being satisfied; and
 - (b) giving the applicant an opportunity to vary the draft site plan or provide the additional information.
- (2) If the applicant varies the draft site plan, or provides additional information, in response to a notice under subregulation (1), a reference in this Division to the draft site plan is a reference to the draft site plan as varied or as including the additional information (as applicable).

20. Notice of decision

- (1) The Minister must give the applicant written notice of a decision under regulation 17(1).
- (2) If the decision is to approve the draft site plan, the notice must include the date of approval.
- (3) If the decision is to refuse to approve the draft site plan, the notice must include the reasons for the refusal.

21. Summary of approved site plan for public release

- (1) Within 10 days after receiving notice under regulation 20(1) that the Minister has approved a draft site plan under regulation 17(1)(a), the applicant must submit to the Minister a summary of the approved site plan for public disclosure.
- (2) A summary submitted under subregulation (1) must include the following —
 - (a) the name of the applicant;
 - (b) the location or locations of the activity;
 - (c) a general description of the existing subsurface conditions (baseline) that may be affected by the activity;
 - (d) a summary of —
 - (i) the construction and layout of any facility; and
 - (ii) the operational activity; and
 - (iii) any risks of the activity submitted as part of Schedule 2 clause 4; and
 - (iv) the detection and monitoring activities submitted as part of Schedule 2 clauses 5, 6, 7 and 8(2); and
 - (v) the site closure activities submitted as part of Schedule 2 clause 8(1).

- (3) If the Minister is not reasonably satisfied that a summary submitted under subregulation (1) meets the criteria set out in subregulation (2), the Minister must give the applicant written notice that the applicant must modify and resubmit the summary.
- (4) Within 10 days after receiving a notice under subregulation (3), the applicant must modify and resubmit the summary of the approved site plan.

Division 4 — Duration of approved site plans

22. Purpose of Division

This Division is made for the purposes of section 74AI(4) of the Act.

23. Duration of approved site plans

If the Minister approves a draft site plan in relation to an identified GHG storage formation, the site plan —

- (a) comes into force at the time of the approval; and
- (b) remains in force —
 - (i) if, under regulation 25, the Minister withdraws the approval of the site plan for the formation — until the withdrawal; or
 - (ii) otherwise — indefinitely.

Division 5 — Withdrawal of approval of site plans

24. Purpose of Division

This Division is made for the purposes of section 74AI(5) of the Act.

25. Withdrawal of approval of site plan

- (1) This regulation applies if —
 - (a) an approved site plan is in force in relation to an identified GHG storage formation specified in a GHG injection licence; and
 - (b) the licensee fails to —
 - (i) comply with the site plan; or
 - (ii) review the site plan as required by Division 6; or
 - (iii) submit a draft variation of the site plan to the Minister as required by Division 6; or
 - (iv) comply with a direction given by the Minister under the Act.
- (2) The Minister may withdraw approval of the site plan.

26. Steps to be taken before withdrawing approval

- (1) Before withdrawing approval of a site plan, the Minister must comply with subregulations (2), (4) and (5).
- (2) The Minister must give the licensee at least 30 days' written notice of the Minister's intention to withdraw approval of the site plan.
- (3) The Minister may give a copy of the notice to such other persons as the Minister thinks fit.
- (4) The Minister must specify in the notice a day by which the licensee (or any other recipient of the notice) may submit to the Minister, in writing, any matters for the Minister to take into account in deciding whether to withdraw approval of the site plan.

- (5) In deciding whether to withdraw approval of the site plan, the Minister must take into account —
 - (a) any action taken by the licensee to remove a ground for withdrawal of approval, or to prevent the recurrence of that ground; and
 - (b) any matter submitted to the Minister before the day specified in the notice by either of the following —
 - (i) the licensee;
 - (ii) if there is another recipient of the notice under subregulation (3) — that other person.

27. Notice of withdrawal of approval

- (1) The Minister must give the licensee written notice of withdrawal of approval of a site plan under regulation 25.
- (2) The notice must specify —
 - (a) the reasons for the withdrawal; and
 - (b) the day on which the withdrawal takes effect.

Division 6 — Review and variation of approved site plans

28. Purpose of Division

This Division is made for the purposes of section 74AI(6) of the Act.

29. Periodic reviews and draft variations

- (1) A GHG licensee must, at least once in each 5-year period during which an approved site plan is in force in relation to an identified GHG storage formation specified in the licence —
 - (a) review the site plan, taking into account the matters mentioned in regulation 31; and
 - (b) decide whether the site plan should be varied.

- (2) The licensee must, within 30 days after making a decision under subregulation (1)(b), give the Minister written notice of the decision specifying —
 - (a) the date of the decision; and
 - (b) the reasons for the decision.
- (3) If the decision is that the site plan should be varied, the licensee must, within the period mentioned in subregulation (4), give the Minister a draft variation of the site plan.
- (4) For the purposes of subregulation (3), the period is —
 - (a) the period ending 180 days after the date of the decision; or
 - (b) if the Minister agrees to a longer period — that period.
- (5) A licensee who contravenes subregulation (2) or (3) commits an offence.
Penalty for this subregulation: a fine of \$5 000.

30. Reviews requested by Minister and draft variations

- (1) This regulation applies if —
 - (a) an approved site plan is in force in relation to an identified GHG storage formation specified in a GHG injection licence; and
 - (b) any of the following applies —
 - (i) the licensee applies, under section 74AG of the Act, for a variation of the declaration under section 74AE of the Act in relation to the formation;
 - (ii) a serious situation in relation to the formation occurs;
 - (iii) the Minister thinks it necessary.
- (2) The Minister may, by written notice given to the licensee, request the licensee to review the site plan within the period specified in the notice.

- (3) A notice given by the Minister under subsection (2) must include the reasons for the decision.
- (4) If the Minister gives the licensee a notice under subregulation (2), the licensee must, within the period specified in the notice —
 - (a) review the site plan, taking into account the matters mentioned in regulation 31; and
 - (b) decide whether the site plan should be varied; and
 - (c) give the Minister written notice of the decision specifying —
 - (i) the date of the decision; and
 - (ii) the reasons for the decision.
- (5) The period specified in a notice under subregulation (2) must be at least 60 days.
- (6) If the decision under subregulation (4) is that the site plan should be varied, the licensee must prepare and give to the Minister a draft variation of the site plan within the period mentioned in subregulation (7).
- (7) For the purposes of subregulation (6), the period is —
 - (a) the period ending 180 days after the date of the decision; or
 - (b) if the Minister agrees to a longer period — that period.
- (8) A person who contravenes subregulation (4) or (6) commits an offence.
Penalty for this subregulation: a fine of \$10 000.

31. Matters to be considered in reviews

- (1) In relation to the predictions set out in Part A of the site plan, the matters are the following —
 - (a) the experience gained about the predictions;

- (b) the carrying out of the operations in the approved site plan;
 - (c) the monitoring of migration pathways.
- (2) In relation to the plans and programs set out in Part B of the site plan that are described in subregulation (3), the matters are the following —
 - (a) the evolution of industry best practice;
 - (b) the carrying out of the operations in the approved site plan.
- (3) For the purposes of subregulation (2), the plans and programs are the following —
 - (a) the plan for monitoring and verification;
 - (b) the program for detecting and monitoring leakages of greenhouse gas substances during injection;
 - (c) the program for detecting and monitoring leakages of greenhouse gas substances from well bores;
 - (d) the plan for carrying out any work that is required to remediate the formation.

32. Draft variations to remove inconsistency with directions under Act s. 74AL

- (1) This regulation applies if —
 - (a) the Minister has given a direction under section 74AL of the Act in relation to a GHG injection licence; and
 - (b) the direction is inconsistent with anything in an approved site plan in relation to an identified GHG storage formation specified in the licence.
- (2) The licensee must, within the period mentioned in subregulation (3) —
 - (a) prepare a draft variation of the site plan for the purpose of removing the inconsistency; and
 - (b) give the draft variation to the Minister.

- (3) For the purpose of subregulation (2), the period is —
- (a) 60 days beginning on the day on which the direction was given; or
 - (b) if the Minister agrees to a longer period — that period.

33. Draft variation following occurrence of certain events

- (1) This regulation applies if —
- (a) an approved site plan is in force in relation to an identified GHG storage formation specified in a GHG injection licence; and
 - (b) an event mentioned in the Table occurs.

Table

Item	Event
1.	<p>The site plan is no longer accurate and up to date because there is new information that significantly alters the determination of any of the following —</p> <ul style="list-style-type: none">(a) the fundamental suitability determinants of the formation;(b) the expected migration pathway or pathways of each greenhouse gas substance stored in, or to be injected into and stored in, the formation;(c) predictions set out in Part A of the site plan for the behaviour of each greenhouse gas substance stored in, or to be injected into and stored in, the formation;(d) interactions between the formation and the method by which a greenhouse gas substance is injected into the formation;(e) any other matter relevant to the safe and secure storage of a greenhouse gas substance in the formation.

Item	Event
2.	The licensee proposes to make a change, or a series of changes, to the way the operations in the approved site plan are carried out that will affect — (a) predictions set out in Part A of the site plan for the behaviour of each greenhouse gas substance stored in, or to be injected into and stored in, the formation; or (b) the risks associated with those operations.
3.	The licensee proposes to make a significant change to the way the operations in the approved site plan are managed that will affect the integrated operations management plan.

- (2) The licensee must, within the period mentioned in subregulation (3) —
- (a) prepare a draft variation of the site plan for the purpose of addressing the circumstances of the event; and
 - (b) give the draft variation to the Minister.
- (3) For the purpose of subregulation (2), the period is —
- (a) 60 days beginning on the day on which the event occurs; or
 - (b) if the Minister agrees to a longer period — that period.

34. Draft variation initiated by licensee

- (1) A GHG licensee may apply to the Minister for approval to vary an approved site plan.
- (2) An application must be in writing and be accompanied by the draft variation.

35. Draft variation required by Minister

- (1) The Minister may give a GHG licensee a written notice —
 - (a) requiring the licensee to submit to the Minister a draft variation of an approved site plan as set out in the notice; and
 - (b) setting out the technical grounds for requiring the draft variation; and
 - (c) identifying the proposed date by which the licensee must submit the draft variation to the Minister; and
 - (d) identifying the proposed effective date of the draft variation; and
 - (e) advising the licensee of the effect of subregulation (2).
- (2) If the Minister gives a GHG licensee notice under subregulation (1), the licensee may submit a written objection to the Minister stating 1 or more of the following —
 - (a) that a draft variation should not be required;
 - (b) that the draft variation should be on terms different from the proposed terms;
 - (c) that the date by which the licensee must submit the draft variation should be later than the proposed date;
 - (d) that the draft variation should take effect on a date later than the proposed effective date.
- (3) An objection submitted under subregulation (2) must include the reasons for the objection.
- (4) If a GHG licensee submits an objection under subregulation (2), the licensee must submit the objection within —
 - (a) 21 days after receiving the notice; or
 - (b) if the Minister, in writing, allows a longer period — that period.

- (5) As soon as practicable after a licensee submits an objection under subregulation (2), the Minister must decide whether to accept or reject the objection.
- (6) As soon as practicable after making a decision under subregulation (5), the Minister must give the GHG licensee written notice of the decision specifying —
 - (a) if the decision is to accept the objection —
 - (i) whether the original notice given under subregulation (1) is varied or withdrawn; and
 - (ii) if the original notice is varied — the requirements of that notice as varied;
 - or
 - (b) if the decision is to reject the objection — the reasons for the decision.
- (7) The GHG licensee must comply with the requirements of a notice given under subregulation (1) unless the notice is varied or withdrawn under subregulation (6).
- (8) If the notice is varied under subregulation (6), the GHG licensee must comply with the requirements of the notice as varied.

36. Decision-making process: request for further information

- (1) The Minister may, by written notice given to the GHG licensee, request the licensee to provide further written information relating to a draft variation.
- (2) The request must specify —
 - (a) each matter in relation to which information is required; and
 - (b) a reasonable period within which the information is to be provided.
- (3) If the licensee provides the information within the specified period, or a longer period agreed to by the Minister, a reference

in this Division to a draft variation is a reference to the draft variation as including the further information.

37. Decision on approval of draft variation

- (1) If the Minister receives a draft variation of an approved site plan under this Division, the Minister must —
 - (a) approve the draft variation; or
 - (b) refuse to approve the draft variation.
- (2) The Minister may approve the draft variation if the Minister is reasonably satisfied that —
 - (a) if the draft variation was prepared under regulation 29, 30 or 34 — the approved site plan should be varied as set out in the draft variation; or
 - (b) if the draft variation was prepared under regulation 32 — the draft variation would remove the inconsistency with the direction under section 74AL of the Act in relation to which the draft variation was prepared; or
 - (c) if the draft variation was prepared under regulation 33 —
 - (i) the draft variation would address the circumstance in relation to which the draft variation was prepared; and
 - (ii) if the circumstance in relation to which the draft variation was prepared is mentioned in item 2 of the Table to regulation 33(1) — the approved site plan, as varied by the draft variation, would meet the requirements set out in Division 2.
- (3) In deciding whether to approve the draft variation, the Minister may have regard to any matters the Minister considers relevant.
- (4) The Minister may approve the draft variation subject to conditions.

38. Notice of decision

- (1) The Minister must give the licensee written notice of a decision under regulation 37(1).
- (2) If the decision is to refuse to approve the draft variation, the notice must include the reasons for the refusal.

39. Effect of approval of draft variation

If a draft variation of an approved site plan is approved under regulation 37(1)(a), the approved site plan is varied accordingly.

40. Reference to approved site plan

If an approved site plan is varied under regulation 29, a reference in these regulations to the approved site plan is a reference to the approved site plan as varied.

41. Summary of varied site plan for public release

- (1) Within 10 days after receiving notice under regulation 38(1) that the Minister has approved a draft variation under regulation 37(1)(a), the licensee must submit a summary of the varied and approved site plan to the Minister for public disclosure.
- (2) A summary submitted under subregulation (1) must include the following —
 - (a) the name of the licensee;
 - (b) the location or locations of the activity;
 - (c) a general description of the existing baseline conditions identified as part of the monitoring and verification plan that may be affected by the activity;
 - (d) a summary of —
 - (i) the construction and layout of any facility; and
 - (ii) the operational activity; and

- (iii) any risks of the activity submitted as part of Schedule 2 clause 4; and
 - (iv) the detection and monitoring activities submitted as part of Schedule 2 clauses 5, 6, 7 and 8(2); and
 - (v) the site closure activities submitted as part of Schedule 2 clause 8(1).
- (3) If the Minister is not reasonably satisfied that a summary submitted under subregulation (1) meets the criteria set out in subregulation (2), the Minister must give the licensee written notice that the licensee must modify and resubmit the summary.
- (4) Within 10 days after receiving a notice under subregulation (3), the licensee must modify and resubmit the summary of the varied and approved site plan.

Part 4 — Serious situations

42. Application of Part

This Part applies if —

- (a) a serious situation in relation to an identified GHG storage formation specified in a GHG injection licence occurs; and
- (b) the GHG licensee becomes aware of the situation.

43. Notifying Minister

- (1) The licensee may notify the Minister of a serious situation orally or in writing.
- (2) The notification under subregulation (1) must include —
 - (a) all material facts and circumstances concerning the incident that the licensee knows or is able, by reasonable search or enquiry, to find out; and
 - (b) the details of any action taken to avoid or mitigate any adverse environmental impacts of the incident; and
 - (c) the details of corrective action that has been, or is proposed to be, taken to prevent the occurrence of a similar incident.

44. Reporting to Minister

A report of a serious situation must be in writing and include —

- (a) all material facts and circumstances concerning the situation that the licensee knows or is able, by reasonable search or enquiry, to find out; and
- (b) the details of any action taken to avoid or mitigate any adverse environmental impacts of the situation; and
- (c) the details of corrective action that has been, or is proposed to be, taken to prevent the occurrence of a similar situation; and

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- (d) for a situation involving leakage of a greenhouse gas substance that has occurred or will occur to the surface of the land or soil, the seabed or an aquifer —
 - (i) an estimate of how much greenhouse gas substance has leaked, or is likely to leak; and
 - (ii) an estimate of how much greenhouse gas substance would leak as a result of the situation if action were taken to avoid or mitigate any adverse environmental impacts of the situation; and
 - (iii) an estimate of how much greenhouse gas substance would leak as a result of the situation if no action were taken to avoid or mitigate any adverse environmental impacts of the situation; and
 - (iv) an explanation of how the estimates mentioned in subparagraphs (i) to (iii) were made.

45. Minister may require additional information and further reports

- (1) After receiving a report under regulation 44, the Minister may by written notice —
 - (a) require such further information as the Minister sees fit in relation to the serious situation; and
 - (b) require the licensee to submit a further report or reports, at a specified frequency, as the Minister determines necessary in relation to a serious situation.
- (2) A notice given under subregulation (1) must include —
 - (a) details of the information required; and
 - (b) the timeframe within which the licensee must provide the information.

Part 5 — Information that may be made publicly available

46. Information relating to leakages during injection or from well bores

- (1) This regulation applies to information that —
 - (a) is held by the State; and
 - (b) relates to detecting and monitoring, under the programs mentioned in Schedule 2 clauses 6 and 7 set out in Part B of the site plan in relation to an identified GHG storage formation, leakages of greenhouse gas substances —
 - (i) during injection; or
 - (ii) from well bores.
- (2) The Minister may make publicly available —
 - (a) the results of the detection and monitoring; and
 - (b) any raw data collected during the detection and monitoring.

47. Site plan summary

- (1) This regulation applies if an approved site plan is in force.
- (2) The Minister may make publicly available —
 - (a) a site plan summary submitted under regulation 21; and
 - (b) a varied site plan summary submitted under regulation 41.

Schedule 1 — Information required for identified GHG storage formations and estimates of spatial extent

[r. 4(2), 6, 7]

Division 1 — Preliminary

1. Preliminary

- (1) Divisions 2 and 4 of this Schedule specify information that must be set out in an application for the declaration of a part of a geological formation as an identified GHG storage formation, assuming (if applicable for particular information) that the part is an eligible GHG storage formation.
- (2) Assuming that the part is an eligible GHG storage formation, Division 3 of this Schedule specifies requirements with which the estimate of the spatial extent of the eligible GHG storage formation must comply.

Division 2 — Information about part of geological formation

2. Geological features of part of geological formation

A description and detailed analysis of the geological features of the part of the geological formation, including the effective sealing feature, attribute or mechanism.

3. Understanding of the subsurface environment

- (1) Information relating to the geological formation, set out in sufficient detail to demonstrate that the applicant has an understanding of the subsurface environment that is sufficient to allow the applicant to —
 - (a) identify all risks relating to —
 - (i) the containment of the greenhouse gas substances to be stored; and
 - (ii) the geotechnical integrity of the formation or structure; and
 - (iii) the displacement of the formation fluids;and

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Information required for identified GHG storage formations and estimates of spatial extent

Schedule 1

Information about part of geological formation

Division 2

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- (b) propose strategies for the reduction of risks to as low as reasonably practicable; and
 - (c) propose strategies for the management of those risks.
- (2) An explanation of how, on the basis of the information mentioned in subclause (1), the applicant can identify risks and propose strategies as mentioned in that subclause.
- (3) The information mentioned in subclause (1) must, at a minimum, identify or refer to the following —
 - (a) a stratigraphy of the geological formation and its rock types;
 - (b) the structure of the geological formation and its rock types;
 - (c) any faults in the structure of —
 - (i) the geological formation; or
 - (ii) the seal rocks of the geological formation;
 - (d) the porosity and permeability of —
 - (i) the reservoirs of the geological formation; and
 - (ii) the seal rocks of the geological formation;
 - (e) the reactivity, with the greenhouse gas substance to be stored, of —
 - (i) the rock types of the reservoirs of the geological formation; and
 - (ii) the seal rocks of the geological formation;
 - (f) a geomechanical analysis of the geological formation, including an assessment of —
 - (i) the local stress regime; and
 - (ii) fracture gradients; and
 - (iii) fault stability; and
 - (iv) the expected geomechanical response of the geological formation to injection;
 - (g) the fluid parameters of the geological formation, including data about chemical composition, pressure and temperature;
 - (h) seismic information about the area in which the geological formation is situated, including the history of any seismic activity in the area;

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- (i) the conduct, in the area of the geological formation, of any previous exploration activity for petroleum or greenhouse gas substances;
- (j) the existence of wells, including a map showing the location of each well, and any information available to the applicant about the following for each well —
 - (i) its location;
 - (ii) its construction history;
 - (iii) how it was plugged, if applicable;
 - (iv) the kind of cement used to plug it, if applicable;
 - (v) any other aspect of its nature that is relevant.

4. Model of reservoirs and seal rocks

A 3-dimensional static earth model of the storage formation.

5. Dynamic modelling

- (1) Details of any dynamic modelling undertaken, including details of the following —
 - (a) the methodology used;
 - (b) the types of models used;
 - (c) any assumptions made in the course of 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; and
 - (b) pressure changes in response to the injected greenhouse gas substance; and
 - (c) any other parameter of change that has a significant impact on the suitability of the declared identified GHG storage formation.

6. Other relevant information

Any other information that may be relevant to the long-term safe and secure storage of the greenhouse gas substance to be stored, including information that —

- (a) relates to an area other than the permit area, lease area or licence area (as applicable) in which the part of the geological formation is situated; and
- (b) would be relevant to the Minister declaring a closure assurance period for the part of the geological formation.

Division 3 — Requirements for estimates of spatial extent

7. Predicted expected migration pathways

- (1) A description of what the applicant predicts to be each expected migration pathway or pathways of the particular amount of the particular greenhouse gas substance to be injected into the part of the geological formation as mentioned in section 4B(1) of the Act for which the applicant has estimated the probability of occurrence to be more than 10%.
- (2) The description must be set out and explained in sufficient detail to demonstrate that the prediction is soundly based.

8. Blocks occupied by pathways

A description of each block that the applicant reasonably believes will be occupied by a migration pathway or pathways described under clause 7.

9. Sealing feature, attribute or mechanism

An explanation of the 3-dimensional extent of the effective sealing feature, attribute or mechanism within the spatial extent of the part of the geological formation.

Schedule 1	Information required for identified GHG storage formations and estimates of spatial extent
Division 4	Engineering enhancement information
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Division 4 — Engineering enhancement information

10. Application of Division

This Division applies if engineering enhancements are proposed in an application for the declaration of an identified GHG storage formation.

11. Description of engineering enhancements

A description of the engineering enhancements set out in sufficient detail to demonstrate that, taking into account those enhancements, the risks set out in clause 12 are likely to be acceptable.

12. Risk assessment

For each engineering enhancement —

- (a) the identification of all risks relating to the containment of the greenhouse gas substance to be stored; and
- (b) the identification of all risks relating to the integrity of any other part of the geological formation or any separate geological formation; and
- (c) the identification of all risks relating to the displacement or reinjection of formation fluids within the geological formation or any separate geological formation; and
- (d) proposed strategies for the reduction and management of those risks to as low as reasonably practicable.

Schedule 2 — Information: draft site plan Part B

[r. 13(1)(b), 21(2)(d), 41(2)(d), 46(1)(b)]

1. Preliminary

This Schedule specifies information that must be set out in Part B of a draft site plan in relation to an identified GHG storage formation.

2. Operations planning and management

Information set out in sufficient detail to demonstrate that adequate planning has taken place for the proposed operations and management of the plan.

3. Overview of proposed operations

- (1) Details of any arrangements between the registered holders if there are 2 or more registered holders of a —
 - (a) GHG exploration permit; or
 - (b) GHG retention lease; or
 - (c) GHG injection licence; or
 - (d) geothermal retention lease, as defined in the *Petroleum and Geothermal Energy Resources Act 1967* section 5; or
 - (e) geothermal production licence, as defined in the *Petroleum and Geothermal Energy Resources Act 1967* section 5; or
 - (f) petroleum retention lease; or
 - (g) petroleum production licence.
- (2) Details of any commercial agreements, or negotiations undertaken, with suppliers of greenhouse gas substances in relation to the injection of a greenhouse gas substance into the formation.
- (3) A description of the following —
 - (a) the infrastructure facilities for engaging in the activities involved in the proposed operations for the plan;
 - (b) for each kind of greenhouse gas substance that is proposed to be injected into the formation —
 - (i) the source, composition and other relevant physical and chemical properties of the substance; and

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- (ii) the proposed rate, or range of rates, of injection of the substance; and
 - (iii) the number and location of wells at which injection of the substance is proposed to take place; and
 - (iv) the proposed injection pressure, or range of pressures, for each well at which injection of the substance is proposed to take place;
- (c) the quantity of each greenhouse gas substance that is proposed to be injected into the formation;
- (d) details of equipment and procedures used to determine the quantity and composition of each injected greenhouse gas substance.
- (4) A schedule for carrying out the proposed operations, including the timing proposed for each major milestone of the proposed operations.
- (5) Information about significant works and upgrades that are planned over the life of the proposed operations.
- (6) If the plan includes engineering enhancements, details of the proposed enhancement operations.

4. Risks relating to proposed operations

- (1) Information about any risks that are identified, including those in the application for the declaration of the part of the formation as an identified GHG storage formation, in relation to —
 - (a) the containment of greenhouse gas substances to be stored; and
 - (b) the geotechnical integrity of the formation or structure; and
 - (c) the displacement of formation fluids.
- (2) Details of the risk assessment analysis used by the applicant to identify each risk mentioned in subclause (1), including the following for each risk —
 - (a) a description of the risk;
 - (b) the possible consequences of the risk;
 - (c) an assessment of the likelihood of occurrence of the risk;

- (d) the strategies for reducing the risk to as low as is reasonably practicable;
- (e) if the risk has been, or will be, reduced but not eliminated — information demonstrating that the remaining risk will be acceptable.

Examples for this subclause:

The following are examples of things that could pose risks:

- (a) leakage of a greenhouse gas substance from a well bore;
- (b) leakage of a greenhouse gas substance at the point of injection into the formation;
- (c) displacement of formation fluids into a shallow groundwater formation;
- (d) existing wells that could adversely affect the ability of the formation to permanently contain greenhouse gas substances.

5. Monitoring and verification plan

- (1) A plan for monitoring the behaviour of greenhouse gas substances in the reservoirs of the formation, set out in sufficient detail to demonstrate that —
 - (a) significant events in the reservoirs will be detected in a timely manner to enable any necessary mitigation and corrective action to be initiated; and
 - (b) the timing and nature of the monitoring will detect any variations from the predictions set out in Part A of the draft site plan.
- (2) A plan for detecting and monitoring the leakage of a greenhouse gas substance stored in the formation to the surface of the land or soil, the seabed or an aquifer.
- (3) If applicable, a plan for monitoring the risks identified in clause 4(1)(b) or (c).
- (4) Details (including concentration) of any substance that is proposed to be used to facilitate the monitoring of the behaviour of a greenhouse gas substance.
- (5) A description of each event in the behaviour of a greenhouse gas substance in the formation that, if it causes, or has the potential to cause, a serious situation to occur in relation to the formation, will be

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a reportable incident in relation to the formation, such as a departure from —

- (a) a predicted migration pathway of a greenhouse gas substance; or
 - (b) a predicted migration rate of a greenhouse gas substance.
- (6) A description of each measurement, where such measurement is part of the monitoring and verification plan, that would be regarded as a significant deviation from the predicted subsurface behaviours or established baseline measurement, including —
- (a) formation pressure; and
 - (b) chemical properties of an aquifer; and
 - (c) seismicity; and
 - (d) surface elevation.

6. Detecting and monitoring leakages during injection

A program for detecting and monitoring the leakage of a greenhouse gas substance at the point of injection into the formation.

7. Detecting and monitoring leakages from well bores

A program for detecting and monitoring the leakage of a greenhouse gas substance from a well bore.

8. Site closure: decommissioning, remediation and monitoring

- (1) A description of the applicant's plans for decommissioning and rehabilitation, including the following —
- (a) the plugging or closing off of wells;
 - (b) progressive decommissioning and rehabilitation;
 - (c) if applicable, operations for stabilising subsurface conditions;
 - (d) if applicable, any corrective action required in order to prevent or minimise damage to the whole or a part of a geological formation;
 - (e) if applicable, any corrective action required to contain leaks in order to prevent or minimise the release of a greenhouse gas substance from the identified GHG storage formation;

- (f) the remediating of any abandoned wells or other features that could pose a risk of leakage of a greenhouse gas substance stored in an identified GHG storage formation after a site closing certificate has been issued for the formation.
- (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.

Clerk of the Executive Council