

INDEPENDENT THIRD-PARTY TECHNICAL REVIEW REPORT

Environmental Act Proposal for Crystal Springs Colony Lagoon

Purpose: *Independent technical review of The Environment Act Proposal and associated public and Technical Advisory Committee comment responses.*

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Appendix A Detailed Comment-Response Adequacy Assessment

Executive Summary

This report presents the findings of an independent third-party technical review of *The Environment Act* Proposal (EAP) for the proposed lagoon wastewater treatment system. The review was undertaken to assess whether issues raised through the public and Technical Advisory Committee (TAC) review process have been identified and addressed in a manner that is technically appropriate for consideration at *The Environment Act* Proposal stage and potential licensing.

The review examined the EAP and supporting technical documentation, public submissions, TAC comments, and the proponent's responses as reflected within *The Environment Act* Registry record and hearing record, including responses to Information Requests. The purpose of the review was not to redesign the proposed works or to make determinations regarding project approval. Rather, the review focused on evaluating whether potential environmental and human health impact pathways have been appropriately identified and whether reasonable mechanisms exist to manage those impacts through the regulatory process.

A structured evaluation framework was applied to distinguish between matters appropriately addressed at *The Environment Act* Proposal stage and those typically addressed through subsequent licensing, construction implementation (including construction quality assurance and quality control verification), and facility operation. This framework recognizes that Environment Act Proposals are conceptual in nature and that enforceable, site-specific requirements are commonly formalized through licensing and implementation processes.

An issue-based review methodology was used to group individual public comments, TAC comments, and Information Requests into common technical categories. These issue categories include:

- effluent monitoring and reporting framework
- discharge timing, notification, and coordination
- flooding, ice conditions, and wet-weather operation
- inflow and infiltration (including weeping tile contributions)
- groundwater protection and liner performance verification
- biosolids and sludge management
- non-domestic or process wastewater acceptance
- receiving environment protection
- odour and nuisance management
- consultation documentation and transparency
- operational contingency procedures and response planning

The detailed adequacy evaluation supporting this review is provided in Appendix A, which documents how individual comments and Information Requests have been considered within the evidentiary record and identifies the basis upon which responses were evaluated with reference to accepted engineering practice and applicable regulatory guidance.

Based on the independent technical review undertaken, the issues raised through the public and TAC review process, including Information Requests, have been identified and addressed in a manner consistent with the level of detail appropriate for an Environment Act Proposal. Consideration was given

to whether any information gaps exist that would preclude understanding of potential environmental or human health impact pathways at this stage of regulatory review, and no such gaps were identified.

Where additional detail or confirmation may support implementation clarity or regulatory oversight, these matters are appropriately addressed through established regulatory mechanisms, including license conditions, construction quality assurance and quality control verification, and operational procedures. These mechanisms are consistent with accepted regulatory practice under *The Environment Act*.

Table 1 summarizes the resolution pathways corresponding to the issue categories evaluated in Appendix A. The table provides a high-level synthesis of how implementation-related considerations are typically addressed through licensing requirements, construction verification processes, and operational controls. The identification of resolution pathways does not indicate deficiencies in The Environment Act Proposal; rather, it provides transparency regarding how certain matters are appropriately addressed as part of the normal progression from Environment Act Proposal to licensing, construction, and operation.

The review considered the information provided within the EAP, supporting technical documentation, public comments, TAC comments, and Information Request responses as part of the evidentiary record for the Environment Act Proposal stage. The review findings indicate that the issues raised through the review process have been identified and addressed in a manner that supports an understanding of potential environmental and human health impact pathways at this stage of regulatory consideration. Implementation-related matters identified through the review are of a type typically addressed through established regulatory mechanisms, including licence conditions, construction verification processes, and operational procedures. Decisions regarding licensing, construction implementation, and operation remain within the regulatory process established under *The Environment Act*.

1 Introduction and Purpose of Review

The proposed lagoon wastewater treatment system is subject to review and approval under *The Environment Act*. As part of this process, public and Technical Advisory Committee (TAC) comments were solicited and responses were provided by the proponent. These comments and responses form an important component of the regulatory record and inform subsequent decision-making.

This report was prepared to provide an independent, third-party technical review of the EAP and the associated responses to public and TAC comments. The intent of the review is to assist in understanding whether the issues raised during the review process have been considered and responded to in a manner consistent with accepted environmental engineering practice and regulatory expectations at the Environment Act Proposal stage.

The review is not intended to advocate for or against the project. Rather, it provides a technical assessment of whether the information presented demonstrates that potential environmental effects have been appropriately identified and that reasonable mechanisms are in place to manage those effects through subsequent regulatory and operational controls.

The report is structured to be accessible to both technical and non-technical readers, while maintaining technical rigor appropriate for regulatory review, recognizing that Environment Act proposals and associated hearings often involve a diverse audience, including regulators, elected officials, community members, and technical specialists.

2 Scope, Limitations, and Review Framework

2.1 Scope of Review

The scope of this review includes:

- review of the Environment Act Proposal and supporting technical documentation;
- consideration of public comments submitted through *The Environment Act* registry;
- consideration of TAC comments provided by regulatory and technical agencies; and
- evaluation of the proponent's responses to those comments.

The review focused on issue areas commonly associated with lagoon wastewater treatment systems, including effluent monitoring, discharge management, groundwater protection, operational reliability, biosolids management, odour and nuisance effects, and consultation transparency.

2.2 Limitations of Review

The review was subject to the following limitations:

- The review did not reassess or redesign the proposed lagoon system.
- The review did not perform independent modelling, site investigations, or field verification.
- The review did not make determinations regarding licence conditions, approval decisions, or regulatory compliance beyond the EAP stage.
- The review did not assess detailed construction methods or operational procedures beyond their conceptual description.

These limitations are consistent with the role of an independent technical review supporting Environment Act Proposal review.

2.3 Review Framework

The review was conducted using a structured evaluation framework intended to:

- distinguish between technical, operational, procedural, and policy-based issues;
- recognize the stages of regulatory approvals under *The Environment Act*; and
- assess whether responses are appropriate for the level of detail expected at the EAP stage.

This framework acknowledges that Environment Act Proposals that certain matters are typically resolved through subsequent licensing, construction quality assurance, and operational oversight.

The detailed methodology and evaluation criteria applied in this review are provided in Appendix A.

3 Review Methodology and Evaluation Approach

3.1 General Approach

The review methodology was designed to be systematic, transparent, and proportionate to the level of detail available at the Environment Act Proposal stage. The review emphasized understanding the substance of issues raised rather than restating individual comments or responses verbatim.

An issue-based approach was adopted to group related comments and responses into common thematic areas. This approach reduces duplication, improves clarity, and aligns with how regulatory decisions are typically made.

3.2 Categorization of Issues

Comments and responses were categorized into the following general types:

- **Technical issues**, relating to environmental protection, system performance, or design intent;
- **Operational issues**, relating to system operation, maintenance, monitoring, or contingency planning;
- **Procedural or documentation issues**, relating to clarity, completeness, or transparency of information; and
- **Policy or perception-based issues**, reflecting broader concerns or expectations rather than specific technical deficiencies.

This categorization informed how each issue was evaluated and how appropriate resolution pathways were identified.

3.3 Evaluation of Technical Adequacy

For each issue area, the review considered whether:

- the underlying concern was clearly identified and understood;
- the response demonstrated an appropriate level of technical awareness;
- the response was proportionate to the level of detail expected at the EAP stage; and
- outstanding detail could reasonably be addressed through established regulatory mechanisms.

Responses were evaluated on whether they demonstrated a reasonable and defensible approach to managing uncertainty appropriate to the EAP stage, rather than on whether they eliminated all uncertainty.

3.4 Resolution Pathways

Where additional detail, confirmation, or oversight was identified as appropriate, the review identified suitable resolution pathways, including:

- clarification within the regulatory record;

- future licence conditions;
- operational commitments; and
- construction quality assurance and quality control verification.

These pathways reflect standard regulatory practice and recognize that Environment Act approval represents one stage within a broader regulatory process. The resolution pathways applicable to the matters considered in this review are summarized in Section 8 of this report.

3.5 Role of Appendix A

Appendix A provides the detailed adequacy evaluation supporting this independent technical review. The appendix documents how public comments, Technical Advisory Committee (TAC) comments, and Information Requests were considered within the evidentiary record and identifies the basis upon which responses were evaluated in relation to the Environment Act Proposal stage.

The review methodology applied in Appendix A groups individual comments into common issue categories consistent with those presented in Sections 6 and 7 of this report. This structured approach supports transparency regarding how technical considerations were assessed and avoids duplication that may arise from addressing individual submissions separately.

Appendix A Table A2 provides a consolidated summary of the issue categories, response references, regulatory and guidance context, and review considerations used to assess technical adequacy. The table is intended to provide traceability between comments and the corresponding adequacy conclusions, while maintaining focus on matters relevant to the Environment Act Proposal stage.

Appendix A does not introduce new technical scope or expand the level of detail presented in the Environment Act Proposal. Rather, it provides supporting documentation demonstrating how the information available within the evidentiary record was reviewed and how implementation considerations may be addressed through established regulatory mechanisms, including licensing requirements, construction verification processes, and operational procedures.

Together with the summary presented in Table 1, Appendix A supports a transparent and structured understanding of how comments and Information Requests relate to the stages of the regulatory process under *The Environment Act*, which includes licensing, construction implementation, and facility operation.

4 Documents and Materials Reviewed

This independent technical review was based on the documents and materials made available through *The Environment Act* registry and supporting submissions. The materials reviewed were considered sufficient to understand the proposed works, the issues raised during the review process, and the responses provided by the proponent.

The following categories of documents were reviewed:

- The Environment Act Proposal (EAP) for the proposed lagoon wastewater treatment system;
- Supporting technical memoranda, figures, and appendices referenced within the EAP;
- Public comments submitted during *The Environment Act* review period;
- Technical Advisory Committee (TAC) comments submitted by regulatory and technical agencies;
- The proponent's written responses to public and TAC comments as well as supplementary information requests (IR); and
- Additional correspondence and documentation posted to the associated hearing record.

The review did not rely on documents or information outside of the regulatory record, nor did it involve independent verification or supplementation of the submitted materials.

5 Overview of the Proposed Lagoon Works

5.1 General Description

The proposed project consists of a lagoon-based wastewater treatment system intended to provide long-term wastewater treatment for the serviced community. Lagoon treatment systems are a well-established wastewater treatment approach and are commonly used in small and remote communities due to their relative simplicity, robustness, and ability to accommodate variable flows and loads.

At a conceptual level, lagoon systems rely on a combination of physical retention, biological treatment processes, and natural environmental conditions to achieve wastewater treatment. Treatment occurs over extended retention periods, with effluent discharged to the receiving environment in accordance with regulatory requirements and operational controls.

The EAP presents the proposed lagoon system at a design level, identifying key design assumptions, anticipated operating conditions, and environmental protection measures.

5.2 Key Components and Operational Considerations

Based on the information provided, the proposed lagoon system includes the following key elements:

- Engineered lagoon cells designed to provide sufficient treatment volume and retention time;
- Containment measures intended to protect groundwater and surrounding environmental features;
- Inlet and outlet structures to manage inflow distribution and controlled discharge;
- Monitoring provisions to assess effluent quality and system performance; and
- Operational controls to manage seasonal conditions, wet-weather events, and maintenance activities.

Lagoon systems are inherently passive treatment systems. Once constructed, treatment continues largely independent of mechanical equipment, with system performance driven by hydraulic retention, biological activity, and environmental conditions.

This inherent storage capacity and passive operation influence both the operational risk profile of lagoon systems and the types of environmental effects typically considered during regulatory review.

5.3 Receiving Environment and Discharge Characteristics

Regardless of the wastewater treatment technology employed, treated effluent must ultimately be discharged to a receiving environment via an outfall pathway. The presence of an outfall is therefore a common feature of all wastewater treatment systems and is not unique to lagoon-based approaches.

The distinction between treatment technologies lies primarily in how and when effluent is discharged:

- Lagoon systems typically discharge on a **seasonal or intermittent basis**, often during periods when receiving-water conditions are favourable and regulatory discharge windows are available.

- Discharge timing is managed through operational controls, storage capacity, and coordination with regulatory oversight.
- Monitoring requirements are commonly applied to confirm compliance during discharge events.

These discharge characteristics influence the types of controls and commitments identified through the review process and are reflected in the resolution pathways summarized in Table 1.

5.4 Overview of Alternative Wastewater Treatment Approaches

(Contextual Information)

This subsection provides general contextual information regarding alternative wastewater treatment approaches to assist in understanding the broader planning considerations typically associated with wastewater system selection. It is not intended to reassess treatment alternatives or to recommend changes to the proposed lagoon system¹.

5.4.1 Lagoon-Based Treatment Systems

Lagoon systems are commonly selected in small or remote communities due to several inherent characteristics:

Typical advantages include:

- Operational simplicity and passive treatment processes;
- Reduced reliance on mechanical and electrical equipment;
- Tolerance to variable flows and loads;
- Inherent hydraulic and biological storage capacity; and
- Lower operator certification and staffing requirements relative to mechanical systems.

Typical limitations include:

- Larger land area requirements;
- Seasonal variability in treatment performance;
- Public perception concerns related to odour and open-water treatment; and
- The need for careful discharge timing and management.

These characteristics influence how lagoon systems are regulated and operated, particularly with respect to seasonal discharge planning and monitoring.

¹ This independent technical review does not reassess treatment alternatives, does not compare lifecycle costs, and does not make recommendations regarding wastewater treatment technology selection. The review focuses solely on whether the proposed lagoon system and associated responses to comments are technically appropriate for consideration at the Environment Act Proposal stage.

5.4.2 Mechanical Wastewater Treatment Systems

Mechanical wastewater treatment plants, such as extended aeration systems, rotating biological contactors (RBCs) sequencing batch reactors (SBRs), or membrane-based systems, are also widely used in various contexts and offer different operational characteristics.

Typical advantages include:

- Smaller physical footprint;
- More consistent effluent quality under steady operating conditions;
- Reduced reliance on seasonal environmental conditions; and
- Continuous treatment and discharge capability.

Typical limitations include:

- Greater dependence on continuous power supply and active process control;
- Increased mechanical and electrical complexity;
- Higher operational and maintenance demands;
- Reliance on skilled and certified operators; and
- Increased vulnerability to process upsets or equipment failures.

In the event of extended power outages, mechanical failures, or significant process disruptions, mechanical treatment systems may be unable to provide effective treatment. Without sufficient redundancy or storage, such failures can result in the discharge of untreated or partially treated wastewater at or near the treatment facility.

5.4.3 Comparison of Failure Modes and Discharge Characteristics

An important distinction between lagoon and mechanical treatment systems relates to failure modes and discharge characteristics.

Lagoon systems provide inherent storage and passive treatment capacity. Short-term power interruptions or operational upsets do not typically result in immediate untreated discharges, as wastewater remains contained within the lagoon cells and treatment processes continue over time.

Mechanical treatment systems, by contrast, generally rely on continuous operation. When treatment is interrupted due to power or process failure, the consequences can be more immediate unless dedicated storage or bypass controls are in place.

With respect to discharge:

- Mechanical treatment plants typically discharge **continuously**, producing a steady effluent flow to the receiving environment.
- Lagoon systems typically discharge **seasonally or intermittently**, with discharge timing managed to align with regulatory requirements and receiving-water conditions.

These distinctions influence regulatory oversight, monitoring requirements, and operational commitments, but do not eliminate the need for effluent management and environmental protection under any treatment approach.

6 Summary of Issues Raised During the Review Process

This section summarizes the principal issue areas raised during the public and Technical Advisory Committee (TAC) review process. Issues are organized by thematic category consistent with Appendix A Table A2 to maintain traceability between individual comments, issue groupings, and adequacy evaluation.

Public and TAC comments addressed a broad range of topics. While the level of technical specificity varied, many comments reflected recurring themes commonly associated with lagoon wastewater treatment systems, particularly in small or remote community contexts.

6.1 Effluent Monitoring and Reporting Framework

Concerns were raised regarding how effluent quality would be monitored, how compliance would be demonstrated, and how monitoring results would be reported to regulators and the public.

Comments in this category generally sought:

- clarity regarding monitored parameters;
- sampling frequency and locations;
- identification of compliance points; and
- transparency of reporting and oversight.

These concerns reflect a broader interest in ensuring that effluent discharges are subject to effective regulatory control and verification over the life of the facility.

6.2 Discharge Timing, Notification, and Coordination

Several comments focused on how discharge events would be managed, including:

- the timing of seasonal discharges;
- coordination with regulatory agencies;
- notification procedures for planned discharges; and
- response protocols for unplanned or emergency discharge scenarios.

These concerns are typical for lagoon systems, where discharge timing is a key operational control and where coordination with regulators is an important component of environmental protection.

6.3 Flooding, Ice Conditions, and Wet-Weather Operation

Comments were received regarding lagoon performance under adverse conditions, including:

- flood events;
- ice cover;
- spring melt; and

- extreme wet-weather inflows.

These issues reflect understandable concern regarding system resilience and operational reliability under conditions that may affect hydraulic capacity, access, or treatment performance.

6.4 Inflow and Infiltration (Including Weeping Tile Contributions)

Concerns were raised regarding the potential for increased inflow during wet-weather conditions, including contributions from weeping tiles or foundation drainage systems.

Issues raised included:

- the impact of additional inflow on lagoon performance;
- wet-weather diversion or control measures; and
- operational strategies to manage short-term hydraulic loading.

6.5 Groundwater Protection and Liner Performance Verification

Groundwater protection was a recurring theme in both public and TAC comments. Issues raised included:

- liner type and permeability;
- construction quality assurance and quality control (QA/QC);
- verification of liner performance; and
- long-term protection of groundwater resources.

These concerns are central to lagoon system review and are commonly addressed through a combination of design standards, construction oversight, and regulatory verification.

6.6 Biosolids and Sludge Management

Comments were raised regarding the long-term management of biosolids or accumulated sludge, including:

- anticipated sludge generation rates;
- removal frequency;
- handling and disposal methods; and
- regulatory oversight of biosolids management activities.

These issues reflect interest in understanding both operational planning assumptions and long-term commitments.

6.7 Non-Domestic or Process Wastewater Contributions

Some comments addressed the acceptance of non-domestic wastewater streams, including:

- abattoir, livestock or process wastewater;
- variability in wastewater characteristics; and
- controls to manage influent quality.

Concerns in this category generally focused on whether such contributions were included in the design basis and how acceptance would be managed operationally.

6.8 Receiving Environment Protection

Concerns were raised regarding the protection of the receiving environment, including:

- assimilative capacity;
- cumulative effects; and
- consistency between EAP assumptions and operational discharge controls.

These comments reflect broader environmental protection objectives and the need to ensure that discharges remain protective over time.

6.9 Odour and Nuisance Effects

Public comments frequently referenced potential odour and nuisance effects associated with lagoon operation. Issues raised included:

- proximity to residences or sensitive receptors;
- operational practices that may influence odour generation; and
- responsiveness to complaints.

While odour concerns are often perception-based, they remain an important consideration for lagoon facilities and are commonly addressed through operational management rather than design modification.

6.10 Consultation Documentation and Transparency

Some comments related to the clarity and accessibility of consultation documentation, including:

- where consultation activities were documented; and
- how public input was reflected in the proposal record.

These concerns relate primarily to transparency and ease of reference rather than technical system performance.

7 Technical Adequacy Assessment

This section assesses the technical adequacy of the proponent's responses for each issue category identified in Section 6 and evaluated in Appendix A Table A2. The assessment considers whether responses demonstrate an appropriate understanding of potential environmental effects and whether the proposed approaches are suitable for consideration at the Environment Act Proposal stage.

The assessment recognizes that Environment Act Proposals that certain details are appropriately addressed through subsequent stages. The licensing process will review the proponent's detailed operational and monitoring plans. The Permit to Construct will include engineering drawings, construction specifications and QA/QC plans.

7.1 Effluent Monitoring and Reporting Framework

Responses addressing effluent monitoring and reporting generally demonstrate an understanding of regulatory expectations for wastewater treatment facilities. Where specific parameters, sampling frequencies, or compliance points are not fully detailed, responses appropriately acknowledge that such matters are typically finalized through licensing.

The reliance on licence conditions and regulatory oversight to formalize monitoring requirements is consistent with accepted practice and does not indicate a technical deficiency at the EAP stage.

7.2 Discharge Timing and Notification Procedures

Responses related to discharge timing and notification appropriately recognize the importance of operational controls and regulatory coordination. Commitments to clarify discharge procedures and notification protocols through operational planning or licence conditions are consistent with standard regulatory approaches for lagoon systems.

No information reviewed suggests that discharge management would be inherently unmanageable or inconsistent with regulatory expectations.

7.3 Flooding, Ice Conditions, and Wet-Weather Operation

Surface drainage conditions in the vicinity of the proposed lagoon site were identified as a concern through public comments, including observations of seasonal ponding in areas southeast of the site, including along Roads 106N and 15E. These observations reflect existing regional drainage patterns associated with spring freshet, snowmelt, and precipitation events within the local topographic setting. Based on the information presented in the EAP design drawings, lagoon berm crest elevations and operating water levels provide freeboard consistent with Manitoba lagoon design guidance, supporting containment of wastewater within the lagoon cells under anticipated facility operating conditions. Lagoon water levels are controlled through influent and discharge infrastructure rather than external drainage conditions.

The lagoon is not intended to receive uncontrolled external surface runoff from surrounding lands. Subsurface drainage inputs associated with the proposed weeping tile system have been considered within the design basis and are incorporated within anticipated hydraulic loading conditions. Available topographic information indicates separation between lagoon operating levels and adjacent drainage

features, including local roads and ditches to the southeast of the site. Seasonal ponding observed in these areas is associated with regional surface drainage conditions rather than lagoon operation.

Based on the information presented in the EAP, lagoon operating levels are maintained below berm crest elevations through controlled influent and discharge management. Circumstances in which regional flood levels approach or exceed berm crest elevation would represent extreme hydrologic conditions external to normal facility operation. In such circumstances, surrounding low-lying areas would be expected to experience similar flood conditions independent of lagoon operation. The lagoon does not function as a flow control structure across a defined watercourse, and its presence does not introduce a new upstream impoundment condition. Accordingly, potential overland flooding observed in the surrounding area is governed primarily by regional drainage patterns rather than lagoon operating levels. The available information indicates that lagoon operation is not expected to materially increase flood risk to adjacent lands or transportation routes, including Roads 106N and 15E.

These considerations indicate that both containment of lagoon water levels and surrounding surface drainage conditions have been addressed through the proposed site configuration, consistent with accepted lagoon siting and design practice.

7.4 Inflow and Infiltration (including Weeping Tile Contributions)

Responses related to inflow and infiltration recognize the potential for wet-weather inflow and the need for operational strategies to manage short-term hydraulic loading.

The identification of operational commitments and potential licence conditions as resolution mechanisms is consistent with regulatory practice and reflects the nature of wastewater system approvals.

7.5 Groundwater Protection and Liner Performance Verification

Responses addressing groundwater protection and liner performance demonstrate awareness of the importance of liner integrity and construction quality assurance.

Commitments to meet regulatory liner standards and to verify performance through construction QA/QC are appropriate for the EAP stage. Detailed liner specifications and testing protocols are typically confirmed during construction permitting requirements and construction oversight.

No responses reviewed indicate an unacceptable risk to groundwater resources based on the information available.

7.6 Biosolids and Sludge Management

Responses related to biosolids management generally distinguish between planning assumptions and committed operational practices. Where long-term biosolids handling strategies are not fully detailed, reliance on future licensing and operational planning is appropriate.

This approach is consistent with regulatory expectations and does not represent a technical deficiency at the proposal stage.

7.7 Non-Domestic or Process Wastewater Contributions

Responses addressing non-domestic wastewater contributions appropriately recognize the need to manage influent quality through acceptance controls and operational oversight.

Clarification regarding included and excluded waste streams is appropriately identified as an operational matter and does not undermine the technical adequacy of the proposed system at this stage.

7.8 Receiving Environment Protection

Responses related to receiving environment protection generally demonstrate an understanding of the relationship between discharge management, monitoring, and environmental protection.

Where additional clarification is required to align EAP assumptions with operational controls, the identification of clarification or operational commitments as resolution pathways is appropriate and consistent with regulatory practice.

7.9 Odour and Nuisance Management

Responses addressing odour and nuisance concerns appropriately focus on operational management and responsiveness rather than design modification. This reflects accepted practice for lagoon facilities, where odour is influenced by operational conditions and environmental factors.

The information reviewed does not indicate that odour concerns would be unmanageable or that additional design changes are required at the EAP stage.

7.10 Consultation Documentation and Transparency

Responses related to consultation documentation appropriately clarify where consultation activities are recorded within the regulatory record. These matters are procedural in nature and do not affect the technical adequacy of the proposed works.

8 Resolution Pathways and Regulatory Handling

This section describes how the issues identified through the review process are appropriately addressed within the regulatory framework established under *The Environment Act*. The resolution pathways identified in this report reflect standard regulatory mechanisms and recognize the nature of environmental approvals.

Table 1 provides a consolidated summary of recommended resolution pathways for key issue areas identified through the review. The purpose of Table 1 is not to restate individual comments or responses, but to synthesize how outstanding matters are appropriately managed within the regulatory process.

8.1 Purpose of Resolution Pathways

Resolution pathways are used to distinguish between:

- matters that require clarification within the existing regulatory record;
- matters that are typically formalized through licence conditions;
- matters addressed through operational commitments; and
- matters confirmed through construction quality assurance and quality control (QA/QC).

The identification of a resolution pathway does not imply that an issue has been inadequately addressed. Rather, it reflects recognition that certain matters are more appropriately resolved at later stages of project development.

8.2 Clarification

Clarification is used where additional explanation or confirmation would improve transparency or understanding, but where the underlying technical approach is already appropriate for the EAP stage.

Examples include:

- clarification of monitoring parameters and reporting mechanisms;
- clarification of discharge notification procedures; and
- clarification of assumptions reflected in the EAP versus those to be confirmed through subsequent approvals.

Clarification does not require redesign or substantive modification of the proposed works.

8.3 Licence Conditions

Licence conditions are a common regulatory tool used to formalize requirements related to:

- effluent quality and monitoring;
- discharge timing and notification;
- biosolids handling and disposal; and

- ongoing compliance verification.

The reliance on future licence conditions is consistent with accepted regulatory practice and reflects the role of licensing as the mechanism through which enforceable requirements are established.

8.4 Operational Commitments

Operational commitments address matters that are best managed through day-to-day operational procedures rather than fixed design features.

Examples include:

- wet-weather and flood response procedures;
- odour management practices;
- influent acceptance controls; and
- complaint response protocols.

Operational commitments recognize that operational flexibility is often necessary to respond effectively to variable conditions.

8.5 Construction Quality Assurance and Quality Control

Construction QA/QC verification is the appropriate mechanism for confirming that design intent is achieved during implementation. This is particularly relevant for:

- liner construction and verification;
- material testing; and
- documentation of construction compliance.

Deferring detailed QA/QC requirements to the construction stage is consistent with standard practice and does not indicate a deficiency at the EAP stage.

8.6 Summary of Resolution Pathways (Table 1)

Table 1 provides a consolidated summary of the principal issue areas evaluated through this review and identifies the corresponding resolution pathways consistent with the regulatory process under *The Environment Act*. The issue categories reflected in Table 1 correspond directly with those evaluated in Appendix A Table A2 and provide a high-level synthesis of how matters raised through public comments, Technical Advisory Committee (TAC) review, and Information Requests are addressed within the evidentiary record.

The purpose of Table 1 is not to restate individual comments or responses, but rather to demonstrate how the types of considerations identified through the review process are appropriately addressed through established regulatory mechanisms. These mechanisms commonly include licensing requirements, construction quality assurance and quality control verification, and operational procedures developed as part of facility implementation and ongoing operation.

The identification of a resolution pathway does not imply that an issue has not been addressed at *The Environment Act* Proposal stage. Rather, it reflects recognition that certain matters are inherently implementation-focused and are typically refined through licensing documentation, construction verification processes, and operational planning. This approach is consistent with accepted regulatory practice for wastewater lagoon systems and other municipal wastewater infrastructure.

Table 1 illustrates that the issues raised during the review process generally relate to confirmation of operational controls, verification of construction performance, clarification of monitoring frameworks, and documentation of contingency procedures. These matters are commonly addressed through licensing conditions, construction QA/QC requirements, and operational commitments that form part of the normal progression from Environment Act Proposal to construction and operation.

When considered together with the detailed evaluation presented in Appendix A, the resolution pathways summarized in Table 1 demonstrate that the matters raised through public comments, TAC review, and Information Requests have been addressed in a manner consistent with the level of detail appropriate for the Environment Act Proposal stage. The identified pathways support transparency regarding how implementation considerations may be addressed through established regulatory mechanisms without expanding the scope of the Proposal beyond its level of development.

The staged progression reflected in Table 1 is consistent with the role of the Environment Act Proposal as a step in the overall regulatory process, with subsequent stages focused on licensing, construction implementation (including QA/QC verification), and facility operation.

Table 1 – Summary of Resolution Pathways

Issue Area	Primary Resolution Pathway	Secondary Pathway	Notes on Application
Effluent monitoring and reporting framework	Licence conditions	Operational procedures; monitoring program documentation	Licence conditions typically specify monitoring parameters, sampling frequency, reporting requirements, and compliance verification obligations. Operational procedures implement monitoring programs and record keeping.
Discharge timing, notification, and coordination	Licence conditions	Operational procedures; adaptive scheduling based on receiving water conditions	Licence conditions typically establish permitted discharge periods, notification requirements, and receiving environment protection measures. Operational procedures govern implementation of discharge timing and communication protocols.
Flooding, ice conditions, and wet-weather operation	Licence conditions	Operational procedures; adaptive discharge management	Licence conditions typically require maintenance of freeboard and operational controls to manage seasonal conditions. Operational procedures address inspection, monitoring, and response during extreme weather or ice conditions.
Inflow and infiltration (including weeping tile contributions)	Licence conditions	Construction, Operational commitments	Hydraulic loading associated with subsurface drainage inputs is described within the EAP and considered within the licensing process. Construction confirms installation of weeping tile infrastructure consistent with design intent. Operational monitoring supports ongoing confirmation of system performance.
Groundwater protection and liner performance verification	Licence conditions	Construction QA/QC verification	Licence conditions typically establish liner performance expectations for seepage control and groundwater protection. Construction QA/QC testing and inspection confirm installation consistent with design intent.
Biosolids and sludge management	Licence conditions	Operational commitments	Licence conditions typically establish sludge accumulation management requirements and disposal expectations. Operational procedures address inspection frequency, removal timing, and approved disposal methods.

Issue Area	Primary Resolution Pathway	Secondary Pathway	Notes on Application
Non-domestic or process wastewater acceptance	Licence conditions	Operational commitments	Licence conditions typically define acceptable influent characteristics and restrictions on non-domestic waste streams. Operational controls manage acceptance policies and monitoring of influent quality.
Receiving environment protection	Licence conditions	Operational commitments	Licence conditions typically establish effluent limits, discharge controls, and environmental protection requirements. Operational monitoring and reporting demonstrate compliance with receiving environment protection objectives.
Odour and nuisance management	Licence conditions	Operational commitments	Licence conditions commonly include nuisance provisions requiring prevention of adverse environmental effects such as persistent odour. Operational practices support ongoing management of nuisance conditions.
Consultation documentation and transparency	Licence conditions	Operational commitments	Licensing documentation reflects consideration of public and TAC input as part of the regulatory record. Operational transparency supports ongoing communication where required.

9 Consideration of Public and Technical Advisory Committee Comments

The review placed importance on demonstrating that public and TAC comments were considered in a fair and proportionate manner.

Public comments frequently reflected broader concerns regarding environmental protection, long-term reliability, and potential nuisance effects. While not all such concerns can be resolved through design modification, they were assessed to determine whether the EAP and responses demonstrated reasonable awareness of the issues raised and identified appropriate management approaches.

TAC comments were generally technical in nature and were assessed against regulatory expectations for Environment Act Proposals. Where responses deferred detailed confirmation to licensing or construction stages, this approach was considered appropriate given the nature of the EAP.

The review found no indication that comments were dismissed or ignored. Rather, comments were addressed in a manner proportionate to their technical content and regulatory relevance.

10 Conclusions

This independent third-party technical review considered the Environment Act Proposal and the proponent's responses to public comments, Technical Advisory Committee comments, and Information Requests associated with the proposed lagoon wastewater treatment system.

The review assessed whether the issues raised through *The Environment Act* review process have been identified and addressed in a manner consistent with the level of detail appropriate for the Environment Act Proposal stage. The review focused on whether potential environmental and human health impact pathways have been appropriately identified and whether reasonable mechanisms are available to manage those pathways through the regulatory process.

Based on the information reviewed, the responses demonstrate an understanding of the principal environmental considerations typically associated with lagoon wastewater treatment systems, including effluent monitoring, discharge management, groundwater protection, biosolids handling, influent characteristics, receiving environment protection, and operational performance considerations. The responses also demonstrate awareness of the role of licensing requirements, construction quality assurance and quality control verification, and operational procedures in supporting implementation of the proposed works.

Where additional clarification or confirmation may support implementation clarity or regulatory oversight, these matters are appropriately addressed through established regulatory mechanisms commonly applied following submission of an Environment Act Proposal. These mechanisms include licensing conditions, construction verification processes, and operational documentation developed as part of facility implementation and operation.

The review did not identify any technical considerations that would indicate a fundamental deficiency in the proposed lagoon concept when considered at the Environment Act Proposal stage. The information reviewed demonstrates that relevant environmental interaction pathways have been identified and that reasonable approaches exist to manage those pathways within the regulatory framework.

Appendix A provides transparency regarding how comments and Information Requests have been considered within the evidentiary record and how implementation considerations may be supported through established regulatory mechanisms, including licence conditions where appropriate.

Decisions regarding licensing, construction implementation, and operation remain within the staged regulatory process established under *The Environment Act*.

Appendix A

Detailed Comment–Response Adequacy Assessment

(Public and Technical Advisory Committee Comments – Environment Act Registry File 6193.00)

Appendix A – Detailed Comment–Response Adequacy Assessment

(Public and Technical Advisory Committee Comments – Environment Act Registry File 6193.00)

A.1 Purpose and Scope

This appendix focuses on assessing the adequacy of responses to registry comments in relation to the information provided in the existing Environment Act Proposal and supporting documentation. The review identifies matters where clarification assists interpretation of the information presented in the Environment Act Proposal and supporting technical documentation..

The review considered:

- public comments posted to the Environment Act registry;
- Technical Advisory Committee comments and correspondence;
- the Environment Act Proposal and supporting engineering appendices;
- proponent response packages and additional information submissions.

How to Read This Appendix

This appendix presents a structured review of public and Technical Advisory Committee comments submitted through the Environment Act registry, together with an assessment of the adequacy of the proponent’s responses. The purpose of the appendix is to provide transparency regarding how comments were considered and how responses relate to the information contained in the Environment Act Proposal and supporting technical documentation posted to the Environment Act Registry File 6193.00 [Environment and Climate Change | Province of Manitoba](#).

Each comment has been reviewed to confirm that a response was provided and to assess whether the response reasonably addresses the issue raised when considered in the context of the submitted materials. Where responses are assessed as generally adequate, they are supported by information or analysis contained within the existing documentation. Where responses benefited from additional clarification to support regulatory interpretation at the Environment Act Proposal stage, supplementary information was obtained through the Information Request process. March 2026 responses to Information Requests issued by the Commission and the Rural Municipality of Gimli have been considered in the review presented herein.

The adequacy assessments presented in this appendix do not represent approval or endorsement of the proposed works. Rather, they are intended to assist regulators, decision-makers, and the public by identifying how comments have been addressed and where additional clarification or established regulatory mechanisms, including licence conditions where appropriate, may support implementation and oversight.

This appendix should be read together with **Table 1** and the conclusions of this report, which outline recommended resolution pathways within the regulatory process.

Appendix A – Detailed Comment–Response Adequacy Assessment

(Public and Technical Advisory Committee Comments – Environment Act Registry File 6193.00)

List of Acronyms and Abbreviations

Acronym	Definition
CEC	Clean Environment Commission
EAP	Environment Act Proposal
IR	Information Request
IWMP	Integrated Watershed Management Plan
MCC	Manitoba Conservation and Climate
MB	Manitoba Regulation
TAC	Technical Advisory Committee
WQMS	Water Quality Management Section

Appendix A – Detailed Comment–Response Adequacy Assessment

(Public and Technical Advisory Committee Comments – Environment Act Registry File 6193.00)

A.2 Public Comment Adequacy Assessment

Comment ID & Source	Issue Area	Response Reference	Regulatory / Guidance Reference	Basis of Review	Review Considerations
PUB-01-01	Surface Water Quantity / Hydraulic Capacity	Proponent Response No. 1 (March 10, 2025), Response A15; Appendix E – Hydrologic and Hydraulic Assessment (TREK Geotechnical, Nov 21, 2022)	The Environment Act (Manitoba); Hydrologic and Hydraulic Assessment (Appendix E); Manitoba Infrastructure flood criteria; HEC-RAS modelling standards	Hydraulic modelling in Appendix E demonstrates the proposed trickle discharge (0.018 m ³ /s) represents ≤0.4% of modeled Willow Creek flows (4.4–31.6 m ³ /s) and does not materially affect flood conveyance capacity. The HEC-RAS steady-state model was developed using conservative assumptions without attenuation. Culvert capacity and drainage assessments are independent of lagoon discharge magnitude. The incremental hydraulic contribution is negligible relative to baseline hydrologic variability and modeled design events.	No additional hydraulic analysis required; operational discharge governance addressed through separate IR.
PUB-01-02	Drainage Governance / IWMP Alignment	Proponent Response No. 1 (March 10, 2025), Response A15; Appendix E	The Environment Act (Manitoba); Applicable drainage approvals; Willow Creek IWMP	Modeled discharge volumes are hydrologically minor relative to receiving system capacity (<0.4%). IWMP retention objectives are watershed-scale considerations and are not materially altered by the documented proportional discharge magnitude. No evidence indicates downstream hydraulic alteration attributable to lagoon discharge. Governance of drainage infrastructure remains subject to statutory approval mechanisms independent of lagoon licensing under The Environment Act.	Confirm applicable drainage approvals are secured where required.
PUB-01-03	Phosphorus / Nutrient Loading	Manitoba Water Quality Management Section Memorandum (July 16, 2024); Proponent Response No. 2 (March 10, 2025)	Manitoba Water Quality Standards, Objectives and Guidelines Regulation, Man. Reg. 196/2011	The Water Quality Management Section establishes an effluent Total Phosphorus limit of <1 mg/L pursuant to Man. Reg. 196/2011. Based on this limit, the maximum annual TP load at full build-out is estimated at 27.05 kg/year. This represents approximately 0.0000367% of total loading to Lake Winnipeg and is characterized by WQMS as small. Both effluent concentration and annual load are quantified and contextualized within the provincial regulatory framework.	Compliance monitoring and reporting governed through licence conditions.
PUB-02-01	Abattoir Expansion / Future Loading	EAP Design Loading Assumptions (Sections 5–7); Proponent Response No. 2 (March 10, 2025)	The Environment Act (Manitoba); Notice of Alteration requirements	Lagoon capacity analysis is based on defined and approved design loading conditions. Any expansion beyond those parameters would require regulatory review and potentially a Notice of Alteration under The Environment Act. Current hydraulic and nutrient assessments reflect approved loading assumptions only. Regulatory safeguards prevent unassessed increases in effluent discharge or loading.	Future operational changes remain subject to regulatory oversight. Current loading assumptions are consistent with the scope of the EAP. No additional action required.
PUB-02-02	Emergency Discharge / Operational Governance	Notice of Alteration (April 16, 2024); Proponent Response No. 2 (March 10, 2025); Proponent Response March 20, 2026 to CEC IR-01.	The Environment Act (Manitoba); Manitoba Lagoon Design Objectives	The Notice of Alteration increased primary cell storage to 9,908 m ³ to accommodate extended trickle discharge operations and enhance operational flexibility. Hydraulic proportionality is demonstrated in Appendix E. Effluent discharge is restricted to the June 15 to November 1 regulatory window and is subject to confirmation that effluent quality criteria are met prior to release. Discharge initiation criteria, deferral thresholds under atypical receiving conditions, and contingency procedures were further clarified through the Proponent’s response to CEC IR-01. The response indicates that available storage capacity provides operational flexibility to defer discharge where required, including an estimated 20–38 days of additional storage under typical operating conditions and up to approximately 92 days utilizing available freeboard under contingency scenarios. These provisions are consistent with the hydraulic proportionality conclusions presented in Appendix E.	Operational decision criteria are now described in sufficient detail to support licensing consideration. Implementation of these procedures may be confirmed through standard licence conditions and operational documentation.
PUB-03-01	Groundwater Protection	EAP (Hydrogeologic Context); Appendix E – Hydrologic & Hydraulic Assessment	Manitoba lagoon Design Objectives; The Environment Act (Manitoba)	Hydraulic and elevation analyses do not indicate increased groundwater risk associated with controlled trickle discharge operations. Lagoon containment, active storage, and freeboard parameters align with Manitoba lagoon Design Objectives. No evidence of groundwater exceedance risk or adverse subsurface interaction is identified in the record.	Standard licence monitoring provisions apply where required.
PUB-03-02	Fish Habitat / Aquatic Environment	Appendix E – Hydrologic & Hydraulic Assessment; Proponent Response No. 1 (March 10, 2025)	The Environment Act (Manitoba); Manitoba Water Quality Standards, Man. Reg. 196/2011	The proportional discharge magnitude (<0.4% of modeled flows) indicates negligible alteration of the hydraulic regime of Willow Creek. Effluent parameters are governed by provincial effluent standards. No material alteration to channel morphology, velocity regime, or aquatic habitat function is identified based on documented flow magnitude and regulatory effluent limits.	Standard licence conditions and monitoring apply.

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Comment ID & Source	Issue Area	Response Reference	Regulatory / Guidance Reference	Basis of Review	Review Considerations
PUB-04-01	Weeping Tile / Infiltration Capacity	Notice of Alteration (April 16, 2024); EAP Storage Calculations (Sections 6–7)	Manitoba lagoon Design Objectives; The Environment Act (Manitoba)	Concerns regarding infiltration impacts and detention time are addressed through revised primary cell storage volumes established in the Notice of Alteration. Total storage (9,908 m ³) accommodates extended trickle discharge conditions and design inflows. Lagoon design references Manitoba lagoon Design Objectives and confirms compliance with active storage and freeboard criteria. Storage adequacy is demonstrated under approved loading conditions.	Information Request responses provide additional clarification regarding operational flexibility associated with storage utilization.
PUB-05-01	Cumulative Effects (Adjacent Agricultural Activity)	EAP Scope Definition (Section 2); WQMS Memorandum (July 16, 2024)	The Environment Act (Manitoba); Manitoba Water Quality Standards, Man. Reg. 196/2011	The EAP assesses the lagoon system as the project under application. Adjacent agricultural operations are not included unless formally incorporated into the licensing scope. Quantified phosphorus contribution (27.05 kg/year) demonstrates negligible basin-scale impact relative to total Lake Winnipeg loading. Any future modifications would require regulatory review under The Environment Act. Information Request responses further confirm that domestic wastewater loading assumptions remain independent of separately regulated agricultural nutrient management activities.	No additional action required.
PUB-05-02	Cumulative Nutrient Loading (Livestock Operation)	Reply to IR-07 (RM Gimli, Feb 27 2026)	Livestock Manure and Mortalities Management Regulation MR 42/98; The Environment Act (Manitoba)	The Information Request response clarifies that the proposed poultry operation is regulated under separate provincial legislation governing livestock manure management and does not form part of the domestic wastewater collection or treatment system assessed in the EAP. Manure handling, storage, and land application associated with livestock operations are subject to independent regulatory review processes. The domestic wastewater lagoon loading analysis appropriately considers only sanitary wastewater flows generated by the colony population. The response confirms that no livestock waste streams enter the lagoon system.	Agricultural nutrient management activities are governed through separate provincial regulatory processes and do not alter the domestic wastewater loading framework evaluated in the EAP.
PUB-06-01	Surface Water Quantity / Hydraulic Capacity	Proponent Response No. 1 (March 10, 2025), Response A15; Appendix E – Hydrologic and Hydraulic Assessment (TREK Geotechnical, Nov 21, 2022)	The Environment Act (Manitoba); Hydrologic and Hydraulic Assessment (Appendix E); Manitoba Infrastructure flood criteria; HEC-RAS modelling standards	Hydraulic modelling in Appendix E demonstrates the proposed trickle discharge (0.018 m ³ /s) represents ≤ 0.4% of modeled Willow Creek flows (4.4–31.6 m ³ /s) and does not materially affect flood conveyance capacity. The HEC-RAS steady-state model was developed using conservative assumptions without attenuation. Culvert capacity and drainage assessments are independent of lagoon discharge magnitude. The incremental hydraulic contribution is negligible relative to baseline hydrologic variability and modeled design events.	No additional hydraulic analysis required; operational discharge governance addressed through separate IR.
TAC-01-01	Drainage Governance / IWMP Alignment	Proponent Response No. 1 (March 10, 2025), Response A15; Appendix E	The Environment Act (Manitoba); Applicable drainage approvals; Willow Creek IWMP	Modeled discharge volumes are hydrologically minor relative to receiving system capacity (<0.4%). IWMP retention objectives are watershed-scale considerations and are not materially altered by the documented proportional discharge magnitude. No evidence indicates downstream hydraulic alteration attributable to lagoon discharge. Governance of drainage infrastructure remains subject to statutory approval mechanisms independent of lagoon licensing under The Environment Act.	Confirm applicable drainage approvals are secured where required.
TAC-01-02	Phosphorus / Nutrient Loading	Manitoba Water Quality Management Section Memorandum (July 16, 2024); Proponent Response No. 2 (March 10, 2025);	Manitoba Water Quality Standards, Objectives and Guidelines Regulation, Man. Reg. 196/2011	The Water Quality Management Section establishes an effluent Total Phosphorus limit of <1 mg/L pursuant to Man. Reg. 196/2011. Based on this limit, the maximum annual TP load at full build-out is estimated at 27.05 kg/year. This represents approximately 0.0000367% of total loading to Lake Winnipeg and is characterized by WQMS as small. Both effluent concentration and annual load are quantified and contextualized within the provincial regulatory framework.	Compliance monitoring and reporting governed through licence conditions.
TAC-02-01	Abattoir Expansion / Future Loading	EAP Design Loading Assumptions (Sections 5–7); Proponent Response No. 2 (March 10, 2025)	The Environment Act (Manitoba); Notice of Alteration requirements	Lagoon capacity analysis is based on defined and approved design loading conditions. Any expansion beyond those parameters would require regulatory review and potentially a Notice of Alteration under The Environment Act. Current hydraulic and nutrient assessments reflect approved loading assumptions only. Regulatory safeguards prevent unassessed increases in effluent discharge or loading.	No additional action required.

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Comment ID & Source	Issue Area	Response Reference	Regulatory / Guidance Reference	Basis of Review	Review Considerations
TAC-02-02	Emergency Discharge / Operational Governance	Notice of Alteration (April 16, 2024); Proponent Response No. 2 (March 10, 2025); Proponent Response March 20, 2026 to CEC IR-01.	The Environment Act (Manitoba); Manitoba Lagoon Design Objectives	The Notice of Alteration increased primary cell storage to 9,908 m ³ to accommodate extended trickle discharge operations and enhance operational flexibility. Hydraulic proportionality is demonstrated in Appendix E; however, discharge initiation criteria, deferral thresholds under atypical receiving conditions, and contingency procedures are further described through IR responses addressing operational decision criteria and contingency flexibility consistent with Manitoba Lagoon Design Objectives. IR responses provide additional clarification regarding operational decision criteria and contingency flexibility consistent with Manitoba Lagoon Design Objectives.	Operational concern addressed.
TAC-03-01	Groundwater Protection	EAP (Hydrogeologic Context); Appendix E – Hydrologic & Hydraulic Assessment	Manitoba Lagoon Design Objectives; The Environment Act (Manitoba)	Hydraulic and elevation analyses do not indicate increased groundwater risk associated with controlled trickle discharge operations. Lagoon containment, active storage, and freeboard parameters align with Manitoba lagoon Design Objectives. No evidence of groundwater exceedance risk or adverse subsurface interaction is identified in the record.	Standard licence monitoring provisions apply where required.

A.3 Summary

The review confirms that all public and Technical Advisory Committee comments have received responses and that the responses are adequate from a technical perspective when considered at the Environment Act Proposal stage. Information Request responses have provided additional clarification regarding operational discharge considerations, contingency storage flexibility, and regulatory scope boundaries within the existing Environment Act Proposal documentation.

Where clarification has been identified, it improves traceability between comment themes, supporting technical documentation, and accepted engineering practice within the Manitoba regulatory framework. These clarifications do not alter the underlying technical conclusions of the Environment Act Proposal.

Matters relating to livestock manure management are governed through separate provincial regulatory processes and do not alter the domestic wastewater loading assumptions evaluated in the EAP.

Appendix A provides transparency regarding how information requests and comments have been addressed within the evidentiary record and how implementation considerations may be supported through established regulatory mechanisms, including licence conditions where appropriate.